

**F7K200219\_BASIC REMEDIATION - TRNC/D-7RD**

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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.: 37879

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
TRNC/D-7RD		RINSATE 5	F7K200219-15	KCMQL1AD	9KCMQL10	7327118
		RINSATE 5	F7K200219-15	KCMQL1AA	9KCMQL10	7327119
		RINSATE 5	F7K200219-15	KCMQL1AC	9KCMQL10	7327122
		RINSATE 5	F7K200219-15	KCMQL1AE	9KCMQL10	7327123
		TSB-GJ-02-0'	F7K200219-6	KCMPK1AA	9KCMRK10	7330517
		TSB-GJ-02-0'	F7K200219-6	KCMPK1AC	9KCMRK10	7330520
		TSB-GJ-02-0'	F7K200219-6	KCMPK1AD	9KCMRK10	7330521
		TSB-GJ-02-05'	F7K200219-8	KCMPT1AA	9KCMPT10	7330517
		TSB-GJ-02-05'	F7K200219-8	KCMPT1AC	9KCMPT10	7330520
		TSB-GJ-02-05'	F7K200219-8	KCMPT1AD	9KCMPT10	7330521
		TSB-GJ-02-0'FD	F7K200219-7	KCMR1AA	9KCMR10	7330517
		TSB-GJ-02-0'FD	F7K200219-7	KCMR1AC	9KCMR10	7330520
		TSB-GJ-02-0'FD	F7K200219-7	KCMR1AD	9KCMR10	7330521
		TSB-GJ-03-0'	F7K200219-13	KCMQH1AA	9KCMQH10	7330517
		TSB-GJ-03-0'	F7K200219-13	KCMQH1AC	9KCMQH10	7330520
		TSB-GJ-03-0'	F7K200219-13	KCMQH1AD	9KCMQH10	7330521
		TSB-GJ-03-5'	F7K200219-14	KCMQJ1AA	9KCMQJ10	7330517
		TSB-GJ-03-5'	F7K200219-14	KCMQJ1AC	9KCMQJ10	7330520
		TSB-GJ-03-5'	F7K200219-14	KCMQJ1AD	9KCMQJ10	7330521
		TSB-GJ-04-0'	F7K200219-4	KCMN51AA	9KCMN510	7330517
		TSB-GJ-04-0'	F7K200219-4	KCMN51AC	9KCMN510	7330520
		TSB-GJ-04-0'	F7K200219-4	KCMN51AD	9KCMN510	7330521
		TSB-GJ-04-5'	F7K200219-5	KCMN81AA	9KCMN810	7330517
		TSB-GJ-04-5'	F7K200219-5	KCMN81AC	9KCMN810	7330520
		TSB-GJ-04-5'	F7K200219-5	KCMN81AD	9KCMN810	7330521
		TSB-GJ-05-0'	F7K200219-11	KCMP51AA	9KCMR510	7330517

Report No.: 37879

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
TRNC/D-7RD		TSB-GJ-05-0'	F7K200219-11	KCMP51AC	9KCMP510	7330520
		TSB-GJ-05-0'	F7K200219-11	KCMP51AD	9KCMP510	7330521
		TSB-GJ-05-5'	F7K200219-12	KCMQF1AA	9KCMQF10	7330517
		TSB-GJ-05-5'	F7K200219-12	KCMQF1AC	9KCMQF10	7330520
		TSB-GJ-05-5'	F7K200219-12	KCMQF1AD	9KCMQF10	7330521
		TSB-GJ-07-0'	F7K200219-9	KCMPV1AA	9KCMPV10	7330517
		TSB-GJ-07-0'	F7K200219-9	KCMPV1AC	9KCMPV10	7330520
		TSB-GJ-07-0'	F7K200219-9	KCMPV1AD	9KCMPV10	7330521
		TSB-GJ-07-5'	F7K200219-10	KCMPX1AA	9KCMPX10	7330517
		TSB-GJ-07-5'	F7K200219-10	KCMPX1AC	9KCMPX10	7330520
		TSB-GJ-07-5'	F7K200219-10	KCMPX1AD	9KCMPX10	7330521
		TSB-GR-02-0'	F7K200219-1	KCMNL1AA	9KCMNL10	7330517
		TSB-GR-02-0'	F7K200219-1	KCMNL1AC	9KCMNL10	7330520
		TSB-GR-02-0'	F7K200219-1	KCMNL1AD	9KCMNL10	7330521
		TSB-GR-02-0'FD	F7K200219-2	KCMNW1AA	9KCMNW10	7330517
		TSB-GR-02-0'FD	F7K200219-2	KCMNW1AC	9KCMNW10	7330520
		TSB-GR-02-0'FD	F7K200219-2	KCMNW1AD	9KCMNW10	7330521
		TSB-GR-02-5'	F7K200219-3	KCMNX1AA	9KCMNX10	7330517
		TSB-GR-02-5'	F7K200219-3	KCMNX1AC	9KCMNX10	7330520
		TSB-GR-02-5'	F7K200219-3	KCMNX1AD	9KCMNX10	7330521

## 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 21, 2007
Sample Type	:	Fourteen (14) Soil / One (1) Water
Project Name	:	Basic Remediation / Tronox Parcel C/D

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### CASE NARRATIVE

#### **I. Introduction**

On November 21, 2007, one water and fourteen 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 F7K200219 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 achieved MDA for samples TSB-GJ-07-0' and TSB-GJ-03-0' exceed the CRDL due to reduced aliquots. The sample activity detected exceeds the MDA/CRDL; therefore the data can be accepted. Except as noted, 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,  $R = \text{constants} * f(x,y,z,...)$ . 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%. $Lc = (1.645 * \sqrt{2 * (BkgndCnt / BkgndCntMin) / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . 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%. $MDC = (4.65 * \sqrt{((BkgndCnt / BkgndCntMin) / SCntMin) + 2.71 / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . 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. : 37879

SDG No: TRNC/D-7RD

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7330520	HASL-300	Th Mod							
	TSB-GJ-02-0'								
	KCMPK1AC	THORIUM-228	1.64E+00 +/- 1.76E-01		pci/g	77%	3.94E-02	1.00E-01	
		THORIUM-230	1.76E+00 +/- 1.85E-01		pci/g	77%	3.82E-02	1.00E-01	
		THORIUM-232	1.42E+00 +/- 1.56E-01		pci/g	77%	3.82E-02	1.00E-01	
	TSB-GJ-02-05'								
	KCMPT1AC	THORIUM-228	1.69E+00 +/- 2.03E-01		pci/g	77%	7.61E-02	1.00E-01	
		THORIUM-230	1.39E+00 +/- 1.75E-01		pci/g	77%	6.26E-02	1.00E-01	
		THORIUM-232	1.29E+00 +/- 1.66E-01		pci/g	77%	6.26E-02	1.00E-01	
	TSB-GJ-02-0'FD								
	KCMPR1AC	THORIUM-228	1.87E+00 +/- 1.89E-01		pci/g	88%	4.53E-02	1.00E-01	
		THORIUM-230	1.61E+00 +/- 1.67E-01		pci/g	88%	3.33E-02	1.00E-01	
		THORIUM-232	1.44E+00 +/- 1.53E-01		pci/g	88%	4.39E-02	1.00E-01	
	TSB-GJ-03-0'								
	KCMQH1AC	THORIUM-228	1.77E+00 +/- 2.51E-01		pci/g	46%	1.14E-01	1.00E-01	
		THORIUM-230	1.36E+00 +/- 2.09E-01		pci/g	46%	1.10E-01	1.00E-01	
		THORIUM-232	1.93E+00 +/- 2.63E-01		pci/g	46%	1.10E-01	1.00E-01	
	TSB-GJ-03-5'								
	KCMQJ1AC	THORIUM-228	1.58E+00 +/- 1.82E-01		pci/g	97%	6.85E-02	1.00E-01	
		THORIUM-230	1.07E+00 +/- 1.37E-01		pci/g	97%	5.04E-02	1.00E-01	
		THORIUM-232	1.28E+00 +/- 1.55E-01		pci/g	97%	5.04E-02	1.00E-01	
	TSB-GJ-04-0'								
	KCMN51AC	THORIUM-228	2.17E+00 +/- 2.44E-01		pci/g	82%	6.42E-02	1.00E-01	
		THORIUM-230	1.98E+00 +/- 2.26E-01		pci/g	82%	6.24E-02	1.00E-01	
		THORIUM-232	1.65E+00 +/- 1.98E-01		pci/g	82%	6.24E-02	1.00E-01	
	TSB-GJ-04-0' DUP								
	KCMN51AF	THORIUM-228	1.48E+00 +/- 1.63E-01		pci/g	95%	5.36E-02		2.4
		THORIUM-230	1.63E+00 +/- 1.74E-01		pci/g	95%	3.95E-02		1.2
		THORIUM-232	1.40E+00 +/- 1.55E-01		pci/g	95%	3.95E-02		1.0
	TSB-GJ-04-5'								
	KCMN81AC	THORIUM-228	1.60E+00 +/- 1.87E-01		pci/g	90%	6.54E-02	1.00E-01	
		THORIUM-230	1.22E+00 +/- 1.53E-01		pci/g	90%	5.38E-02	1.00E-01	
		THORIUM-232	1.20E+00 +/- 1.51E-01		pci/g	90%	5.38E-02	1.00E-01	
	TSB-GJ-05-0'								
	KCMP51AC	THORIUM-228	1.78E+00 +/- 1.94E-01		pci/g	91%	4.69E-02	1.00E-01	
		THORIUM-230	1.05E+00 +/- 1.31E-01		pci/g	91%	4.55E-02	1.00E-01	
		THORIUM-232	1.90E+00 +/- 2.03E-01		pci/g	91%	5.37E-02	1.00E-01	
	TSB-GJ-05-5'								
	KCMQF1AC	THORIUM-228	1.76E+00 +/- 1.93E-01		pci/g	88%	6.74E-02	1.00E-01	

TAL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+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. : 37879

SDG No: TRNC/D-7RD

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7330520 HASL-300 Th Mod									
TSB-GJ-05-5'									
	KCMQF1AC	THORIUM-230	1.62E+00 +/- 1.80E-01		pci/g	88%	5.38E-02	1.00E-01	
		THORIUM-232	1.62E+00 +/- 1.80E-01		pci/g	88%	5.38E-02	1.00E-01	
TSB-GJ-07-0'									
	KCMPV1AC	THORIUM-228	1.52E+00 +/- 2.33E-01		pci/g	43%	1.84E-01	1.00E-01	
		THORIUM-230	1.23E+00 +/- 2.00E-01		pci/g	43%	1.16E-01	1.00E-01	
		THORIUM-232	1.18E+00 +/- 1.95E-01		pci/g	43%	1.16E-01	1.00E-01	
TSB-GJ-07-5'									
	KCMPX1AC	THORIUM-228	1.28E+00 +/- 1.50E-01		pci/g	97%	5.81E-02	1.00E-01	
		THORIUM-230	1.59E+00 +/- 1.74E-01		pci/g	97%	5.05E-02	1.00E-01	
		THORIUM-232	1.37E+00 +/- 1.56E-01		pci/g	97%	4.28E-02	1.00E-01	
TSB-GR-02-0'									
	KCMNL1AC	THORIUM-228	1.69E+00 +/- 1.96E-01		pci/g	75%	6.73E-02	1.00E-01	
		THORIUM-230	1.17E+00 +/- 1.50E-01		pci/g	75%	6.53E-02	1.00E-01	
		THORIUM-232	1.44E+00 +/- 1.73E-01		pci/g	75%	5.53E-02	1.00E-01	
TSB-GR-02-0'FD									
	KCMNW1A	THORIUM-228	1.66E+00 +/- 1.88E-01		pci/g	83%	5.08E-02	1.00E-01	
		THORIUM-230	1.10E+00 +/- 1.38E-01		pci/g	83%	4.93E-02	1.00E-01	
		THORIUM-232	1.22E+00 +/- 1.49E-01		pci/g	83%	4.93E-02	1.00E-01	
TSB-GR-02-5'									
	KCMNX1AC	THORIUM-228	1.77E+00 +/- 1.92E-01		pci/g	92%	6.45E-02	1.00E-01	
		THORIUM-230	1.14E+00 +/- 1.37E-01		pci/g	92%	4.37E-02	1.00E-01	
		THORIUM-232	1.76E+00 +/- 1.89E-01		pci/g	92%	5.15E-02	1.00E-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
RINSATE 5									
	KCMQL1AD	THORIUM-228	4.67E-02 +/- 5.97E-02	U	pci/l	93%	2.80E-01	1.00E+00	
		THORIUM-230	0.00E+00 +/- 5.84E-02	U	pci/l	93%	2.74E-01	1.00E+00	
		THORIUM-232	0.00E+00 +/- 5.84E-02	U	pci/l	93%	2.74E-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
		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
RINSATE 5									

TAL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUD))] as defined by ICPT BOA.  
 rptSTLRchSaSummary2 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. : 37879

SDG No: TRNC/D-7RD

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7327123	HASL-300 U Mod								
	RINSATE 5								
	KCMQL1AE	URANIUM-233/234	0.00E+00 +/- 3.65E-02	U	pci/l	83%	1.71E-01	1.00E+00	
		URANIUM-235/236	-7.15E-03 +/- 3.65E-02	U	pci/l	83%	1.71E-01	1.00E-01	
		URANIUM-238	0.00E+00 +/- 3.65E-02	U	pci/l	83%	1.71E-01	1.00E+00	
7330521	HASL-300 U Mod								
	TSB-GJ-02-0'								
	KCMPK1AD	URANIUM-233/234	1.28E+00 +/- 1.24E-01		pci/g	88%	1.63E-02	6.00E-01	
		URANIUM-235/236	3.40E-02 +/- 1.11E-02	J	pci/g	88%	1.63E-02	6.00E-01	
		URANIUM-238	7.94E-01 +/- 8.34E-02		pci/g	88%	1.63E-02	6.00E-01	
	TSB-GJ-02-05'								
	KCMPT1AD	URANIUM-233/234	1.00E+00 +/- 9.86E-02		pci/g	95%	1.49E-02	6.00E-01	
		URANIUM-235/236	2.42E-02 +/- 9.03E-03	J	pci/g	95%	1.49E-02	6.00E-01	
		URANIUM-238	5.78E-01 +/- 6.33E-02	J	pci/g	95%	1.49E-02	6.00E-01	
	TSB-GJ-02-0'FD								
	KCMPR1AD	URANIUM-233/234	7.59E-01 +/- 8.11E-02		pci/g	82%	1.68E-02	6.00E-01	
		URANIUM-235/236	1.76E-02 +/- 8.02E-03	J	pci/g	82%	1.68E-02	6.00E-01	
		URANIUM-238	4.22E-01 +/- 5.19E-02	J	pci/g	82%	1.68E-02	6.00E-01	
	TSB-GJ-03-0'								
	KCMQH1AD	URANIUM-233/234	1.98E-01 +/- 3.15E-02	J	pci/g	86%	1.81E-02	6.00E-01	
		URANIUM-235/236	1.36E-02 +/- 7.35E-03	U	pci/g	86%	1.81E-02	6.00E-01	
		URANIUM-238	1.66E-01 +/- 2.81E-02	J	pci/g	86%	1.66E-02	6.00E-01	
	TSB-GJ-03-5'								
	KCMQJ1AD	URANIUM-233/234	4.00E-01 +/- 5.15E-02	J	pci/g	88%	2.29E-02	6.00E-01	
		URANIUM-235/236	2.67E-02 +/- 1.05E-02	J	pci/g	88%	1.55E-02	6.00E-01	
		URANIUM-238	2.12E-01 +/- 3.36E-02	J	pci/g	88%	1.76E-02	6.00E-01	
	TSB-GJ-04-0'								
	KCMN51AD	URANIUM-233/234	1.23E+00 +/- 1.17E-01		pci/g	97%	2.54E-02	6.00E-01	
		URANIUM-235/236	2.41E-02 +/- 8.98E-03	J	pci/g	97%	1.48E-02	6.00E-01	
		URANIUM-238	7.39E-01 +/- 7.68E-02		pci/g	97%	2.12E-02	6.00E-01	
	TSB-GJ-04-0' DUP								
	KCMN51AG	URANIUM-233/234	1.17E+00 +/- 1.11E-01		pci/g	93%	2.41E-02		0.3
		URANIUM-235/236	4.63E-02 +/- 1.23E-02		pci/g	93%	1.40E-02		1.5
		URANIUM-238	7.35E-01 +/- 7.55E-02		pci/g	93%	2.91E-02		0.0
	TSB-GJ-04-5'								
	KCMN81AD	URANIUM-233/234	5.04E-01 +/- 5.86E-02	J	pci/g	86%	1.92E-02	6.00E-01	
		URANIUM-235/236	1.29E-02 +/- 6.90E-03	U	pci/g	86%	1.63E-02	6.00E-01	
		URANIUM-238	3.66E-01 +/- 4.63E-02	J	pci/g	86%	1.63E-02	6.00E-01	
	TSB-GJ-05-0'								

TAL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.  
 rptSTLRchSaSummary2 V5.1.5 A2002 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. : 37879

SDG No: TRNC/D-7RD

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7330521	HASL-300 U Mod								
	TSB-GJ-05-0'								
	KCMP51AD	URANIUM-233/234	4.40E-01 +/- 5.27E-02	J	pci/g	87%	1.60E-02	6.00E-01	
		URANIUM-235/236	9.35E-03 +/- 5.88E-03	U	pci/g	87%	1.60E-02	6.00E-01	
		URANIUM-238	3.21E-01 +/- 4.20E-02	J	pci/g	87%	1.60E-02	6.00E-01	
	TSB-GJ-05-5'								
	KCMQF1AD	URANIUM-233/234	1.21E+00 +/- 1.15E-01		pci/g	92%	1.52E-02	6.00E-01	
		URANIUM-235/236	3.28E-02 +/- 1.05E-02	J	pci/g	92%	1.52E-02	6.00E-01	
		URANIUM-238	6.67E-01 +/- 7.04E-02		pci/g	92%	1.23E-02	6.00E-01	
	TSB-GJ-07-0'								
	KCMPV1AD	URANIUM-233/234	4.31E-01 +/- 5.17E-02	J	pci/g	95%	2.26E-02	6.00E-01	
		URANIUM-235/236	6.57E-03 +/- 4.72E-03	U	pci/g	95%	1.57E-02	6.00E-01	
		URANIUM-238	3.31E-01 +/- 4.27E-02	J	pci/g	95%	1.57E-02	6.00E-01	
	TSB-GJ-07-5'								
	KCMPX1AD	URANIUM-233/234	7.89E-01 +/- 7.92E-02		pci/g	98%	1.36E-02	6.00E-01	
		URANIUM-235/236	2.26E-02 +/- 8.23E-03	J	pci/g	98%	1.36E-02	6.00E-01	
		URANIUM-238	5.47E-01 +/- 5.91E-02	J	pci/g	98%	1.79E-02	6.00E-01	
	TSB-GR-02-0'								
	KCMNL1AD	URANIUM-233/234	3.93E-01 +/- 4.73E-02	J	pci/g	95%	1.74E-02	6.00E-01	
		URANIUM-235/236	2.40E-02 +/- 8.95E-03	J	pci/g	95%	1.48E-02	6.00E-01	
		URANIUM-238	2.92E-01 +/- 3.83E-02	J	pci/g	95%	1.48E-02	6.00E-01	
	TSB-GR-02-0'FD								
	KCMNW1A	URANIUM-233/234	3.02E-01 +/- 3.94E-02	J	pci/g	102%	1.77E-02	6.00E-01	
		URANIUM-235/236	1.13E-02 +/- 6.38E-03	U	pci/g	102%	1.77E-02	6.00E-01	
		URANIUM-238	2.95E-01 +/- 3.88E-02	J	pci/g	102%	1.97E-02	6.00E-01	
	TSB-GR-02-5'								
	KCMNX1AD	URANIUM-233/234	4.93E-01 +/- 5.72E-02	J	pci/g	90%	1.59E-02	6.00E-01	
		URANIUM-235/236	6.62E-04 +/- 3.57E-03	U	pci/g	90%	2.28E-02	6.00E-01	
		URANIUM-238	3.31E-01 +/- 4.30E-02	J	pci/g	90%	2.59E-02	6.00E-01	
7330517	EPA 901.1								
	TSB-GJ-02-0'								
	KCMPK1AA	RADIUM-226	1.30E+00 +/- 9.40E-02		pCi/g		7.29E-02		
		RADIUM-228	1.62E+00 +/- 1.55E-01		pCi/g		1.40E-01		
	TSB-GJ-02-05'								
	KCMPT1AA	RADIUM-226	1.24E+00 +/- 1.04E-01		pCi/g		7.62E-02		
		RADIUM-228	1.77E+00 +/- 1.52E-01		pCi/g		1.56E-01		
	TSB-GJ-02-0'FD								
	KCMPR1AA	RADIUM-226	1.28E+00 +/- 8.94E-02		pCi/g		7.68E-02		
		RADIUM-228	2.04E+00 +/- 1.74E-01		pCi/g		1.62E-01		

TAL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.  
 rptSTLRchSaSummary2 V5.1.5 A2002 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. : 37879

SDG No: TRNC/D-7RD

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7330517	EPA 901.1								
	TSB-GJ-03-0'								
	KCMQH1AA	RADIUM-226	8.70E-01 +/- 7.98E-02		pCi/g		7.34E-02		
		RADIUM-228	1.70E+00 +/- 1.62E-01		pCi/g		1.47E-01		
	TSB-GJ-03-5'								
	KCMQJ1AA	RADIUM-226	8.90E-01 +/- 6.70E-02		pCi/g		6.11E-02		
		RADIUM-228	1.94E+00 +/- 1.58E-01		pCi/g		1.18E-01		
	TSB-GJ-04-0'								
	KCMN51AA	RADIUM-226	1.06E+00 +/- 8.67E-02		pCi/g		6.36E-02		
		RADIUM-228	1.72E+00 +/- 1.44E-01		pCi/g		1.31E-01		
	TSB-GJ-04-0' DUP								
	KCMN51AE	RADIUM-226	1.19E+00 +/- 8.66E-02		pCi/g		6.58E-02		
		RADIUM-228	1.86E+00 +/- 1.52E-01		pCi/g		1.19E-01		
	TSB-GJ-04-5'								
	KCMN81AA	RADIUM-226	9.77E-01 +/- 8.28E-02		pCi/g		7.58E-02		
		RADIUM-228	1.84E+00 +/- 2.00E-01		pCi/g		1.41E-01		
	TSB-GJ-05-0'								
	KCMP51AA	RADIUM-226	9.14E-01 +/- 8.91E-02		pCi/g		7.38E-02		
		RADIUM-228	1.69E+00 +/- 1.91E-01		pCi/g		1.42E-01		
	TSB-GJ-05-5'								
	KCMQF1AA	RADIUM-226	1.11E+00 +/- 9.37E-02		pCi/g		8.98E-02		
		RADIUM-228	1.89E+00 +/- 1.62E-01		pCi/g		1.71E-01		
	TSB-GJ-07-0'								
	KCMPV1AA	RADIUM-226	7.95E-01 +/- 6.83E-02		pCi/g		6.27E-02		
		RADIUM-228	1.81E+00 +/- 1.44E-01		pCi/g		1.23E-01		
	TSB-GJ-07-5'								
	KCMPX1AA	RADIUM-226	1.27E+00 +/- 9.10E-02		pCi/g		6.38E-02		
		RADIUM-228	1.66E+00 +/- 1.38E-01		pCi/g		1.26E-01		
	TSB-GR-02-0'								
	KCMNL1AA	RADIUM-226	1.03E+00 +/- 8.09E-02		pCi/g		7.69E-02		
		RADIUM-228	1.67E+00 +/- 1.56E-01		pCi/g		1.35E-01		
	TSB-GR-02-0'FD								
	KCMNW1AA	RADIUM-226	1.02E+00 +/- 7.85E-02		pCi/g		7.70E-02		
		RADIUM-228	1.97E+00 +/- 1.77E-01		pCi/g		1.67E-01		
	TSB-GR-02-5'								
	KCMNX1AA	RADIUM-226	9.51E-01 +/- 8.34E-02		pCi/g		7.62E-02		
		RADIUM-228	1.99E+00 +/- 1.61E-01		pCi/g		1.47E-01		
7327119	EPA 903.1								
	RINSATE 5								
	KCMQL1AA	RADIUM-226	1.62E-02 +/- 2.43E-02	U	pci/l	100%	9.05E-02	1.00E+00	

TAL Richland

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

rptSTLrChSaSummary2 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.

### Sample Results Summary

Date: 26-Dec-07

#### TAL Richland

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

Report No. : 37879

SDG No: TRNC/D-7RD

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7327119	EPA 903.1								
7327122	EPA 904.0								
	RINSATE 5								
	KCMQL1AC	RADIUM-228	1.14E-01 +/- 1.08E-01	U	pci/l	90%	4.91E-01	3.00E+00	
No. of Results:		134							

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TAL Richland      RER2 - Replicate Error Ratio =  $(S-D)/[\text{sqrt}(\text{sq}(TPUs)+\text{sq}(TPUd))]$  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

QC Results Summary

Date: 26-Dec-07

TAL Richland

Ordered by Method, Batch No, QC Type,.

Report No. : 37879

SDG No.: TRNC/D-7RD

Batch	Work Order	Parameter	Result +- Uncertainty ( 1s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDC MDA
<b>HASL-300 Th Mod</b>									
7330520 BLANK QC,									
	KCV2Q1AA	THORIUM-228	-1.47E-03 +- 7.47E-03	U	pci/g	85%			3.51E-02
		THORIUM-230	1.42E-02 +- 1.02E-02	U	pci/g	85%			3.41E-02
		THORIUM-232	0.00E+00 +- 7.25E-03	U	pci/g	85%			3.41E-02
7330520 LCS,									
	KCV2Q1AC	THORIUM-230	2.19E+00 +- 2.15E-01		pci/g	90%	96%	0.0	3.36E-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>HASL-300 U Mod</b>									
7330521 BLANK QC,									
	KCV2R1AA	URANIUM-233/234	8.76E-03 +- 6.25E-03	U	pci/g	98%			1.76E-02
		URANIUM-235/236	-1.40E-03 +- 4.44E-03	U	pci/g	98%			2.34E-02
		URANIUM-238	4.03E-03 +- 4.41E-03	U	pci/g	98%			1.76E-02
7330521 LCS,									
	KCV2R1AC	URANIUM-233/234	9.11E-01 +- 1.14E-01		pci/g	48%	106%	0.1	3.26E-02
		URANIUM-238	9.79E-01 +- 1.21E-01		pci/g	48%	109%	0.1	3.26E-02
<b>EPA 901.1</b>									
7330517 BLANK QC,									
	KCV2M1AA	RADIUM-226	-4.44E-02 +- 6.66E-02	U	pCi/g				1.50E-01
		RADIUM-228	1.88E-01 +- 7.08E-02	U	pCi/g				2.54E-01
7330517 LCS,									
	KCV2M1AC	CESIUM-137	7.92E+00 +- 5.40E-01		pCi/g		99%	0.0	6.61E-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. : 37879

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

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K200219-15  
 Client Sample ID: RINSATE 5  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Matrix: WATER W  
 Collection Date: 11/19/2007 12:40:00 PM  
 Received Date: 11/20/2007 9:30:00 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: 7327118 HASL-300 Th Mod												
THORIUM-228	4.67E-02	U	6.0E-02	6.0E-02	2.80E-01	pci/l	93%	0.17	12/10/07 06:45 a	0.2001	0.2001	ALP177
THORIUM-230	0.00E+00	U	0.0E+00	5.8E-02	2.74E-01	pci/l	93%	0.78	12/10/07 06:45 a	0.2001	L	ALP177
THORIUM-232	0.00E+00	U	0.0E+00	5.8E-02	2.74E-01	pci/l	93%	0.0	12/10/07 06:45 a	0.2001	L	ALP177
Batch: 7327119 EPA 903.1												
RADIUM-226	1.62E-02	U	2.4E-02	2.4E-02	9.05E-02	pci/l	100%	0.18	12/17/07 03:06 p	1.0009	L	ASCHAC
Batch: 7327122 EPA 904.0												
RADIUM-228	1.14E-01	U	8.8E-02	1.1E-01	4.91E-01	pci/l	90%	0.23	12/19/07 06:37 a	1.0009	L	GPC5C
Batch: 7327123 HASL-300 U Mod												
URANIUM-233/234	0.00E+00	U	0.0E+00	3.6E-02	1.71E-01	pci/l	83%	0.0	12/10/07 02:47 p	0.2001	L	ALP9
URANIUM-235/236	-7.15E-03	U	3.6E-02	3.6E-02	1.71E-01	pci/l	83%	-0.04	12/10/07 02:47 p	0.2001	L	ALP9
URANIUM-238	0.00E+00	U	0.0E+00	3.6E-02	1.71E-01	pci/l	83%	-0.2	12/10/07 02:47 p	0.2001	L	ALP9

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.: F7K200219-6  
 Client Sample ID: TSB-GJ-02-0'  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Collection Date: 11/19/2007 6:40:00 AM  
 Received Date: 11/20/2007 9:30:00 AM  
 Matrix: SOLID SO

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
Batch: 7330517 EPA 901.1												
RADIUM-226	<b>1.30E+00</b>		9.4E-02	9.4E-02	7.29E-02	pCi/g	9KCMCPK10	(17.8)	12/20/07 10:15 a	47.0	47.0	GER5\$1
								(13.8)			g	
RADIUM-228	<b>1.62E+00</b>		1.5E-01	1.5E-01	1.40E-01	pCi/g		(11.5)	12/20/07 10:15 a	47.0	47.0	GER5\$1
								(10.4)			g	
Batch: 7330520 HASL-300 Th Mod												
THORIUM-228	<b>1.64E+00</b>		1.2E-01	1.8E-01	3.94E-02	pci/g	9KCMCPK10	(41.7)	12/19/07 09:11 a	1.01	1.01	ALP117
								(9.3)			G	
THORIUM-230	<b>1.76E+00</b>		1.2E-01	1.8E-01	3.82E-02	pci/g		(46.1)	12/19/07 09:11 a	1.01	1.01	ALP117
								(9.5)			G	
THORIUM-232	<b>1.42E+00</b>		1.1E-01	1.6E-01	3.82E-02	pci/g		(37.2)	12/19/07 09:11 a	1.01	1.01	ALP117
								(9.1)			G	
Batch: 7330521 HASL-300 U Mod												
URANIUM-233/234	<b>1.28E+00</b>		6.6E-02	1.2E-01	1.63E-02	pci/g	9KCMCPK10	(78.5)	12/18/07 02:35 p	2.02	2.02	ALP7
								(10.3)			G	
URANIUM-235/236	<b>3.40E-02</b>	J	1.1E-02	1.1E-02	1.63E-02	pci/g		(2.1)	12/18/07 02:35 p	2.02	2.02	ALP7
								(3.1)			G	
URANIUM-238	<b>7.94E-01</b>		5.2E-02	8.3E-02	1.63E-02	pci/g		(48.9)	12/18/07 02:35 p	2.02	2.02	ALP7
								(9.5)			G	

Ratio U-234/238 = 1.6

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.: F7K200219-8  
 Client Sample ID: TSB-GJ-02-05'  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No. :  
 Matrix: SOLID SO  
 Collection Date: 11/19/2007 7:00:00 AM  
 Received Date: 11/20/2007 9:30:00 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: 7330517 EPA 901.1												
Work Order: KCMPT1AA Report DB ID: 9KCMPT10												
RADIUM-226	1.24E+00		1.0E-01	1.0E-01	7.62E-02	pCi/g	(16.3)	(12.)	12/20/07 10:18 a	45.9	45.9	GER7\$1
RADIUM-228	1.77E+00		1.5E-01	1.5E-01	1.56E-01	pCi/g	(11.4)	(11.6)	12/20/07 10:18 a	45.9	45.9	GER7\$1
Batch: 7330520 HASL-300 Th Mod												
Work Order: KCMPT1AC Report DB ID: 9KCMPT10												
THORIUM-228	1.69E+00		1.5E-01	2.0E-01	7.61E-02	pci/g	(22.2)	(8.3)	12/19/07 09:12 a	1.0	1.0	ALP119
THORIUM-230	1.39E+00		1.3E-01	1.7E-01	6.26E-02	pci/g	(22.1)	(7.9)	12/19/07 09:12 a	1.0	1.0	ALP119
THORIUM-232	1.29E+00		1.3E-01	1.7E-01	6.26E-02	pci/g	(20.6)	(7.8)	12/19/07 09:12 a	1.0	1.0	ALP119
Batch: 7330521 HASL-300 U Mod												
Work Order: KCMPT1AD Report DB ID: 9KCMPT10												
URANIUM-233/234	1.00E+00		5.6E-02	9.9E-02	1.49E-02	pci/g	(67.2)	(10.2)	12/18/07 02:35 p	2.01	2.01	ALP9
URANIUM-235/236	2.42E-02	J	8.8E-03	9.0E-03	1.49E-02	pci/g	(1.6)	(2.7)	12/18/07 02:35 p	2.01	2.01	ALP9
URANIUM-238	5.78E-01	J	4.2E-02	6.3E-02	1.49E-02	pci/g	(38.8)	(9.1)	12/18/07 02:35 p	2.01	2.01	ALP9

Ratio U-234/238 = 1.7

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 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.: F7K200219-7  
 Client Sample ID: TSB-GJ-02-0'FD  
 BASIC REMEDIATION - Tronox Parcel C/D

SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:

Collection Date: 11/19/2007 6:40:00 AM  
 Received Date: 11/20/2007 9:30:00 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/TotUcert	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7330517 EPA 901.1												
RADIUM-226	<b>1.28E+00</b>		8.9E-02	8.9E-02	7.68E-02	pCi/g	9KCMPPR10	(16.7)	12/20/07 10:17 a		48.6	GER6\$1
								(14.3)			g	
RADIUM-228	<b>2.04E+00</b>		1.7E-01	1.7E-01	1.62E-01	pCi/g		(12.5)	12/20/07 10:17 a		48.6	GER6\$1
								(11.7)			g	
Batch: 7330520 HASL-300 Th Mod												
THORIUM-228	<b>1.87E+00</b>		1.2E-01	1.9E-01	4.53E-02	pCi/g	9KCMPPR10	(41.3)	12/19/07 09:11 a		1.04	ALP118
								(9.9)			G	
THORIUM-230	<b>1.61E+00</b>		1.1E-01	1.7E-01	3.33E-02	pCi/g		(48.4)	12/19/07 09:11 a		1.04	ALP118
								(9.7)			G	
THORIUM-232	<b>1.44E+00</b>		1.0E-01	1.5E-01	4.39E-02	pCi/g		(32.9)	12/19/07 09:11 a		1.04	ALP118
								(9.4)			G	
Batch: 7330521 HASL-300 U Mod												
URANIUM-233/234	<b>7.59E-01</b>		5.2E-02	8.1E-02	1.68E-02	pCi/g	9KCMPPR10	(45.1)	12/18/07 02:35 p		2.02	ALP8
								(9.4)			G	
URANIUM-235/236	<b>1.76E-02</b>	J	7.9E-03	8.0E-03	1.68E-02	pCi/g		(1.)	12/18/07 02:35 p		2.02	ALP8
								(2.2)			G	
URANIUM-238	<b>4.22E-01</b>	J	3.8E-02	5.2E-02	1.68E-02	pCi/g		(25.1)	12/18/07 02:35 p		2.02	ALP8
								(8.1)			G	

Ratio U-234/238 = 1.8

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.  
 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.: F7K200219-13  
 Client Sample ID: TSB-GJ-03-0'  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Collection Date: 11/19/2007 8:15:00 AM  
 Received Date: 11/20/2007 9:30:00 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/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7330517 EPA 901.1											
RADIUM-226	<b>8.70E-01</b>		8.0E-02	8.0E-02	7.34E-02	pCi/g	9KCMQH10 (11.8) (10.9)	12/20/07 10:31 a		51.9 g	GER4\$1
RADIUM-228	<b>1.70E+00</b>		1.6E-01	1.6E-01	1.47E-01	pCi/g	(11.5) (10.4)	12/20/07 10:31 a		51.9 g	GER4\$1
Batch: 7330520 HASL-300 Th Mod											
THORIUM-228	<b>1.77E+00</b>		2.1E-01	2.5E-01	1.14E-01	pci/g	9KCMQH10 (15.6) (7.1)	12/19/07 12:46 p		1.01 G	ALP177
THORIUM-230	<b>1.36E+00</b>		1.8E-01	2.1E-01	1.10E-01	pci/g	(12.3) (6.5)	12/19/07 12:46 p		1.01 G	ALP177
THORIUM-232	<b>1.93E+00</b>		2.1E-01	2.6E-01	1.10E-01	pci/g	(17.5) (7.3)	12/19/07 12:46 p		1.01 G	ALP177
Batch: 7330521 HASL-300 U Mod											
URANIUM-233/234	<b>1.98E-01</b>	J	2.7E-02	3.1E-02	1.81E-02	pci/g	9KCMQH10 (11.) (6.3)	12/18/07 02:36 p		2.0 G	ALP71
URANIUM-235/236	<b>1.36E-02</b>	U	7.3E-03	7.3E-03	1.81E-02	pci/g	0.75 (1.9)	12/18/07 02:36 p		2.0 G	ALP71
URANIUM-238	<b>1.66E-01</b>	J	2.5E-02	2.8E-02	1.66E-02	pci/g	(10.) (5.9)	12/18/07 02:36 p		2.0 G	ALP71

Ratio U-234/238 = 1.2

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 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.: F7K200219-14  
 Client Sample ID: TSB-GJ-03-5'  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Matrix: SOLID SO  
 Collection Date: 11/19/2007 8:30:00 AM  
 Received Date: 11/20/2007 9:30:00 AM  
 Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDCI\MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL) Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Work Order: KCMQJ1AA Report DB ID: 9KCMQJ10											
Batch: 7330517	EPA 901.1										
RADIUM-226	<b>8.90E-01</b>		6.7E-02	6.7E-02	6.11E-02	pCi/g	(14.6)	12/21/07 09:37 a	50.1	50.1	GER10\$1
RADIUM-228	<b>1.94E+00</b>		1.6E-01	1.6E-01	1.18E-01	pCi/g	(13.3)	12/21/07 09:37 a	50.1	50.1	GER10\$1
Work Order: KCMQJ1AC Report DB ID: 9KCMQJ10											
Batch: 7330520	HASL-300 Th Mod										
THORIUM-228	<b>1.58E+00</b>		1.3E-01	1.8E-01	6.85E-02	pCi/g	(23.)	12/19/07 12:46 p	1.01	1.01	ALP116
THORIUM-230	<b>1.07E+00</b>		1.1E-01	1.4E-01	5.04E-02	pCi/g	(8.7)	12/19/07 12:46 p	1.01	1.01	ALP116
THORIUM-232	<b>1.28E+00</b>		1.2E-01	1.6E-01	5.04E-02	pCi/g	(21.3)	12/19/07 12:46 p	1.01	1.01	ALP116
Work Order: KCMQJ1AD Report DB ID: 9KCMQJ10											
Batch: 7330521	HASL-300 U Mod										
URANIUM-233/234	<b>4.00E-01</b>	J	3.9E-02	5.2E-02	2.29E-02	pCi/g	(17.5)	12/18/07 02:36 p	2.01	2.01	ALP84
URANIUM-235/236	<b>2.67E-02</b>	J	1.0E-02	1.0E-02	1.55E-02	pCi/g	(7.8)	12/18/07 02:36 p	2.01	2.01	ALP84
URANIUM-238	<b>2.12E-01</b>	J	2.9E-02	3.4E-02	1.76E-02	pCi/g	(2.6)	12/18/07 02:36 p	2.01	2.01	ALP84
Work Order: KCMQJ1AE Report DB ID: 9KCMQJ10											
Ratio U-234/238 = 1.9											

No. of Results: 8 Comments:

TAL Richland MDCI\MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample 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.: F7K200219-4  
 Client Sample ID: TSB-GJ-04-0'  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Collection Date: 11/19/2007 9:45:00 AM  
 Received Date: 11/20/2007 9:30:00 AM  
 Matrix: SOLID SO

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
Batch: 7330517 EPA 901.1												
RADIUM-226	<b>1.06E+00</b>		8.7E-02	8.7E-02	6.36E-02	pCi/g	9KCMN510	(16.6)	12/19/07 10:04 a	48.3	48.3	GER8\$1
RADIUM-228	<b>1.72E+00</b>		1.4E-01	1.4E-01	1.31E-01	pCi/g		(12.2)	12/19/07 10:04 a	9	9	GER8\$1
Batch: 7330520 HASL-300 Th Mod												
THORIUM-228	<b>2.17E+00</b>		1.7E-01	2.4E-01	6.42E-02	pCi/g	9KCMN510	(33.8)	12/19/07 09:10 a	1.0	1.0	ALP177
THORIUM-230	<b>1.98E+00</b>		1.6E-01	2.3E-01	6.24E-02	pCi/g		(8.9)	12/19/07 09:10 a	G	G	ALP177
THORIUM-232	<b>1.65E+00</b>		1.5E-01	2.0E-01	6.24E-02	pCi/g		(31.7)	12/19/07 09:10 a	1.0	1.0	ALP177
Batch: 7330521 HASL-300 U Mod												
URANIUM-233/234	<b>1.23E+00</b>		6.2E-02	1.2E-01	2.54E-02	pCi/g	9KCMN510	(48.3)	12/18/07 02:35 p	2.0	2.0	ALP4
URANIUM-235/236	<b>2.41E-02</b>	J	8.8E-03	9.0E-03	1.48E-02	pCi/g		(10.5)	12/18/07 02:35 p	G	G	ALP4
URANIUM-238	<b>7.39E-01</b>		4.8E-02	7.7E-02	2.12E-02	pCi/g		(2.7)	12/18/07 02:35 p	2.0	2.0	ALP4
Batch: 7330521 HASL-300 U Mod												
URANIUM-233/234	<b>1.23E+00</b>		6.2E-02	1.2E-01	2.54E-02	pCi/g	9KCMN510	(34.8)	12/18/07 02:35 p	2.0	2.0	ALP4
URANIUM-235/236	<b>2.41E-02</b>	J	8.8E-03	9.0E-03	1.48E-02	pCi/g		(9.6)	12/18/07 02:35 p	G	G	ALP4
URANIUM-238	<b>7.39E-01</b>		4.8E-02	7.7E-02	2.12E-02	pCi/g			12/18/07 02:35 p	2.0	2.0	ALP4

Ratio U-234/238 = 1.7

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.



FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K200219-5  
 Client Sample ID: TSB-GJ-04-5'  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Collection Date: 11/19/2007 10:05:00 AM  
 Received Date: 11/20/2007 9:30:00 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/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7330517 EPA 901.1 Work Order: KCMN81AA Report DB ID: 9KCMN810											
RADIUM-226	9.77E-01		8.3E-02	8.3E-02	7.58E-02	pCi/g	(12.9) (11.8)	12/19/07 10:06 a	48.1	48.1	GER13\$1
RADIUM-228	1.84E+00		2.0E-01	2.0E-01	1.41E-01	pCi/g	(13.) (9.2)	12/19/07 10:06 a	48.1	48.1	GER13\$1
Batch: 7330520 HASL-300 Th Mod Work Order: KCMN81AC Report DB ID: 9KCMN810											
THORIUM-228	1.60E+00		1.4E-01	1.9E-01	6.54E-02	pci/g	(24.5) (8.6)	12/19/07 09:11 a	1.02	1.02	ALP116
THORIUM-230	1.22E+00		1.2E-01	1.5E-01	5.38E-02	pci/g	(22.8) (8.)	12/19/07 09:11 a	1.02	1.02	ALP116
THORIUM-232	1.20E+00		1.2E-01	1.5E-01	5.38E-02	pci/g	(22.3) (8.)	12/19/07 09:11 a	1.02	1.02	ALP116
Batch: 7330521 HASL-300 U Mod Work Order: KCMN81AD Report DB ID: 9KCMN810											
URANIUM-233/234	5.04E-01	J	4.1E-02	5.9E-02	1.92E-02	pci/g	(26.3) (8.6)	12/18/07 02:35 p	2.01	2.01	ALP6
URANIUM-235/236	1.29E-02	U	6.8E-03	6.9E-03	1.63E-02	pci/g	0.79 (1.9)	12/18/07 02:35 p	2.01	2.01	ALP6
URANIUM-238	3.66E-01	J	3.5E-02	4.6E-02	1.63E-02	pci/g	(22.5) (7.9)	12/18/07 02:35 p	2.01	2.01	ALP6

Ratio U-234/238 = 1.4

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.: F7K200219-11  
 Client Sample ID: TSB-GJ-05-0'  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Collection Date: 11/19/2007 7:45:00 AM  
 Received Date: 11/20/2007 9:30:00 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: 7330517 EPA 901.1												
RADIUM-226	9.14E-01		8.9E-02	8.9E-02	7.38E-02	pCi/g	9KCMFP510	(12.4)	12/20/07 10:20 a	45.8	45.8	GER13\$1
								(10.3)			9	
RADIUM-228	1.69E+00		1.9E-01	1.9E-01	1.42E-01	pCi/g		(11.9)	12/20/07 10:20 a	45.8	45.8	GER13\$1
								(8.8)			9	
Batch: 7330520 HASL-300 Th Mod												
THORIUM-228	1.78E+00		1.3E-01	1.9E-01	4.69E-02	pci/g	9KCMFP510	(38.)	12/19/07 12:46 p	1.0	1.0	ALP172
								(9.2)			G	
THORIUM-230	1.05E+00		1.0E-01	1.3E-01	4.55E-02	pci/g		(23.1)	12/19/07 12:46 p	1.0	1.0	ALP172
								(8.)			G	
THORIUM-232	1.90E+00		1.3E-01	2.0E-01	5.37E-02	pci/g		(35.3)	12/19/07 12:46 p	1.0	1.0	ALP172
								(9.4)			G	
Batch: 7330521 HASL-300 U Mod												
URANIUM-233/234	4.40E-01	J	3.8E-02	5.3E-02	1.60E-02	pci/g	9KCMFP510	(27.5)	12/18/07 02:35 p	2.01	2.01	ALP12
								(8.4)			G	
URANIUM-235/236	9.35E-03	U	5.8E-03	5.9E-03	1.60E-02	pci/g		0.58	12/18/07 02:35 p	2.01	2.01	ALP12
								(1.6)			G	
URANIUM-238	3.21E-01	J	3.3E-02	4.2E-02	1.60E-02	pci/g		(20.)	12/18/07 02:35 p	2.01	2.01	ALP12
								(7.6)			G	

Ratio U-234/238 = 1.4

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.

FORM I

Date: 26-Dec-07

SAMPLE RESULTS

Lab Name: TA Richland  
 Lot-Sample No.: F7K200219-12  
 Client Sample ID: TSB-GJ-05-5'

SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:

Collection Date: 11/19/2007 7:55:00 AM  
 Received Date: 11/20/2007 9:30:00 AM  
 Matrix: SOLID SO

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/TotUcert	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7330517 EPA 901.1												
RADIUM-226	1.11E+00		9.4E-02	9.4E-02	8.98E-02	pCi/g	9KCMQF10 (12.4)	(11.8)	12/20/07 10:21 a	50.0	50.0	GER14\$1
RADIUM-228	1.89E+00		1.6E-01	1.6E-01	1.71E-01	pCi/g	9KCMQF10 (11.)	(11.6)	12/20/07 10:21 a	50.0	9	GER14\$1
Batch: 7330520 HASL-300 Th Mod												
THORIUM-228	1.76E+00		1.3E-01	1.9E-01	6.74E-02	pci/g	9KCMQF10 (26.1)	(9.1)	12/19/07 12:46 p	1.02	1.02	ALP176
THORIUM-230	1.62E+00		1.2E-01	1.8E-01	5.38E-02	pci/g	9KCMQF10 (30.2)	(9.)	12/19/07 12:46 p	1.02	1.02	ALP176
THORIUM-232	1.62E+00		1.2E-01	1.8E-01	5.38E-02	pci/g	9KCMQF10 (30.2)	(9.)	12/19/07 12:46 p	1.02	1.02	ALP176
Batch: 7330521 HASL-300 U Mod												
URANIUM-233/234	1.21E+00		6.1E-02	1.2E-01	1.52E-02	pci/g	9KCMQF10 (79.5)	(10.5)	12/18/07 02:36 p	2.03	2.03	ALP69
URANIUM-235/236	3.28E-02	J	1.0E-02	1.0E-02	1.52E-02	pci/g	9KCMQF10 (2.2)	(3.1)	12/18/07 02:36 p	2.03	2.03	ALP69
URANIUM-238	6.67E-01		4.5E-02	7.0E-02	1.23E-02	pci/g	9KCMQF10 (54.4)	(9.5)	12/18/07 02:36 p	2.03	2.03	ALP69

Ratio U-234/238 = 1.8

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 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.: F7K200219-9  
 Client Sample ID: TSB-GJ-07-0'  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Collection Date: 11/19/2007 7:15:00 AM  
 Received Date: 11/20/2007 9:30:00 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: 7330517 EPA 901.1												
Work Order: KCMPV1AA Report DB ID: 9KCMPPV10												
RADIUM-226	7.95E-01		6.8E-02	6.8E-02	6.27E-02	pCi/g		(12.7)	12/20/07 10:19 a		49.5	GER8\$1
								(11.6)			9	
RADIUM-228	1.81E+00		1.4E-01	1.4E-01	1.23E-01	pCi/g		(14.8)	12/20/07 10:19 a		49.5	GER8\$1
								(12.6)			9	
Batch: 7330520 HASL-300 Th Mod												
Work Order: KCMPV1AC Report DB ID: 9KCMPPV10												
THORIUM-228	1.52E+00		2.0E-01	2.3E-01	1.84E-01	pci/g		(8.3)	12/19/07 09:12 a		1.01	ALP120
								(6.5)			G	
THORIUM-230	1.23E+00		1.7E-01	2.0E-01	1.16E-01	pci/g		(10.6)	12/19/07 09:12 a		1.01	ALP120
								(6.2)			G	
THORIUM-232	1.18E+00		1.7E-01	1.9E-01	1.16E-01	pci/g		(10.2)	12/19/07 09:12 a		1.01	ALP120
								(6.1)			G	
Batch: 7330521 HASL-300 U Mod												
Work Order: KCMPV1AD Report DB ID: 9KCMPPV10												
URANIUM-233/234	4.31E-01	J	3.8E-02	5.2E-02	2.26E-02	pci/g		(19.1)	12/18/07 02:35 p		2.01	ALP10
								(8.3)			G	
URANIUM-235/236	6.57E-03	U	4.7E-03	4.7E-03	1.57E-02	pci/g		0.42	12/18/07 02:35 p		2.01	ALP10
								(1.4)			G	
URANIUM-238	3.31E-01	J	3.3E-02	4.3E-02	1.57E-02	pci/g		(21.)	12/18/07 02:35 p		2.01	ALP10
								(7.8)			G	

Ratio U-234/238 = 1.3

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.  
 rptSTLLRchSample 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.: F7K200219-10  
 Client Sample ID: TSB-GJ-07-5'  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Collection Date: 11/19/2007 7:25:00 AM  
 Received Date: 11/20/2007 9:30:00 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/TotUcert	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7330517 EPA 901.1												
RADIUM-226	<b>1.27E+00</b>		9.1E-02	9.1E-02	6.38E-02	pCi/g	9KCMFPX10 (19.8)	(19.8)	12/20/07 10:19 a	48.4	48.4	GER10\$1
RADIUM-228	<b>1.66E+00</b>		1.4E-01	1.4E-01	1.26E-01	pCi/g	9KCMFPX10 (13.9)	(13.9)	12/20/07 10:19 a	48.4	48.4	GER10\$1
Batch: 7330520 HASL-300 Th Mod												
THORIUM-228	<b>1.28E+00</b>		1.1E-01	1.5E-01	5.81E-02	pCi/g	9KCMFPX10 (22.1)	(22.1)	12/19/07 12:46 p	1.02	1.02	ALP171
THORIUM-230	<b>1.59E+00</b>		1.2E-01	1.7E-01	5.05E-02	pCi/g	9KCMFPX10 (31.4)	(31.4)	12/19/07 12:46 p	1.02	1.02	ALP171
THORIUM-232	<b>1.37E+00</b>		1.1E-01	1.6E-01	4.28E-02	pCi/g	9KCMFPX10 (32.1)	(32.1)	12/19/07 12:46 p	1.02	1.02	ALP171
Batch: 7330521 HASL-300 U Mod												
URANIUM-233/234	<b>7.89E-01</b>		4.7E-02	7.9E-02	1.36E-02	pCi/g	9KCMFPX10 (58.2)	(58.2)	12/18/07 02:35 p	2.0	2.0	ALP11
URANIUM-235/236	<b>2.26E-02</b>	J	8.0E-03	8.2E-03	1.36E-02	pCi/g	9KCMFPX10 (10.)	(10.)	12/18/07 02:35 p	2.0	2.0	ALP11
URANIUM-238	<b>5.47E-01</b>	J	3.9E-02	5.9E-02	1.79E-02	pCi/g	9KCMFPX10 (30.6)	(30.6)	12/18/07 02:35 p	2.0	2.0	ALP11

Ratio U-234/238 = 1.4

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.: F7K200219-1  
 Client Sample ID: TSB-GR-02-0'  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Collection Date: 11/19/2007 8:40:00 AM  
 Received Date: 11/20/2007 9:30:00 AM  
 Matrix: SOLID SO

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
Batch: 7330517 EPA 901.1												
Work Order: KCMNL1AA Report DB ID: 9KCMNL10												
RADIUM-226	1.03E+00		8.1E-02	8.1E-02	7.69E-02	pCi/g		(13.4)	12/19/07 10:01 a		46.2	GER5\$1
								(12.8)			g	
RADIUM-228	1.67E+00		1.6E-01	1.6E-01	1.35E-01	pCi/g		(12.4)	12/19/07 10:01 a		46.2	GER5\$1
								(10.7)			g	
Batch: 7330520 HASL-300 Th Mod												
Work Order: KCMNL1AC Report DB ID: 9KCMNL10												
THORIUM-228	1.69E+00		1.4E-01	2.0E-01	6.73E-02	pCi/g		(25.1)	12/19/07 09:10 a		1.01	ALP171
								(8.6)			G	
THORIUM-230	1.17E+00		1.2E-01	1.5E-01	6.53E-02	pCi/g		(18.)	12/19/07 09:10 a		1.01	ALP171
								(7.8)			G	
THORIUM-232	1.44E+00		1.3E-01	1.7E-01	5.53E-02	pCi/g		(26.1)	12/19/07 09:10 a		1.01	ALP171
								(8.3)			G	
Batch: 7330521 HASL-300 U Mod												
Work Order: KCMNL1AD Report DB ID: 9KCMNL10												
URANIUM-233/234	3.93E-01	J	3.5E-02	4.7E-02	1.74E-02	pCi/g		(22.6)	12/18/07 02:34 p		2.01	ALP1
								(8.3)			G	
URANIUM-235/236	2.40E-02	J	8.7E-03	9.0E-03	1.48E-02	pCi/g		(1.6)	12/18/07 02:34 p		2.01	ALP1
								(2.7)			G	
URANIUM-238	2.92E-01	J	3.0E-02	3.8E-02	1.48E-02	pCi/g		(19.8)	12/18/07 02:34 p		2.01	ALP1
								(7.6)			G	

Ratio U-234/238 = 1.3

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.: F7K200219-2  
 Client Sample ID: TSB-GR-02-01FD  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Matrix: SOLID SO  
 Collection Date: 11/19/2007 8:40:00 AM  
 Received Date: 11/20/2007 9:30:00 AM  
 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/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7330517 EPA 901.1												
RADIUM-226	<b>1.02E+00</b>		7.9E-02	7.9E-02	7.70E-02	pci/g		(13.3)	12/19/07 10:02 a		48.3	GER6\$1
RADIUM-228	<b>1.97E+00</b>		1.8E-01	1.8E-01	1.67E-01	pci/g		(13.)	12/19/07 10:02 a		g	GER6\$1
Work Order: KCMNW1AA Report DB ID: 9KCMNW10												
Batch: 7330520 HASL-300 Th Mod												
THORIUM-228	<b>1.66E+00</b>		1.3E-01	1.9E-01	5.08E-02	pci/g		(32.6)	12/19/07 09:10 a		1.01	ALP172
THORIUM-230	<b>1.10E+00</b>		1.1E-01	1.4E-01	4.93E-02	pci/g	1.10E-02	(8.8)	12/19/07 09:10 a		G	ALP172
THORIUM-232	<b>1.22E+00</b>		1.1E-01	1.5E-01	4.93E-02	pci/g	1.07E-02	(22.3)	12/19/07 09:10 a		G	ALP172
Work Order: KCMNW1AC Report DB ID: 9KCMNW10												
Batch: 7330521 HASL-300 U Mod												
URANIUM-233/234	<b>3.02E-01</b>	J	3.1E-02	3.9E-02	1.77E-02	pci/g		(17.1)	12/18/07 02:34 p		2.0	ALP2
URANIUM-235/236	<b>1.13E-02</b>	U	6.3E-03	6.4E-03	1.77E-02	pci/g	4.60E-03	(7.7)	12/18/07 02:34 p		G	ALP2
URANIUM-238	<b>2.95E-01</b>	J	3.1E-02	3.9E-02	1.97E-02	pci/g	4.60E-03	(1.8)	12/18/07 02:34 p		G	ALP2
Work Order: KCMNW1AD Report DB ID: 9KCMNW10												
Batch: 7330521 HASL-300 U Mod												
URANIUM-233/234	<b>3.02E-01</b>	J	3.1E-02	3.9E-02	1.77E-02	pci/g		(17.1)	12/18/07 02:34 p		2.0	ALP2
URANIUM-235/236	<b>1.13E-02</b>	U	6.3E-03	6.4E-03	1.77E-02	pci/g	4.60E-03	(7.7)	12/18/07 02:34 p		G	ALP2
URANIUM-238	<b>2.95E-01</b>	J	3.1E-02	3.9E-02	1.97E-02	pci/g	4.60E-03	(1.8)	12/18/07 02:34 p		G	ALP2
Work Order: KCMNW1AE Report DB ID: 9KCMNW10												
Batch: 7330521 HASL-300 U Mod												
URANIUM-233/234	<b>3.02E-01</b>	J	3.1E-02	3.9E-02	1.77E-02	pci/g		(17.1)	12/18/07 02:34 p		2.0	ALP2
URANIUM-235/236	<b>1.13E-02</b>	U	6.3E-03	6.4E-03	1.77E-02	pci/g	4.60E-03	(7.7)	12/18/07 02:34 p		G	ALP2
URANIUM-238	<b>2.95E-01</b>	J	3.1E-02	3.9E-02	1.97E-02	pci/g	4.60E-03	(1.8)	12/18/07 02:34 p		G	ALP2

Ratio U-234/238 = 1.0

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.: F7K200219-3  
 Client Sample ID: TSB-GR-02-5'  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Collection Date: 11/19/2007 9:05:00 AM  
 Received Date: 11/20/2007 9:30:00 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/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7330517 EPA 901.1											
Work Order: KCMNX1AA Report DB ID: 9KCMNX10											
RADIUM-226	9.51E-01		8.3E-02	8.3E-02	7.62E-02	pCi/g	(12.5) (11.4)	12/19/07 10:03 a		47.7	GER7\$1
RADIUM-228	1.99E+00		1.6E-01	1.6E-01	1.47E-01	pCi/g	(13.5) (12.4)	12/19/07 10:03 a		47.7	GER7\$1
Batch: 7330520 HASL-300 Th Mod											
Work Order: KCMNX1AC Report DB ID: 9KCMNX10											
THORIUM-228	1.77E+00		1.3E-01	1.9E-01	6.45E-02	pCi/g	(27.4) (9.2)	12/19/07 09:10 a		1.01	ALP176
THORIUM-230	1.14E+00		1.0E-01	1.4E-01	4.37E-02	pCi/g	(26.1) (8.3)	12/19/07 09:10 a		1.01	ALP176
THORIUM-232	1.76E+00		1.3E-01	1.9E-01	5.15E-02	pCi/g	(34.1) (9.3)	12/19/07 09:10 a		1.01	ALP176
Batch: 7330521 HASL-300 U Mod											
Work Order: KCMNX1AD Report DB ID: 9KCMNX10											
URANIUM-233/234	4.93E-01	J	4.0E-02	5.7E-02	1.59E-02	pCi/g	(31.1) (8.6)	12/18/07 02:35 p		2.0	ALP3
URANIUM-235/236	6.62E-04	U	3.6E-03	3.6E-03	2.28E-02	pCi/g	0.03 0.19	12/18/07 02:35 p		2.0	ALP3
URANIUM-238	3.31E-01	J	3.3E-02	4.3E-02	2.59E-02	pCi/g	(12.8) (7.7)	12/18/07 02:35 p		2.0	ALP3

Ratio U-234/238 = 1.5

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 AZ002



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.: 37879  
 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 (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: 7327118 HASL-300 Th Mod												
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 (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: 7327123 HASL-300 U Mod												
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 ICYT 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 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.: F7K200219-4  
 Client Sample ID: TSB-GJ-04-0' DUP  
 SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:  
 Collection Date: 11/19/2007 9:45:00 AM  
 Received Date: 11/20/2007 9:30:00 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: 7330517	EPA 901.1				Work Order: KCMN51AE	Report DB ID: KCMN51ER		Orig Sa DB ID: 9KCMN510				
RADIUM-226	1.19E+00		8.7E-02	8.7E-02	6.58E-02	pCi/g	(18.1)	12/19/07 10:05 a		48.2	48.2	GER10\$1
	1.06E+00		RER2 1.1				(13.7)			g	g	
RADIUM-228	1.86E+00		1.5E-01	1.5E-01	1.19E-01	pCi/g	(15.6)	12/19/07 10:05 a		48.2	48.2	GER10\$1
	1.72E+00		RER2 0.7				(12.3)			g	g	

Batch: 7330520	Work Order: KCMN51AF	Report DB ID: KCMN51FR	Orig Sa DB ID: 9KCMN510
HASL-300 Th Mod	1.6E-01	95%	12/19/07 09:11 a
THORIUM-228	1.48E+00	5.36E-02 pci/g	(27.6)
	2.17E+00	RER2 2.4	(9.1)
THORIUM-230	1.63E+00	1.2E-01	12/19/07 09:11 a
	1.98E+00	RER2 1.2	(9.4)
THORIUM-232	1.40E+00	1.1E-01	12/19/07 09:11 a
	1.65E+00	RER2 1.0	(9.1)

Alpha Spec Result Sum = 4.5E+00

Batch: 7330521	Work Order: KCMN51AG	Report DB ID: KCMN51GR	Orig Sa DB ID: 9KCMN510
HASL-300 U Mod	1.1E-01	93%	12/18/07 02:35 p
URANIUM-233/234	5.9E-02	2.41E-02 pci/g	(48.5)
	1.23E+00	RER2 0.3	(10.5)
URANIUM-235/236	4.63E-02	1.2E-02	12/18/07 02:35 p
	2.41E-02	RER2 1.5	(3.3)
URANIUM-238	7.35E-01	4.7E-02	12/18/07 02:35 p
	7.39E-01	RER2 0.0	(25.3)

Alpha Spec Result Sum = 6.5E+00

Ratio U-234/238 = 1.6

TAL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.  
 rpt\STLRchDupV5.1 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.: F7K200219-4  
 Client Sample ID: TSB-GJ-04-0' DUP

SDG: TRNC/D-7RD  
 Report No.: 37879  
 COC No.:

Collection Date: 11/19/2007 9:45:00 AM  
 Received Date: 11/20/2007 9:30:00 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
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No. of Results: 8    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-7RD

Matrix: SOLID

Report No.: 37879

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 Defector
<b>Batch: 7330521</b> HASL-300 U Mod <b>Report DB ID: KCV2R1AA</b> <b>Report DB ID: KCV2R1AB</b>												
URANIUM-233/234	8.76E-03	U	6.2E-03	6.2E-03	1.76E-02	pci/g	98%	0.5	12/18/07 02:36 p	2.04	2.04	ALP85
					2.88E-03	6.00E-01		(1.4)		G	G	
URANIUM-235/236	-1.40E-03	U	4.4E-03	4.4E-03	2.34E-02	pci/g	98%	-0.06	12/18/07 02:36 p	2.04	2.04	ALP85
					5.77E-03	6.00E-01		-0.32		G	G	
URANIUM-238	4.03E-03	U	4.4E-03	4.4E-03	1.76E-02	pci/g	98%	0.23	12/18/07 02:36 p	2.04	2.04	ALP85
					2.88E-03	6.00E-01		0.91		G	G	
<b>Ratio U-234/238 = 2.2</b>												
<b>Batch: 7330517</b> EPA 901.1 <b>Work Order: KCV2M1AA</b> <b>Report DB ID: KCV2M1AB</b>												
RADIUM-226	-4.44E-02	U	6.7E-02	6.7E-02	1.50E-01	pCi/g		-0.3	12/19/07 10:08 a	25.2	25.2	GER15\$1
					2.54E-01	pCi/g		-0.67		g	g	
RADIUM-228	1.88E-01	U	7.1E-02	7.1E-02	2.54E-01	pCi/g		0.74	12/19/07 10:08 a	25.2	25.2	GER15\$1
								(2.7)		g	g	
<b>Batch: 7330520</b> HASL-300 Th Mod <b>Work Order: KCV2Q1AA</b> <b>Report DB ID: KCV2Q1AB</b>												
THORIUM-228	-1.47E-03	U	7.5E-03	7.5E-03	3.51E-02	pci/g	85%	-0.04	12/19/07 12:46 p	1.03	1.03	ALP117
					7.62E-03	1.00E-01		-0.2		G	G	
THORIUM-230	1.42E-02	U	1.0E-02	1.0E-02	3.41E-02	pci/g	85%	0.42	12/19/07 12:46 p	1.03	1.03	ALP117
					7.40E-03	1.00E-01		(1.4)		G	G	
THORIUM-232	0.00E+00	U	0.0E+00	7.3E-03	3.41E-02	pci/g	85%	0.	12/19/07 12:46 p	1.03	1.03	ALP117
					7.40E-03	1.00E-01		0.		G	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.  
 rptSTLRchBlank      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  
BLANK RESULTS

Date: 26-Dec-07

Lab Name: TA Richland  
Matrix: WATER

SDG: TRNC/D-7RD  
Report No.: 37879

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
<b>Batch: 7327123</b> HASL-300 U Mod <b>Report DB ID: KCR7M1AB</b>												
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	1.00E+00	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	
Ratio U-234/238 = 4.0												
<b>Batch: 7327118</b> HASL-300 Th Mod <b>Report DB ID: KCR641AB</b>												
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	1.00E+00	95%	0.17	12/10/07 10:33 a	0.2003	0.2003	ALP171
					4.81E-02	1.00E+00		0.78		L	L	
					2.22E-01	1.00E+00		-0.04		0.2003	0.2003	ALP171
					4.81E-02	1.00E+00		-0.2		L	L	
<b>Batch: 7327119</b> EPA 903.1 <b>Report DB ID: KCR7F1AB</b>												
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	
<b>Batch: 7327122</b> EPA 904.0 <b>Report DB ID: KCR7G1AB</b>												
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	

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.  
 rptSTLRchBlank      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  
LCS RESULTS

Date: 26-Dec-07

Lab Name: TA Richland  
Matrix: SOLID

SDG: TRNC/D-7RD  
Report No.: 37879

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
<b>Batch: 7330521 HASL-300 U Mod</b>													
<b>Work Order: KCV2R1AC Report DB ID: KCV2R1CS</b>													
URANIUM-233/234	9.11E-01		7.9E-02	1.1E-01	3.26E-02	pci/g	48%	8.58E-01	4.8E-03	106%	12/18/07 02:36 p	2.02	ALP88
							Rec Limits:	70	130	0.1		G	
URANIUM-238	9.79E-01		8.2E-02	1.2E-01	3.26E-02	pci/g	48%	8.99E-01	5.1E-03	109%	12/18/07 02:36 p	2.02	ALP88
							Rec Limits:	70	130	0.1		G	
<b>Batch: 7330517 EPA 901.1</b>													
<b>Work Order: KCV2M1AC Report DB ID: KCV2M1CS</b>													
CESIUM-137	7.92E+00		5.4E-01	5.4E-01	6.61E-02	pCi/g		7.97E+00	1.9E+01	99%	12/20/07 10:23 a	25.34	GER15\$1
							Rec Limits:	70	130	0.0		g	
<b>Batch: 7330520 HASL-300 Th Mod</b>													
<b>Work Order: KCV2Q1AC Report DB ID: KCV2Q1CS</b>													
THORIUM-230	2.19E+00		1.2E-01	2.1E-01	3.36E-02	pci/g	90%	2.30E+00	6.9E-02	96%	12/19/07 12:47 p	1.0	ALP118
							Rec Limits:	75	125	0.0		G	

No. of Results: 4      Comments:

FORM II  
LCS RESULTS

Date: 26-Dec-07

Lab Name: TA Richland  
Matrix: WATER

SDG: TRNC/D-7RD  
Report No.: 37879

Parameter	Result	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: Phs2 Smplng Tronox Prcl  
 Report Type: W  
 Client: 445691 - Basic Remediation Company

Date Received: 2007-11-20  
 Analytical Due Date: 2007-12-04  
 Report Due Date: 2007-12-10

**WORK LOCATION: 10 TestAmerica Richland**

SMP#: 1 CLIENT ID: TSB-GR-02-0' DATE SAMPLED: 20071119 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 KCMNL1AA 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 KCMNL1AC 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 KCMNL1AD METAL: XX

SMP#: 2 CLIENT ID: TSB-GR-02-0'FD DATE SAMPLED: 20071119 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 KCMNW1AA 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 KCMNW1AC 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 KCMNW1AD METAL: XX

SMP#: 3 CLIENT ID: TSB-GR-02-5' DATE SAMPLED: 20071119 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 KCMNX1AA 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 KCMNX1AC 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 KCMNX1AD METAL: XX

SMP#: 4 CLIENT ID: TSB-GJ-04-0' DATE SAMPLED: 20071119 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:

Report Type:

Client:

W

445691 - Basic Remediation Company

Phs2 Smpling Tronox PrcI

Date Received: 2007-11-20

Analytical Due Date: 2007-12-04

Report Due Date: 2007-12-10

WORKORDER KCMN51AA METAL: XX

WORKORDER KCMN51AE X 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 KCMN51AC METAL: XX

WORKORDER KCMN51AF X 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 KCMN51AD METAL: XX

WORKORDER KCMN51AG X METAL: XX

SMP#: 5 CLIENT ID: TSB-GJ-04-5' DATE SAMPLED: 20071119 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 KCMN81AA 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 KCMN81AC 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 KCMN81AD METAL: XX

SMP#: 6 CLIENT ID: TSB-GJ-02-0' DATE SAMPLED: 20071119 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 KCMPK1AA 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 KCMPK1AC 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 KCMPK1AD METAL: XX

SMP#: 7 CLIENT ID: TSB-GJ-02-0'FD DATE SAMPLED: 20071119 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 KCMPR1AA METAL: XX

METHOD: S1 NONE Thlso by ALP Thorium-228,230,232 by Alpha Spec

COMMENTS:

Project Manager:  
 Project: Phs2 Smplng Tronox Prc1  
 Report Type: W  
 Client: 445691 - Basic Remediation Company

Date Received: 2007-11-20  
 Analytical Due Date: 2007-12-04  
 Report Due Date: 2007-12-10

EXTRACTION: D2 Th PrpRC5013/5032, SepRC5084(5003) QC TYPE: 01 STANDARD TEST SET  
WORKORDER KCMPR1AC 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 KCMPR1AD METAL: XX

SMP#: 8 CLIENT ID: TSB-GJ-02-05' DATE SAMPLED: 20071119 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 KCMP1AA 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 KCMP1AC 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 KCMP1AD METAL: XX

SMP#: 9 CLIENT ID: TSB-GJ-07-0' DATE SAMPLED: 20071119 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 KCMPV1AA 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 KCMPV1AC 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 KCMPV1AD METAL: XX

SMP#: 10 CLIENT ID: TSB-GJ-07-5' DATE SAMPLED: 20071119 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 KCMPX1AA 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 KCMPX1AC 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 KCMPX1AD METAL: XX

COMMENTS:

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

Date Received: 2007-11-20  
 Analytical Due Date: 2007-12-04  
 Report Due Date: 2007-12-10

SMP#: 11      CLIENT ID: TSB-GJ-05-0'      DATE SAMPLED: 20071119      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    KCMF51AA      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    KCMF51AC      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    KCMF51AD      METAL: XX

SMP#: 12      CLIENT ID: TSB-GJ-05-5'      DATE SAMPLED: 20071119      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    KCMQF1AA      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    KCMQF1AC      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    KCMQF1AD      METAL: XX

SMP#: 13      CLIENT ID: TSB-GJ-03-0'      DATE SAMPLED: 20071119      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    KCMQH1AA      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    KCMQH1AC      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    KCMQH1AD      METAL: XX

SMP#: 14      CLIENT ID: TSB-GJ-03-5'      DATE SAMPLED: 20071119      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    KCMQJ1AA      METAL: XX

COMMENTS:

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

Date Received: 2007-11-20  
Analytical Due Date: 2007-12-04  
Report Due Date: 2007-12-10

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 KCMQJ1AC 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 KCMQJ1AD METAL: XX

SMP#: 15 CLIENT ID: RINSATE 5 DATE SAMPLED: 20071119 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 KCMQL1AA 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 KCMQL1AC 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 KCMQL1AD 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 KCMQL1AE METAL: XX

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: [Signature] DATE: 11-20-07 1730  
RECEIVED FOR LAB BY: [Signature] DATE: 11/21/07 1000

## Sample Check-in List

Date/Time Received: 11/21/07 1000

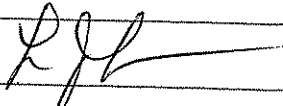
Client: TA-STL SDG #: \_\_\_\_\_ NA [ ] SAF #: \_\_\_\_\_ NA [ ]

Work Order Number: FTK200219 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: 15
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 Custodian:  Date: 11/21/07

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: **F7K200219; 12/20/2007**  
 Client, Site: **445691; Phs2 Smpling Tronox Prcl CDFG**  
 QC Batch No., Method Test: **7330520; RTHISO Thiso by ALP**  
 SDG, Matrix: **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 # 10-11518

First Level Review *Cole* *Wester*

Date 12-20-07



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

Batch Number: 7330520

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 ncr

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Second Level Review: *Einho [Signature]* Date: 12/26/7

# Clouseau Nonconformance Memo

NCM #: <b>10-11518</b> NCM Initiated By: John Norton Date Opened: 12/20/2007 Date Closed:	Classification: <b>Anomaly</b> Status: <b>GLREVIEW</b> Production Area: Environmental - Sep Tests: Thlso by ALP Lot #'s (Sample #'s): J7K260000 (520), QC Batches: 7330520,
Nonconformance: MDA not met Subcategory: Data accepted	

### Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
John Norton	12/20/2007	Sample F7K200219-9 and 13 did not meet the RDL due to reduced aliquot sizes.

### Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
John Norton	12/20/2007	The activity detected in the samples was greater than the IDC, the data can be accepted.

### 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>
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12/4/2007 5:42:32 AM

445691, Basic Remediation Company  
Basic Remediation Company

### Sample Preparation/Analysis

Balance Id: 1120373922

Pipet #:

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

AnalyDueDate: 12/14/2007

Sep1 DT/Tm Tech:

Batch: 7330520

pCi/g

PM, Quote: JAE, 77571

Prep Tech: WoodT

SEQ Batch, Test: None

**PRIORITY**

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 KCMNL-1-AC F7K200219-1-SAMP 11/19/2007 08:40		1.01g,in	THTC11984 11/27/07,pd 09/24/07							
2 KCMNW-1-AC F7K200219-2-SAMP 11/19/2007 08:40		1.01g,in	THTC11985 11/27/07,pd 09/24/07							
3 KCMNX-1-AC F7K200219-3-SAMP 11/19/2007 09:05		1.01g,in	THTC11986 11/27/07,pd 09/24/07							
4 KCMN5-1-AC F7K200219-4-SAMP 11/19/2007 09:45		1.00g,in	THTC11987 11/27/07,pd 09/24/07							
5 KCMN5-1-AF-X F7K200219-4-DUP 11/19/2007 09:45		1.02g,in	THTC11988 11/27/07,pd 09/24/07							
6 KCMN8-1-AC F7K200219-5-SAMP 11/19/2007 10:05		1.02g,in	THTC11989 11/27/07,pd 09/24/07							
7 KCMFK-1-AC F7K200219-6-SAMP 11/19/2007 06:40		1.01g,in	THTC11990 11/27/07,pd 09/24/07							

12/4/2007 5:42:32 AM

445691, Basic Remediation Company  
Basic Remediation Company

### Sample Preparation/Analysis

Balance Id:1120373922

Pipet #:

D2 Th PipRC5013/5032; SepRC5084(5003)  
S1 Thorium-228,230,232 by Alpha Spec  
01 STANDARD TEST SET

AnalyDueDate: 12/14/2007

Sep1 DT/Tm Tech:

Batch: 7330520

PM, Quote: JAE, 77571

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

pCi/g

**PRIORITY**  
Tech: , Barcoll

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 KCMPR-1-AC		1.04g,in	THTC11991							
F7K200219-7-SAMP			11/27/07,pd							
11/19/2007 06:40		AmtRec: 500SL								Beta:
9 KCMPV-1-AC		1.00g,in	THTC11992							
F7K200219-8-SAMP			11/27/07,pd							
11/19/2007 07:00		AmtRec: 500SL								Beta:
10 KCMPV-1-AC		1.01g,in	THTC11993							
F7K200219-9-SAMP			11/27/07,pd							
11/19/2007 07:15		AmtRec: 500SL								Beta:
11 KCMPX-1-AC		1.02g,in	THTC11994							
F7K200219-10-SAMP			11/27/07,pd							
11/19/2007 07:25		AmtRec: 500SL								Beta:
12 KCMP5-1-AC		1.00g,in	THTC11995							
F7K200219-11-SAMP			11/27/07,pd							
11/19/2007 07:45		AmtRec: 500SL								Beta:
13 KCMQF-1-AC		1.02g,in	THTC11996							
F7K200219-12-SAMP			11/27/07,pd							
11/19/2007 07:55		AmtRec: 500SL								Beta:
14 KCMQH-1-AC		1.01g,in	THTC11997							
F7K200219-13-SAMP			11/27/07,pd							
11/19/2007 08:15		AmtRec: 500SL								Beta:

12/4/2007 5:42:33 AM  
 445691, Basic Remediation Company  
 Basic Remediation Company  
 Analyze Date: 12/14/2007  
 Batch: 7330520  
 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: \_\_\_\_\_  
 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:
15 KCMQJ-1-AC		1.01g,in	THTC11998 11/27/07,pd							
F7K200219-14-SAMP			11/27/07,pd							
11/19/2007 08:30										
16 KCV2Q-1-AA-B		1.03g,in	THTC11999 11/27/07,pd							
J7K260000-520-BLK			11/27/07,pd							
11/19/2007 08:40										
17 KCV2Q-1-AC-C		1.00g,in	THS1112 11/27/07,pd							
J7K260000-520-LCS			11/27/07,pd							
11/19/2007 08:40										

Comments:

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

KCMNL1AC-SAMP Constituent List:

Sample	RDL	UCL	PCi/g	RDL	UCL	PCi/g	RDL	UCL	PCi/g	RDL	UCL	PCi/g	RDL	UCL	PCi/g
KCV2Q1AA-BLK:															
Th-228	RDL:1.00E-01	UCL:	PCi/g	RPD:	UCL:	PCi/g	RDL:1.00E-01	LCL:	PCi/g	RPD:	UCL:	PCi/g	RDL:	UCL:	PCi/g
Th-232	RDL:1.00E-01	UCL:	PCi/g	RPD:	UCL:	PCi/g	RDL:	LCL:20	PCi/g	RPD:	UCL:115	PCi/g	RDL:	UCL:115	PCi/g
KCV2Q1AC-LCS:															
Th-230	RDL:0.1	UCL:70	PCi/g	RPD:35	UCL:130	PCi/g	RDL:	LCL:20	PCi/g	RPD:35	UCL:115	PCi/g	RDL:	UCL:115	PCi/g

KCMNL1AC-SAMP Calc Info:  
 Uncert Level (#s): 4  
 Decay to SaDt: N  
 BLk Subt.: N  
 Sci.Not.: N  
 ODRs: B

KCV2Q1AA-BLK:  
 Uncert Level (#s): 4  
 Decay to SaDt: N  
 BLk Subt.: N  
 Sci.Not.: N  
 ODRs: B

KCV2Q1AC-LCS:  
 Uncert Level (#s): 4  
 Decay to SaDt: N  
 BLk Subt.: N  
 Sci.Not.: N  
 ODRs: B

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: 17  
 Prep SamplePrep v4.8.29

# ICOC Fraction Transfer/Status Report

ByDate: 12/20/2006, 12/25/2007, Batch: '7330520', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
<b>7330520</b>				
AC	<b>CalcC</b>	<b>WoodT</b>	12/4/2007 5:41:55	
SC		wagarr	IsBatched	11/26/2007 2:51:34 PM
SC		WoodT	InPrep	12/4/2007 5:41:55 AM
SC		WoodT	Prep1C	12/4/2007 5:42:48 AM
SC		WoodT	InPrep2	12/4/2007 5:43:11 AM
SC		WoodT	Prep2C	12/4/2007 5:43:31 AM
SC		AshworthA	Sep1C	12/17/2007 7:13:24 PM
SC		FABREM	Sep1C	12/18/2007 7:26:53 PM
SC		DAWKINSO	InCnt1	12/18/2007 8:38:13 PM
SC		DAWKINSO	CalcC	12/19/2007 9:18:26 PM
AC		<b>WoodT</b>	12/4/2007 5:42:48	ICOC_RADCALC v4.8.29
AC		<b>WoodT</b>	12/4/2007 5:43:11	RICH-RC-5013 Revision 7
AC		<b>WoodT</b>	12/4/2007 5:43:31	RICH-RC-5013 REVISION 7
AC		<b>AshworthA</b>	12/17/2007 7:13:24	RICH-RC-5032 REVISION 3
AC		<b>FABREM</b>	12/18/2007 7:26:53	RICH-RC-5032 REVISION 3
AC		<b>DAWKINSO</b>	12/18/2007 8:38:13	RICH-RC-5087 REV1
AC		<b>DAWKINSO</b>	12/19/2007 9:18:26	RICH-RC-5003 REVISION 7
				RICH-RD-0008 REVISION 4
				RICH-RD-0008 REVISION 4

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-7RD</b>	<b>9KCMN510</b>		<b>F7K2002194</b>	TSB-GJ-04-0'	SOLID	11/20/2007 9:30:00	11/19/2007 9:45:00 AM			
TH-228	D2S1	0	12/19/2007 9:10:58	2.1703E+00	1.707E-01	2.438E-01	6.424E-02	pCi/g	0.817	1.0E+0
TH-230	D2S1	0	12/19/2007 9:10:58	1.9791E+00	1.605E-01	2.258E-01	6.236E-02	pCi/g	0.817	1.0E+0
TH-232	D2S1	0	12/19/2007 9:10:58	1.6536E+00	1.468E-01	1.978E-01	6.236E-02	pCi/g	0.817	1.0E+0
U-234	7USR	0	12/18/2007 2:35:08	PM1.2253E+00	6.166E-02	1.17E-01	2.537E-02	pCi/g	0.969	2.0E+0
U-235	7USR	0	12/18/2007 2:35:08	PM2.4098E-02	8.76E-03	8.976E-03	1.48E-02	pCi/g	0.969	2.0E+0
U-238	7USR	0	12/18/2007 2:35:08	PM7.3902E-01	4.788E-02	7.676E-02	2.122E-02	pCi/g	0.969	2.0E+0
<b>TRNC/D-7RD</b>	<b>9KCMN810</b>		<b>F7K2002195</b>	TSB-GJ-04-5'	SOLID	11/20/2007 9:30:00	11/19/2007 10:05:00 AM			
TH-228	D2S1	0	12/19/2007 9:11:37	1.6045E+00	1.365E-01	1.874E-01	6.542E-02	pCi/g	0.899	1.02E+0
TH-230	D2S1	0	12/19/2007 9:11:37	1.2249E+00	1.173E-01	1.529E-01	5.382E-02	pCi/g	0.899	1.02E+0
TH-232	D2S1	0	12/19/2007 9:11:37	1.2002E+00	1.163E-01	1.508E-01	5.382E-02	pCi/g	0.899	1.02E+0
U-234	7USR	0	12/18/2007 2:35:20	PM5.0434E-01	4.144E-02	5.857E-02	1.918E-02	pCi/g	0.862	2.01E+0
U-235	7USR	0	12/18/2007 2:35:20	PM1.2896E-02	6.822E-03	6.903E-03	1.626E-02	pCi/g	0.862	2.01E+0
U-238	7USR	0	12/18/2007 2:35:20	PM3.6586E-01	3.528E-02	4.632E-02	1.626E-02	pCi/g	0.862	2.01E+0
<b>TRNC/D-7RD</b>	<b>9KCMNL10</b>		<b>F7K2002191</b>	TSB-GR-02-0'	SOLID	11/20/2007 9:30:00	11/19/2007 8:40:00 AM			
TH-228	D2S1	0	12/19/2007 9:10:58	1.6855E+00	1.419E-01	1.961E-01	6.726E-02	pCi/g	0.755	1.01E+0
TH-230	D2S1	0	12/19/2007 9:10:58	1.1739E+00	1.167E-01	1.5E-01	6.529E-02	pCi/g	0.755	1.01E+0
TH-232	D2S1	0	12/19/2007 9:10:58	1.4419E+00	1.292E-01	1.735E-01	5.534E-02	pCi/g	0.755	1.01E+0
U-234	7USR	0	12/18/2007 2:34:56	PM3.9307E-01	3.486E-02	4.727E-02	1.741E-02	pCi/g	0.954	2.01E+0
U-235	7USR	0	12/18/2007 2:34:56	PM2.4027E-02	8.735E-03	8.95E-03	1.476E-02	pCi/g	0.954	2.01E+0
U-238	7USR	0	12/18/2007 2:34:56	PM2.9203E-01	3.003E-02	3.827E-02	1.476E-02	pCi/g	0.954	2.01E+0
<b>TRNC/D-7RD</b>	<b>9KCMNW10</b>		<b>F7K2002192</b>	TSB-GR-02-0'FD	SOLID	11/20/2007 9:30:00	11/19/2007 8:40:00 AM			
TH-228	D2S1	0	12/19/2007 9:10:58	1.6555E+00	1.326E-01	1.876E-01	5.083E-02	pCi/g	0.835	1.01E+0
TH-230	D2S1	0	12/19/2007 9:10:58	1.1001E+00	1.066E-01	1.383E-01	4.934E-02	pCi/g	0.835	1.01E+0
TH-232	D2S1	0	12/19/2007 9:10:58	1.2237E+00	1.124E-01	1.492E-01	4.934E-02	pCi/g	0.835	1.01E+0
U-234	7USR	0	12/18/2007 2:34:57	PM3.0221E-01	3.082E-02	3.939E-02	1.768E-02	pCi/g	1.02	2.0E+0
U-235	7USR	0	12/18/2007 2:34:57	PM1.1262E-02	6.319E-03	6.385E-03	1.768E-02	pCi/g	1.02	2.0E+0
U-238	7USR	0	12/18/2007 2:34:57	PM2.9533E-01	3.051E-02	3.88E-02	1.975E-02	pCi/g	1.02	2.0E+0
<b>TRNC/D-7RD</b>	<b>9KCMNX10</b>		<b>F7K2002193</b>	TSB-GR-02-5'	SOLID	11/20/2007 9:30:00	11/19/2007 9:05:00 AM			
TH-228	D2S1	0	12/19/2007 9:10:58	1.7686E+00	1.292E-01	1.916E-01	6.455E-02	pCi/g	0.923	1.01E+0
TH-230	D2S1	0	12/19/2007 9:10:58	1.1384E+00	1.02E-01	1.368E-01	4.369E-02	pCi/g	0.923	1.01E+0
TH-232	D2S1	0	12/19/2007 9:10:58	1.7568E+00	1.267E-01	1.893E-01	5.155E-02	pCi/g	0.923	1.01E+0
U-234	7USR	0	12/18/2007 2:35:04	PM4.9338E-01	4.048E-02	5.717E-02	1.588E-02	pCi/g	0.903	2.0E+0
U-235	7USR	0	12/18/2007 2:35:04	PM6.6172E-04	3.571E-03	3.572E-03	2.278E-02	pCi/g	0.903	2.0E+0
U-238	7USR	0	12/18/2007 2:35:04	PM3.309E-01	3.336E-02	4.297E-02	2.588E-02	pCi/g	0.903	2.0E+0
<b>TRNC/D-7RD</b>	<b>9KCMPP510</b>		<b>F7K20021911</b>	TSB-GJ-05-0'	SOLID	11/20/2007 9:30:00	11/19/2007 7:45:00 AM			
TH-228	D2S1	0	12/19/2007 12:46:26	1.7816E+00	1.321E-01	1.944E-01	4.688E-02	pCi/g	0.914	1.0E+0
TH-230	D2S1	0	12/19/2007 12:46:26	1.0526E+00	1.001E-01	1.308E-01	4.55E-02	pCi/g	0.914	1.0E+0
TH-232	D2S1	0	12/19/2007 12:46:26	1.8962E+00	1.344E-01	2.027E-01	5.368E-02	pCi/g	0.914	1.0E+0
U-234	7USR	0	12/18/2007 2:35:59	PM4.4035E-01	3.839E-02	5.268E-02	1.6E-02	pCi/g	0.875	2.01E+0
U-235	7USR	0	12/18/2007 2:35:59	PM9.3548E-03	5.825E-03	5.876E-03	1.6E-02	pCi/g	0.875	2.01E+0
U-238	7USR	0	12/18/2007 2:35:59	PM3.2074E-01	3.274E-02	4.198E-02	1.6E-02	pCi/g	0.875	2.01E+0
<b>TRNC/D-7RD</b>	<b>9KCMPPK10</b>		<b>F7K2002196</b>	TSB-GJ-02-0'	SOLID	11/20/2007 9:30:00	11/19/2007 6:40:00 AM			
TH-228	D2S1	0	12/19/2007 9:11:47	1.642E+00	1.162E-01	1.757E-01	3.936E-02	pCi/g	0.774	1.01E+0
TH-230	D2S1	0	12/19/2007 9:11:47	1.7628E+00	1.186E-01	1.846E-01	3.821E-02	pCi/g	0.774	1.01E+0
TH-232	D2S1	0	12/19/2007 9:11:47	1.4198E+00	1.064E-01	1.559E-01	3.821E-02	pCi/g	0.774	1.01E+0
U-234	7USR	0	12/18/2007 2:35:24	PM1.2765E+00	6.584E-02	1.238E-01	1.626E-02	pCi/g	0.879	2.02E+0
U-235	7USR	0	12/18/2007 2:35:24	PM3.395E-02	1.076E-02	1.111E-02	1.626E-02	pCi/g	0.879	2.02E+0
U-238	7USR	0	12/18/2007 2:35:24	PM7.9443E-01	5.194E-02	8.34E-02	1.626E-02	pCi/g	0.879	2.02E+0
<b>TRNC/D-7RD</b>	<b>9KCMPPR10</b>		<b>F7K2002197</b>	TSB-GJ-02-0'FD	SOLID	11/20/2007 9:30:00	11/19/2007 6:40:00 AM			
TH-228	D2S1	0	12/19/2007 9:11:53	1.8673E+00	1.159E-01	1.89E-01	4.527E-02	pCi/g	0.876	1.04E+0
TH-230	D2S1	0	12/19/2007 9:11:53	1.6133E+00	1.06E-01	1.67E-01	3.334E-02	pCi/g	0.876	1.04E+0

7330520, \*\*Samples Inserted | Updated | NotUpdated => 3 | 0 | 14,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 49 | 0 | 0.  
 \*\*Diff RptDb | Qiims => .

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	mqg	Units	Expected	
TH-232	D2S1	0	12/19/2007 9:11:53	1.4435E+00	1.004E-01	1.53E-01	4.394E-02	pCi/g	0.876	1.04E+0
U-234	7USR	0	12/18/2007 2:35:30	PM7.5897E-01	5.165E-02	8.113E-02	1.683E-02	pCi/g	0.817	2.02E+0
U-235	7USR	0	12/18/2007 2:35:30	PM1.7569E-02	7.888E-03	8.02E-03	1.683E-02	pCi/g	0.817	2.02E+0
U-238	7USR	0	12/18/2007 2:35:30	PM4.2165E-01	3.85E-02	5.187E-02	1.683E-02	pCi/g	0.817	2.02E+0
<b>TRNC/D-7RD 9KCMPT10</b>			<b>F7K2002198</b>	TSB-GJ-02-05'	SOLID	11/20/2007 9:30:00	11/19/2007 7:00:00	AM		
TH-228	D2S1	0	12/19/2007 9:12:06	1.6916E+00	1.512E-01	2.032E-01	7.61E-02	pCi/g	0.773	1.0E+0
TH-230	D2S1	0	12/19/2007 9:12:06	1.3857E+00	1.346E-01	1.746E-01	6.261E-02	pCi/g	0.773	1.0E+0
TH-232	D2S1	0	12/19/2007 9:12:06	1.2915E+00	1.301E-01	1.663E-01	6.261E-02	pCi/g	0.773	1.0E+0
U-234	7USR	0	12/18/2007 2:35:45	PM1.0008E+00	5.577E-02	9.859E-02	1.489E-02	pCi/g	0.953	2.01E+0
U-235	7USR	0	12/18/2007 2:35:45	PM2.4242E-02	8.813E-03	9.03E-03	1.489E-02	pCi/g	0.953	2.01E+0
U-238	7USR	0	12/18/2007 2:35:45	PM5.7809E-01	4.239E-02	6.327E-02	1.489E-02	pCi/g	0.953	2.01E+0
<b>TRNC/D-7RD 9KCMPIV10</b>			<b>F7K2002199</b>	TSB-GJ-07-0'	SOLID	11/20/2007 9:30:00	11/19/2007 7:15:00	AM		
TH-228	D2S1	0	12/19/2007 9:12:12	1.5215E+00	1.967E-01	2.325E-01	1.836E-01	pCi/g	0.433	1.01E+0
TH-230	D2S1	0	12/19/2007 9:12:12	1.2347E+00	1.73E-01	2.001E-01	1.16E-01	pCi/g	0.433	1.01E+0
TH-232	D2S1	0	12/19/2007 9:12:12	1.1814E+00	1.695E-01	1.949E-01	1.16E-01	pCi/g	0.433	1.01E+0
U-234	7USR	0	12/18/2007 2:35:46	PM4.3108E-01	3.777E-02	5.167E-02	2.257E-02	pCi/g	0.947	2.01E+0
U-235	7USR	0	12/18/2007 2:35:46	PM6.5714E-03	4.693E-03	4.724E-03	1.574E-02	pCi/g	0.947	2.01E+0
U-238	7USR	0	12/18/2007 2:35:46	PM3.312E-01	3.303E-02	4.272E-02	1.574E-02	pCi/g	0.947	2.01E+0
<b>TRNC/D-7RD 9KCMPIX10</b>			<b>F7K20021910</b>	TSB-GJ-07-5'	SOLID	11/20/2007 9:30:00	11/19/2007 7:25:00	AM		
TH-228	D2S1	0	12/19/2007 12:46:26	1.284E+00	1.09E-01	1.497E-01	5.814E-02	pCi/g	0.966	1.02E+0
TH-230	D2S1	0	12/19/2007 12:46:26	1.5875E+00	1.193E-01	1.741E-01	5.051E-02	pCi/g	0.966	1.02E+0
TH-232	D2S1	0	12/19/2007 12:46:26	1.3747E+00	1.109E-01	1.561E-01	4.281E-02	pCi/g	0.966	1.02E+0
U-234	7USR	0	12/18/2007 2:35:52	PM7.8907E-01	4.728E-02	7.92E-02	1.356E-02	pCi/g	0.975	2.0E+0
U-235	7USR	0	12/18/2007 2:35:52	PM2.2642E-02	8.025E-03	8.23E-03	1.356E-02	pCi/g	0.975	2.0E+0
U-238	7USR	0	12/18/2007 2:35:52	PM5.4737E-01	3.943E-02	5.914E-02	1.786E-02	pCi/g	0.975	2.0E+0
<b>TRNC/D-7RD 9KCMQF10</b>			<b>F7K20021912</b>	TSB-GJ-05-5'	SOLID	11/20/2007 9:30:00	11/19/2007 7:55:00	AM		
TH-228	D2S1	0	12/19/2007 12:46:26	1.7575E+00	1.316E-01	1.926E-01	6.737E-02	pCi/g	0.876	1.02E+0
TH-230	D2S1	0	12/19/2007 12:46:26	1.6237E+00	1.245E-01	1.799E-01	5.378E-02	pCi/g	0.876	1.02E+0
TH-232	D2S1	0	12/19/2007 12:46:26	1.6237E+00	1.245E-01	1.799E-01	5.378E-02	pCi/g	0.876	1.02E+0
U-234	7USR	0	12/18/2007 2:36:21	PM1.2082E+00	6.067E-02	1.153E-01	1.519E-02	pCi/g	0.923	2.03E+0
U-235	7USR	0	12/18/2007 2:36:21	PM3.2765E-02	1.011E-02	1.045E-02	1.519E-02	pCi/g	0.923	2.03E+0
U-238	7USR	0	12/18/2007 2:36:21	PM6.6687E-01	4.506E-02	7.043E-02	1.226E-02	pCi/g	0.923	2.03E+0
<b>TRNC/D-7RD 9KCMQH10</b>			<b>F7K20021913</b>	TSB-GJ-03-0'	SOLID	11/20/2007 9:30:00	11/19/2007 8:15:00	AM		
TH-228	D2S1	0	12/19/2007 12:46:26	1.7748E+00	2.055E-01	2.512E-01	1.136E-01	pCi/g	0.457	1.01E+0
TH-230	D2S1	0	12/19/2007 12:46:26	1.3586E+00	1.769E-01	2.086E-01	1.103E-01	pCi/g	0.457	1.01E+0
TH-232	D2S1	0	12/19/2007 12:46:26	1.9343E+00	2.111E-01	2.633E-01	1.103E-01	pCi/g	0.457	1.01E+0
U-234	7USR	0	12/18/2007 2:36:27	PM1.9838E-01	2.687E-02	3.148E-02	1.807E-02	pCi/g	0.857	2.0E+0
U-235	7USR	0	12/18/2007 2:36:27	PM1.3621E-02	7.263E-03	7.349E-03	1.807E-02	pCi/g	0.857	2.0E+0
U-238	7USR	0	12/18/2007 2:36:27	PM1.6606E-01	2.457E-02	2.815E-02	1.656E-02	pCi/g	0.857	2.0E+0
<b>TRNC/D-7RD 9KCMQJ10</b>			<b>F7K20021914</b>	TSB-GJ-03-5'	SOLID	11/20/2007 9:30:00	11/19/2007 8:30:00	AM		
TH-228	D2S1	0	12/19/2007 12:46:48	1.5778E+00	1.312E-01	1.82E-01	6.849E-02	pCi/g	0.969	1.01E+0
TH-230	D2S1	0	12/19/2007 12:46:48	1.0742E+00	1.064E-01	1.367E-01	5.044E-02	pCi/g	0.969	1.01E+0
TH-232	D2S1	0	12/19/2007 12:46:48	1.2827E+00	1.163E-01	1.551E-01	5.044E-02	pCi/g	0.969	1.01E+0
U-234	7USR	0	12/18/2007 2:36:35	PM3.995E-01	3.936E-02	5.154E-02	2.289E-02	pCi/g	0.877	2.01E+0
U-235	7USR	0	12/18/2007 2:36:35	PM2.6706E-02	1.022E-02	1.045E-02	1.553E-02	pCi/g	0.877	2.01E+0
U-238	7USR	0	12/18/2007 2:36:35	PM2.1164E-01	2.862E-02	3.362E-02	1.764E-02	pCi/g	0.877	2.01E+0
<b>TRNC/D-7RD KCMN51FR</b>			<b>F7K2002194</b>	TSB-GJ-04-0' DUP	SOLID	11/20/2007 9:30:00	11/19/2007 9:45:00	AM		
TH-228	D2S1	0	R 12/19/2007 9:11:30	1.4798E+00	1.123E-01	1.631E-01	5.356E-02	pCi/g	0.947	1.02E+0
TH-230	D2S1	0	R 12/19/2007 9:11:30	1.6309E+00	1.159E-01	1.744E-01	3.945E-02	pCi/g	0.947	1.02E+0
TH-232	D2S1	0	R 12/19/2007 9:11:30	1.3986E+00	1.074E-01	1.55E-01	3.945E-02	pCi/g	0.947	1.02E+0
<b>TRNC/D-7RD KCV2Q1AB</b>			<b>J7K260000520</b>	INTRA-LAB BLANK	SOLID	11/20/2007 9:30:00	11/19/2007 8:40:00	AM		
TH-228	D2S1	0	B 12/19/2007 12:46:54	-1.4658E-03	7.474E-03	7.475E-03	3.51E-02	pCi/g	0.852	1.03E+0
TH-230	D2S1	0	B 12/19/2007 12:46:54	1.4225E-02	1.016E-02	1.022E-02	3.407E-02	pCi/g	0.852	1.03E+0
TH-232	D2S1	0	B 12/19/2007 12:46:54	0.0E+00	0.0E+00	7.253E-03	3.407E-02	pCi/g	0.852	1.03E+0

7330520, \*\*Samples Inserted | Updated | NotUpdated => 3 | 0 | 14,  
\*\*Results Inserted | ReTestInserted | Updated | NotInserted => 49 | 0 | 0 | 0.  
\*\*Diff RptDb | Qtims => .



SDG or Batch Isotope	Rpt Db Id Method	LotSample RTst Qc	Client Id Analysis Date	Matrix Result	Received Date Cnt Uncert	Sample Date Tot uncert mqa	Expected Yield	Volumes	
TRNC/D-7RD	KCV2Q1CS	J7K260000520	INTRA-LAB CHECK	SOLID	11/20/2007 9:30:00	11/19/2007 8:40:00 AM			
TH-230	D2S1	0 S	12/19/2007 12:47:03	2.1925E+00	1.24E-01	2.149E-01	3.357E-02 pCi/g	2.2958E+00 0.904	1.0E+0

7330520, \*\*Samples Inserted | Updated | NotUpdated => 3 | 0 | 14,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 49 | 0 | 0 | 0.  
 \*\*Diff RptDb | Qtims => .

# Alpha Spec, Thlso by ALP , Results

## 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 Aiplso Wo Blk Subt. *CntU: 0+1, + *SystU, *MDCConst:2.71																
Calc	S1	SOLID	KCMNL1AC	TH-228	1.69E+00	(1.96E-01)		pCi/g	R	1.75E-02	6.73E-02			75%		
Calc	S1	SOLID	KCMNL1AC	TH-230	1.17E+00	(1.50E-01)		pCi/g	R	1.70E-02	6.53E-02			75%		
Calc	S1	SOLID	KCMNL1AC	TH-232	1.44E+00	(1.73E-01)		pCi/g	R	1.20E-02	5.53E-02			75%		
Calc	S1	SOLID	KCMNW1AC	TH-228	1.66E+00	(1.88E-01)		pCi/g	R	1.10E-02	5.08E-02			83%		
Calc	S1	SOLID	KCMNW1AC	TH-230	1.10E+00	(1.38E-01)		pCi/g	R	1.07E-02	4.93E-02			83%		
Calc	S1	SOLID	KCMNW1AC	TH-232	1.22E+00	(1.49E-01)		pCi/g	R	1.07E-02	4.93E-02			83%		
Calc	S1	SOLID	KCMNX1AC	TH-228	1.77E+00	(1.92E-01)		pCi/g	R	1.96E-02	6.45E-02			92%		
Calc	S1	SOLID	KCMNX1AC	TH-230	1.14E+00	(1.37E-01)		pCi/g	R	9.49E-03	4.37E-02			92%		
Calc	S1	SOLID	KCMNX1AC	TH-232	1.76E+00	(1.89E-01)		pCi/g	R	1.34E-02	5.15E-02			92%		
Calc	S1	SOLID	KCMN51AC	TH-228	2.17E+00	(2.44E-01)		pCi/g	R	1.40E-02	6.42E-02			82%		
Calc	S1	SOLID	KCMN51AC	TH-230	1.98E+00	(2.26E-01)		pCi/g	R	1.35E-02	6.24E-02			82%		
Calc	S1	SOLID	KCMN51AC	TH-232	1.65E+00	(1.98E-01)		pCi/g	R	1.35E-02	6.24E-02			82%		
Calc	S1	SOLID	KCMN51AF	TH-228	1.48E+00	(1.63E-01)		pCi/g	R	1.53E-02	5.36E-02	R		95%		
Calc	S1	SOLID	KCMN51AF	TH-230	1.63E+00	(1.74E-01)		pCi/g	R	8.57E-03	3.95E-02	R		95%		
Calc	S1	SOLID	KCMN51AF	TH-232	1.40E+00	(1.55E-01)		pCi/g	R	8.57E-03	3.95E-02	R		95%		
Calc	S1	SOLID	KCMN81AC	TH-228	1.60E+00	(1.87E-01)		pCi/g	R	1.70E-02	6.54E-02			90%		
Calc	S1	SOLID	KCMN81AC	TH-230	1.22E+00	(1.53E-01)		pCi/g	R	1.17E-02	5.38E-02			90%		
Calc	S1	SOLID	KCMN81AC	TH-232	1.20E+00	(1.51E-01)		pCi/g	R	1.17E-02	5.38E-02			90%		
Calc	S1	SOLID	KCMPK1AC	TH-228	1.64E+00	(1.76E-01)		pCi/g	R	8.55E-03	3.94E-02			77%		
Calc	S1	SOLID	KCMPK1AC	TH-230	1.76E+00	(1.85E-01)		pCi/g	R	8.30E-03	3.82E-02			77%		
Calc	S1	SOLID	KCMPK1AC	TH-232	1.42E+00	(1.56E-01)		pCi/g	R	8.30E-03	3.82E-02			77%		
Calc	S1	SOLID	KCMPR1AC	TH-228	1.87E+00	(1.89E-01)		pCi/g	R	1.29E-02	4.53E-02			88%		
Calc	S1	SOLID	KCMPR1AC	TH-230	1.61E+00	(1.67E-01)		pCi/g	R	7.24E-03	3.33E-02			88%		
Calc	S1	SOLID	KCMPR1AC	TH-232	1.44E+00	(1.53E-01)		pCi/g	R	1.25E-02	4.39E-02			88%		
Calc	S1	SOLID	KCMPT1AC	TH-228	1.69E+00	(2.03E-01)		pCi/g	R	1.98E-02	7.61E-02			77%		
Calc	S1	SOLID	KCMPT1AC	TH-230	1.39E+00	(1.75E-01)		pCi/g	R	1.36E-02	6.26E-02			77%		
Calc	S1	SOLID	KCMPT1AC	TH-232	1.29E+00	(1.66E-01)		pCi/g	R	1.36E-02	6.26E-02			77%		
Calc	S1	SOLID	KCMPV1AC	TH-228	1.52E+00	(2.33E-01)		pCi/g	R	5.80E-02	1.84E-01			43%		
Calc	S1	SOLID	KCMPV1AC	TH-230	1.23E+00	(2.00E-01)		pCi/g	R	2.52E-02	1.16E-01			43%		
Calc	S1	SOLID	KCMPV1AC	TH-232	1.18E+00	(1.95E-01)		pCi/g	R	2.52E-02	1.16E-01			43%		
Calc	S1	SOLID	KCMPX1AC	TH-228	1.28E+00	(1.50E-01)		pCi/g	R	1.66E-02	5.81E-02			97%		
Calc	S1	SOLID	KCMPX1AC	TH-230	1.59E+00	(1.74E-01)		pCi/g	R	1.32E-02	5.05E-02			97%		
Calc	S1	SOLID	KCMPX1AC	TH-232	1.37E+00	(1.56E-01)		pCi/g	R	9.30E-03	4.28E-02			97%		
Calc	S1	SOLID	KCMP51AC	TH-228	1.78E+00	(1.94E-01)		pCi/g	R	1.02E-02	4.69E-02			91%		
Calc	S1	SOLID	KCMP51AC	TH-230	1.05E+00	(1.31E-01)		pCi/g	R	9.88E-03	4.55E-02			91%		

( ) - (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	KCMP51AC	TH-232	1.90E+00	(2.03E-01)		pCi/g	R	1.40E-02	5.37E-02	91%	
Calc	S1	SOLID	KCMQF1AC	TH-228	1.76E+00	(1.93E-01)		pCi/g	R	2.04E-02	6.74E-02	88%	
Calc	S1	SOLID	KCMQF1AC	TH-230	1.62E+00	(1.80E-01)		pCi/g	R	1.40E-02	5.38E-02	88%	
Calc	S1	SOLID	KCMQF1AC	TH-232	1.62E+00	(1.80E-01)		pCi/g	R	1.40E-02	5.38E-02	88%	
Calc	S1	SOLID	KCMQH1AC	TH-228	1.77E+00	(2.51E-01)		pCi/g	R	2.47E-02	1.14E-01	46%	
Calc	S1	SOLID	KCMQH1AC	TH-230	1.36E+00	(2.09E-01)		pCi/g	R	2.40E-02	1.10E-01	46%	
Calc	S1	SOLID	KCMQH1AC	TH-232	1.93E+00	(2.63E-01)		pCi/g	R	2.40E-02	1.10E-01	46%	
Calc	S1	SOLID	KCMQJ1AC	TH-228	1.58E+00	(1.82E-01)		pCi/g	R	1.96E-02	6.85E-02	97%	
Calc	S1	SOLID	KCMQJ1AC	TH-230	1.07E+00	(1.37E-01)		pCi/g	R	1.10E-02	5.04E-02	97%	
Calc	S1	SOLID	KCMQJ1AC	TH-232	1.28E+00	(1.55E-01)		pCi/g	R	1.10E-02	5.04E-02	97%	
Calc	S1	SOLID	KCV2Q1AA	TH-228	-1.47E-03	(7.47E-03)	U4	pCi/g	R	7.62E-03	3.51E-02	B	85%
Calc	S1	SOLID	KCV2Q1AA	TH-230	1.42E-02	(1.02E-02)	U4	pCi/g	R	7.40E-03	3.41E-02	B	85%
Calc	S1	SOLID	KCV2Q1AA	TH-232	0.00E+00	(7.25E-03)	U4	pCi/g	R	7.40E-03	3.41E-02	B	85%
Calc	S1	SOLID	KCV2Q1AC	TH-228	2.02E-02	(1.27E-02)	U4	pCi/g	R	7.52E-03	3.46E-02	S	90%
Calc	S1	SOLID	KCV2Q1AC	TH-230	2.19E+00	(2.15E-01)		pCi/g	R	7.29E-03	3.36E-02	S	90%
Calc	S1	SOLID	KCV2Q1AC	TH-232	-4.21E-03	(7.43E-03)	U4	pCi/g	R	1.26E-02	4.42E-02	S	90%

96%

() - (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: 7330520

Alpha Spec, Thisso by ALP, Calculated Results  
Detailed Report

12/19/2007 4:58:37 PM

Sq	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										
1	Calc	S1 SOLID	*STLE	AlpIsoWoBS	KCMNL1AC	,F7K200219-1	pcI/g	SOLID	11/19/07 08:40	12/19/07 09:10	1	592.23	Alq	1	g	1.01g										
0	12/19/07 07:31	TH-228	142	2	ALP171	COP	N	N	2.5595E-01	Efficiency1	N	75%	N	1.0000E+00	4.5045E-01	1.0302E+00										
			199.7833333	998.95			Y		(7.679E-03)		4%			(0.000E+00)	0.990099											
1	12/19/07 07:31	TH-230	102	2	ALP171	COP	N	N	2.5595E-01	Efficiency1	N	75%	N	1.0000E+00	4.5045E-01	1.0000E+00										
			199.7833333	998.95			Y		(7.679E-03)		4%			(0.000E+00)	0.990099											
2	12/19/07 07:31	TH-232	125	1	ALP171	COP	N	N	2.5595E-01	Efficiency1	N	75%	N	1.0000E+00	4.5045E-01	1.0000E+00										
			199.7833333	998.95			Y		(7.679E-03)		4%			(0.000E+00)	0.990099											
3	12/19/07 05:58	Th-234	405	725	GPC30A	COP	Y	N	4.5050E-01	Efficiency1	N	100%	N	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	EntFctU	IDC	ILcC	BIK	LcC/MDC	Std	DvMdc/LcC	
	12/19/07	TH-228	R	1.865509			7.08768E-01		3.66837		3.66837			1.01 G		75%						0.067264				
	2.641E+02			(0.196058)			(5.9663E-02)		(0.380101)		(0.380101)			(0.017321)								0.017513				
	12/19/07	TH-230	R	1.173895			5.08551E-01		2.632108		2.632108			1.01 G		75%						0.065291				
	2.641E+02			(0.150026)			(5.0572E-02)		(0.306266)		(0.306266)			(0.017321)								0.017				
	12/19/07	TH-232	R	1.441948			6.24677E-01		3.23314		3.23314			1.01 G		75%						0.055338				
	2.641E+02			(0.173468)			(5.5971E-02)		(0.349394)		(0.349394)			(0.017321)								0.012021				
	12/19/07	Th-234	R	199.383809			2.01400E+02		447.058824		447.058824			1.01 G		75%										
	2.641E+02			(13.587696)			(3.1852E+00)		(19.229356)		(19.229356)			(0.017321)												

( ) - (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

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	BIK/LcC/MDC	StdDvMdc/LcC
12/19/07	TH-228	R	1.655494 (0.187566)	7.80846E-01 (6.2526E-02)	3.603044 (0.361072)	3.603044 (0.361072)	3.603044 (0.361072)	1.01 G (0.017321)	83%	0.050827	0.011041			
12/19/07	TH-230	R	1.100125 (0.138324)	5.34579E-01 (5.1786E-02)	2.4667 (0.28141)	2.4667 (0.28141)	2.4667 (0.28141)	1.01 G (0.017321)	83%	0.049336	0.010717			
12/19/07	TH-232	R	1.223733 (0.149172)	5.94644E-01 (5.4612E-02)	2.743857 (0.301391)	2.743857 (0.301391)	2.743857 (0.301391)	1.01 G (0.017321)	83%	0.049336	0.010717			
12/19/07	Th-234	R	222.445345 (15.127662)	2.18316E+02 (3.3163E+00)	498.767452 (21.340918)	498.767452 (21.340918)	498.767452 (21.340918)	1.01 G (0.017321)	83%					

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 SOLID \*STLE AlplsoWoBS KCMNX1AC pCi/g 11/19/07 09:05 12/19/07 09:10 1 9  
 445691,TSB-GR-02-5 ,F7K200219-3 SOLID 597.09 Alq 1.01 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/Vol/Adj	Decay	Abn
0	12/19/07 07:31	TH-228	189	4	ALP176	COP	N	N	2.6518E-01		N	92%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0302E+00	
			199.7833333	998.95			Y		(7.955E-03)			5%		(0.000E+00)	0.990099			
1	12/19/07 07:31	TH-230	125	1	ALP176	COP	N	N	2.6518E-01		N	92%	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	12/19/07 07:31	TH-232	193	2	ALP176	COP	N	N	2.6518E-01		N	92%	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	12/19/07 05:58	Th-234	4867	775	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		(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	Trc Yld,EnFct	LCS Yld,EFctU	IDC/ILcC	BIK/LcC/MDC	StdDvMdc/LcC
12/19/07	TH-228	R	1.768551 (0.191648)	9.42021E-01 (6.8842E-02)	3.84917 (0.364123)	3.84917 (0.364123)	3.84917 (0.364123)	1.01 G (0.017321)	92%	0.064549	0.019553			
12/19/07	TH-230	R	1.138381 (0.13675)	6.24677E-01 (5.5971E-02)	2.552478 (0.275341)	2.552478 (0.275341)	2.552478 (0.275341)	1.01 G (0.017321)	92%	0.043688	0.00949			
12/19/07	TH-232	R	1.756827 (0.189276)	9.64044E-01 (6.9552E-02)	3.939161 (0.369803)	3.939161 (0.369803)	3.939161 (0.369803)	1.01 G (0.017321)	92%	0.051545	0.013421			
12/19/07	Th-234	R	245.762092 (16.672472)	2.41800E+02 (3.4886E+00)	551.048314 (23.431939)	551.048314 (23.431939)	551.048314 (23.431939)	1.01 G (0.017321)	92%					

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 SOLID \*STLE AlplsoWoBS KCMN51AC pCi/g 11/19/07 09:45 12/19/07 09:10 1 9  
 445691,TSB-GJ-04-0 ,F7K200219-4 v4.8.29 SOLID 596.75 Alq 1.00 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/Vol/Adj	Decay	Abn
0	12/19/07 07:31	TH-228	162	1	ALP177	COP	N	N	2.1204E-01		N	82%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0302E+00	
			199.7833333	998.95			Y		(6.361E-03)			4%		(0.000E+00)	1.00			

(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

RecCnt:4 RADCALC v4.8.29  
 TA Richland

Alpha Spec, Thlso by ALP , Calculated Results

12/19/2007 4:58:38 PM

Batch Nbr: 7330520

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rtt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BIK/LcC/MDC	StdDvMdc/LcC
1	12/19/07 07:31	TH-230	152	0	ALP177 COP	N	N	2.1204E-01 (6.361E-03)	N	82%	N	4%	1.0000E+00 (0.000E+00)	1.0000E+00 (0.000E+00)
2	12/19/07 07:31	TH-232	127	0	ALP177 COP	N	N	2.1204E-01 (6.361E-03)	N	82%	N	4%	1.0000E+00 (0.000E+00)	1.0000E+00 (0.000E+00)
3	12/19/07 05:58	Th-234	4314	533	GPC30D COP	Y	N	4.4042E-01 (1.762E-02)	N	100%	N		1.0000E+00 (0.000E+00)	1.0000E+00 (0.000E+00)
	Sq CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rtt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BIK/LcC/MDC	StdDvMdc/LcC
	12/19/07	TH-228	R	2.170271 (0.243842)		8.09877E-01 (6.3716E-02)	4.676856 (0.463547)	4.676856 (0.463547)	1.00 G (0.017321)	82%			0.064243 0.013955	
	12/19/07	TH-230	R	1.979092 (0.22578)		7.60824E-01 (6.1719E-02)	4.393585 (0.444053)	4.393585 (0.444053)	1.00 G (0.017321)	82%			0.062361 0.013546	
	12/19/07	TH-232	R	1.653582 (0.197813)		6.35689E-01 (5.6417E-02)	3.670956 (0.393848)	3.670956 (0.393848)	1.00 G (0.017321)	82%			0.062361 0.013546	
	12/19/07	Th-234	R	219.522014 (14.943884)		2.14634E+02 (3.2844E+00)	487.339358 (20.871317)	487.339358 (20.871317)	1.00 G (0.017321)	82%				

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	S1	SOLID	*STLE	AlpIsoWoBS	KCMN51AF	pCi/g	R	11/19/07 09:45	12/19/07 09:11	602.88	Alq	1	g
5	445691	TSB-GJ-04-0	DUP				SOLID							
0	12/19/07 07:31	TH-228	175	3	ALP113 COP	N	N	2.8313E-01 (8.494E-03)	N	95%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.980392
1	12/19/07 07:31	TH-230	198	0	ALP113 COP	N	N	2.8313E-01 (8.494E-03)	N	95%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.980392
2	12/19/07 07:31	TH-232	170	1	ALP113 COP	N	N	2.8313E-01 (8.494E-03)	N	95%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.980392
3	12/19/07 06:44	Th-234	5171	725	GPC30A COP	Y	N	4.5050E-01 (1.802E-02)	N	100%	N		1.0000E+00 (0.000E+00)	4.5045E-01 0.980392

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rtt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BIK/LcC/MDC	StdDvMdc/LcC
12/19/07	TH-228	R	1.47983 (0.163061)		8.71781E-01 (6.6150E-02)	3.252759 (0.314581)	3.252759 (0.314581)	3.252759 (0.314581)	1.02 G (0.017321)	95%			0.053562 0.015292	
12/19/07	TH-230	R	1.630864 (0.174399)		9.89753E-01 (7.0346E-02)	3.692929 (0.343406)	3.692929 (0.343406)	3.692929 (0.343406)	1.02 G (0.017321)	95%			0.039452 0.00857	
12/19/07	TH-232	R	1.398588 (0.154995)		8.48788E-01 (6.5183E-02)	3.166965 (0.308568)	3.166965 (0.308568)	3.166965 (0.308568)	1.02 G (0.017321)	95%			0.039452 0.00857	
12/19/07	Th-234	R	252.030848 (17.063751)		2.57100E+02 (3.5959E+00)	570.699223 (24.183224)	570.699223 (24.183224)	570.699223 (24.183224)	1.02 G (0.017321)	95%				

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:6

RADCALC v4.8.29  
TA Richland

Batch Nbr: 7330520

Alpha Spec, Thiso by ALP, Calculated Results

12/19/2007 4:58:38 PM

Sq	Calc	S1	SOLID	STLE	AlpIsoWoBS	KCMN81AC	pci/g	11/19/07 10:05	12/19/07 09:11	601.27	Alq	1	g	1.02	g
Sq	Calc	S1	SOLID	STLE	AlpIsoWoBS	KCMN81AC	pci/g	11/19/07 10:05	12/19/07 09:11	601.15	Alq	1	g	1.01	g
0	12/19/07 07:31	TH-228	139	2	ALP116	COP	N	N	2.1858E-01	N	90%	N	1.0000E+00	4.5045E-01	1.0302E+00
			200.01666666	1000.0666			Y		(6.557E-03)		5%		(0.000E+00)	0.980392	
1	12/19/07 07:31	TH-230	109	0	ALP116	COP	N	N	2.1858E-01	N	90%	N	1.0000E+00	4.5045E-01	1.0000E+00
			200.01666666	1000.0666			Y		(6.557E-03)		5%		(0.000E+00)	0.980392	
2	12/19/07 07:31	TH-232	107	1	ALP116	COP	N	N	2.1858E-01	N	90%	N	1.0000E+00	4.5045E-01	1.0000E+00
			200.01666666	1000.0666			Y		(6.557E-03)		5%		(0.000E+00)	0.980392	
3	12/19/07 06:44	Th-234	4763	792	GPC30B	COP	Y	N	4.3771E-01	N	100%	N	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/LcC	BIKLC/MDC	StdDvMdc/LcC	
	12/19/07	TH-228	R	1.604526		6.92942E-01	3.526897	3.526897	1.02 G	90%		0.065419			
	2.655E+02			(0.187401)		(5.8961E-02)	(0.367421)	(0.367421)	(0.017321)			0.017033			
	12/19/07	TH-230	R	1.224906		5.44955E-01	2.773678	2.773678	1.02 G	90%		0.053824			
	2.655E+02			(0.152887)		(5.2207E-02)	(0.313689)	(0.313689)	(0.017321)			0.011692			
	12/19/07	TH-232	R	1.200182		5.33955E-01	2.717696	2.717696	1.02 G	90%		0.053823			
	2.655E+02			(0.150791)		(5.1726E-02)	(0.309831)	(0.309831)	(0.017321)			0.011692			
	12/19/07	Th-234	R	238.677393		2.36566E+02	540.461629	540.461629	1.02 G	90%					
	2.655E+02			(16.189964)		(3.4512E+00)	(23.011415)	(23.011415)	(0.017321)						
Sq	Calc	S1	SOLID	STLE	AlpIsoWoBS	KCMPK1AC	pci/g <td>11/19/07 06:40 <td>12/19/07 09:11 <td>601.15</td> <td>Alq <td>1</td> <td>g <td>1.01</td> <td>g</td> </td></td></td></td>	11/19/07 06:40 <td>12/19/07 09:11 <td>601.15</td> <td>Alq <td>1</td> <td>g <td>1.01</td> <td>g</td> </td></td></td>	12/19/07 09:11 <td>601.15</td> <td>Alq <td>1</td> <td>g <td>1.01</td> <td>g</td> </td></td>	601.15	Alq <td>1</td> <td>g <td>1.01</td> <td>g</td> </td>	1	g <td>1.01</td> <td>g</td>	1.01	g
Sq	Calc	S1	SOLID	STLE	AlpIsoWoBS	KCMPK1AC	pci/g <td>11/19/07 06:40 <td>12/19/07 09:11 <td>601.15</td> <td>Alq <td>1</td> <td>g <td>1.01</td> <td>g</td> </td></td></td></td>	11/19/07 06:40 <td>12/19/07 09:11 <td>601.15</td> <td>Alq <td>1</td> <td>g <td>1.01</td> <td>g</td> </td></td></td>	12/19/07 09:11 <td>601.15</td> <td>Alq <td>1</td> <td>g <td>1.01</td> <td>g</td> </td></td>	601.15	Alq <td>1</td> <td>g <td>1.01</td> <td>g</td> </td>	1	g <td>1.01</td> <td>g</td>	1.01	g
0	12/19/07 07:31	TH-228	200	1	ALP117	COP	N	N	3.6088E-01	N	77%	N	1.0000E+00	4.5045E-01	1.0303E+00
			200.1	1000.0333			Y		(1.083E-02)		4%		(0.000E+00)	0.990099	
1	12/19/07 07:31	TH-230	221	0	ALP117	COP	N	N	3.6088E-01	N	77%	N	1.0000E+00	4.5045E-01	1.0000E+00
			200.1	1000.0333			Y		(1.083E-02)		4%		(0.000E+00)	0.990099	
2	12/19/07 07:31	TH-232	178	0	ALP117	COP	N	N	3.6088E-01	N	77%	N	1.0000E+00	4.5045E-01	1.0000E+00
			200.1	1000.0333			Y		(1.083E-02)		4%		(0.000E+00)	0.990099	
3	12/19/07 06:44	Th-234	4116	775	GPC30C	COP	Y	N	4.3880E-01	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00
			20	500			Y		(1.755E-02)				(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

RecCnt:7  
 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,EFctU	IDC/ILcC	BikLc/MDC	StdDv/MdC/LcC				
12/19/07	TH-228	R	1.641974	9.98500E-01	3.573322	3.573322	3.573322	1.01 G	77%	0.039365								
2.681E+02			(0.175713)	(7.0682E-02)	(0.332487)	(0.332487)				0.008552								
12/19/07	TH-230	R	1.762766	1.10445E+00	3.952475	3.952475	3.952475	1.01 G	77%	0.038207								
2.681E+02			(0.184599)	(7.4300E-02)	(0.35731)	(0.35731)				0.0083								
12/19/07	TH-232	R	1.419783	8.89555E-01	3.183441	3.183441	3.183441	1.01 G	77%	0.038207								
2.681E+02			(0.155918)	(6.6682E-02)	(0.306438)	(0.306438)				0.0083								
12/19/07	Th-234	R	207.596804	2.04250E+02	465.47402	465.47402	465.47402	1.01 G	77%									
2.681E+02			(14.142233)	(3.2083E+00)	(20.003093)	(20.003093)												
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	KCMPRIAC	pCi/g			11/19/07 06:40	12/19/07 09:11	603.35	Alq	1.04 g	9				
445691,TSB-GJ-02-0FD						SOLID												
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Bik Value	Ingr Fct	Conv Fct/Vol/Adj	Decay	Abn
0	12/19/07 07:31	TH-228	261	3	ALP118	COP	N	N	3.5511E-01		N	88%	N	1.0000E+00	4.5045E-01	1.0303E+00		
			200.0833333	1000.0833			Y		(1.065E-02)			5%		(0.000E+00)	0.961538			
1	12/19/07 07:31	TH-230	232	1	ALP118	COP	N	N	3.5511E-01		N	88%	N	1.0000E+00	4.5045E-01	1.0000E+00		
			200.0833333	1000.0833			Y		(1.065E-02)			5%		(0.000E+00)	0.961538			
2	12/19/07 07:31	TH-232	208	3	ALP118	COP	N	N	3.5511E-01		N	88%	N	1.0000E+00	4.5045E-01	1.0000E+00		
			200.0833333	1000.0833			Y		(1.065E-02)			5%		(0.000E+00)	0.961538			
3	12/19/07 06:44	Th-234	4676	533	GPC30D	COP	Y	N	4.4042E-01		N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00		
			20	500			Y		(1.762E-02)					(0.000E+00)	0.961538			
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	KCMPRIAC	pCi/g			11/19/07 07:00	12/19/07 09:12	603.90	Alq	1.00 g	9				
445691,TSB-GJ-02-05						SOLID												
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Bik Value	Ingr Fct	Conv Fct/Vol/Adj	Decay	Abn
0	12/19/07 07:32	TH-228	126	2	ALP119	COP	N	N	2.2282E-01		N	77%	N	1.0000E+00	4.5045E-01	1.0303E+00		
			200.0166666	1000.3833			Y		(6.684E-03)			4%		(0.000E+00)	1.00			
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																		
RecCnt:9 RADCALC v4.8.29 TA Richland																		

(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	BIKlcC/MDC	StdDvMdc/LcC
1	12/19/07 07:32	TH-230	106	0	ALP119 COP	N	2.2282E-01	N	77%	N	4.5045E-01	1.0000E+00	4.5045E-01	1.0000E+00
			200.0166666	1000.3833		Y	(6.684E-03)		(0.017321)		(0.000E+00)	1.00		
2	12/19/07 07:32	TH-232	99	1	ALP119 COP	N	2.2282E-01	N	77%	N	4.5045E-01	1.0000E+00	4.5045E-01	1.0000E+00
			200.0166666	1000.3833		Y	(6.684E-03)		(0.017321)		(0.000E+00)	1.00		
3	12/19/07 07:09	Th-234	4236	725	GPC30A COP	Y	4.5050E-01	N	100%	N	4.5045E-01	1.0000E+00	4.5045E-01	1.0000E+00
			20	500		Y	(1.802E-02)		(0.017321)		(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	BIKlcC/MDC	StdDvMdc/LcC
12/19/07	TH-228	R	1.691623	6.27948E-01	3.644971	3.644971	3.644971	1.00 G	77%	0.076102				
2.720E+02			(0.203217)	(5.6138E-02)	(0.39311)	(0.39311)		(0.017321)		0.019813				
12/19/07	TH-230	R	1.38566	5.29956E-01	3.076166	3.076166	3.076166	1.00 G	77%	0.062606				
2.720E+02			(0.174598)	(5.1484E-02)	(0.351773)	(0.351773)		(0.017321)		0.013598				
12/19/07	TH-232	R	1.29154	4.93959E-01	2.867221	2.867221	2.867221	1.00 G	77%	0.062606				
2.720E+02			(0.16633)	(4.9755E-02)	(0.336644)	(0.336644)		(0.017321)		0.013598				
12/19/07	Th-234	R	210.326654	2.10350E+02	466.925638	466.925638	466.925638	1.00 G	77%					
2.720E+02			(14.326014)	(3.2547E+00)	(20.02563)	(20.02563)		(0.017321)						

Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/IBB	Sa/On Date	AnalysisDate/PptWt	Sep/1	Sep/2	Date	QC/Tracer	Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	S1	SOLID	*STLE	AlpIsoWoBS	KCMPV1AC	pci/g			11/19/07 07:15	12/19/07 09:12	1	g						
445691	TSS	GJ-07-0										603.94	Alq					1.01 g	
0	12/19/07 07:32	TH-228	62	5	ALP120 COP	N	2.1268E-01	N	43%	N	1.0000E+00	4.5045E-01	1.0303E+00						
			200.05	1000		Y	(6.380E-03)		(0.000E+00)		0.990099								
1	12/19/07 07:32	TH-230	51	0	ALP120 COP	N	2.1268E-01	N	43%	N	1.0000E+00	4.5045E-01	1.0000E+00						
			200.05	1000		Y	(6.380E-03)		(0.000E+00)		0.990099								
2	12/19/07 07:32	TH-232	49	1	ALP120 COP	N	2.1268E-01	N	43%	N	1.0000E+00	4.5045E-01	1.0000E+00						
			200.05	1000		Y	(6.380E-03)		(0.000E+00)		0.990099								
3	12/19/07 07:09	Th-234	2321	792	GPC30B COP	Y	4.3771E-01	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00						
			20	500		Y	(1.751E-02)		(0.000E+00)		0.990099								

( ) - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 \* TPU  
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 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	Calc	Matrix	Method	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		
11	12/19/07 11:06	S1	SOLID	*STLE	AlpIsoWoBS	KCMP51AC	pCi/g	SOLID		11/19/07 07:25	12/19/07 12:46		603.94	Alq	1	9			
445691	TSB-GJ-07-5															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	12/19/07 11:06	TH-228	140	3	ALP171	COP	N	N	2.5595E-01		N	97%	N		1.0000E+00	4.5045E-01	1.0304E+00		
			199.7833333	998.95			Y		(7.679E-03)			5%			(0.000E+00)	0.980392			
1	12/19/07 11:06	TH-230	178	2	ALP171	COP	N	N	2.5595E-01		N	97%	N		1.0000E+00	4.5045E-01	1.0000E+00		
			199.7833333	998.95			Y		(7.679E-03)			5%			(0.000E+00)	0.980392			
2	12/19/07 11:06	TH-232	154	1	ALP171	COP	N	N	2.5595E-01		N	97%	N		1.0000E+00	4.5045E-01	1.0000E+00		
			199.7833333	998.95			Y		(7.679E-03)			5%			(0.000E+00)	0.980392			
3	12/19/07 07:09	Th-234	5152	775	GPC30C	COP	Y	N	4.3880E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00		
			20	500			Y		(1.755E-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	BlkLcC/MDC	StdDvMdc/LcC					
	12/19/07	TH-228	R	1.283952		6.97756E-01	2.821517	2.821517	1.02 G	97%			0.058135						
	2.667E+02			(0.149708)		(5.9250E-02)	(0.293318)	(0.293318)	(0.017321)				0.016597						
	12/19/07	TH-230	R	1.587485		8.88963E-01	3.594701	3.594701	1.02 G	97%			0.050511						
	2.667E+02			(0.174123)		(6.6796E-02)	(0.345584)	(0.345584)	(0.017321)				0.013151						
	12/19/07	TH-232	R	1.374746		7.69834E-01	3.112979	3.112979	1.02 G	97%			0.042811						
	2.667E+02			(0.156123)		(6.2124E-02)	(0.312984)	(0.312984)	(0.017321)				0.009299						
	12/19/07	Th-234	R	257.694163		2.56050E+02	583.523245	583.523245	1.02 G	97%									
	2.667E+02			(17.448872)		(3.5893E+00)	(24.73274)	(24.73274)	(0.017321)										

Sq	Calc	Matrix	Method	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	
12	12/19/07 11:06	S1	SOLID	*STLE	AlpIsoWoBS	KCMP51AC	pCi/g	SOLID		11/19/07 07:45	12/19/07 12:46		603.98	Alq	1	9		
445691	TSB-GJ-05-0															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/VolAdj	Decay	Abn
0	12/19/07 11:06	TH-228	182	0	ALP172	COP	N	N	2.5961E-01		N	91%	N		1.0000E+00	4.5045E-01	1.0304E+00	
			199.7833333	998.95			Y		(7.788E-03)			5%			(0.000E+00)	1.00		
1	12/19/07 11:06	TH-230	111	1	ALP172	COP	N	N	2.5961E-01		N	91%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			199.7833333	998.95			Y		(7.788E-03)			5%			(0.000E+00)	1.00		
2	12/19/07 11:06	TH-232	200	2	ALP172	COP	N	N	2.5961E-01		N	91%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			199.7833333	998.95			Y		(7.788E-03)			5%			(0.000E+00)	1.00		
3	12/19/07 07:09	Th-234	4885	533	GPC30D	COP	Y	N	4.4042E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			20	500			Y		(1.762E-02)						(0.000E+00)	1.00		

Batch Nbr: 7330520

Alpha Spec, Thiso by ALP, Calculated Results

12/19/2007 4:58:39 PM

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	BIKLC/MDC	StdDvMdc/LcC
12/19/07	TH-228	R	1.781613	9.10987E-01	3.838425	3.838425	1.00 G	91%	0.046885					
2.721E+02			(0.194369)	(6.7534E-02)	(0.366208)	(0.366208)	(0.017321)		0.010184					
12/19/07	TH-230	R	1.052612	5.54601E-01	2.336799	2.336799	1.00 G	91%	0.045501					
2.721E+02			(0.130843)	(5.2745E-02)	(0.262839)	(0.262839)	(0.017321)		0.009884					
12/19/07	TH-232	R	1.89622	9.99082E-01	4.209613	4.209613	1.00 G	91%	0.053684					
2.721E+02			(0.202715)	(7.0802E-02)	(0.391032)	(0.391032)	(0.017321)		0.013978					
12/19/07	Th-234	R	248.722203	2.43184E+02	552.163844	552.163844	1.00 G	91%						
2.721E+02			(16.881154)	(3.4949E+00)	(23.468866)	(23.468866)	(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
13	Calc S1 SOLID	*STLE AlplsoWoBS	KCMQFIAC	pCi/g		11/19/07 07:55	12/19/07 12:46		604.74 Alq	1	g	
445691,TSB-GJ-05-5				SOLID							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	12/19/07 11:06	TH-228	180	4	ALP176	COP	N	N	2.6518E-01		N	88%	N	1.0000E+00	4.5045E-01	1.0304E+00		
			199.7833333	998.95			Y		(7.955E-03)			5%		(0.000E+00)	0.980392			
1	12/19/07 11:06	TH-230	171	2	ALP176	COP	N	N	2.6518E-01		N	88%	N	1.0000E+00	4.5045E-01	1.0000E+00		
			199.7833333	998.95			Y		(7.955E-03)			5%		(0.000E+00)	0.980392			
2	12/19/07 11:06	TH-232	171	2	ALP176	COP	N	N	2.6518E-01		N	88%	N	1.0000E+00	4.5045E-01	1.0000E+00		
			199.7833333	998.95			Y		(7.955E-03)			5%		(0.000E+00)	0.980392			
3	12/19/07 07:32	Th-234	4801	725	GPC30A	COP	Y	N	4.5050E-01		N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00		
			20	500			Y		(1.802E-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,EntFct	LCSYld,EFctU	IDC/ILcC	BIKLC/MDC	StdDvMdc/LcC
12/19/07	TH-228	R	1.75746	8.96972E-01	3.862143	3.862143	1.02 G	88%	0.067366					
2.671E+02			(0.192596)	(6.7185E-02)	(0.370869)	(0.370869)	(0.017321)		0.020406					
12/19/07	TH-230	R	1.623739	8.53925E-01	3.676795	3.676795	1.02 G	88%	0.053784					
2.671E+02			(0.179916)	(6.5470E-02)	(0.358163)	(0.358163)	(0.017321)		0.014004					
12/19/07	TH-232	R	1.623737	8.53925E-01	3.676795	3.676795	1.02 G	88%	0.053784					
2.671E+02			(0.179916)	(6.5470E-02)	(0.358163)	(0.358163)	(0.017321)		0.014004					
12/19/07	Th-234	R	233.895606	2.38600E+02	529.63374	529.63374	1.02 G	88%						
2.671E+02			(15.862245)	(3.4649E+00)	(22.538266)	(22.538266)	(0.017321)							

Sq	Calc S1 SOLID	*STLE AlplsoWoBS	KCMQH1AC	pCi/g		11/19/07 08:15 <th>12/19/07 12:46 <th></th> <th>603.73 Alq <th>1 <th>g <th></th> </th></th></th></th>	12/19/07 12:46 <th></th> <th>603.73 Alq <th>1 <th>g <th></th> </th></th></th>		603.73 Alq <th>1 <th>g <th></th> </th></th>	1 <th>g <th></th> </th>	g <th></th>	
445691,TSB-GJ-03-0				SOLID							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	12/19/07 11:06	TH-228	75	1	ALP177	COP	N	N	2.1204E-01		N	46%	N	1.0000E+00	4.5045E-01	1.0304E+00		
			199.7833333	998.95			Y		(6.361E-03)			2%		(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

RecCnt:14 RADCALC v4.8.29  
 TA Richland

Alpha Spec, Thlso by ALP , Calculated Results

Batch Nbr: 7330520

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	BIK/LcC/MDC	StdV/MdC/LcC
1	12/19/07 11:06	TH-230	59	0	ALP177 COP	N	N	2.1204E-01 (6.361E-03)	N	46%	N	1.0000E+00 (0.000E+00)	4.5045E-01 0.990099	1.0000E+00
			199.7833333	998.95		Y				2%				
2	12/19/07 11:06	TH-232	84	0	ALP177 COP	N	N	2.1204E-01 (6.361E-03)	N	46%	N	1.0000E+00 (0.000E+00)	4.5045E-01 0.990099	1.0000E+00
			199.7833333	998.95		Y				2%				
3	12/19/07 07:32	Th-234	2448	792	GPC30B COP	Y	N	4.3771E-01 (1.751E-02)	N	100%	N	1.0000E+00 (0.000E+00)	4.5045E-01 0.990099	1.0000E+00
			20	500		Y								

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	
15	Calc	S1	SOLID	*STLE	AlpIsoWoBS	KCMQJAC	pCi/g			11/19/07 08:30	12/19/07 12:46				1	9		
																602.71	Alq	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	12/19/07 11:06	TH-228	146	3	ALP116 COP	N	N	2.1858E-01	(6.557E-03)	N	N	97%	N	1.0000E+00 (0.000E+00)	4.5045E-01 0.990099	1.0304E+00		
			200	1000.0666		Y						5%						
1	12/19/07 11:06	TH-230	102	0	ALP116 COP	N	N	2.1858E-01	(6.557E-03)	N	N	97%	N	1.0000E+00 (0.000E+00)	4.5045E-01 0.990099	1.0000E+00		
			200	1000.0666		Y						5%						
2	12/19/07 11:06	TH-232	122	1	ALP116 COP	N	N	2.1858E-01	(6.557E-03)	N	N	97%	N	1.0000E+00 (0.000E+00)	4.5045E-01 0.990099	1.0000E+00		
			200	1000.0666		Y						5%						
3	12/19/07 07:32	Th-234	5155	775	GPC30C COP	Y	N	4.3880E-01	(1.755E-02)	N	N	100%	N	1.0000E+00 (0.000E+00)	4.5045E-01 0.990099	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	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BIK/LcC/MDC	StdV/MdC/LcC
	12/19/07	TH-228	R 1.577782	7.27000E-01	3.433377	3.433377	3.433377	3.433377	1.01 G	97%	0.068491			
	2.688E+02		(0.181973)	(6.0440E-02)	(0.351951)	(0.351951)	(0.351951)	(0.351951)	(0.017321)		0.019554			
	12/19/07	TH-230	R 1.074194	5.10000E-01	2.408558	2.408558	2.408558	2.408558	1.01 G	97%	0.050439			
	2.688E+02		(0.136715)	(5.0507E-02)	(0.278854)	(0.278854)	(0.278854)	(0.278854)	(0.017321)		0.010956			
	12/19/07	TH-232	R 1.282713	6.09000E-01	2.876102	2.876102	2.876102	2.876102	1.01 G	97%	0.050439			
	2.688E+02		(0.15508)	(5.5236E-02)	(0.312726)	(0.312726)	(0.312726)	(0.312726)	(0.017321)		0.010956			
	12/19/07	Th-234	R 260.398048	2.56200E+02	583.865087	583.865087	583.865087	583.865087	1.01 G	97%	0.050439			
	2.688E+02		(17.642764)	(3.5903E+00)	(24.746431)	(24.746431)	(24.746431)	(24.746431)	(0.017321)		0.010956			

Alpha Spec, Thlso by ALP , Calculated Results

Sq	Calc	Matrix	Method	Equation Set	Wkr Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol			
16	Calc	S1	SOLID	*STLE AlpiSoWoBS	KCV2Q1AA	pCi/g	B	11/19/07 08:40	12/19/07 12:46		602.08 Alq	1	g				
0			INTRA-LAB BLANK			SOLID							1.03 g				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/19/07 11:06	TH-228	0	1	ALP117	COP	N	N	3.6088E-01	N	N	85%	N	1.0000E+00	4.5045E-01	1.0304E+00	
			200.0166666	1000.0333			Y		(1.083E-02)			4%		(0.000E+00)	0.970874		
1	12/19/07 11:06	TH-230	2	0	ALP117	COP	N	N	3.6088E-01	N	N	85%	N	1.0000E+00	4.5045E-01	1.0000E+00	
			200.0166666	1000.0333			Y		(1.083E-02)			4%		(0.000E+00)	0.970874		
2	12/19/07 11:06	TH-232	0	0	ALP117	COP	N	N	3.6088E-01	N	N	85%	N	1.0000E+00	4.5045E-01	1.0000E+00	
			200.0166666	1000.0333			Y		(1.083E-02)			4%		(0.000E+00)	0.970874		
3	12/19/07 07:32	Th-234	4539	533	GPC30D	COP	Y	N	4.4042E-01	N	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00	
			20	500			Y		(1.762E-02)					(0.000E+00)	0.970874		
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Bk	Dpm-Bk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC			
12/19/07	TH-228	R	-0.001466	U4	-9.99967E-04	-0.003253	-0.003253	1.03 G	85%	0.0351							
2.633E+02			(0.007475)		(5.0986E-03)	(0.016586)	(0.016586)	(0.017321)		0.007625							
12/19/07	TH-230	R	0.014225	U4	9.99917E-03	0.032526	0.032526	1.03 G	85%	0.034065							
2.633E+02			(0.010222)		(7.1408E-03)	(0.023311)	(0.023311)	(0.017321)		0.0074							
12/19/07	TH-232	R	0.00E00	U4	0.00000E+00	0.00E00	0.00E00	1.03 G	85%	0.034065							
2.633E+02			(0.007253)		(5.0986E-03)	(0.016585)	(0.016585)	(0.017321)		0.0074							
12/19/07	Th-234	R	224.299241		2.25884E+02	512.883157	512.883157	1.03 G	85%								
2.633E+02			(15.22134)		(3.3689E+00)	(21.894999)	(21.894999)	(0.017321)									
Sq	Calc	Matrix	Method	Equation Set	Wkr Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol			
17	Calc	S1	SOLID	*STLE AlpiSoWoBS	KCV2Q1AC	pCi/g	S	11/19/07 08:40	12/19/07 12:47		5.0967	1	g				
0			INTRA-LAB CHECK			SOLID							1.00 g				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/19/07 11:06	TH-228	3	1	ALP118	COP	N	N	3.5511E-01	N	N	90%	N	1.0000E+00	4.5045E-01	1.0304E+00	
			200.1	1000.0833			Y		(1.065E-02)			5%		(0.000E+00)	1.00		
1	12/19/07 11:06	TH-230	313	1	ALP118	COP	N	N	3.5511E-01	N	N	90%	N	1.0000E+00	4.5045E-01	1.0000E+00	
			200.1	1000.0833			Y		(1.065E-02)			5%		(0.000E+00)	1.00		
2	12/19/07 11:06	TH-232	0	3	ALP118	COP	N	N	3.5511E-01	N	N	90%	N	1.0000E+00	4.5045E-01	1.0000E+00	
			200.1	1000.0833			Y		(1.065E-02)			5%		(0.000E+00)	1.00		
3	12/19/07 07:54	Th-234	4933	725	GPC30A	COP	Y	N	4.5050E-01	N	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00	
			20	500			Y		(1.802E-02)					(0.000E+00)	1.00		

( ) - (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

RecCnt:17

RADGALC v4.8.29  
 TA Richland

Alpha Spec, Thiso 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	BiKLC/MDC	StdBvMdc/LcC
12/19/07	2.711E+02	TH-228	R	0.020222 (0.012696)	U4	1.39926E-02 (8.7135E-03)	0.043568 (0.027257)	0.043568 (0.027257)	1.00 G (0.017321)	90%		0.034594 0.007515		
12/19/07	2.711E+02	TH-230	R	2.192502 (0.214871)		1.56322E+00 (8.8420E-02)	4.867356 (0.401507)	4.867356 (0.401507)	1.00 G (0.017321)	90%	96%	0.033574 0.007294		
12/19/07	2.711E+02	TH-232	R	-0.004207 (0.007426)	U4	-2.99975E-03 (5.2891E-03)	-0.00934 (0.016478)	-0.00934 (0.016478)	1.00 G (0.017321)	90%		0.044247 0.012633		
12/19/07	2.711E+02	Th-234	R	245.172786 (16.637768)		2.45200E+02 (3.5122E+00)	544.284129 (23.125154)	544.284129 (23.125154)	1.00 G (0.017321)	90%				

(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

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RecCnt: 17  
 RADCALC v4.8.29  
 TA Richland

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 06:20:42.00

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>
19-DEC-2007 06:20:42.00	8543	20.00	725	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	27	671	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 06:20:42.00

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>
19-DEC-2007 06:20:42.00	8143	20.00	792	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	14	671	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.



TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report  
19-DEC-2007 06:20:42.00

LBPRINT - Rev#: 2.5

Sample ID	Isotope	Geometry
CAL6454	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
19-DEC-2007 06:20:42.00	8534	20.00	775	500.00	30C

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
2	29	671	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 06:20:42.00

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>
19-DEC-2007 06:20:42.00	8324	20.00	533	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	671	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 05:58:26.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMNL1AC	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>
19-DEC-2007 05:58:26.00	4057	20.00	725	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>
4	27	666	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 05:58:26.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMNW1AC	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>
19-DEC-2007 05:58:26.00	4398	20.00	792	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	14	666	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 05:58:26.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMNX1AC	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>
19-DEC-2007 05:58:26.00	4867	20.00	775	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	29	666	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report  
19-DEC-2007 05:58:26.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMN51AC	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>
19-DEC-2007 05:58:26.00	4314	20.00	533	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	12	666	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

**GPC Report**

19-DEC-2007 06:44:06.00

LBPRINT - Rev#: 2.5

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
KCMN51AF	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>
19-DEC-2007 06:44:06.00	5171	20.00	725	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>
7	27	665	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 06:44:06.00

LBPRINT - Rev#: 2.5

Sample ID	Isotope	Geometry
KCMN81AC	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
19-DEC-2007 06:44:06.00	4763	20.00	792	500.00	30B

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
2	14	665	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.



TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 06:44:06.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMPK1AC	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>
19-DEC-2007 06:44:06.00	4116	20.00	775	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>
5	29	665	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 06:44:06.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMPR1AC	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>
19-DEC-2007 06:44:06.00	4676	20.00	533	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>
6	12	665	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report  
19-DEC-2007 07:09:18.00

LBPRINT - Rev#: 2.5

Sample ID	Isotope	Geometry
KCMPT1AC	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
19-DEC-2007 07:09:18.00	4236	20.00	725	500.00	30A

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
4	27	679	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 07:09:18.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMPV1AC	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>
19-DEC-2007 07:09:18.00	2321	20.00	792	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	14	679	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 07:09:18.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMPX1AC	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>
19-DEC-2007 07:09:18.00	5152	20.00	775	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>
6	29	679	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 07:09:18.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMP51AC	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>
19-DEC-2007 07:09:18.00	4885	20.00	533	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	12	679	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 07:32:27.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMQF1AC	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>
19-DEC-2007 07:32:27.00	4801	20.00	725	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>
6	27	672	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 07:32:27.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMQH1AC	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>
19-DEC-2007 07:32:27.00	2448	20.00	792	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	14	672	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.



TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 07:32:27.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCMQJ1AC	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>
19-DEC-2007 07:32:27.00	5155	20.00	775	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	29	672	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 07:32:27.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCV2Q1AA	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>
19-DEC-2007 07:32:27.00	4539	20.00	533	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	672	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

TESTAMERICA LABORATORIES, INC.  
Richland, WA

GPC Report

19-DEC-2007 07:54:23.00

LBPRINT - Rev#: 2.5

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
KCV2Q1AC	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>
19-DEC-2007 07:54:23.00	4933	20.00	725	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	27	673	1492	19-DEC-2007 04:29:06.00

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

\* Count Durations in Minutes.

# THORIUM ISOTOPICT COUNTING REQUEST

1051

C.R. Technician CB  
Date Counted 12/19/05  
C.R. Analyst CB  
Date Analyzed 12/19/05

Counting Time 260 Minutes  
Sample 260  
SOP's RICHRD008  
Operating: RICHRD0016  
Review: 7330520

Background See Alpha Analysis Report  
SPC  
11/19/07

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)		
KCMNLIAC		10		0			171	
KCMNW1AC		10		0			172	
KCMNX1AC		10		0			176	
KCMN51AC		10		0			171	
KCMN51AF		10		0			113	
KCMN81AC		10		0			116	
KCMPKIAC		10		0			117	
KCMPRIAC		10		0			117	

Comments:

Approved by: S Date: 11/19/07

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

Sample Identity: KCMNL1AC

Detector: ALP171 1

Report Date: 19-Dec-07 11:01 AM

Acquire Date: 19-DEC-2007 07:31:04.95

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

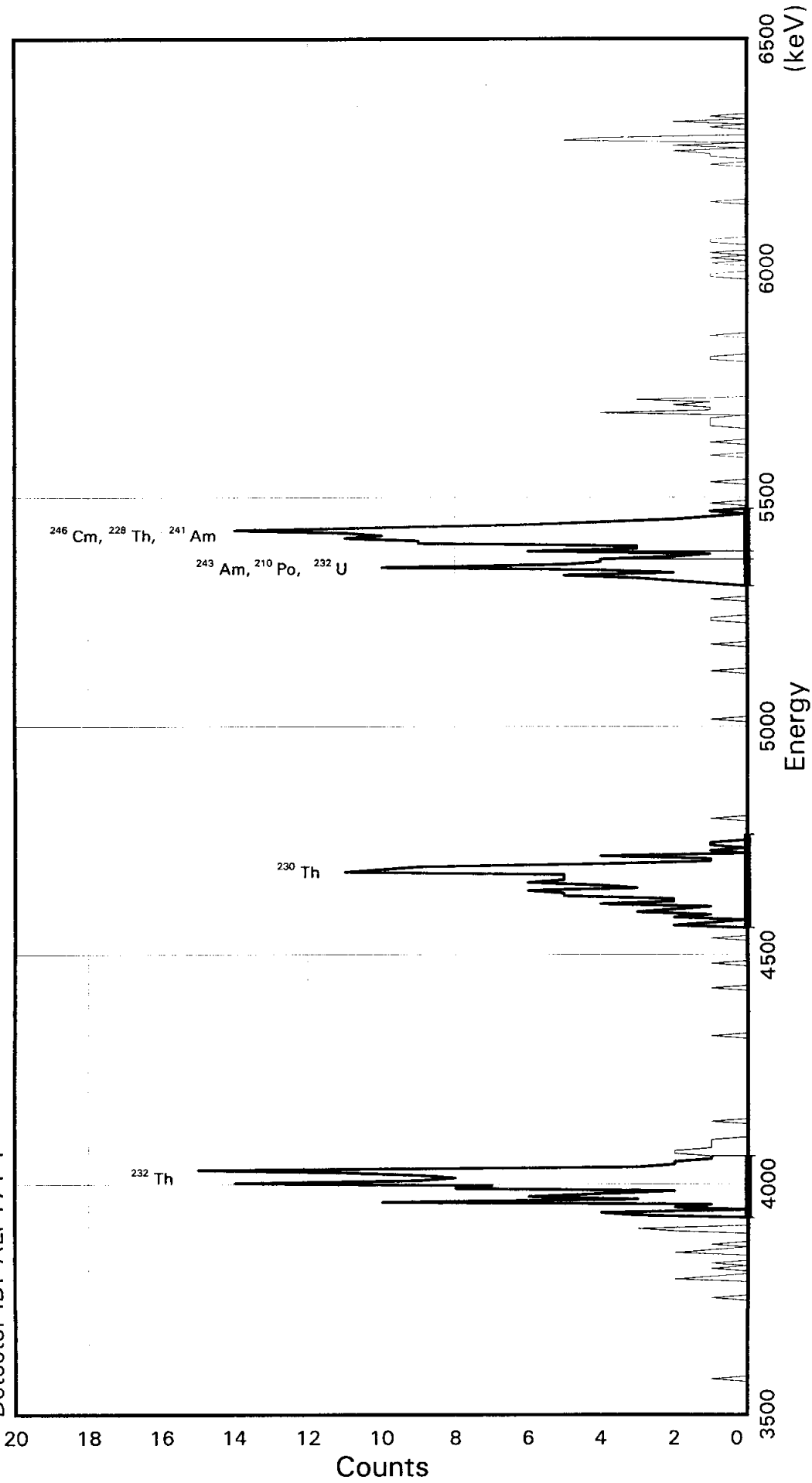
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	142	2	0.709	5423.2	157.2	311	338
TH-230	102	2	0.509	4687.7	163.0	188	216
TH-232	125	1	0.625	4013.0	133.9	74	97

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCMNL1AC  
Detector ID: ALP171 1

Batch ID: 7330520



Acquisition Start: 19-DEC-2007 07:31:04.95  
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: KCMNL1AC

TITLE : TH BRCO

DETECTOR : ALP171 1  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCMNL1AC\_191270731A.CN  
F;1  
ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 07:31:04 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: KCMNLJAC

Flags Key

Detector: ALP1/1.1

Report Date: 10 Dec 07 10:51 AM

Intersect Region: 0

Acquire Date: 10 DEC 2007 07:31:04.95

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



0 50 1 100 0 150 6 200 0 250 0 300 1 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 19-DEC-2007 10:51:20

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCMNL1AC_191270731A.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 07:31:04
Sample ID        : KCMNL1AC Sample quantity : 0.000000E+00 LITER
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	4014.44	125	0	52.37	89.05	74	23	1.04E-02	8.9	
2	0	4684.24	108	0	40.73	204.12	183	35	9.01E-03	9.6	
3	0	5345.23	41	0	34.91	317.65	311	13	3.42E-03	15.6	
4	0	5418.45	101	0	52.37	330.22	321	19	8.43E-03	10.0	

Error Report (Date: 19-Dec-07 10:51 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: KCMNW1AC

Detector: ALP171 2

Report Date: 19-Dec-07 11:02 AM

Acquire Date: 19-DEC-2007 07:31:04.95

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

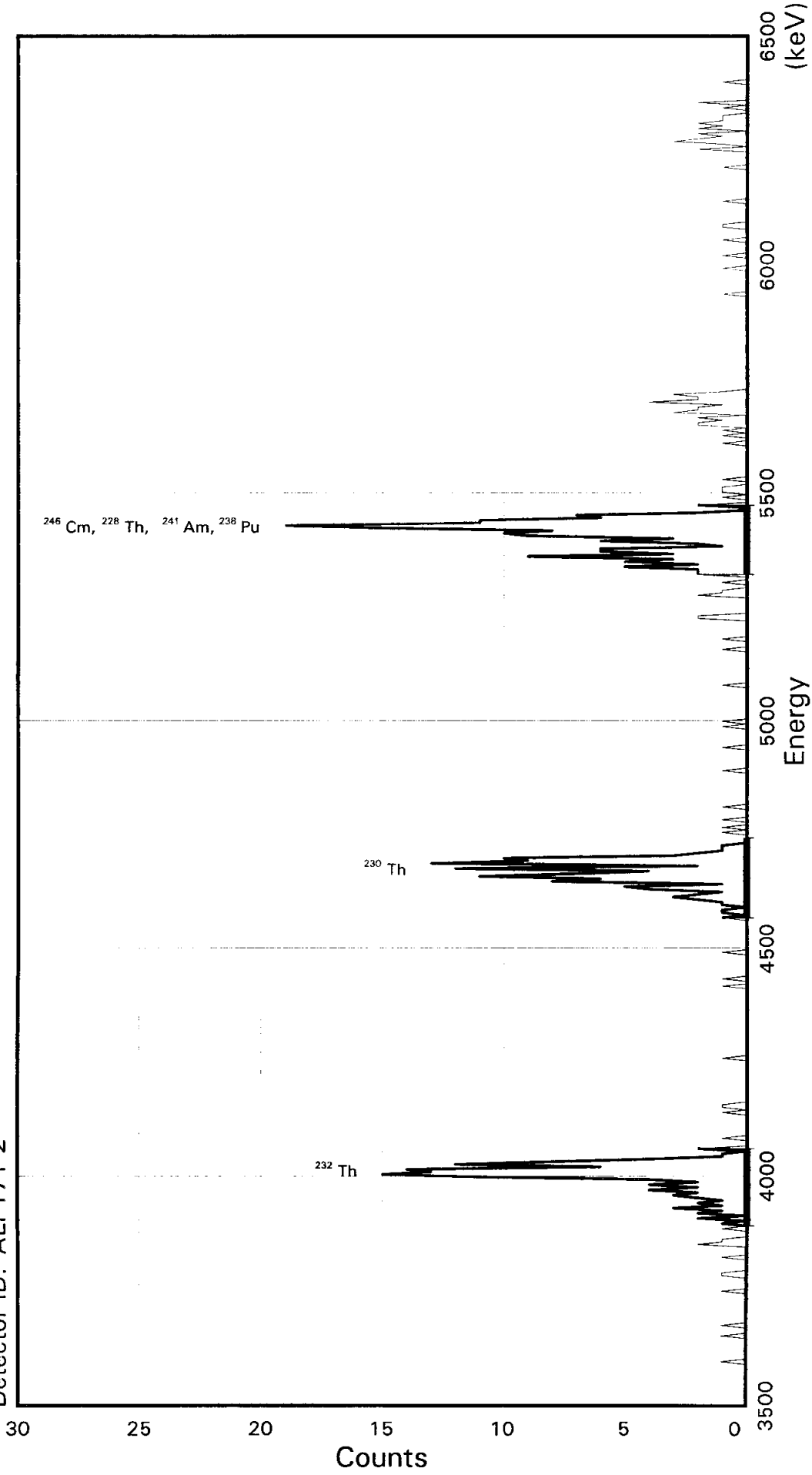
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	156	0	0.781	5423.2	175.2	312	343
TH-230	107	1	0.535	4687.7	113.0	190	210
TH-232	119	1	0.595	4013.0	141.3	66	91

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCMNW1AC  
Detector ID: ALP171 2

Batch ID: 7330520



Acquisition Start: 19-DEC-2007 07:31:04.95  
Preset Live Time: 0 08:20:00.00  
Elapsed Live Time: 0 03:19:47.00

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

SAMPLE IDENTIITY: KCMNW1AC

TITLE : TH BRCO

DETECTOR : ALP171 2  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCMNW1AC\_191270731B.CN  
F;1  
ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 07:31:04 CALIB DATE : 09-DEC-2007 00:49:05

PRESET LIVE TIME: 0 08:20:00 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: KCMNW1AC

Flags Key

Detector: ALP1/1 2

Report Date: 19 Dec 07 10:51 AM

Intersect Region: 4

Acquire Date: 19 DEC 2007 07:31:04.95

Non-Intersect Region: 6,

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

0 50 0 100 0 150 11 200 1 250 2 300 1 350 0 400 0 450 2 500



VMS Peak Search Report V1.9 Generated 19-DEC-2007 10:51:27

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCMNW1AC_191270731B.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 07:31:04
Sample ID         : KCMNW1AC Sample quantity : 0.00000E+00 LITER
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	4011.94	124	0	45.23	85.45	64	30	1.03E-02	9.0	
2	0	4674.83	114	0	67.85	202.72	184	31	9.51E-03	9.4	
3	0	5425.78	155	0	45.23	335.58	317	27	1.29E-02	8.0	

Error Report (Date: 19-Dec-07 10:51 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: KCMNX1AC

Detector: ALP171 6

Report Date: 19-Dec-07 11:02 AM

Acquire Date: 19-DEC-2007 07:31:04.95

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

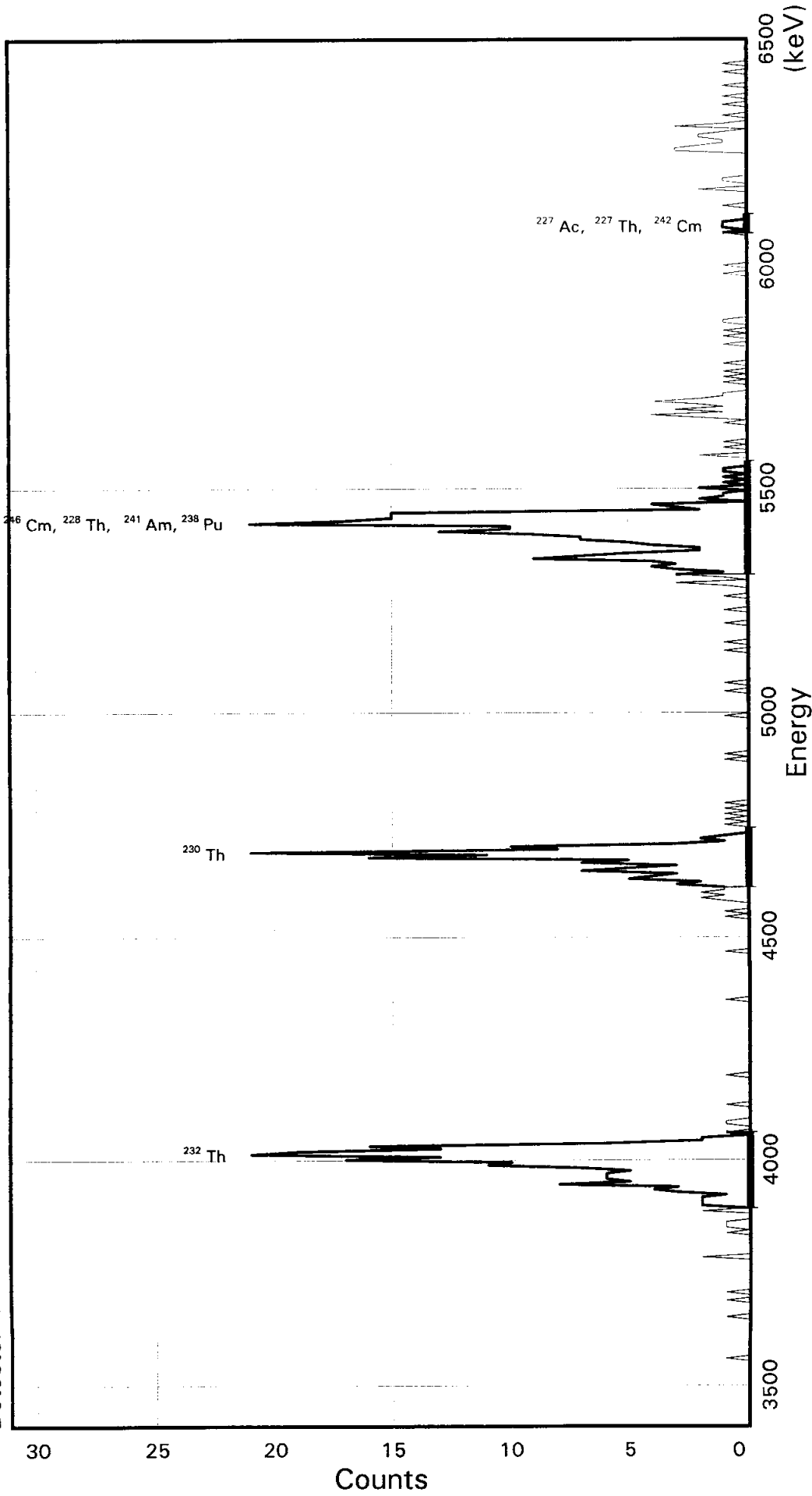
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	189	4	0.942	5423.2	139.2	321	344
TH-230	125	1	0.625	4687.7	163.3	195	222
TH-232	193	2	0.964	4013.0	175.2	83	112

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCMNX1AC  
Detector ID: ALP171 6

Batch ID: 7330520



Acquisition Start: 19-DEC-2007 07:31:04.95  
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: KCMNX1AC

TITLE : TH BRCO

DETECTOR : ALP171 6  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE] KCMNX1AC\_191270731F.CN

F;1  
ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 07:31:04 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: KCMNX1AC

Flags Key

Detector: ALP171 6

Report Date: 19 Dec 07 10:51 AM

Intersect Region: 0

Acquire Date: 19 DEC 2007 07:01:04.95

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	0	51	17	181	0	151	1	201	1	251	0	301	1	351	0	401	0	451	0	501						
0	2	52	13	182	0	152	1	202	0	252	0	302	0	352	1	402	0	452	1	502						
0	3	53	21	183	0	153	3	203	0	253	0	303	1	353	0	403	1	453	0	503						
0	4	54	19	184	0	154	2	204	0	254	1	304	0	354	0	404	0	454	0	504						
0	5	55	13	185	0	155	5	205	0	255	0	305	1	355	1	405	0	455	1	505						
0	6	56	16	186	0	156	4	206	0	256	0	306	1	356	0	406	0	456	0	506						
0	7	57	6	187	0	157	3	207	0	257	0	307	0	357	1	407	0	457	0	507						
0	8	58	2	188	0	158	7	208	0	258	0	308	0	358	0	408	0	458	0	508						
0	9	59	2	189	0	159	5	209	0	259	1	309	0	359	0	409	2	459	0	509						
0	10	60	0	190	1	160	3	210	0	260	0	310	0	360	1	410	0	460	0	510						
0	11	61	1	191	0	161	7	211	0	261	0	311	2	361	1	411	0	461	0	511						
0	12	62	0	192	0	162	5	212	0	262	0	312	0	362	0	412	1	462	0	512						
0	13	63	0	193	0	163	16	213	0	263	1	313	0	363	0	413	1	463								
0	14	64	1	194	0	164	11	214	0	264	3	314	1	364	0	414	0	464								
0	15	65	1	195	0	165	21	215	1	265	0	315	0	365	0	415	0	465								
0	16	66	0	196	0	166	8	216	0	266	1	316	1	366	0	416	0	466								
0	17	67	0	197	0	167	10	217	0	267	3	317	0	367	0	417	0	467								
0	18	68	0	198	0	168	3	218	0	268	1	318	0	368	0	418	0	468								
0	19	69	0	199	0	169	1	219	0	269	3	319	0	369	0	419	0	469								
0	20	70	0	200	0	170	2	220	0	270	4	320	0	370	0	420	0	470								
0	21	71	1	201	0	171	1	221	0	271	3	321	0	371	0	421	0	471								
0	22	72	0	202	0	172	0	222	0	272	4	322	0	372	0	422	0	472								
0	23	73	0	203	0	173	0	223	0	273	9	323	1	373	0	423	3	473								
0	24	74	0	204	0	174	0	224	1	274	7	324	0	374	0	424	3	474								
0	25	75	0	205	0	175	1	225	0	275	5	325	2	375	0	425	2	475								
0	26	76	0	206	0	176	0	226	0	276	2	326	4	376	0	426	1	476								
0	27	77	0	207	0	177	1	227	1	277	2	327	1	377	0	427	1	477								
1	28	78	0	208	1	178	0	228	0	278	4	328	3	378	1	428	2	478								
0	29	79	0	209	0	179	1	229	0	279	5	329	1	379	0	429	2	479								
0	30	80	0	210	0	180	0	230	0	280	7	330	2	380	0	430	1	480								
0	31	81	0	211	0	181	1	231	0	281	7	331	4	381	1	431	0	481								
0	32	82	1	212	0	182	0	232	0	282	9	332	2	382	0	432	3	482								
0	33	83	0	213	0	183	1	233	0	283	13	333	1	383	0	433	1	483								
0	34	84	0	214	0	184	0	234	0	284	10	334	1	384	0	434	0	484								
0	35	85	0	215	0	185	0	235	0	285	10	335	0	385	0	435	0	485								
0	36	86	0	216	0	186	0	236	0	286	21	336	0	386	0	436	1	486								
0	37	87	0	217	0	187	0	237	0	287	17	337	0	387	0	437	0	487								
0	38	88	0	218	0	188	0	238	0	288	15	338	1	388	0	438	0	488								
0	39	89	0	219	0	189	0	239	1	289	15	339	0	389	0	439	0	489								
0	40	90	0	220	0	190	0	240	0	290	15	340	1	390	0	440	1	490								
0	41	91	0	221	1	191	0	241	0	291	2	341	0	391	0	441	0	491								
0	42	92	0	222	0	192	0	242	1	292	3	342	1	392	0	442	0	492								
1	43	93	0	223	1	193	0	243	0	293	4	343	0	393	1	443	1	493								
0	44	94	0	224	0	194	0	244	0	294	0	344	0	394	0	444	0	494								
0	45	95	0	225	0	195	0	245	0	295	2	345	1	395	1	445	0	495								
0	46	96	0	226	0	196	0	246	0	296	1	346	0	396	1	446	0	496								
0	47	97	0	227	1	197	0	247	0	297	1	347	0	397	1	447	1	497								
0	48	98	0	228	2	198	0	248	0	298	0	348	0	398	0	448	0	498								
1	49	99	0	229	1	199	1	249	1	299	2	349	0	399	0	449	0	499								

0 50 100 150 200 250 300 350 400 450 500

VMS Peak Search Report V1.9 Generated 19-DEC-2007 10:51:31

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCMNX1AC_191270731F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 07:31:04
Sample ID         : KCMNX1AC           Sample quantity  : 0.000000E+00 LITER
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	4011.44	194	0	48.30	102.72	83	28	1.62E-02	7.2	
2	0	4686.98	115	0	36.22	214.49	202	22	9.59E-03	9.3	
3	0	5423.43	210	0	54.33	336.22	317	42	1.75E-02	6.9	
4	0	6085.06	4	0	24.15	445.50	443	7	3.34E-04	50.0	



Error Report (Date: 19-Dec-07 10:51 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: KCMN51AC

Detector: ALP171 7

Report Date: 19-Dec-07 11:02 AM

Acquire Date: 19-DEC-2007 07:31:04.95

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

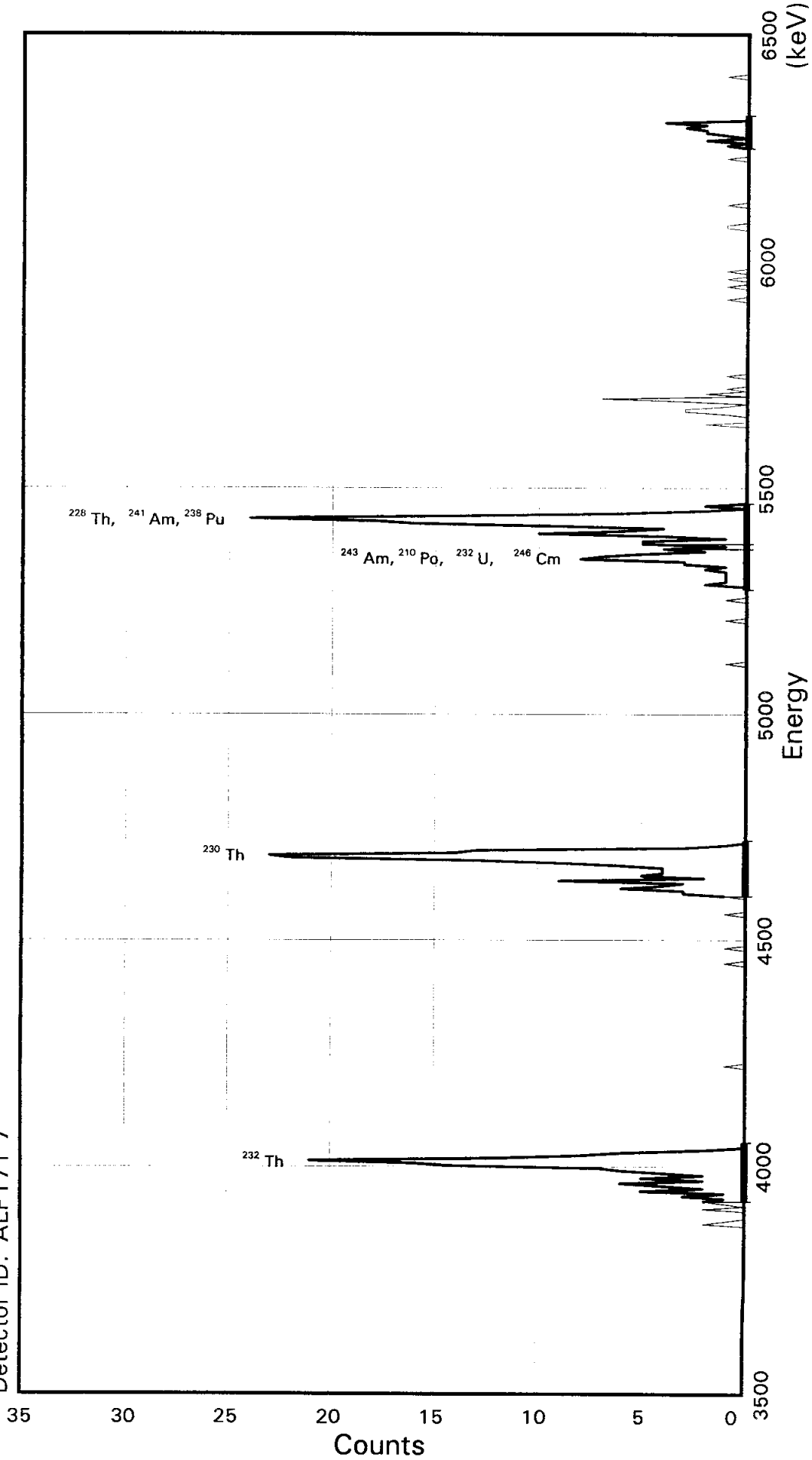
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Right
			C/Min	keV	keV	Chnl	Chnl
TH-228	162	1	0.810	5423.2	140.8	305	330
TH-230	152	0	0.761	4687.7	123.9	178	200
TH-232	127	0	0.636	4013.0	112.7	60	80

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCMN51AC  
Detector ID: ALP171 7

Batch ID: 7330520



Acquisition Start: 19-DEC-2007 07:31:04.95  
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: KCMN51AC

TITLE : TH BRCO

DETECTOR : ALP171 7  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCMN51AC\_191270731G.CN  
F;1  
ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 07:31:04 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: KCMN51AC  
 Detector: ALP171 7  
 Report Date: 19 Dec 07 10:55 AM  
 Acquire Date: 19 DEC 2007 07:31:04.95

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

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

VMS Peak Search Report V1.9 Generated 19-DEC-2007 10:55:48

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCMN51AC_191270731G.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 07:31:04
Sample ID         : KCMN51AC           Sample quantity  : 0.000000E+00 LITER
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	4010.51	130	0	33.80	74.53	59	23	1.08E-02	8.8	
2	0	4688.29	155	0	28.17	194.86	179	22	1.29E-02	8.0	
3	0	5343.99	40	0	28.17	311.27	299	18	3.34E-03	15.8	
4	0	5429.73	127	0	22.53	326.49	315	18	1.06E-02	8.9	
5	0	6294.78	18	0	28.17	480.08	472	13	1.50E-03	23.6	

Error Report (Date: 19-Dec-07 10:55 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: KCMN51AF

Detector: ALP113 1

Report Date: 19-Dec-07 11:03 AM

Acquire Date: 19-DEC-2007 07:31:28.12

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgnd Live Time: 1000 minutes

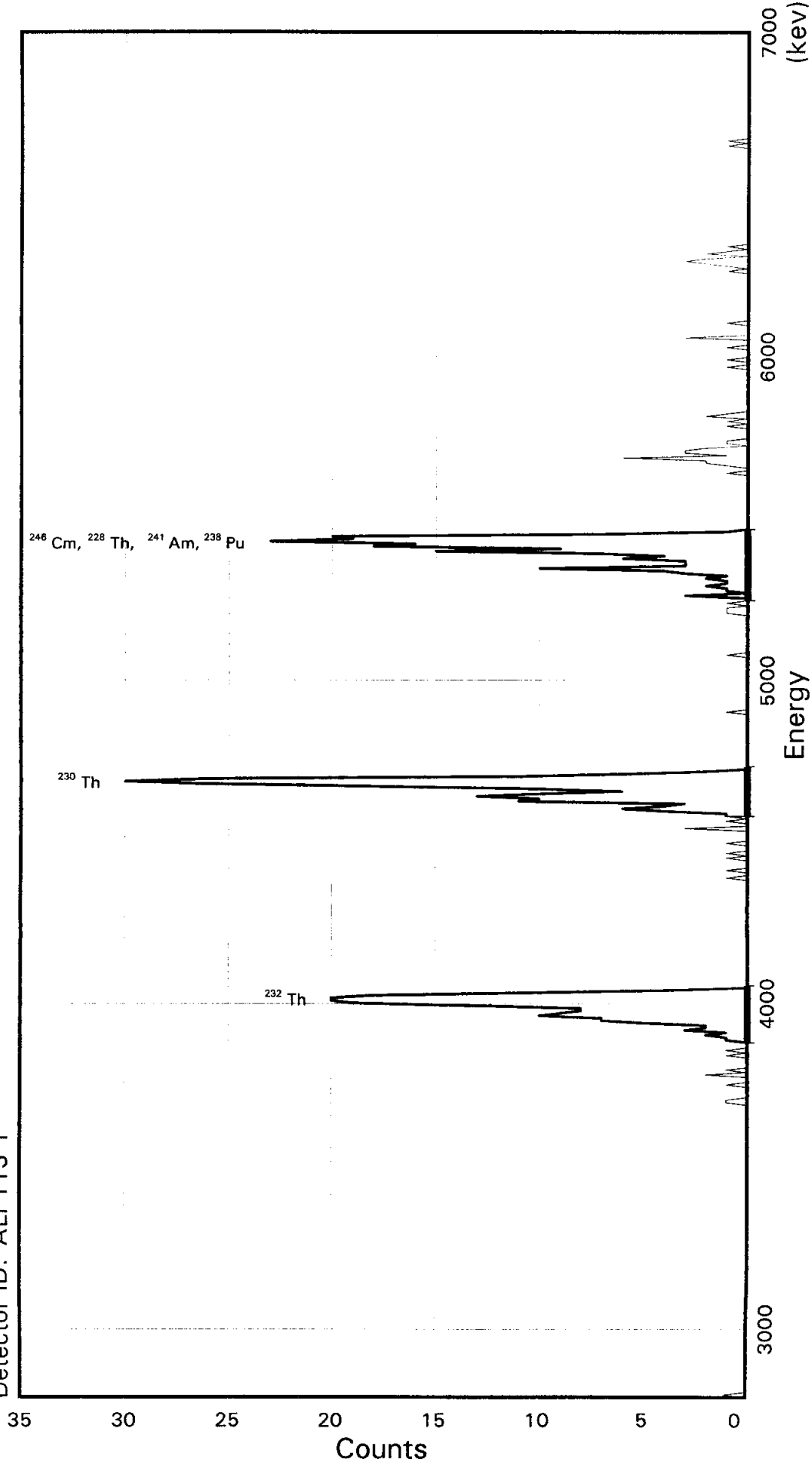
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	175	3	0.872	5423.2	152.2	332	352
TH-230	198	0	0.990	4687.7	152.6	236	256
TH-232	170	1	0.849	4013.0	153.0	147	167

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCMN51AF  
Detector ID: ALP113 1

Batch ID: 7330520



Acquisition Start: 19-DEC-2007 07:31:28.12  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:03.00

Energy Coefficients:  
Offset: 2.76783E+03  
Slope: 7.67924E+00  
Quadrature: -1.00704E-04

SAMPLE IDENTIITY: KCMN51AF

TITLE : TH BRCO

DETECTOR : ALP113 1  
CONFIGURATION NAME : RDND06\$DKA100: [ALP113.SAMPLE] KCMN51AF\_191270  
731.CNF;1  
ACQUIRE DATE of BACKGROUND: 13-DEC-2007 07:56:34

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 07:31:28 CALIB DATE : 13-DEC-2007 07:46:33

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

OFFSET : 2767.83 keV CONSTANT FWHM : 6.00000 Channels  
SLOPE : 7.67924 keV/C SENSITIVITY : 6.00000 Std Dev's  
QUAD COEFF : -.100704E-03 keV/C^2 SUM SENSITIVITY: 0.10000 %

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

Sample Identity: KCMN51AF

Flags Key

Detector: ALP113 1

Report Date: 19 Dec 07 10:51 AM

Intersect Region: +

Acquire Date: 19 DEC 2007 07:31:28.12

Non Intersect Region: -

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

0 50 0 100 3 150 0 200 26 250 0 300 20 350 1 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 19-DEC-2007 10:51:33

```

Configuration      : RDND06$DKA100:[ALP113.SAMPLE]KCMN51AF_191270731.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 07:31:28
Sample ID         : KCMN51AF           Sample quantity  : 0.000000E+00 LITER
Sample type       : disk               Sample geometry   :
Detector name     : ALP113            Detector geometry:
Elapsed live time: 0 03:20:03.00      Elapsed real time: 0 03:20:03.00   0.0%
Start energy      : 2790.87 kev        End energy        : 6673.21 kev
Sensitivity       : 6.00                Sum Sensitivity   : 0.10
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4012.55	169	0	46.08	162.43	145	23	1.41E-02	7.7	
2	0	4686.02	198	0	30.72	250.61	237	20	1.65E-02	7.1	
3	0	5423.01	181	0	53.75	347.34	324	29	1.51E-02	7.4	

Error Report (Date: 19-Dec-07 10:51 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: KCMN81AC

Detector: ALP116 1

Report Date: 19-Dec-07 11:03 AM

Acquire Date: 19-DEC-2007 07:31:36.52

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 1000 minutes

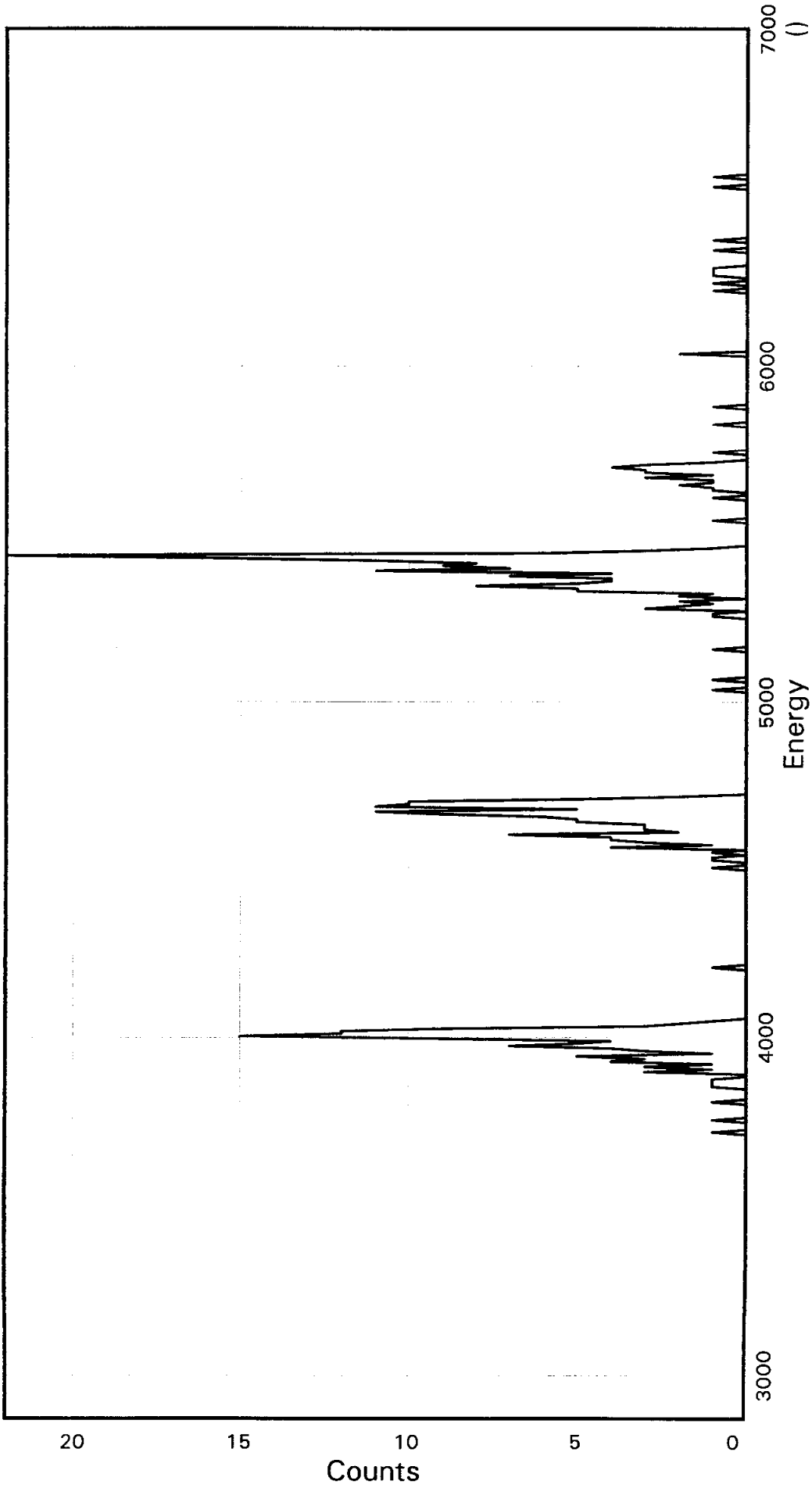
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	139	2	0.693	5423.2	150.4	326	346
TH-230	109	0	0.545	4687.7	150.6	229	249
TH-232	107	1	0.534	4013.0	165.9	137	159

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCMN81AC  
Detector ID: ALP116 1

Batch ID: 7330520



Acquisition Start: 19-DEC-2007 07:31:36.52  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:01.00

Energy Coefficients:  
Offset: 2.84932E+03  
Slope: 7.55805E+00  
Quadrature: -5.87815E-05

SAMPLE IDENTIITY: KCMN81AC

TITLE : TH BRCO

DETECTOR : ALP116 1  
CONFIGURATION NAME : RDND06\$DKA100:[ALP116.SAMPLE]KCMN81AC\_191270  
731.CNF;1  
ACQUIRE DATE of BACKGROUND: 13-DEC-2007 07:56:36

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 07:31:36 CALIB DATE : 13-DEC-2007 07:46:27

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:01

OFFSET : 2849.32 keV CONSTANT FWHM : 8.83333 Channels  
SLOPE : 7.55805 keV/C SENSITIVITY : 6.00000 Std Dev's  
QUAD COEFF : -.587815E-04 keV/C^2 SUM SENSITIVITY: 0.10000 %



0 50 0 100 5 150 0 200 0 250 0 300 0 350 0 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 19-DEC-2007 10:51:39

Configuration : RDND06\$DKA100:[ALP116.SAMPLE]KCMN81AC\_191270731.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : TH BRCO  
Sample date : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 07:31:36  
Sample ID : KCMN81AC Sample quantity : 0.000000E+00 LITER  
Sample type : disk Sample geometry :  
Detector name : ALP116 Detector geometry:  
Elapsed live time: 0 03:20:01.00 Elapsed real time: 0 03:20:01.00 0.0%  
Start energy : 2872.00 End energy : 6703.63  
Sensitivity : 6.00 Sum Sensitivity : 0.10  
No peaks were found

Error Report (Date: 19-Dec-07 10:51 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: KCMPK1AC

Detector: ALP117 1

Report Date: 19-Dec-07 11:04 AM

Acquire Date: 19-DEC-2007 07:31:43.69

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 1000 minutes

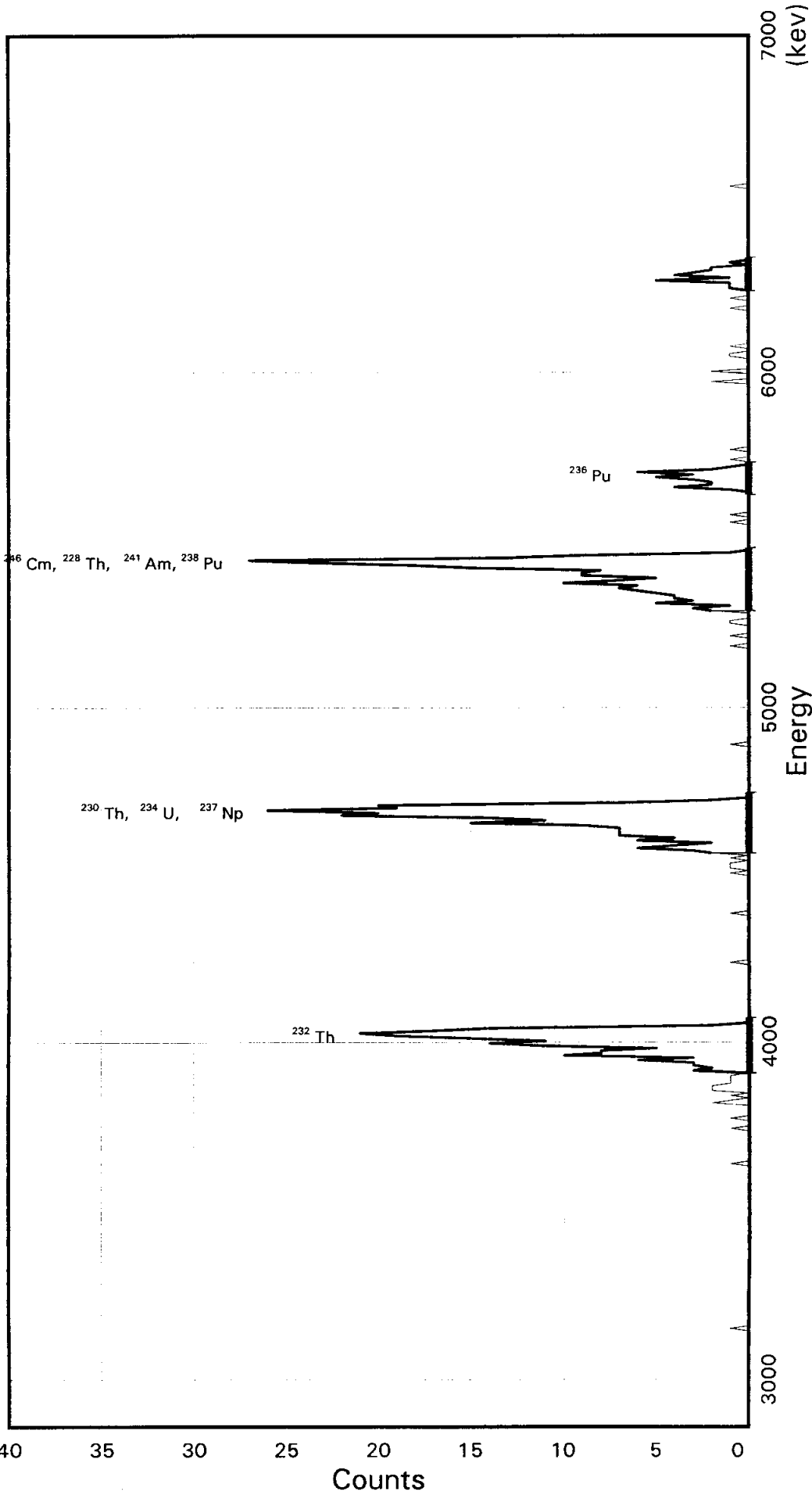
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	200	1	0.999	5423.2	187.9	325	350
TH-230	221	0	1.104	4687.7	187.6	228	253
TH-232	178	0	0.890	4013.0	179.8	140	164

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7330520

Sample ID: KCMPK1AC  
Detector ID: ALP117 1



Energy Coefficients:  
Offset: 2.83750E +03  
Slope: 7.47254E +00  
Quadrature: 6.43952E-05

Acquisition Start: 19-DEC-2007 07:31:43.69  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:06.00

SAMPLE IDENTIITY: KCMPK1AC

TITLE : TH BRCO

DETECTOR : ALP117 1  
CONFIGURATION NAME : RDND06\$DKA100: [ALP117.SAMPLE] KCMPK1AC\_191270  
731.CNF;1  
ACQUIRE DATE of BACKGROUND: 13-DEC-2007 07:56:39

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 07:31:43 CALIB DATE : 13-DEC-2007 07:46:43

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:06

OFFSET : 2837.50 keV CONSTANT FWHM : 8.00000 Channels  
SLOPE : 7.47254 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 6.439520E-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: KCMFKCAC  
Detector: ALP117.1

Report Date: 19 Dec 07 10:51 AM

Acquire Date: 19 DEC 2007 07:31:43.60

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

0 50 0 100 10 150 0 200 20 250 0 300 1 350 0 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 19-DEC-2007 10:51:52

```

Configuration      : RDND06$DKA100:[ALP117.SAMPLE]KCMFK1AC_191270731.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 07:31:43
Sample ID         : KCMFK1AC           Sample quantity  : 0.00000E+00 LITER
Sample type       : disk               Sample geometry   :
Detector name     : ALP117            Detector geometry:
Elapsed live time: 0 03:20:06.00      Elapsed real time: 0 03:20:06.00    0.0%
Start energy      : 2859.92 keV        End energy        : 6680.32 keV
Sensitivity       : 3.00                Sum Sensitivity   : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4017.85	176	0	59.78	157.74	143	22	1.47E-02	7.5	
2	0	4688.34	220	0	52.31	247.16	231	24	1.83E-02	6.7	
3	0	5431.18	201	0	37.36	346.06	327	25	1.67E-02	7.1	
4	0	5690.81	30	0	44.84	380.59	373	13	2.50E-03	18.3	
5	0	6281.80	20	0	52.31	459.11	454	13	1.67E-03	22.4	

Error Report (Date: 19-Dec-07 10:51 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: KCMPR1AC

Detector: ALP118 1

Report Date: 19-Dec-07 11:04 AM

Acquire Date: 19-DEC-2007 07:31:50.10

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 1000 minutes

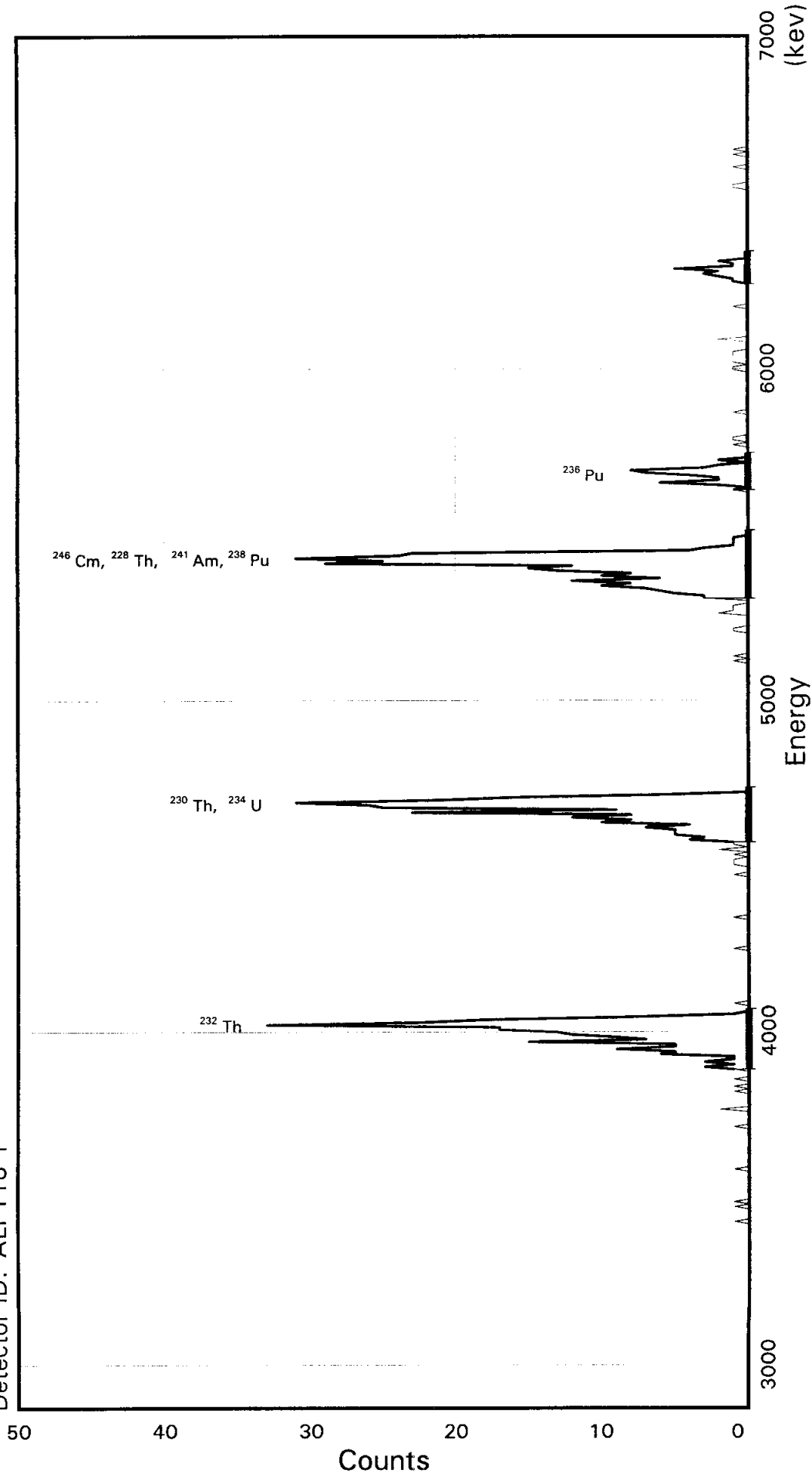
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	261	3	1.301	5423.2	204.7	324	351
TH-230	232	1	1.159	4687.7	181.4	225	249
TH-232	208	3	1.037	4013.0	150.8	140	160

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7330520

Sample ID: KCMR1AC  
Detector ID: ALP118 1



Acquisition Start: 19-DEC-2007 07:31:50.10  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:05.00

Energy Coefficients:  
Offset: 2.84842E + 03  
Slope: 7.50369E + 00  
Quadrature: 1.12667E-04

SAMPLE IDENTIITY: KCMPR1AC

TITLE : TH BRCO

DETECTOR : ALP118 1  
CONFIGURATION NAME : RDND06\$DKA100: [ALP118.SAMPLE] KCMPR1AC\_191270  
731.CNF;1  
ACQUIRE DATE of BACKGROUND: 13-DEC-2007 07:56:41

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 07:31:50 CALIB DATE : 13-DEC-2007 07:46:47

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:05

OFFSET : 2848.42 keV CONSTANT FWHM : 7.83333 Channels  
SLOPE : 7.50369 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 1.126670E-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: KCMPR1AC

Flags Key

Detector: ALP118 1

Report Date: 19 Dec 07 10:51 AM

Intersect Region: 0

Acquire Date: 19 DEC 2007 07:31:50.10

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

0 50 0 100 7 150 0 200 0 250 0 300 1 350 1 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 19-DEC-2007 10:51:58

```

Configuration      : RDND06$DKA100:[ALP118.SAMPLE]KCMPR1AC_191270731.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 07:31:50
Sample ID         : KCMPR1AC Sample quantity : 0.000000E+00 LITER
Sample type       : disk Sample geometry :
Detector name     : ALP118 Detector geometry:
Elapsed live time: 0 03:20:05.00 Elapsed real time: 0 03:20:05.00 0.0%
Start energy      : 2870.93 kev End energy : 6719.85 kev
Sensitivity       : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4019.42	212	0	45.02	155.69	138	24	1.77E-02	6.9	
2	0	4686.91	230	0	52.53	244.12	229	22	1.92E-02	6.6	
3	0	5424.31	258	0	45.02	341.53	326	27	2.15E-02	6.2	
4	0	5678.15	38	0	60.03	375.00	369	15	3.17E-03	16.2	
5	0	6296.58	19	0	45.02	456.40	451	13	1.58E-03	22.9	

Error Report (Date: 19-Dec-07 10:52 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

C.R. Technician CS  
Date Counted 12/19/15  
C.R. Analyst CP  
Date Analyzed 12/19/15

Counting Time 200 Minutes  
Sample 200  
Background See Alpha Analysis Report  
SOP's RICHRD008  
Operating: RICHRD0016  
Review: 7330520

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)		
KCMPTIAC		10		0	See Alpha Analysis Report for ROI Information			119
		10		0	See Alpha Analysis Report for ROI Information			120
KCMPTIAC		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: CS

Date: 12/19/15

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

Sample Identity: KCMPT1AC

Detector: ALP119 1

Report Date: 19-Dec-07 11:04 AM

Acquire Date: 19-DEC-2007 07:32:05.45

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 1000 minutes

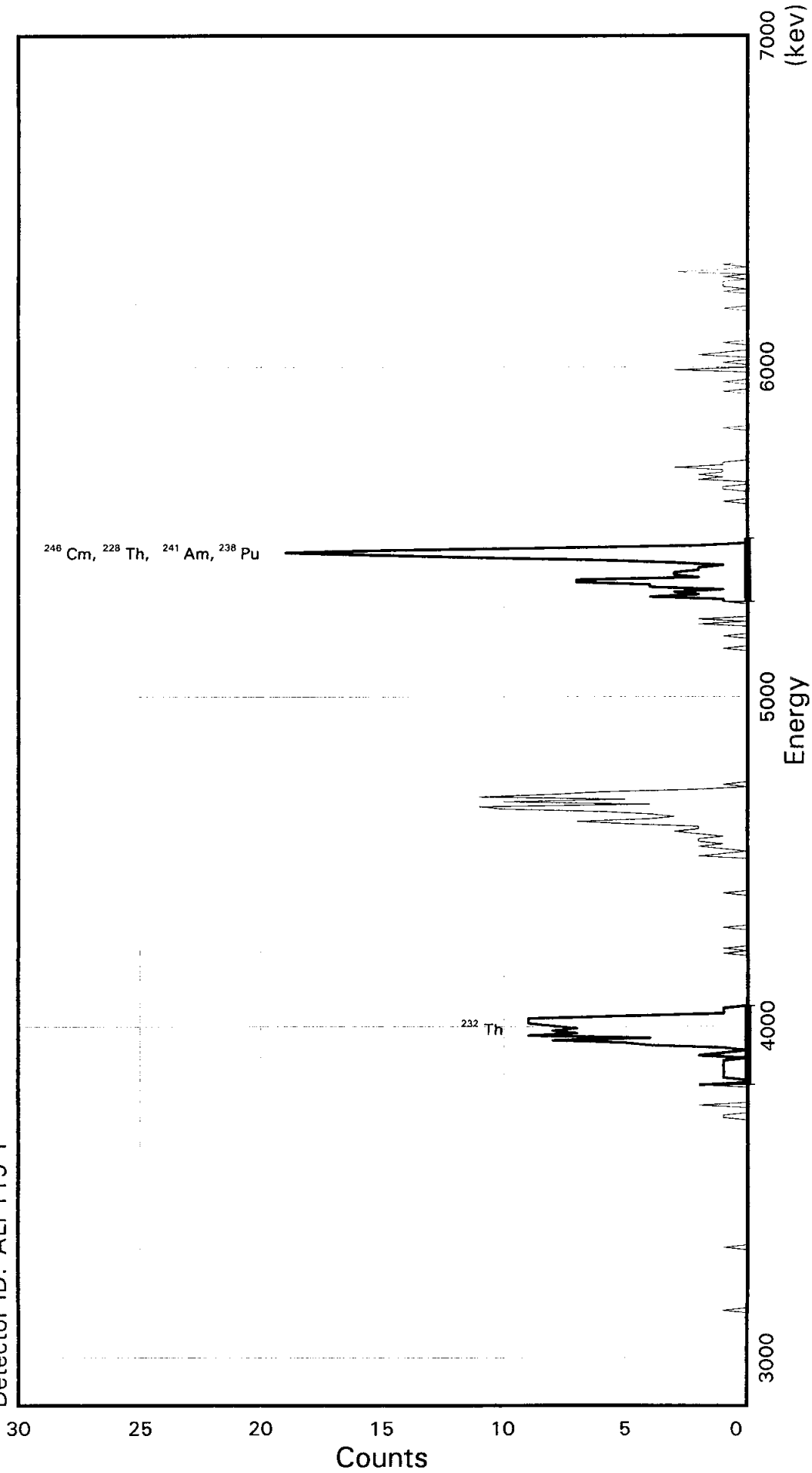
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	126	2	0.628	5423.2	178.3	327	351
TH-230	106	0	0.530	4687.7	149.4	232	252
TH-232	99	1	0.494	4013.0	150.2	141	161

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7330520

Sample ID: KCMPT1AC  
Detector ID: ALP119 1



Acquisition Start: 19-DEC-2007 07:32:05.45  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:01.00

Energy Coefficients:  
Offset: 2.83360E + 03  
Slope: 7.57054E + 00  
Quadrature: -2.06701E-04

SAMPLE IDENTIITY: KCMPT1AC

TITLE : TH BRCO

DETECTOR : ALP119 1

CONFIGURATION NAME : RDND06\$DKA100: [ALP119.SAMPLE]KCMPT1AC\_191270  
732.CNF;1

ACQUIRE DATE of BACKGROUND: 14-DEC-2007 05:57:17

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00

ACQUIRE DATE: 19-DEC-2007 07:32:05 CALIB DATE : 14-DEC-2007 00:36:57

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:01

OFFSET : 2833.60 keV CONSTANT FWHM : 8.66667 Channels

SLOPE : 7.57054 keV/C SENSITIVITY : 3.00000 Std Dev's

QUAD COEFF : -.206701E-03 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: KCMPTIAC  
Detector: ALP118-1  
Report Date: 19 DEC 2007 10:52 AM  
Acquire Date: 19 DEC 2007 07:32:05.45

Flags Key  
Intersect Region: I  
Non-Intersect Region: N

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

0 50 0 100 4 150 0 200 6 250 0 300 2 350 0 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 19-DEC-2007 10:52:09

Configuration : RDND06\$DKA100: [ALP119.SAMPLE] KCMPT1AC\_191270732.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : TH BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 07:32:05  
 Sample ID : KCMPT1AC Sample quantity : 0.00000E+00 LITER  
 Sample type : disk Sample geometry :  
 Detector name : ALP119 Detector geometry:  
 Elapsed live time: 0 03:20:01.00 Elapsed real time: 0 03:20:01.00 0.0%  
 Start energy : 2856.30 kev End energy : 6655.53 kev  
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	3992.14	107	0	90.85	153.68	131	32	8.92E-03	9.7	
2	0	5434.98	126	0	37.85	346.90	327	26	1.05E-02	8.9	



Error Report (Date: 19-Dec-07 10:52 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: KCMPV1AC

Detector: ALP120 1

Report Date: 19-Dec-07 11:05 AM

Acquire Date: 19-DEC-2007 07:32:10.13

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 1000 minutes

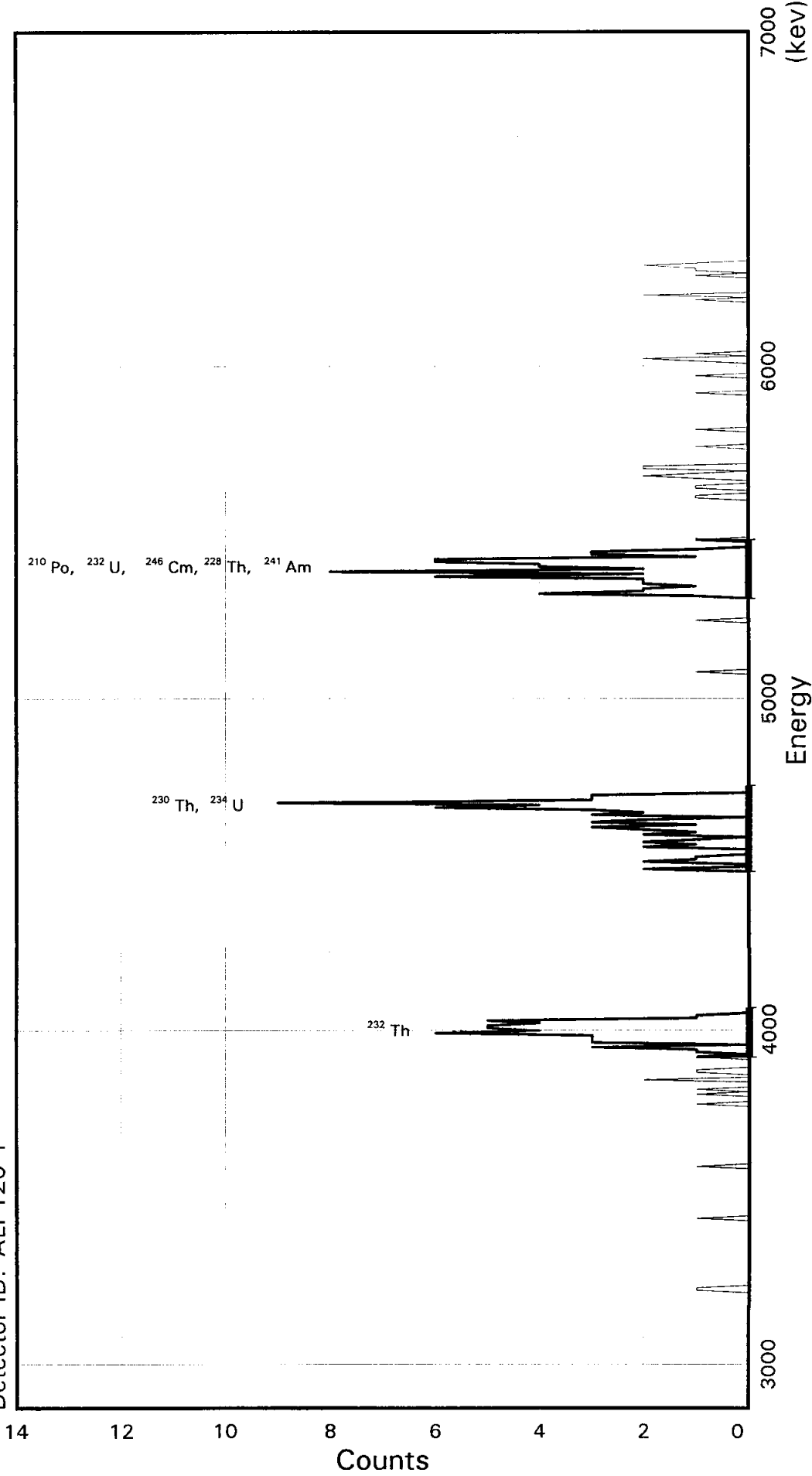
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	62	5	0.305	5423.2	169.5	330	353
TH-230	51	0	0.255	4687.7	147.9	233	253
TH-232	49	1	0.244	4013.0	148.3	142	162

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7330520

Sample ID: KCMPV1AC  
Detector ID: ALP120 1



Acquisition Start: 19-DEC-2007 07:32:10.13  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:03.00

Energy Coefficients:  
Offset: 2.84693E + 03  
Slope: 7.45396E + 00  
Quadrature: -1.24192E-04

SAMPLE IDENTIITY: KCMPV1AC

TITLE : TH BRCO

DETECTOR : ALP120 1  
CONFIGURATION NAME : RDND06\$DKA100: [ALP120.SAMPLE] KCMPV1AC\_191270  
732.CNF;1  
ACQUIRE DATE of BACKGROUND: 13-DEC-2007 07:56:46

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 07:32:10 CALIB DATE : 13-DEC-2007 07:46:52

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

OFFSET : 2846.93 keV CONSTANT FWHM : 9.16667 Channels  
SLOPE : 7.45396 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.124192E-03 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: KCMPIVAC  
 Detector: ALP120-1  
 Report Date: 18 Dec 07 10:52 AM  
 Acquire Date: 18 DEC 2007 07:32:10.13

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

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



VMS Peak Search Report V1.9 Generated 19-DEC-2007 10:52:14

```

Configuration      : RDND06$DKA100:[ALP120.SAMPLE]KCMPV1AC_191270732.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 07:32:10
Sample ID        : KCMPV1AC Sample quantity : 0.00000E+00 LITER
Sample type      : disk Sample geometry :
Detector name    : ALP120 Detector geometry:
Elapsed live time: 0 03:20:03.00 Elapsed real time: 0 03:20:03.00 0.0%
Start energy     : 2869.29 kev End energy : 6630.80 kev
Sensitivity      : 3.00 Sum Sensitivity : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4000.54	47	0	67.09	155.17	144	20	3.92E-03	14.6	
2	0	4681.37	61	0	37.27	247.12	220	35	5.08E-03	12.8	
3	0	5397.05	64	0	81.99	344.09	331	24	5.33E-03	12.5	



Error Report (Date: 19-Dec-07 10:52 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 ISOTOPICT COUNTING REQUEST

1424

C.R. Technician CS  
Date Counted 10/19/07  
C.R. Analyst CS  
Date Analyzed 10/19/07

Counting Time 200 Minutes  
Sample 200  
SOP's RICHRD008  
Operating: RICHRD0016  
Review: 11/19 7330520

Background See Alpha Analysis Report

WorkOrder #	Th-229 (4845 KeV) Tracer		TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	from Th-234 Beta Count (7)		
<u>KCMPXIAC</u>		10		0	Th-228 (5423 KeV) (6)		171
<u>KCMPXIAC</u>		10		0	Th-230 (4688 KeV) (8)		172
<u>KCMQFIAC</u>		10		0	Th-232 (4010 KeV) (9)		176
<u>KCMQFIAC</u>		10		0	See Alpha Analysis Report for ROI Information		177
<u>KCMQFIAC</u>		10		0	See Alpha Analysis Report for ROI Information		176
<u>KCVAGIAC</u>		10		0	See Alpha Analysis Report for ROI Information		117
<u>KCVAGIAC</u>		10		0	See Alpha Analysis Report for ROI Information		118
		10		0	See Alpha Analysis Report for ROI Information		
		10		0	See Alpha Analysis Report for ROI Information		

Comments:

Approved by: S

Date: 10/19/07

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

Sample Identity: KCMPX1AC

Detector: ALP171 1

Report Date: 19-Dec-07 02:35 PM

Acquire Date: 19-DEC-2007 11:06:32.71

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

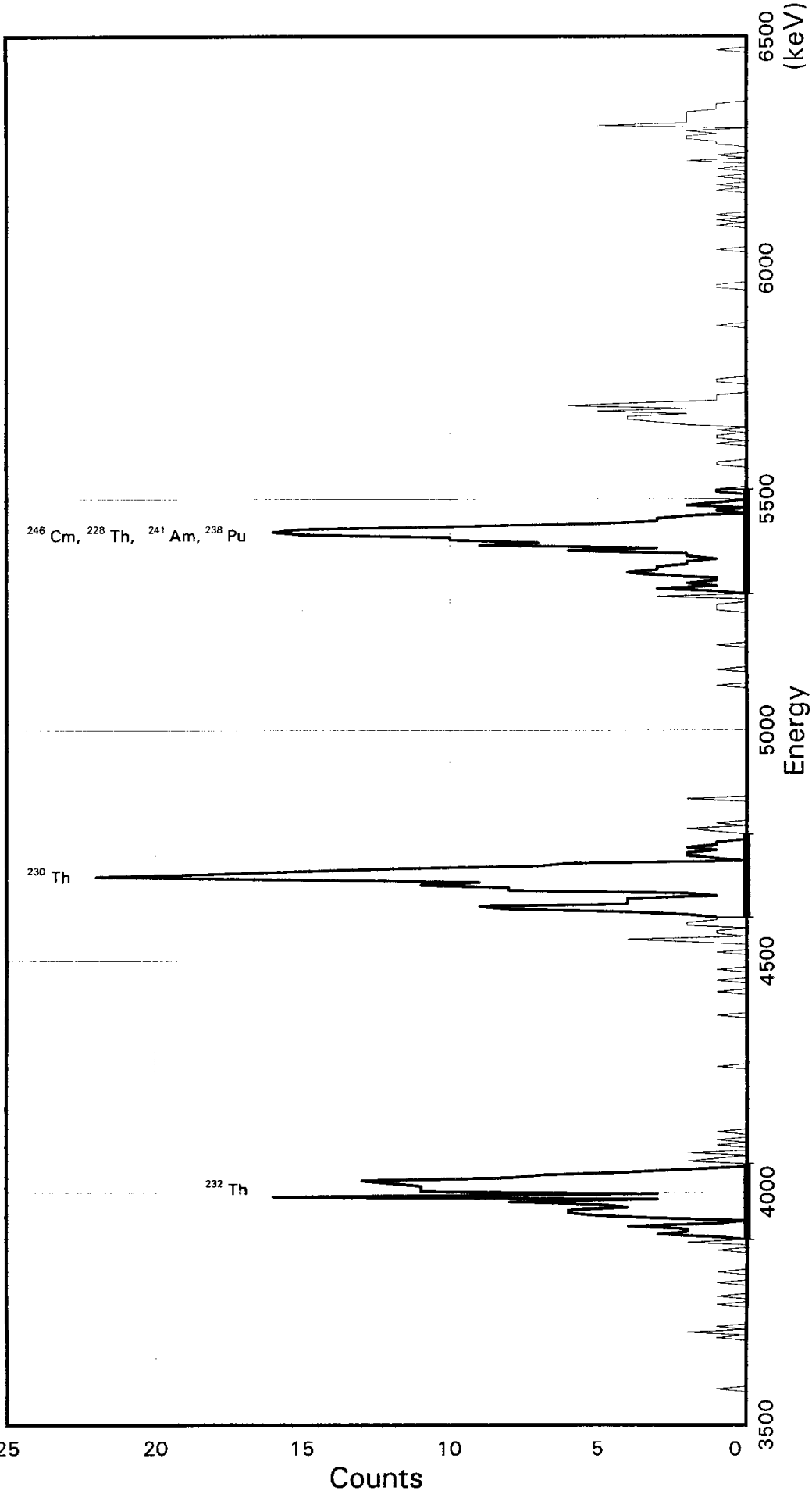
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Right
			C/Min	keV	keV	Chnl	Chnl
TH-228	140	3	0.698	5423.2	163.1	316	344
TH-230	178	2	0.889	4687.7	151.4	188	214
TH-232	154	1	0.770	4013.0	180.4	69	100

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7330520

Sample ID: KCMPX1AC  
Detector ID: ALP171 1



Acquisition Start: 19-DEC-2007 11:06:32.71  
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: KCMPX1AC

TITLE : TH BRCO

DETECTOR : ALP171 1  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE] KCMPX1AC\_191271106A.CN  
F;1

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

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 11:06:32 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: KCMPTAC

Flags Key

Detector: ALP171.1

Report Date: 12 Dec 07 02:33 PM

Intersect Region: -

Acquire Date: 10 DEC 2007 11:06:32.71

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

0 50 0 100 0 150 8 200 0 250 0 300 0 350 0 400 1 450 0 500

VMS Peak Search Report V1.9 Generated 19-DEC-2007 14:33:06

```

Configuration      : $DISK1:[ALP171.SAMPLE] KCMPX1AC_191271106A.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 11:06:32
Sample ID        : KCMPX1AC           Sample quantity  : 0.00000E+00 LITER
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	4007.95	151	0	69.82	87.93	69	28	1.26E-02	8.1	
2	0	4683.99	183	0	40.73	204.08	189	31	1.53E-02	7.4	
3	0	5422.02	153	0	46.55	330.83	309	39	1.28E-02	8.1	



Error Report (Date: 19-Dec-07 02:33 PM)

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

System Status Message:

%NCNAME-W-NOMSG, Message number 00000000

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

Sample Identity: KCMP51AC

Detector: ALP171 2

Report Date: 19-Dec-07 02:35 PM

Acquire Date: 19-DEC-2007 11:06:32.71

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

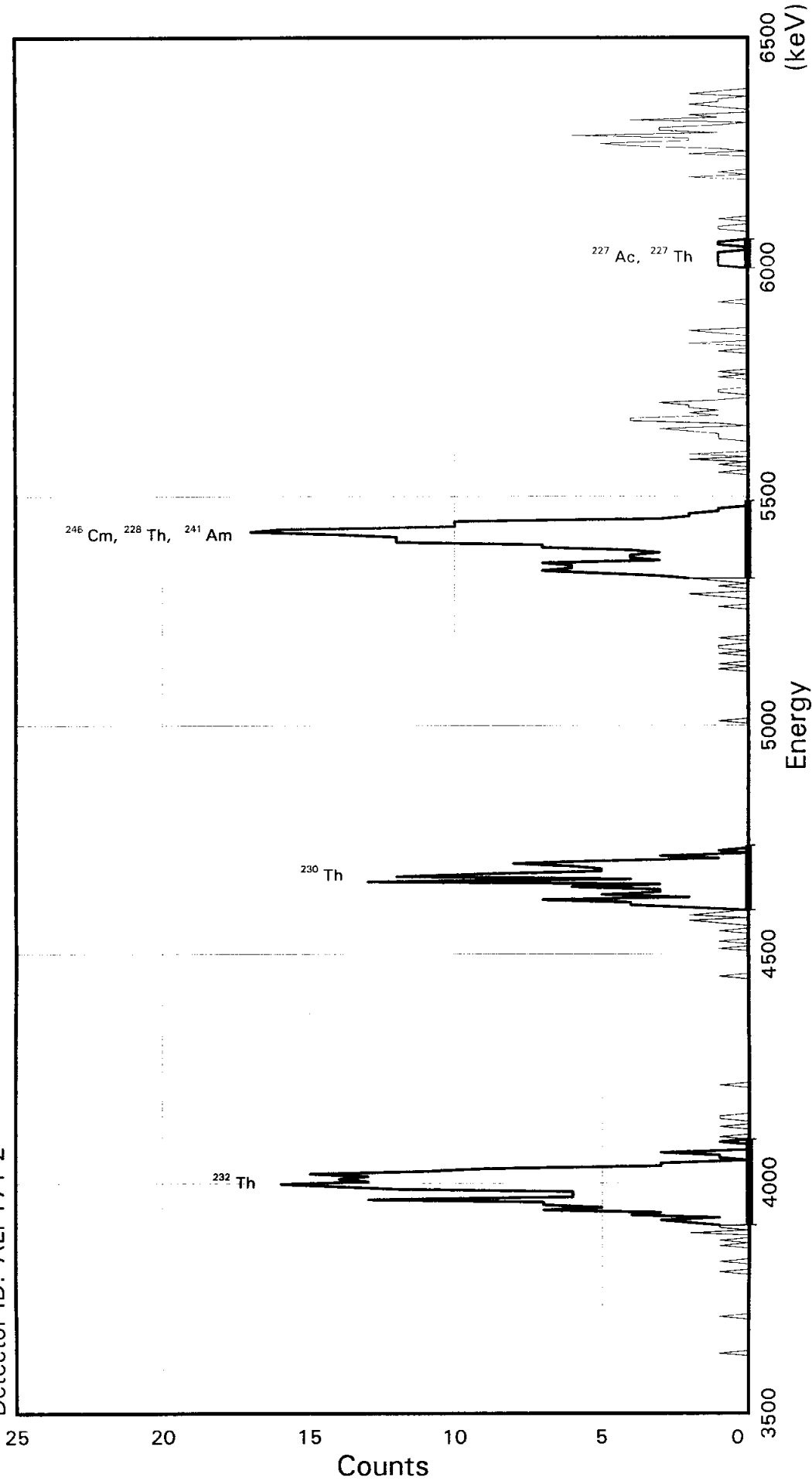
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	182	0	0.911	5423.2	124.3	318	340
TH-230	111	1	0.555	4687.7	130.0	189	212
TH-232	200	2	0.999	4013.0	175.3	65	96

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7330520

Sample ID: KCMP51AC  
Detector ID: ALP171 2



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

Acquisition Start: 19-DEC-2007 11:06:32.71  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCMP51AC

TITLE : TH BRCO

DETECTOR : ALP171 2  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE] KCMP51AC\_191271106B.CN  
F;1  
ACQUIRE DATE of BACKGROUND: 09-DEC-2007 07:20:28

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 11:06:32 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: KCMP51AC  
Detector: ALP171 2

Flags Key

Report Date: 19 Dec 07 02:33 PM  
Acquire Date: 19 DEC 2007 11:06:32.71

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	91	0	101	0	151	4	201	0	251	0	301	0	351	0	401	0	451	1	501						
0	2	92	0	102	0	152	12	202	0	252	0	302	0	352	0	402	1	452	1	502						
0	3	93	0	103	0	153	9	203	0	253	0	303	0	353	0	403	1	453	0	503						
0	4	94	0	104	0	154	5	204	0	254	0	304	0	354	0	404	0	454	2	504						
0	5	95	1	105	0	155	5	205	0	255	0	305	0	355	1	405	0	455	1	505						
0	6	96	0	106	0	156	6	206	0	256	1	306	0	356	0	406	1	456	0	506						
0	7	97	0	107	0	157	8	207	0	257	0	307	0	357	0	407	0	457	0	507						
0	8	98	1	108	0	158	5	208	0	258	0	308	1	358	2	408	0	458	0	508						
0	9	99	1	109	0	159	1	209	0	259	0	309	0	359	0	409	0	459	0	509						
0	10	100	0	110	0	160	3	210	0	260	1	310	0	360	0	410	0	460	0	510						
0	11	101	1	111	0	161	0	211	0	261	2	311	1	361	0	411	0	461	0	511						
0	12	102	0	112	0	162	1	212	1	262	0	312	0	362	1	412	0	462	0	512						
0	13	103	0	113	1	163	0	213	0	263	0	313	2	363	2	413	0	463								
0	14	104	2	114	0	164	0	214	0	264	1	314	0	364	0	414	0	464								
0	15	105	0	115	0	165	0	215	0	265	0	315	2	365	0	415	0	465								
0	16	106	1	116	0	166	0	216	0	266	1	316	0	366	0	416	0	466								
0	17	107	1	117	0	167	0	217	0	267	2	317	0	367	0	417	0	467								
1	18	108	2	118	0	168	0	218	0	268	3	318	0	368	0	418	0	468								
0	19	109	3	119	0	169	0	219	0	269	5	319	0	369	0	419	0	469								
0	20	110	1	120	0	170	0	220	0	270	7	320	0	370	0	420	0	470								
0	21	111	4	121	1	171	0	221	0	271	6	321	1	371	0	421	0	471								
0	22	112	3	122	0	172	0	222	0	272	6	322	1	372	0	422	2	472								
0	23	113	7	123	0	173	0	223	0	273	7	323	1	373	0	423	0	473								
0	24	114	5	124	1	174	0	224	0	274	3	324	2	374	1	424	1	474								
0	25	115	7	125	0	175	0	225	0	275	4	325	3	375	0	425	0	475								
0	26	116	7	126	0	176	0	226	0	276	4	326	0	376	0	426	0	476								
0	27	117	13	127	1	177	0	227	0	277	3	327	1	377	0	427	0	477								
0	28	118	6	128	0	178	0	228	0	278	4	328	4	378	0	428	0	478								
0	29	119	6	129	0	179	0	229	0	279	7	329	4	379	0	429	0	479								
0	30	120	6	130	0	180	0	230	0	280	7	330	1	380	0	430	0	480								
0	31	121	12	131	1	181	0	231	0	281	12	331	2	381	0	431	2	481								
1	32	122	14	132	0	182	0	232	1	282	12	332	1	382	0	432	0	482								
0	33	123	16	133	0	183	0	233	0	283	12	333	2	383	0	433	1	483								
0	34	124	13	134	1	184	0	234	1	284	14	334	2	384	0	434	4	484								
0	35	125	14	135	2	185	0	235	0	285	17	335	3	385	0	435	5	485								
0	36	126	13	136	0	186	0	236	0	286	16	336	1	386	0	436	2	486								
0	37	127	15	137	2	187	0	237	0	287	10	337	0	387	0	437	2	487								
0	38	128	11	138	1	188	0	238	1	288	10	338	0	388	1	438	6	488								
0	39	129	9	139	0	189	0	239	0	289	10	339	1	389	1	439	1	489								
0	40	130	3	140	2	190	0	240	1	290	3	340	1	390	1	440	3	490								
0	41	131	3	141	4	191	0	241	1	291	2	341	0	391	1	441	3	491								
0	42	132	0	142	4	192	0	242	0	292	2	342	0	392	1	442	1	492								
0	43	133	1	143	7	193	0	243	0	293	1	343	0	393	1	443	0	493								
0	44	134	1	144	2	194	0	244	1	294	1	344	0	394	0	444	4	494								
0	45	135	3	145	5	195	0	245	0	295	0	345	1	395	0	445	1	495								
0	46	136	0	146	3	196	0	246	0	296	0	346	0	396	1	446	2	496								
0	47	137	0	147	3	197	0	247	0	297	0	347	1	397	1	447	0	497								
0	48	138	0	148	6	198	0	248	0	298	0	348	0	398	0	448	0	498								
1	49	139	1	149	3	199	0	249	0	299	0	349	0	399	0	449	1	499								

0 50 0 100 0 150 13 200 0 250 0 300 0 350 0 400 0 450 2 500

VMS Peak Search Report V1.9 Generated 19-DEC-2007 14:33:20

```

Configuration      : $DISK1:[ALP171.SAMPLE] KCMP51AC_191271106B.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 11:06:32
Sample ID         : KCMP51AC           Sample quantity  : 0.00000E+00 LITER
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	4002.54	200	0	67.85	83.79	67	33	1.67E-02	7.1	
2	0	4675.23	112	0	62.20	202.79	189	25	9.34E-03	9.4	
3	0	5417.91	190	0	50.89	334.19	317	30	1.59E-02	7.3	
4	0	6024.28	8	0	45.23	441.50	437	11	6.67E-04	35.4	

Error Report (Date: 19-Dec-07 02:33 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: KCMQF1AC

Detector: ALP171 6

Report Date: 19-Dec-07 02:36 PM

Acquire Date: 19-DEC-2007 11:06:32.71

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 999 minutes

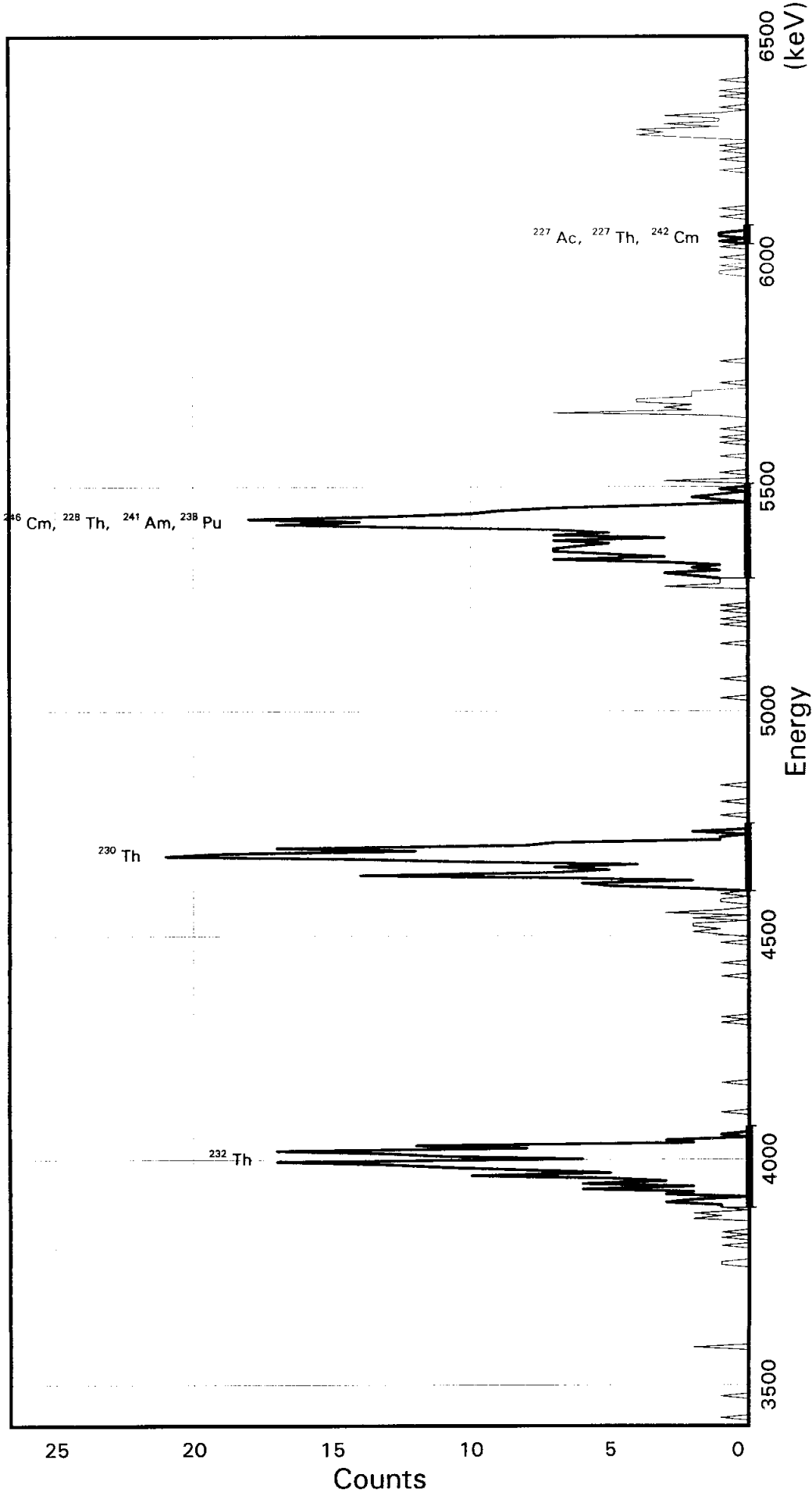
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	180	4	0.897	5423.2	163.4	320	347
TH-230	171	2	0.854	4687.7	139.1	200	223
TH-232	171	2	0.854	4013.0	175.2	82	111

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7330520

Sample ID: KCMQF1AC  
Detector ID: ALP171 6



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

Acquisition Start: 19-DEC-2007 11:06:32.71  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCMQF1AC

TITLE : TH BRCO

DETECTOR : ALP171 6  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCMQF1AC\_191271106F.CN  
F;1

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

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 11:06:32 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: KCMQF1AC

Flags Key

Detector: ALP171.6

Report Date: 19 Dec 07 12:28 PM

Intersect Region: 0

Acquire Date: 19 DEC 2007 11:06:32.71

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
0	0	51	11	0	101	0	0	101	2	0	201	0	0	301	0	0	401	0	0	501	0	0	601
0	2	52	11	0	102	0	0	152	5	0	202	0	0	252	0	0	302	0	0	402	0	0	502
0	0	53	13	0	103	1	0	153	6	0	203	0	1	303	0	0	353	0	0	403	0	0	503
0	0	54	17	0	104	0	0	154	2	0	204	0	0	304	1	0	354	0	0	404	0	0	504
0	0	55	8	0	105	0	0	155	7	0	205	0	1	305	0	0	355	0	0	405	0	0	505
1	0	56	12	0	106	0	0	156	14	0	206	0	0	306	0	0	356	0	0	406	0	0	506
0	0	57	2	0	107	0	0	157	7	0	207	0	0	307	0	0	357	0	0	407	0	0	507
0	0	58	3	0	108	0	0	158	5	0	208	0	0	308	0	0	358	0	0	408	0	0	508
0	0	59	0	0	109	0	0	159	7	0	209	0	0	309	0	0	359	0	0	409	0	0	509
0	0	60	1	0	110	0	0	160	4	0	210	0	0	310	1	0	360	0	0	410	0	0	510
0	0	61	0	0	111	0	0	161	10	0	211	0	0	311	0	0	361	0	0	411	0	0	511
0	0	62	1	0	112	0	0	162	14	0	212	0	3	312	0	0	362	0	0	412	0	0	512
0	1	63	0	0	113	0	0	163	21	0	213	0	1	313	0	0	363	0	0	413	0	0	513
1	0	64	0	0	114	0	0	164	19	0	214	0	1	314	0	0	364	0	0	414	0	0	514
0	0	65	0	0	115	0	0	165	12	0	215	0	1	315	1	0	365	0	0	415	1	0	515
0	0	66	0	0	116	0	0	166	17	0	216	0	2	316	0	0	366	0	0	416	0	0	516
0	0	67	0	0	117	0	0	167	8	0	217	0	3	317	1	0	367	0	0	417	0	0	517
0	0	68	1	0	118	1	0	168	7	0	218	0	1	318	0	0	368	0	0	418	0	0	518
0	0	69	0	0	119	0	0	169	1	0	219	0	2	319	0	0	369	0	0	419	1	0	519
0	0	70	0	0	120	0	0	170	1	0	220	0	1	320	1	0	370	0	0	420	0	0	520
0	0	71	0	0	121	0	0	171	0	0	221	1	3	321	0	0	371	0	0	421	0	0	521
0	0	72	1	0	122	0	0	172	2	0	222	0	7	322	0	0	372	0	0	422	1	0	522
0	0	73	0	0	123	1	0	173	0	0	223	0	3	323	0	0	373	0	0	423	0	0	523
0	0	74	1	0	124	0	0	174	0	0	224	0	5	324	0	0	374	0	0	424	1	0	524
0	0	75	0	0	125	0	0	175	0	0	225	0	7	325	1	0	375	0	0	425	0	0	525
0	0	76	0	0	126	0	0	176	0	0	226	0	7	326	7	0	376	0	0	426	0	0	526
0	0	77	0	0	127	0	0	177	0	0	227	0	6	327	2	0	377	1	0	427	2	0	527
0	0	78	0	0	128	0	0	178	1	0	228	1	5	328	3	0	378	1	0	428	4	0	528
0	0	79	1	0	129	0	0	179	0	0	229	0	7	329	2	0	379	0	0	429	3	0	529
0	0	80	0	0	130	0	0	180	0	0	230	0	3	330	4	0	380	1	0	430	4	0	530
0	0	81	0	0	131	1	0	181	0	0	231	0	7	331	4	0	381	0	0	431	1	0	531
2	0	82	0	0	132	0	0	182	0	0	232	0	5	332	2	0	382	0	0	432	3	0	532
0	0	83	0	0	133	0	0	183	1	0	233	0	7	333	2	0	383	1	0	433	1	0	533
0	0	84	0	0	134	1	0	184	0	0	234	0	12	334	2	0	384	0	0	434	1	0	534
0	0	85	0	0	135	2	0	185	0	0	235	0	17	335	0	0	385	0	0	435	3	0	535
0	0	86	0	0	136	1	0	186	0	0	236	0	14	336	0	0	386	0	0	436	1	0	536
0	0	87	0	0	137	2	0	187	0	0	237	0	18	337	1	0	387	1	0	437	0	0	537
0	0	88	0	0	138	2	0	188	0	0	238	0	13	338	0	0	388	0	0	438	1	0	538
0	0	89	0	0	139	0	0	189	1	0	239	0	10	339	0	0	389	1	0	439	0	0	539
0	0	90	0	0	140	2	0	190	0	0	240	0	9	340	0	0	390	0	0	440	0	0	540
0	0	91	0	0	141	0	0	191	0	0	241	1	7	341	0	0	391	1	0	441	0	0	541
0	0	92	0	0	142	3	0	192	0	0	242	0	3	342	0	0	392	1	0	442	1	0	542
0	0	93	0	0	143	1	0	193	0	0	243	0	0	343	0	0	393	0	0	443	0	0	543
0	0	94	0	0	144	0	0	194	0	0	244	0	1	344	0	0	394	0	0	444	1	0	544
0	0	95	0	0	145	0	0	195	0	0	245	0	2	345	1	0	395	0	0	445	0	0	545
0	0	96	0	0	146	1	0	196	0	0	246	0	1	346	0	0	396	0	0	446	0	0	546
0	0	97	0	0	147	1	0	197	0	0	247	0	0	347	0	0	397	0	0	447	0	0	547
0	0	98	0	0	148	0	0	198	0	0	248	1	1	348	0	0	398	1	0	448	1	0	548
0	0	99	0	0	149	1	0	199	0	0	249	0	0	349	0	0	399	0	0	449	0	0	549

0 50 17 100 0 150 0 200 0 250 1 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 19-DEC-2007 14:26:52

Configuration : \$DISK1:[ALP171.SAMPLE]KCMQF1AC\_191271106F.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : TH BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 11:06:32  
 Sample ID : KCMQF1AC Sample quantity : 0.00000E+00 LITER  
 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	4002.20	171	0	66.41	101.19	83	30	1.43E-02	7.6	
2	0	4681.62	169	0	36.22	213.60	200	25	1.41E-02	7.7	
3	0	5422.99	189	0	42.26	336.15	315	35	1.58E-02	7.3	
4	0	6054.77	4	0	24.15	440.50	438	7	3.34E-04	50.0	

Error Report (Date: 19-Dec-07 02:26 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

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

Sample Identity: KCMQH1AC

Detector: ALP171 7

Report Date: 19-Dec-07 02:36 PM

Acquire Date: 19-DEC-2007 11:06:32.71

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	75	1	0.374	5423.2	112.6	310	330
TH-230	59	0	0.295	4687.7	118.3	179	200
TH-232	84	0	0.420	4013.0	112.7	60	80

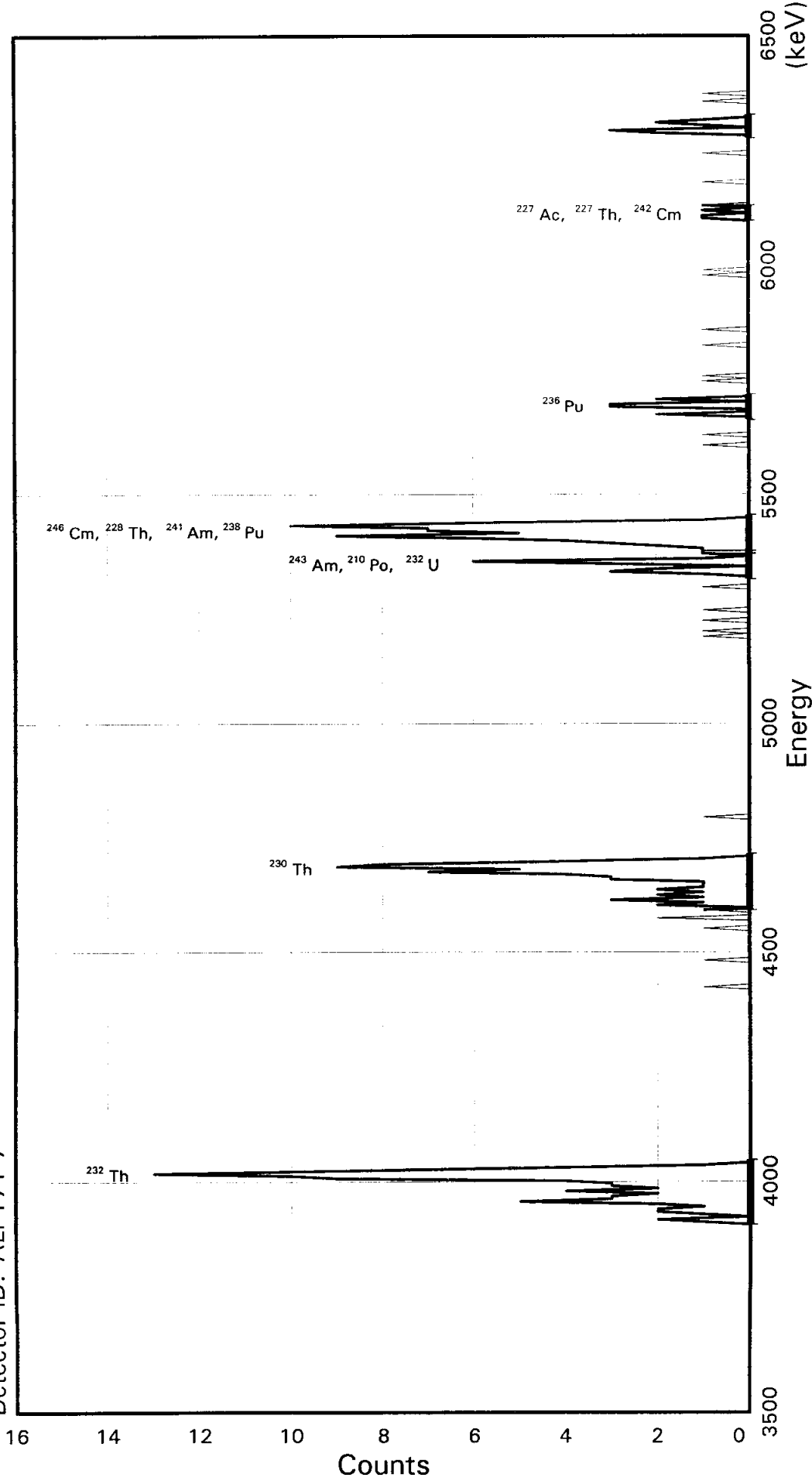
End of Alpha Region Report  
(Produced by ANAL Report)



STL Richland WA.  
TH BRCO

Batch ID: 7330520

Sample ID: KCMQH1AC  
Detector ID: ALP171 7



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

Acquisition Start: 19-DEC-2007 11:06:32.71  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:19:47.00

SAMPLE IDENTIITY: KCMQH1AC

TITLE : TH BRCO

DETECTOR : ALP171 7  
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]KCMQH1AC\_191271106G.CN  
F;1

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

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 11:06:32 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: KCMQH1AC

Flags Key

Detector: ALP1717

Report Date: 19 Dec 07 08:10 PM

Intersect Region: -

Acquire Date: 19 DEC 2007 11:06:32.71

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

VMS Peak Search Report V1.9 Generated 19-DEC-2007 14:26:56

```

Configuration      : $DISK1:[ALP171.SAMPLE]KCMQH1AC_191271106G.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 11:06:32
Sample ID        : KCMQH1AC Sample quantity : 0.00000E+00 LITER
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	4016.19	87	0	22.53	75.54	56	25	7.26E-03	10.7	
2	0	4684.98	60	0	39.43	194.27	178	22	5.01E-03	12.9	
3	0	5346.70	19	0	33.80	311.75	306	11	1.59E-03	22.9	
4	0	5419.20	63	0	45.07	324.62	316	15	5.26E-03	12.6	
5	0	5693.08	10	0	28.17	373.25	368	10	8.34E-04	31.6	
6	0	6111.27	4	0	22.53	447.50	445	6	3.34E-04	50.0	
7	0	6293.37	9	0	22.53	479.83	477	9	7.51E-04	33.3	

Error Report (Date: 19-Dec-07 02:27 PM)

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

System Status Message:

%NNAME-W-NOMSG, Message number 00000000

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

Sample Identity: KCMQJ1AC

Detector: ALP116 1

Report Date: 19-Dec-07 02:37 PM

Acquire Date: 19-DEC-2007 11:06:48.37

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 1000 minutes

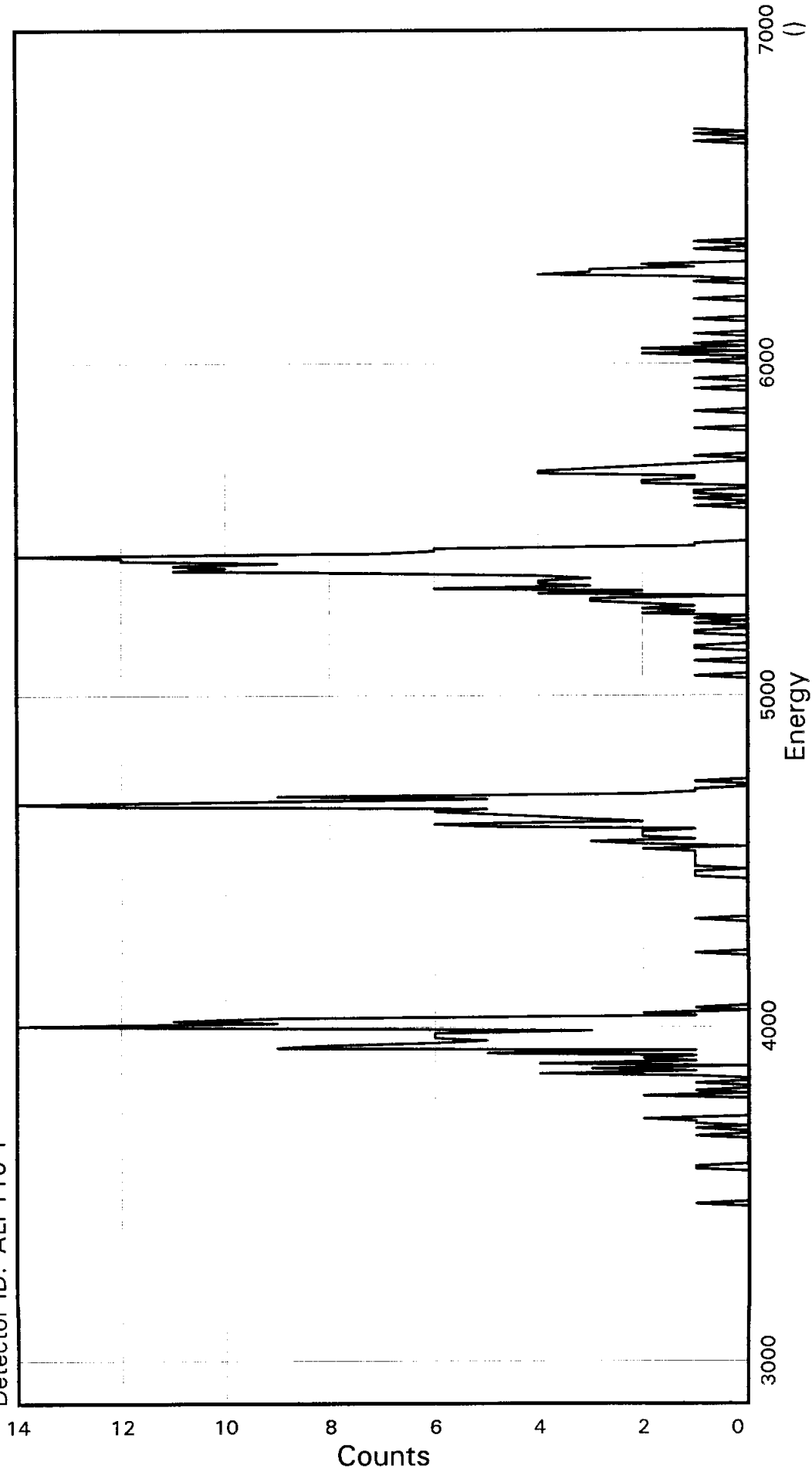
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	146	3	0.727	5423.2	188.0	321	346
TH-230	102	0	0.510	4687.7	180.7	225	249
TH-232	122	1	0.609	4013.0	181.0	135	159

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7330520

Sample ID: KCMQJ1AC  
Detector ID: ALP116 1



Energy Coefficients:  
Offset: 2.84932E + 03  
Slope: 7.55805E + 00  
Quadrature: -5.87815E-05

Acquisition Start: 19-DEC-2007 11:06:48.37  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:00.00



SAMPLE IDENTIITY: KCMQJ1AC

TITLE : TH BRCO

DETECTOR : ALP116 1  
CONFIGURATION NAME : RDND06\$DKA100: [ALP116.SAMPLE] KCMQJ1AC\_191271  
106.CNF;1  
ACQUIRE DATE of BACKGROUND: 13-DEC-2007 07:56:36

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 11:06:48 CALIB DATE : 13-DEC-2007 07:46:27

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

OFFSET : 2849.32 keV CONSTANT FWHM : 8.83333 Channels  
SLOPE : 7.55805 keV/C SENSITIVITY : 6.00000 Std Dev's  
QUAD COEFF : -.587815E-04 keV/C^2 SUM SENSITIVITY: 0.10000 %

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

Sample Identity: KCMQJ1AC

Flags Key

Detector: ALP116 I

Report Date: 19 Dec 07 02:26 PM

Intersect Region: 0

Acquire Date: 19 DEC 2007 11:06:48.37

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

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



VMS Peak Search Report V1.9 Generated 19-DEC-2007 14:26:51

Configuration : RDND06\$DKA100:[ALP116.SAMPLE]KCMQJ1AC\_191271106.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : TH BRCO  
Sample date : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 11:06:48  
Sample ID : KCMQJ1AC Sample quantity : 0.00000E+00 LITER  
Sample type : disk Sample geometry :  
Detector name : ALP116 Detector geometry:  
Elapsed live time: 0 03:20:00.00 Elapsed real time: 0 03:20:00.00 0.0%  
Start energy : 2872.00 End energy : 6703.63  
Sensitivity : 6.00 Sum Sensitivity : 0.10  
No peaks were found

Error Report (Date: 19-Dec-07 02:26 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

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

Sample Identity: KCV2Q1AA

Detector: ALP117 1

Report Date: 19-Dec-07 02:37 PM

Acquire Date: 19-DEC-2007 11:06:53.35

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 1000 minutes

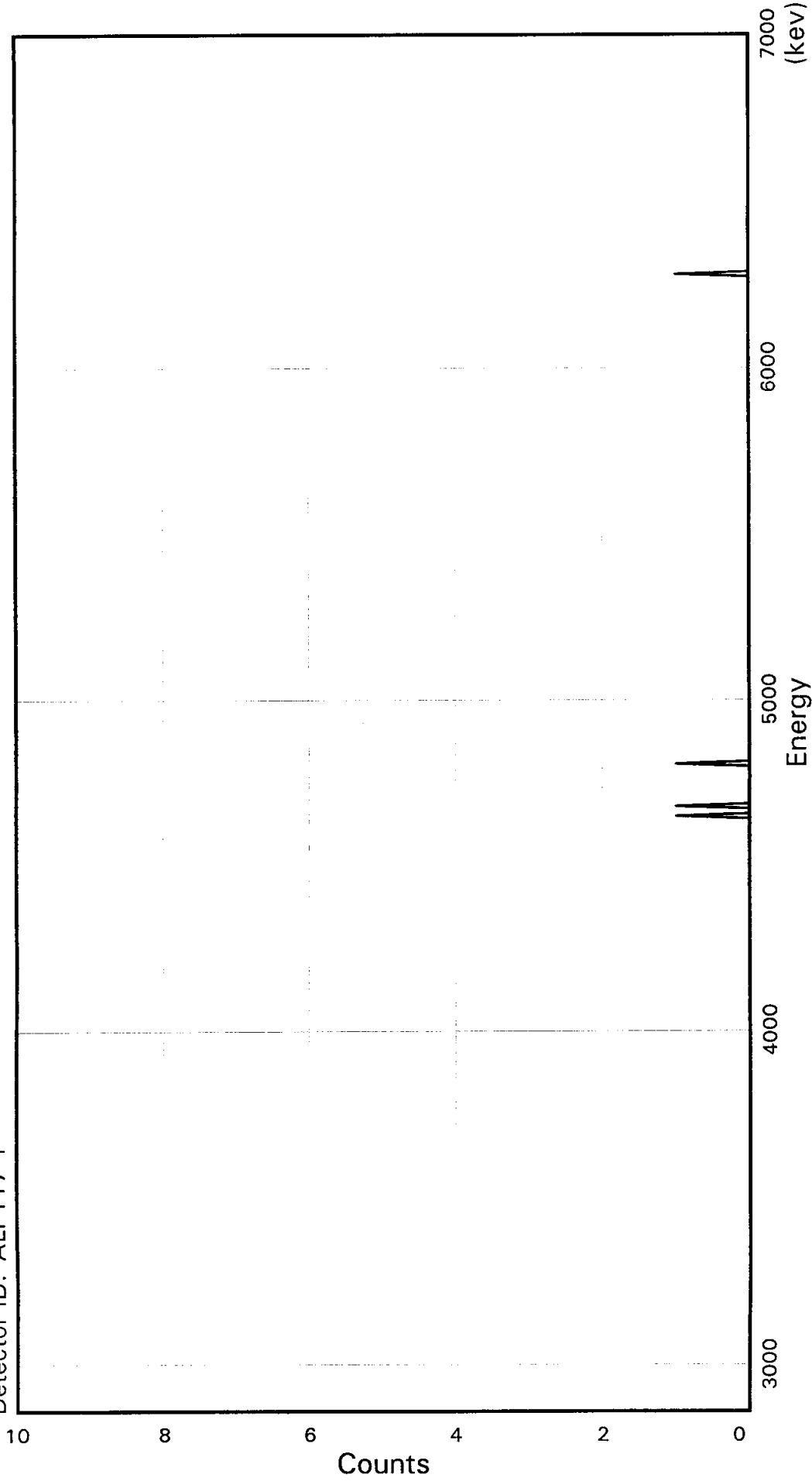
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	0	1	-0.001	5423.2	150.3	330	350
TH-230	2	0	0.010	4687.7	150.1	232	252
TH-232	0	0	0.000	4013.0	149.8	142	162

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7330520

Sample ID: KCV2Q1AA  
Detector ID: ALP117 1



Acquisition Start: 19-DEC-2007 11:06:53.35  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:01.00

Energy Coefficients:  
Offset: 2.83750E + 03  
Slope: 7.47254E + 00  
Quadrature: 6.43952E-05



SAMPLE IDENTIITY: KCV2Q1AA

TITLE : TH BRCO

DETECTOR : ALP117 1  
CONFIGURATION NAME : RDND06\$DKA100: [ALP117.SAMPLE] KCV2Q1AA\_191271  
106.CNF;1  
ACQUIRE DATE of BACKGROUND: 13-DEC-2007 07:56:39

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 11:06:53 CALIB DATE : 13-DEC-2007 07:46:43

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:01

OFFSET : 2837.50 keV CONSTANT FWHM : 8.00000 Channels  
SLOPE : 7.47254 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 6.439520E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %



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 19-DEC-2007 14:32:53

Configuration : RDND06\$DKA100:[ALP117.SAMPLE]KCV2Q1AA\_191271106.CNF;1  
Analyses by : ALPHA V1.8  
Sample title : TH BRCO  
Sample date : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 11:06:53  
Sample ID : KCV2Q1AA Sample quantity : 0.00000E+00 LITER  
Sample type : disk Sample geometry :  
Detector name : ALP117 Detector geometry:  
Elapsed live time: 0 03:20:01.00 Elapsed real time: 0 03:20:01.00 0.0%  
Start energy : 2859.92 kev End energy : 6680.32 kev  
Sensitivity : 3.00 Sum Sensitivity : 1.00  
No peaks were found

Error Report (Date: 19-Dec-07 02:32 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: KCV2Q1AC

Detector: ALP118 1

Report Date: 19-Dec-07 02:37 PM

Acquire Date: 19-DEC-2007 11:06:59.75

Tracer Nuclide: TH-229

Sample Live Time: 200 minutes

Bkgrnd Live Time: 1000 minutes

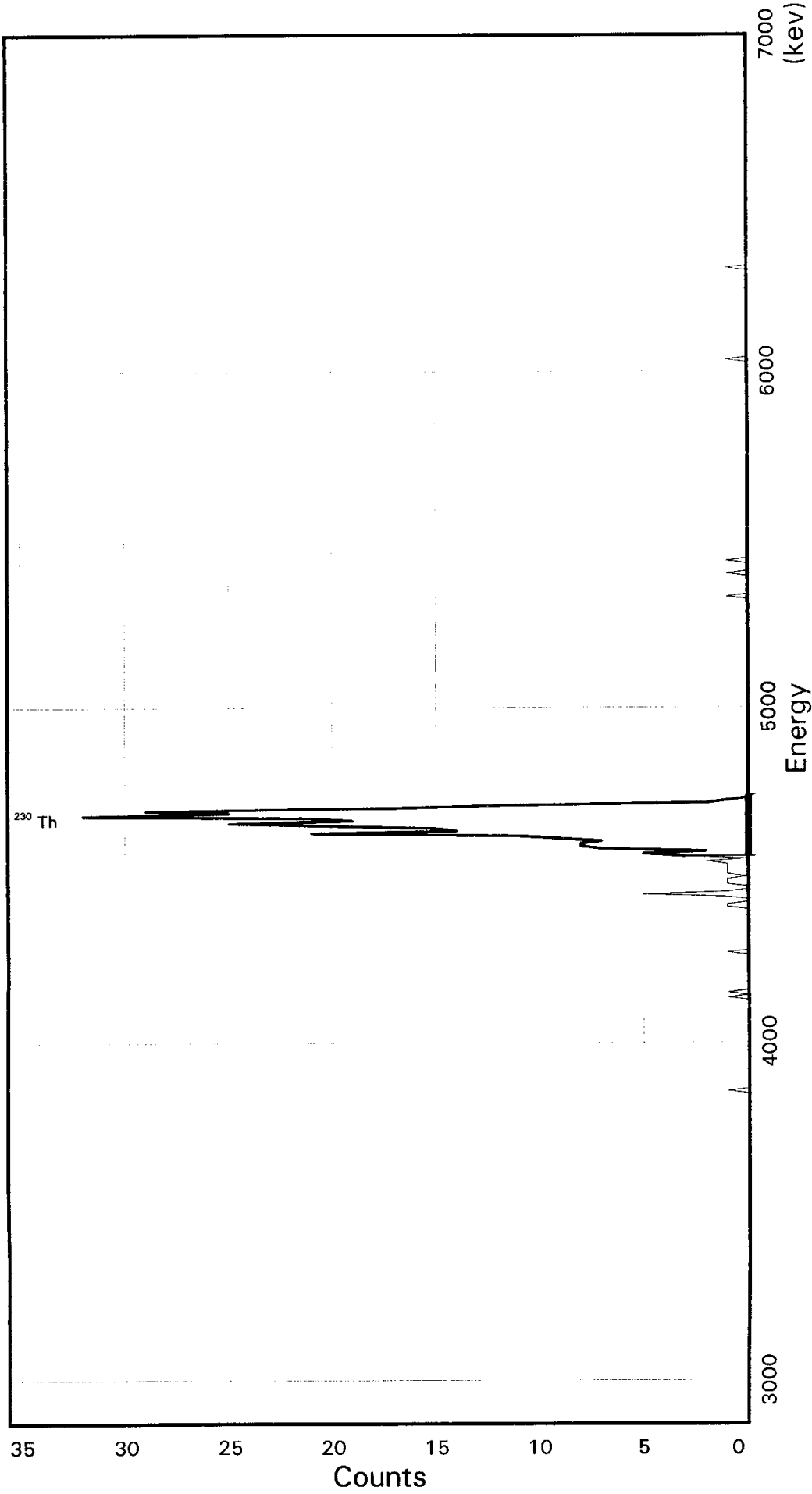
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	3	1	0.014	5423.2	151.6	326	346
TH-230	313	1	1.563	4687.7	181.4	226	250
TH-232	0	3	-0.003	4013.0	150.8	140	160

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Batch ID: 7330520

Sample ID: KCV2Q1AC  
Detector ID: ALP118 1



Energy Coefficients:  
Offset: 2.84842E + 03  
Slope: 7.50369E + 00  
Quadrature: 1.12667E-04

Acquisition Start: 19-DEC-2007 11:06:59.75  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:06.00



SAMPLE IDENTIITY: KCV2Q1AC

TITLE : TH BRCO

DETECTOR : ALP118 1  
CONFIGURATION NAME : RDND06\$DKA100: [ALP118.SAMPLE] KCV2Q1AC\_191271  
106.CNF;1  
ACQUIRE DATE of BACKGROUND: 13-DEC-2007 07:56:41

REPORT DATE : 19-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 19-DEC-2007 11:06:59 CALIB DATE : 13-DEC-2007 07:46:47

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:06

OFFSET : 2848.42 keV CONSTANT FWHM : 7.83333 Channels  
SLOPE : 7.50369 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : 1.126670E-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: KCV2Q1AC  
Detector: ALP118 E  
Report Date: 19 Dec 07 02:27 PM  
Acquire Date: 19 DEC 2007 11:06:59.75

Flags Key

Intersect Region: I  
Non Intersect Region: N

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	0	301	0	351	0	401	0	451	0	501						
0	0	52	0	102	0	152	0	202	0	252	0	302	0	352	0	402	0	452	0	502						
0	0	53	0	103	0	153	0	203	0	253	0	303	0	353	0	403	0	453	0	503						
0	0	54	0	104	0	154	0	204	0	254	0	304	0	354	0	404	0	454	0	504						
0	0	55	0	105	0	155	0	205	0	255	0	305	0	355	0	405	0	455	0	505						
0	0	56	0	106	0	156	0	206	0	256	0	306	0	356	0	406	0	456	0	506						
0	0	57	0	107	0	157	1	207	0	257	0	307	0	357	0	407	0	457	0	507						
0	0	58	0	108	0	158	1	208	0	258	0	308	0	358	0	408	1	458	0	508						
0	0	59	0	109	0	159	0	209	0	259	0	309	0	359	0	409	0	459	0	509						
0	0	60	0	110	0	160	0	210	0	260	0	310	0	360	0	410	0	460	0	510						
0	0	61	0	111	0	161	1	211	0	261	0	311	0	361	0	411	0	461	0	511						
0	0	62	0	112	0	162	5	212	0	262	0	312	0	362	0	412	0	462	0	512						
0	0	63	0	113	0	163	1	213	0	263	0	313	0	363	0	413	0	463								
0	0	64	0	114	0	164	0	214	0	264	0	314	0	364	0	414	0	464								
0	0	65	0	115	0	165	0	215	0	265	0	315	0	365	0	415	0	465								
0	0	66	0	116	0	166	1	216	0	266	0	316	0	366	0	416	0	466								
C	0	67	0	117	0	167	1	217	0	267	0	317	0	367	0	417	0	467								
C	0	68	0	118	0	168	1	218	0	268	0	318	0	368	0	418	0	468								
C	0	69	0	119	0	169	0	219	0	269	0	319	0	369	0	419	0	469								
C	0	70	0	120	0	170	1	220	0	270	0	320	0	370	0	420	0	470								
0	0	71	0	121	1	171	1	221	0	271	0	321	0	371	0	421	0	471								
0	0	72	0	122	0	172	1	222	0	272	0	322	0	372	1	422	0	472								
0	0	73	0	123	1	173	1	223	0	273	0	323	0	373	0	423	0	473								
0	0	74	0	124	0	174	1	224	0	274	0	324	0	374	0	424	0	474								
0	0	75	0	125	0	175	2	225	0	275	0	325	0	375	0	425	0	475								
0	0	76	0	126	0	176	0	226	0	276	0	326	0	376	0	426	0	476								
0	0	77	0	127	0	177	3	227	0	277	0	327	0	377	0	427	0	477								
0	0	78	0	128	0	178	5	228	0	278	0	328	0	378	0	428	0	478								
0	0	79	0	129	0	179	2	229	0	279	1	329	0	379	0	429	0	479								
0	0	80	0	130	0	180	7	230	0	280	0	330	0	380	0	430	0	480								
0	0	81	0	131	0	181	8	231	0	281	0	331	0	381	0	431	0	481								
0	0	82	0	132	0	182	8	232	0	282	0	332	0	382	0	432	0	482								
0	0	83	0	133	0	183	7	233	0	283	0	333	0	383	0	433	0	483								
0	0	84	1	134	0	184	9	234	0	284	0	334	0	384	0	434	0	484								
0	0	85	0	135	0	185	11	235	0	285	0	335	0	385	0	435	0	485								
0	0	86	0	136	0	186	21	236	0	286	0	336	0	386	0	436	0	486								
0	0	87	0	137	0	187	14	237	0	287	0	337	0	387	0	437	0	487								
0	0	88	0	138	0	188	15	238	0	288	1	338	0	388	0	438	0	488								
0	0	89	0	139	1	189	20	239	0	289	0	339	0	389	0	439	0	489								
0	0	90	0	140	0	190	25	240	0	290	0	340	0	390	0	440	0	490								
0	0	91	0	141	0	191	19	241	0	291	0	341	0	391	0	441	0	491								
0	0	92	0	142	0	192	21	242	0	292	0	342	0	392	0	442	0	492								
0	0	93	0	143	0	193	32	243	0	293	1	343	0	393	0	443	0	493								
0	0	94	0	144	0	194	25	244	0	294	0	344	0	394	0	444	0	494								
0	0	95	0	145	0	195	29	245	0	295	0	345	0	395	0	445	0	495								
0	0	96	0	146	0	196	17	246	0	296	0	346	0	396	0	446	0	496								
0	0	97	0	147	0	197	12	247	0	297	0	347	0	397	0	447	0	497								
0	0	98	0	148	0	198	2	248	0	298	0	348	0	398	0	448	0	498								
0	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 0 250 0 300 0 350 0 400 0 450 0 500



VMS Peak Search Report V1.9 Generated 19-DEC-2007 14:27:07

Configuration : RDND06\$DKA100:[ALP118.SAMPLE]KCV2Q1AC\_191271106.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : TH BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 19-DEC-2007 11:06:59  
 Sample ID : KCV2Q1AC Sample quantity : 0.00000E+00 LITER  
 Sample type : disk Sample geometry :  
 Detector name : ALP118 Detector geometry:  
 Elapsed live time: 0 03:20:06.00 Elapsed real time: 0 03:20:06.00 0.0%  
 Start energy : 2870.93 kev End energy : 6719.85 kev  
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4666.75	311	0	82.54	241.45	227	24	2.59E-02	5.7	

Error Report (Date: 19-Dec-07 02:27 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:12/17/06 to 12/19/07,SMFractionIdentifier Between THTC11984 and THTC11999, 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	
THTC11984	Th-234	4.9696E+02 ± 3.768E+01 CPM	1.4006 g	11/27/2007 11/27/2007	Armstron	3.5482E+02 ± 2.690E+01 CPM/G
THTC11985	Th-234	5.0135E+02 ± 3.802E+01 CPM	1.413 g	11/27/2007 11/27/2007	Armstron	3.5481E+02 ± 2.690E+01 CPM/G
THTC11986	Th-234	5.0103E+02 ± 3.799E+01 CPM	1.4121 g	11/27/2007 11/27/2007	Armstron	3.5481E+02 ± 2.690E+01 CPM/G
THTC11987	Th-234	5.0074E+02 ± 3.797E+01 CPM	1.4113 g	11/27/2007 11/27/2007	Armstron	3.5481E+02 ± 2.690E+01 CPM/G
THTC11988	Th-234	5.0586E+02 ± 3.836E+01 CPM	1.4258 g	11/27/2007 11/27/2007	Armstron	3.5479E+02 ± 2.690E+01 CPM/G
THTC11989	Th-234	5.0451E+02 ± 3.826E+01 CPM	1.422 g	11/27/2007 11/27/2007	Armstron	3.5479E+02 ± 2.690E+01 CPM/G
THTC11990	Th-234	5.0440E+02 ± 3.825E+01 CPM	1.4217 g	11/27/2007 11/27/2007	Armstron	3.5478E+02 ± 2.690E+01 CPM/G
THTC11991	Th-234	5.0624E+02 ± 3.839E+01 CPM	1.4269 g	11/27/2007 11/27/2007	Armstron	3.5478E+02 ± 2.690E+01 CPM/G
THTC11992	Th-234	5.0670E+02 ± 3.842E+01 CPM	1.4282 g	11/27/2007 11/27/2007	Armstron	3.5478E+02 ± 2.690E+01 CPM/G
THTC11993	Th-234	5.0673E+02 ± 3.842E+01 CPM	1.4283 g	11/27/2007 11/27/2007	Armstron	3.5478E+02 ± 2.690E+01 CPM/G
THTC11994	Th-234	5.0673E+02 ± 3.842E+01 CPM	1.4283 g	11/27/2007 11/27/2007	Armstron	3.5478E+02 ± 2.690E+01 CPM/G
THTC11995	Th-234	5.0676E+02 ± 3.843E+01 CPM	1.4284 g	11/27/2007 11/27/2007	Armstron	3.5478E+02 ± 2.690E+01 CPM/G
THTC11996	Th-234	5.0739E+02 ± 3.847E+01 CPM	1.4302 g	11/27/2007 11/27/2007	Armstron	3.5477E+02 ± 2.690E+01 CPM/G
THTC11997	Th-234	5.0654E+02 ± 3.841E+01 CPM	1.4278 g	11/27/2007 11/27/2007	Armstron	3.5477E+02 ± 2.690E+01 CPM/G
THTC11998	Th-234	5.0568E+02 ± 3.834E+01 CPM	1.4254 g	11/27/2007 11/27/2007	Armstron	3.5477E+02 ± 2.690E+01 CPM/G
THTC11999	Th-234	5.0515E+02 ± 3.830E+01 CPM	1.4239 g	11/27/2007 11/27/2007	Armstron	3.5477E+02 ± 2.690E+01 CPM/G

5.0455E+002 ± 2.969E+000 ( 16) 0.588% 4.9696E+002 , 5.0739E+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	
THSI1112	Th-234	5.0510E+02 ± 3.830E+01 CPM	1.4233 g	11/27/2007 11/27/2007	Armstron	3.5488E+02 ± 2.691E+01 CPM/G

5.0510E+002 ± 5.051E+002 ( 1)                      5.0510E+002 , 5.0510E+002

## 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		Decay	Th234 wt. grams	Th230 Yield	Th234
			Cts	Min				
27-Sep-07	16:06	93821	20	630	1.0974	2.4276	0.9492	2233.46
27-Sep-07	16:06	89844	20	839	1.0974	2.4330	0.9126	2219.43
27-Sep-07	16:06	92844	20	718	1.0974	2.4295	0.9758	2148.24
27-Sep-07	16:06	91175	20	577	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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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

# 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

Sample ID	Isotope	Geometry
CAL6386	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
27-SEP-2007 12:30:33.00	8889	20.00	630	500.00	30A

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
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

Sample ID	Isotope	Geometry
CAL6454	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
27-SEP-2007 16:06:58.00	92844	20.00	718	500.00	30C

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
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  
SOP's 9/25/07  
Operating: RICHRD008  
Review: RICHRD0016  
TA-RLD 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

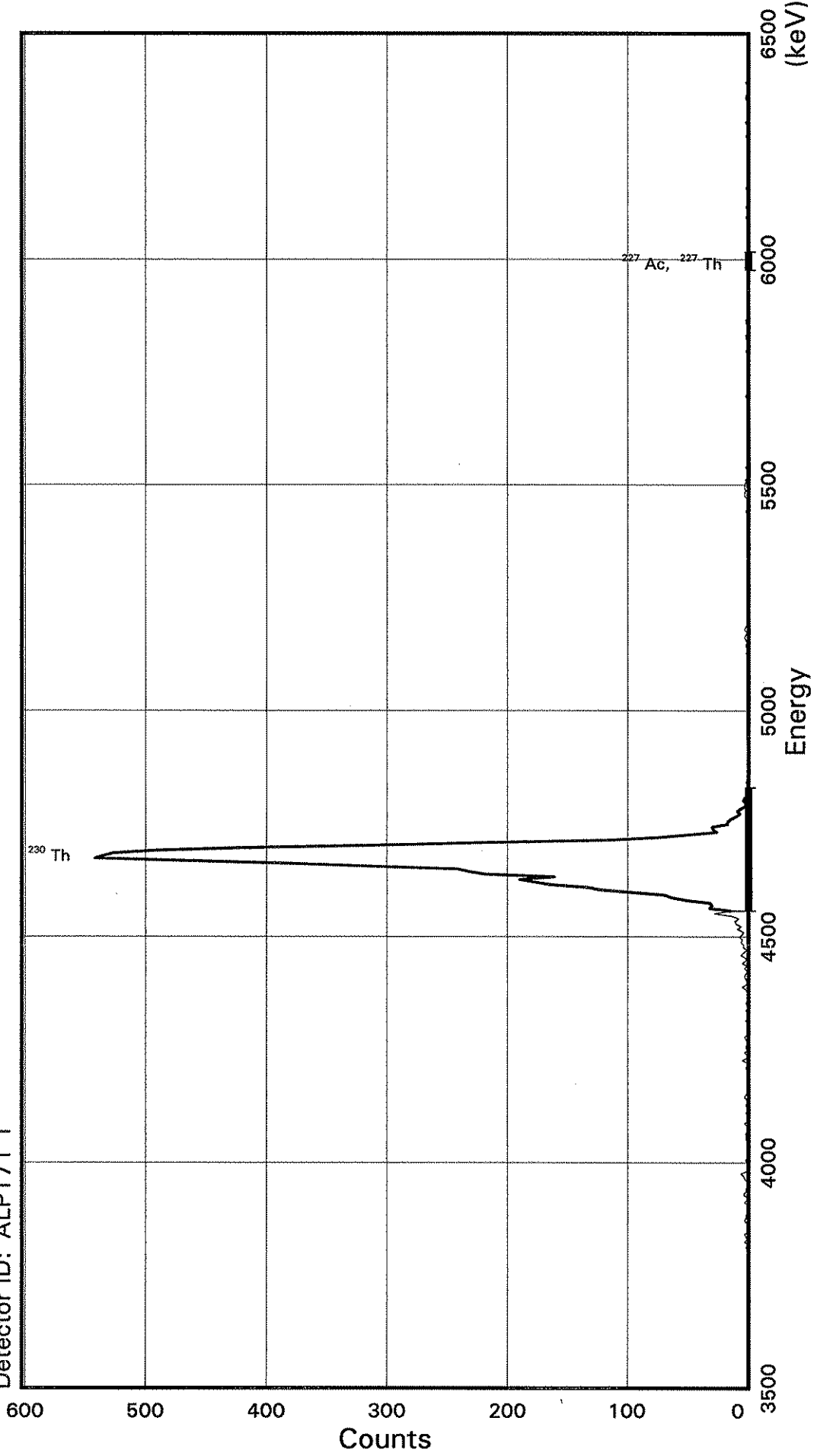
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	4	5	-0.001	5423.2	116.4	316	336
TH-230	6768	3	6.772	4687.7	366.3	167	230
TH-232	31	0	0.031	4013.0	116.2	73	93

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

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	
		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

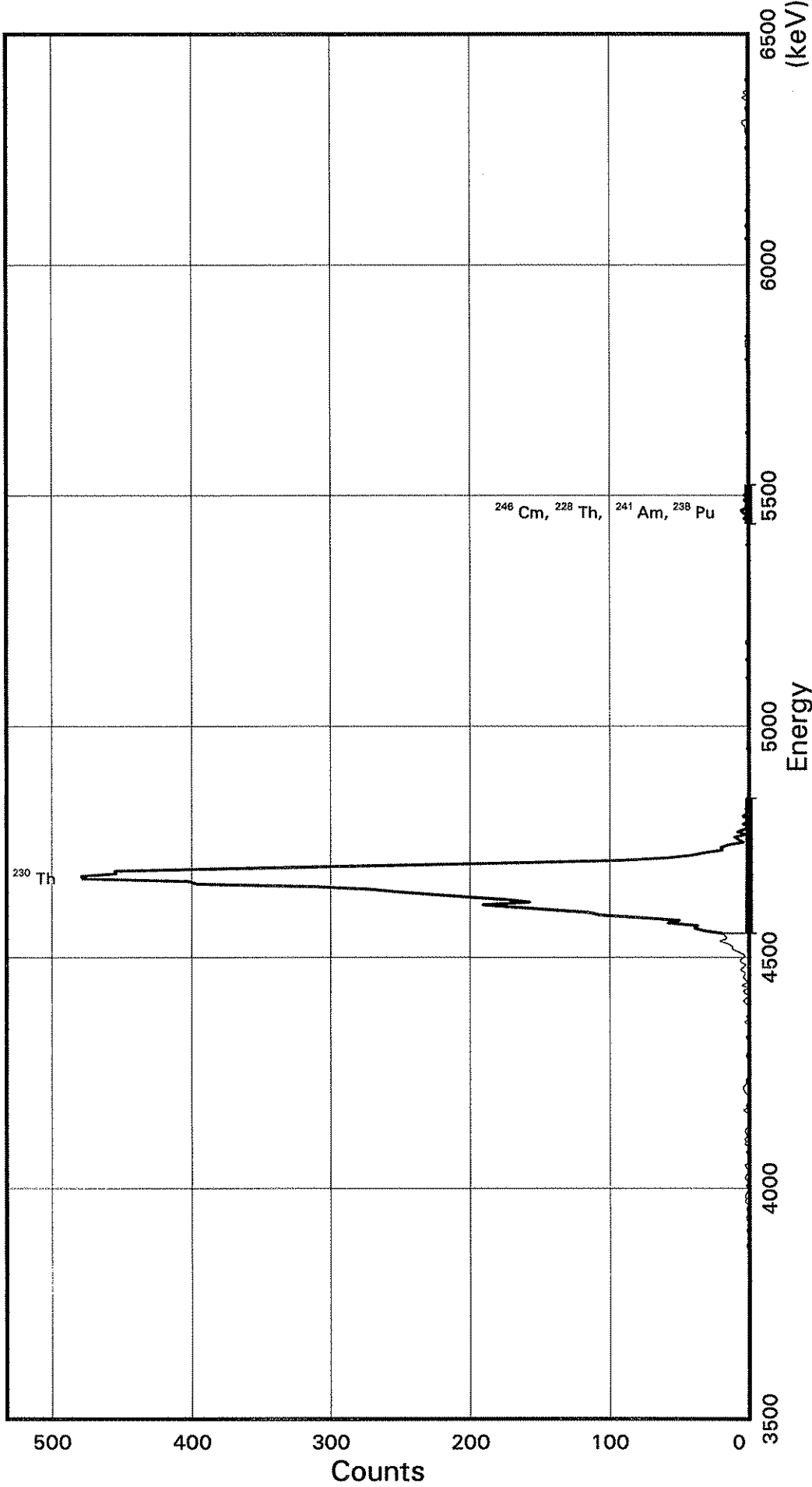
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	7	3	0.004	5423.2	113.1	320	340
TH-230	6547	6	6.548	4687.7	299.0	169	222
TH-232	32	2	0.030	4013.0	112.6	70	90

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

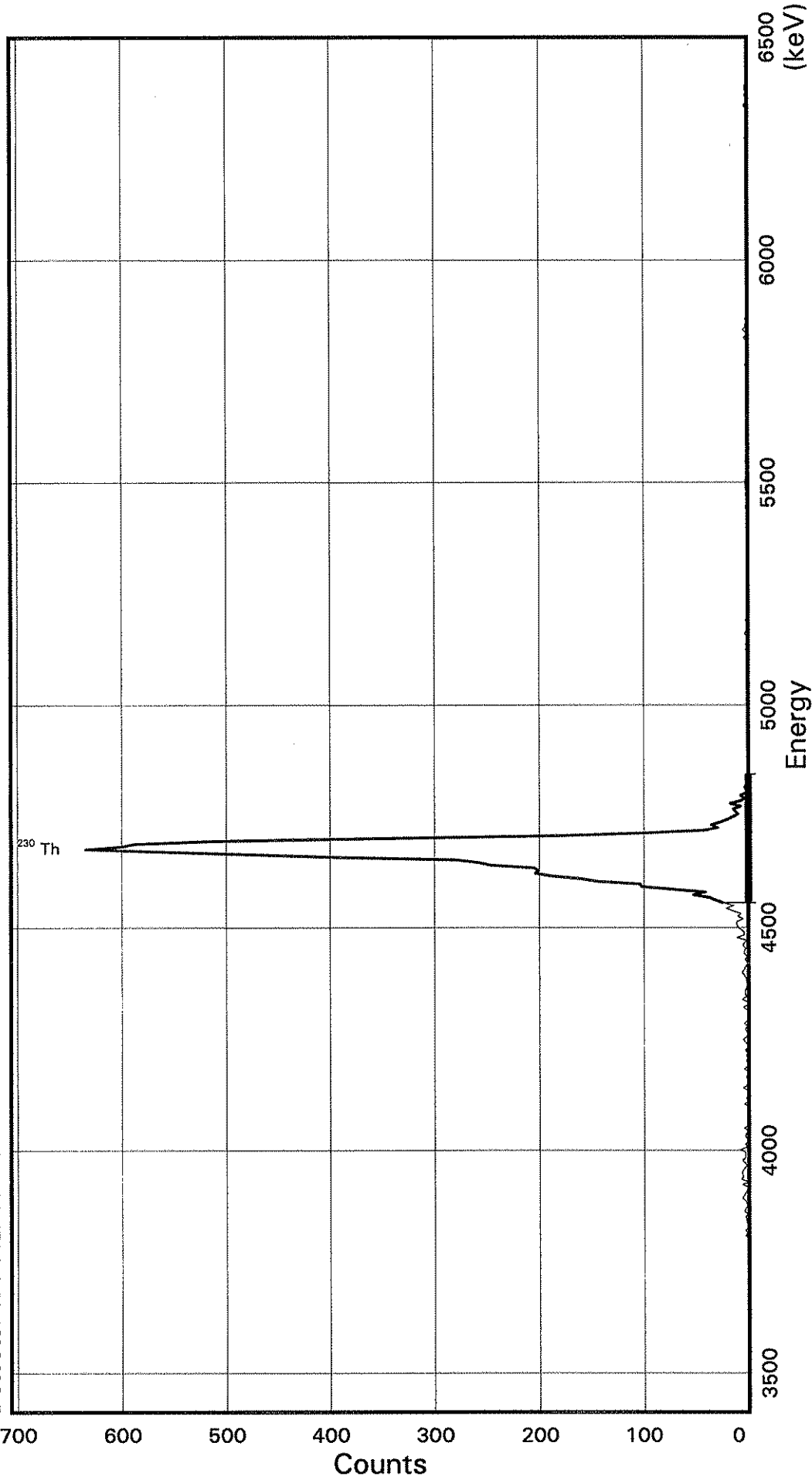
Nuclide	Smpl	Bkg	Count	Centrd	Region	Left	Rght
Name	Count	Count	C/Min	Energy	Width	Chnl	Chnl
TH-228	6	2	0.004	5423.2	120.9	322	342
TH-230	7115	2	7.120	4687.7	343.9	181	238
TH-232	73	0	0.073	4013.0	120.4	88	108

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	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	Rght 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

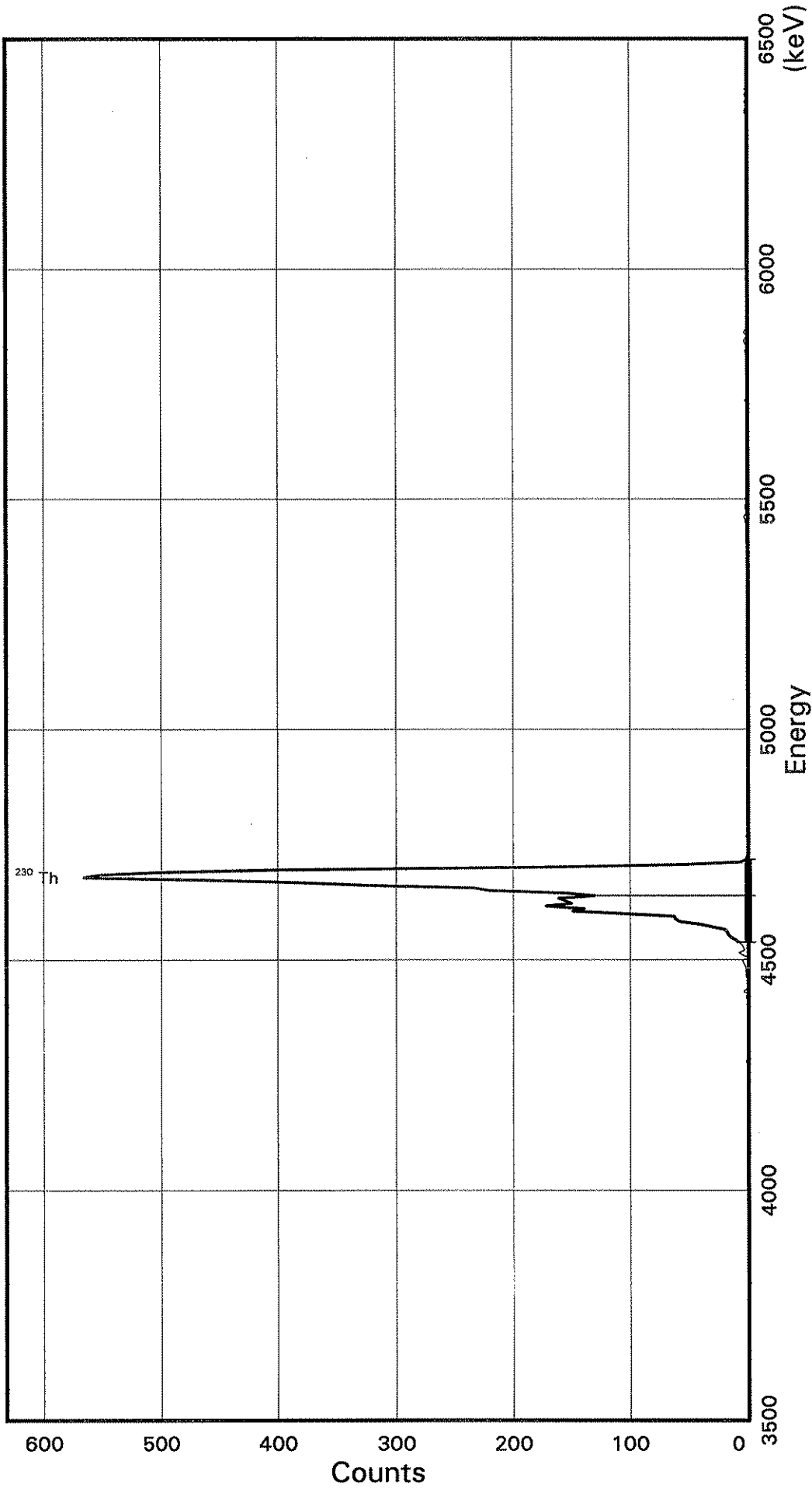
End of Alpha Region Report  
(Produced by ANAL Report)



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

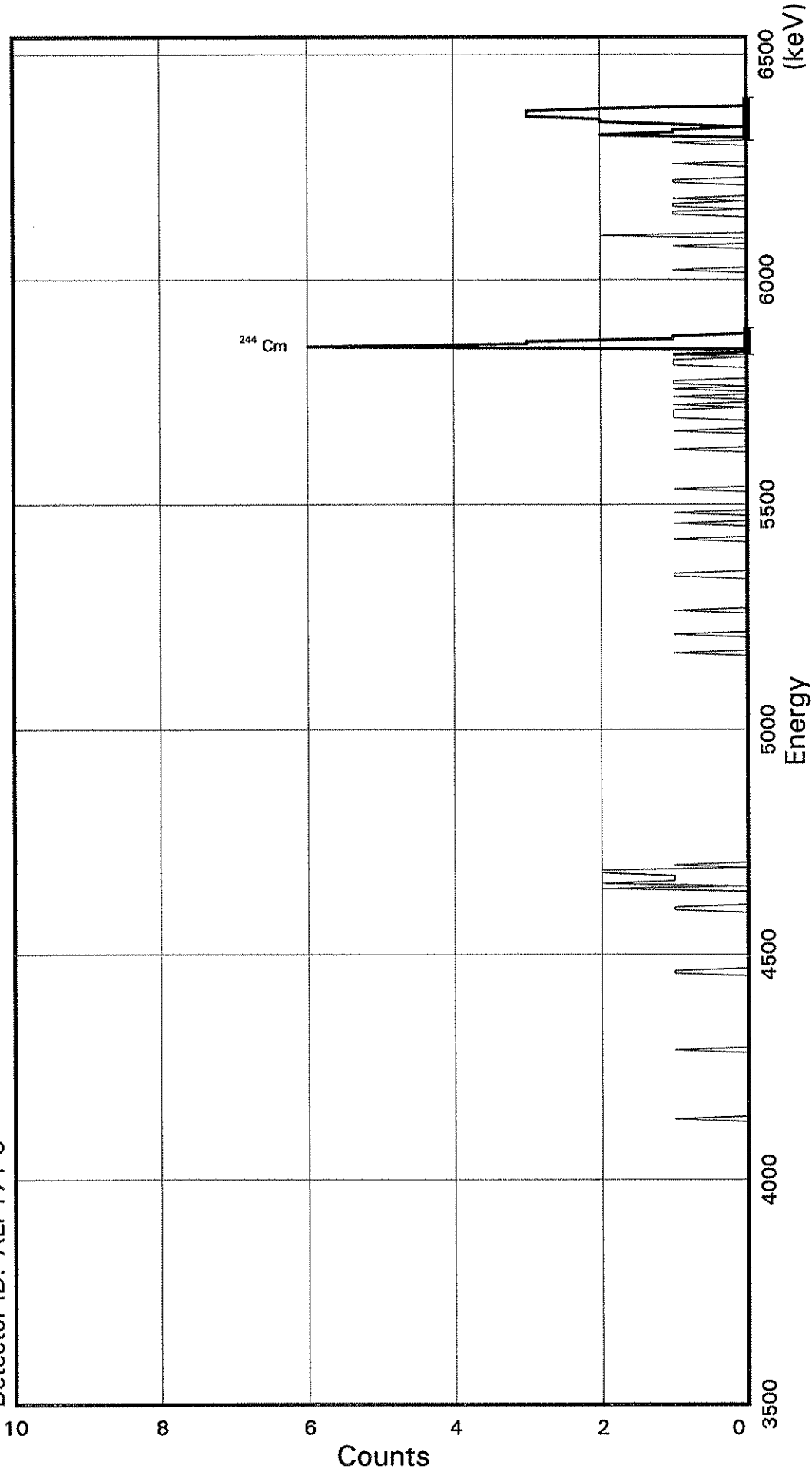
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	3	1	0.002	5423.2	117.6	307	327
TH-230	14	0	0.014	4687.7	117.6	182	202
TH-232	0	1	-0.001	4013.0	117.7	67	87

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 %



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

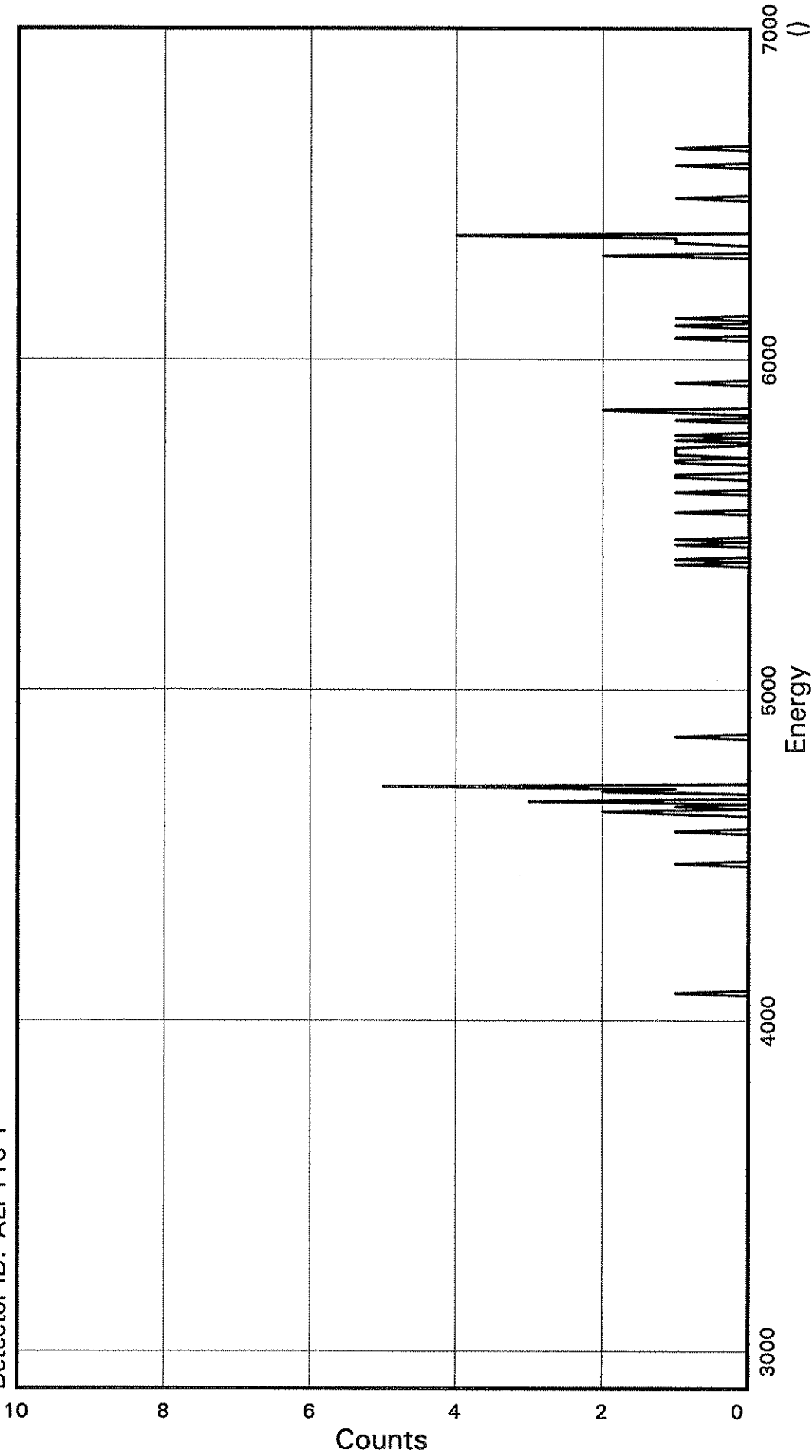
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	4	3	0.001	5423.2	150.8	325	345
TH-230	16	0	0.016	4687.7	150.6	227	247
TH-232	0	1	-0.001	4013.0	150.5	138	158

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 %





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
- $A * B / C = D$        $D - B = E$   
 $B / (B + F) * A = G$

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

TD 70163

THORIUM BETA DATA FORM



M23107A200 # 6254

Requested by: TDA

BETA

Analysis: M234

Sample ID	Vial Code	TH-234 WT(g)	Date-time Counted	Lab Tech:	Sel ID	Gross Counts	Counting Time	Bkg. Counts	Count Room Tech
RAC 897B		0.1056	9/24/79 1030		20R		20MIN		0
RAC 897A		0.0993			20S				
RAC 8980		0.1030			20C				
RAC 8981		0.1059			20D				



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

Sample ID	Isotope	Geometry
RDQC8979	111	15

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
24-SEP-2007 10:33:59.00	4408	20.00	611	500.00	26B

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
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

Sample ID	Isotope	Geometry
RCQD8981	111	15

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
24-SEP-2007 10:33:59.00	4623	20.00	596	500.00	26D

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
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	Aliq (g)	Ppt. Wt.	Date	Time	Counts	Count time	Bkgd.	Bkgd. Time	Set	Initials
20ac8981	0.1056	0	9/24/07	0952		50MIN			10A	←
20ac8979	0.0993	↓							10B	↓
20ac8980	0.1030	↓							10C	↓
20ac8981	0.1059	↓							10F	↓

Client: TAR

Date: 9/24/07

Analyst: TPA

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 00002 Beta 00000 Min 0050 Guard 00000 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: [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



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

12/18/2007 9:09:09 PM

# Standard Material Fractions (Vials)

Vial Prep:12/17/06 to 12/19/07,SMFractionIdentifier Like: THSI1112%, 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
THSI1112	TH-230	5.0967E+00 ± 1.682E-01 DPM	0.2349 g	11/27/2007 11/27/2007	Armstron	2.1697E+01 ± 7.160E-01 DPM/G
		5.0967E+000 ± 5.097E+000 ( 1)		5.0967E+000		5.0967E+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

Sample ID	Isotope	Geometry
DVF2602	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
30-MAY-2006 09:43:12.00	8717	20.00	740	500.00	30B

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
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

Sample ID	Isotope	Geometry
DVF2604	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
30-MAY-2006 09:43:12.00	8500	20.00	608	500.00	30D

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
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

<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

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

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
CAL5736	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 10:00:42.00	478	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>
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 =									<b>3905.82</b>

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
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		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

# 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

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
CAL5800	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	137549	20.00	795	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>
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  
 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: 5/24/06

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	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

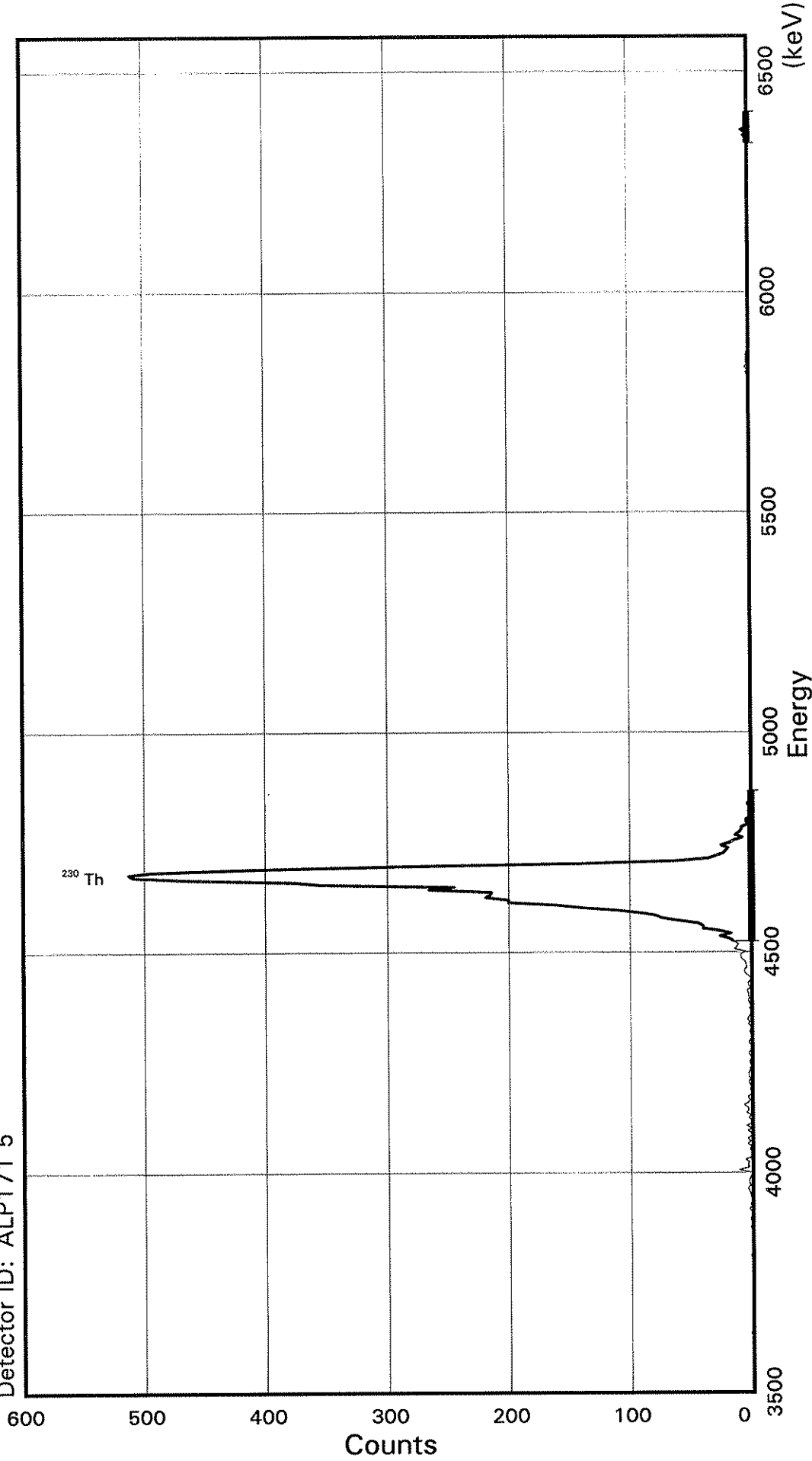
End of Alpha Region Report  
(Produced by ANAL Report)



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 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
		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	

```

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

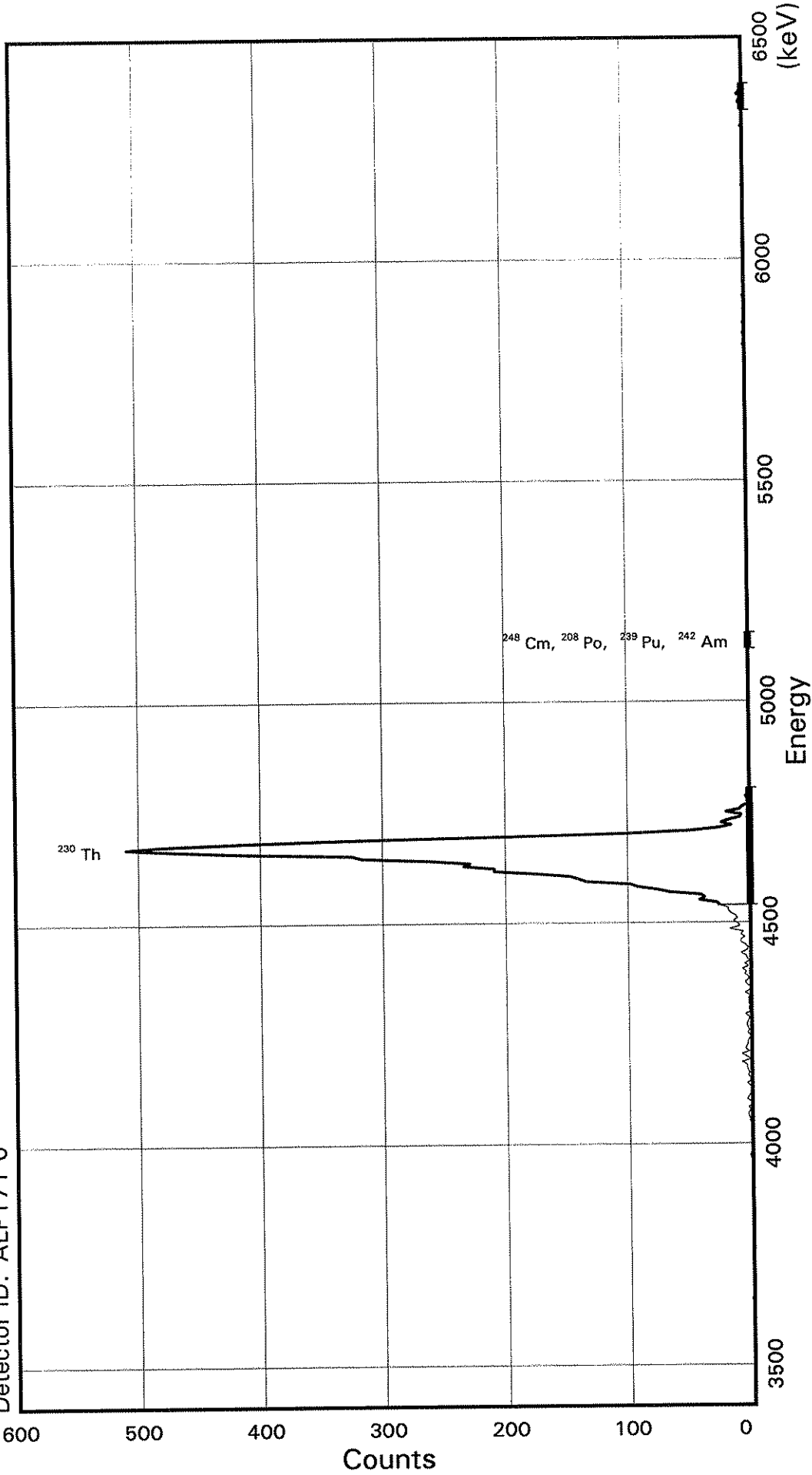
End of Alpha Region Report  
(Produced by ANAL Report)



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 %



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

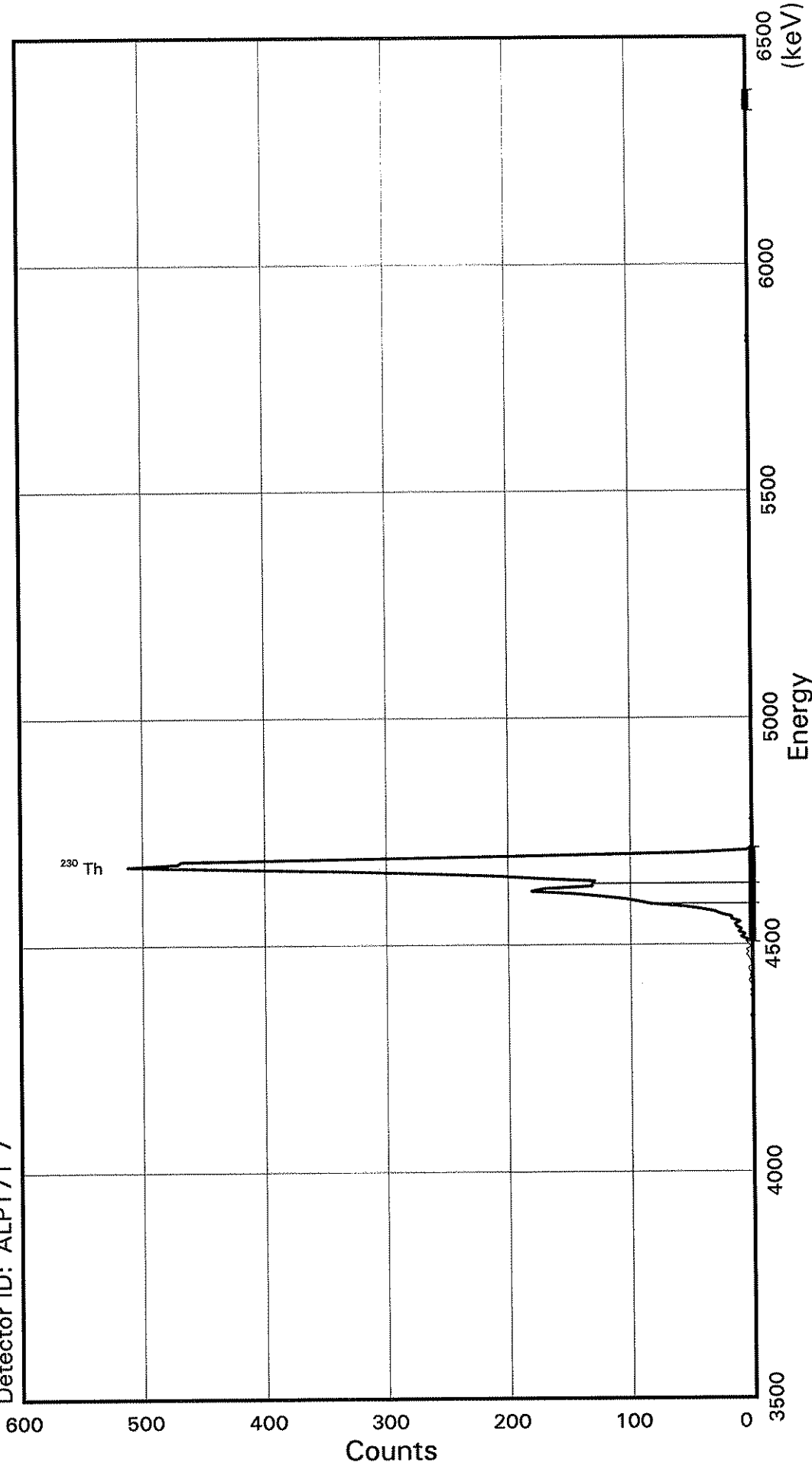
End of Alpha Region Report  
(Produced by ANAL Report)



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 STLR

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 %



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	

VMS Nuclide Identification Report V3.0 Generated 25-MAY-2006 10:47:42

```

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

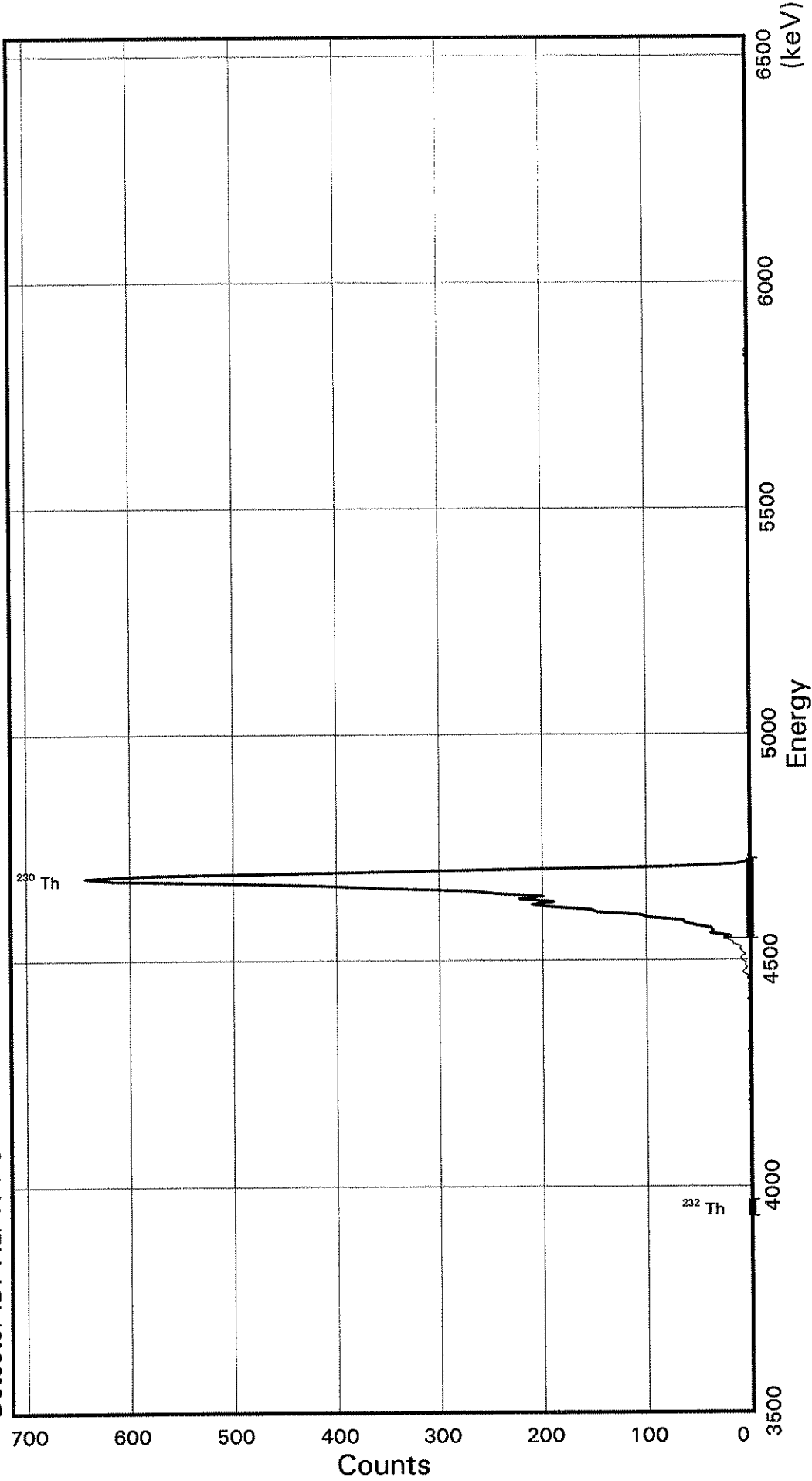
End of Alpha Region Report  
(Produced by ANAL Report)



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 %



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	

```

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 13-DEC-2007 20:49:14.78

QA Filename        : RDND06::RDND06\$DKA100:[ALP119.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description        : Efficiency, Am-241  
Parameter Units    : %                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:39	chk		0.2509	

-- Multi-Test Full Report --

Description        : Constant FWHM  
Parameter Units    : channels                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:39	chk		9.0000	

-- Multi-Test Full Report --

Description        : Centroid, Am-241  
Parameter Units    : channels                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:39	chk		354.6487	

-- 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        : 10-DEC-2000 00:00 End Date        : 30-MAY-2030 00:00  
Mean             : 0.260160                      Std Deviation   : 0.004550

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:39	chk		0.2588	

-- Multi-Test Full Report --

Description : Energy Calibration Slope  
 Parameter Units : keV/chan Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:39	chk		7.4897	

Quality Assurance Report. Generated 13-DEC-2007 20:49:16.17

QA Filename : RDND06::RDND06\$DKA100:[ALP119.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
------------------	-----------	----------------	-------	-----------------

-----  
 21-OCT-2007 10:05 bkg 0.0000 | | |

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0020	

-----  
 21-OCT-2007 10:05 bkg 0.0020 | | |

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0000	

-----  
 21-OCT-2007 10:05 bkg 0.0000 | | |

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0000	

-----  
 21-OCT-2007 10:05 bkg 0.0000 | | |

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0000	

-----  
 Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0000	

-----  
 21-OCT-2007 10:05 bkg 0.0000 | | |

## -- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0000		

## -- 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
21-OCT-2007 10:05	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
21-OCT-2007 10:05	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
21-OCT-2007 10:05	bkg		0.0010		

## -- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej

21-OCT-2007 10:05 bkg 0.0010 | | |

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
21-OCT-2007 10:05	bkg		0.0010		

21-OCT-2007 10:05 bkg 0.0010 | | |

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

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
-----					
21-OCT-2007 10:05	bkg		0.0070		

21-OCT-2007 10:05 bkg 0.0070 | | |

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
21-OCT-2007 10:05	bkg		0.0070		

21-OCT-2007 10:05 bkg 0.0070 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
21-OCT-2007 10:05	bkg		0.0050		

21-OCT-2007 10:05 bkg 0.0050 | | |

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0110		

-- 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
21-OCT-2007 10:05	bkg		0.0140		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0060		



## Quality Assurance Report.

Generated 26-DEC-2007 15:39:02.24

QA Filename : RDND06::RDND06\$DKA100:[ALP118.QA]GROUP\_1\_CHK.QAF;1

## -- Multi-Test Full Report --

Description : Efficiency, Am-241

Parameter Units : % Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
26-NOV-2007 07:06	chk		0.3510		
27-NOV-2007 04:34	chk		0.3489		
28-NOV-2007 05:26	chk		0.3424		
29-NOV-2007 13:25	chk		0.3459		
30-NOV-2007 06:16	chk		0.3402		
8-DEC-2007 08:08	chk		0.3498		
12-DEC-2007 15:06	chk		0.3498		

## -- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
26-NOV-2007 07:06	chk		8.0000		
27-NOV-2007 04:34	chk		8.0000		
28-NOV-2007 05:26	chk		7.8333		
29-NOV-2007 13:25	chk		8.0000		
30-NOV-2007 06:16	chk		8.0000		
8-DEC-2007 08:08	chk		7.5000		
12-DEC-2007 15:06	chk		7.8333		

## -- Multi-Test Full Report --

Description : Centroid, Am-241

Parameter Units : channels Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

26-NOV-2007 07:06	chk	350.4839			
27-NOV-2007 04:34	chk	350.1223			
28-NOV-2007 05:26	chk	349.7694			
29-NOV-2007 13:25	chk	350.4426			
30-NOV-2007 06:16	chk	350.4691			
8-DEC-2007 08:08	chk	350.5742			
12-DEC-2007 15:06	chk	350.5614			

-- 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-NOV-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.353575 Std Deviation : 0.002700

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

26-NOV-2007 07:06	chk	0.3528			
27-NOV-2007 04:34	chk	0.3536			
28-NOV-2007 05:26	chk	0.3507			
29-NOV-2007 13:25	chk	0.3532			
30-NOV-2007 06:16	chk	0.3520			
8-DEC-2007 08:08	chk	0.3536			
12-DEC-2007 15:06	chk	0.3592	In		

-- Multi-Test Full Report --

Description : Energy Calibration Slope  
 Parameter Units : keV/chan Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

26-NOV-2007 07:06	chk	7.5804			
27-NOV-2007 04:34	chk	7.5831			
28-NOV-2007 05:26	chk	7.6166			

29-NOV-2007 13:25	chk	7.5647	
30-NOV-2007 06:16	chk	7.5157	
8-DEC-2007 08:08	chk	7.6360	
12-DEC-2007 15:06	chk	7.5037	

Quality Assurance Report. Generated 26-DEC-2007 15:39:03.37

QA Filename : RDND06::RDND06\$DKA100:[ALP118.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
1-DEC-2007 11:54	bkg		0.0008	
3-DEC-2007 06:51	bkg		0.0020	
4-DEC-2007 05:16	bkg		0.0010	
5-DEC-2007 05:10	bkg		0.0000	
6-DEC-2007 05:22	bkg		0.0000	
9-DEC-2007 07:21	bkg		0.0010	
13-DEC-2007 07:56	bkg		0.0030	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
1-DEC-2007 11:54	bkg		0.0016	
3-DEC-2007 06:51	bkg		0.0010	
4-DEC-2007 05:16	bkg		0.0000	
5-DEC-2007 05:10	bkg		0.0040	
6-DEC-2007 05:22	bkg		0.0000	
9-DEC-2007 07:21	bkg		0.0000	
13-DEC-2007 07:56	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-DEC-2007 11:54	bkg		0.0000		
3-DEC-2007 06:51	bkg		0.0000		
4-DEC-2007 05:16	bkg		0.0000		
5-DEC-2007 05:10	bkg		0.0000		
6-DEC-2007 05:22	bkg		0.0000		
9-DEC-2007 07:21	bkg		0.0000		
13-DEC-2007 07:56	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-DEC-2007 11:54	bkg		0.0000		
3-DEC-2007 06:51	bkg		0.0010		

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
4-DEC-2007 05:16	bkg		0.0020		
5-DEC-2007 05:10	bkg		0.0010		
6-DEC-2007 05:22	bkg		0.0010		
9-DEC-2007 07:21	bkg		0.0020		
13-DEC-2007 07:56	bkg		0.0010		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-DEC-2007 11:54	bkg		0.0008		
3-DEC-2007 06:51	bkg		0.0020		
4-DEC-2007 05:16	bkg		0.0010		
5-DEC-2007 05:10	bkg		0.0010		
6-DEC-2007 05:22	bkg		0.0030		

9-DEC-2007 07:21 bkg 0.0010 | | |  
 13-DEC-2007 07:56 bkg 0.0010 | | |

## -- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-DEC-2007 11:54	bkg		0.0008	
3-DEC-2007 06:51	bkg		0.0020	
4-DEC-2007 05:16	bkg		0.0000	
5-DEC-2007 05:10	bkg		0.0010	
6-DEC-2007 05:22	bkg		0.0030	
9-DEC-2007 07:21	bkg		0.0010	
13-DEC-2007 07:56	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-DEC-2007 11:54	bkg		0.0016	
3-DEC-2007 06:51	bkg		0.0010	
4-DEC-2007 05:16	bkg		0.0000	
5-DEC-2007 05:10	bkg		0.0010	
6-DEC-2007 05:22	bkg		0.0020	
9-DEC-2007 07:21	bkg		0.0010	
13-DEC-2007 07:56	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 4882, Po-209 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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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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```
-----
1-DEC-2007 11:54 bkg          0.0028  | | |
3-DEC-2007 06:51 bkg          0.0010  | | |
4-DEC-2007 05:16 bkg          0.0000  | | |
5-DEC-2007 05:10 bkg          0.0020  | | |
6-DEC-2007 05:22 bkg          0.0010  | | |
9-DEC-2007 07:21 bkg          0.0020  | | |
13-DEC-2007 07:56 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
1-DEC-2007 11:54	bkg		0.0024	
3-DEC-2007 06:51	bkg		0.0020	
4-DEC-2007 05:16	bkg		0.0000	
5-DEC-2007 05:10	bkg		0.0020	
6-DEC-2007 05:22	bkg		0.0010	
9-DEC-2007 07:21	bkg		0.0020	
13-DEC-2007 07:56	bkg		0.0010	

-- 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
1-DEC-2007 11:54	bkg		0.0040	
3-DEC-2007 06:51	bkg		0.0010	
4-DEC-2007 05:16	bkg		0.0030	
5-DEC-2007 05:10	bkg		0.0040	
6-DEC-2007 05:22	bkg		0.0040	
9-DEC-2007 07:21	bkg		0.0020	
13-DEC-2007 07:56	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
1-DEC-2007 11:54	bkg		0.0020	
3-DEC-2007 06:51	bkg		0.0010	
4-DEC-2007 05:16	bkg		0.0020	
5-DEC-2007 05:10	bkg		0.0020	
6-DEC-2007 05:22	bkg		0.0010	
9-DEC-2007 07:21	bkg		0.0030	
13-DEC-2007 07:56	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

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
1-DEC-2007 11:54	bkg		0.0008	
3-DEC-2007 06:51	bkg		0.0010	
4-DEC-2007 05:16	bkg		0.0020	
5-DEC-2007 05:10	bkg		0.0010	
6-DEC-2007 05:22	bkg		0.0000	
9-DEC-2007 07:21	bkg		0.0010	
13-DEC-2007 07:56	bkg		0.0020	

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-DEC-2007 11:54	bkg		0.0008	
3-DEC-2007 06:51	bkg		0.0010	
4-DEC-2007 05:16	bkg		0.0020	
5-DEC-2007 05:10	bkg		0.0010	
6-DEC-2007 05:22	bkg		0.0000	
9-DEC-2007 07:21	bkg		0.0010	

13-DEC-2007 07:56 bkg 0.0020 | | |

## -- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-DEC-2007 11:54	bkg		0.0000	
3-DEC-2007 06:51	bkg		0.0000	
4-DEC-2007 05:16	bkg		0.0020	
5-DEC-2007 05:10	bkg		0.0020	
6-DEC-2007 05:22	bkg		0.0010	
9-DEC-2007 07:21	bkg		0.0020	
13-DEC-2007 07:56	bkg		0.0010	

## -- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-DEC-2007 11:54	bkg		0.0024	
3-DEC-2007 06:51	bkg		0.0000	
4-DEC-2007 05:16	bkg		0.0030	
5-DEC-2007 05:10	bkg		0.0030	
6-DEC-2007 05:22	bkg		0.0040	
9-DEC-2007 07:21	bkg		0.0030	
13-DEC-2007 07:56	bkg		0.0020	

## -- Multi-Test Full Report --

Description : 5499, Pu-238 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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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-DEC-2007 11:54	bkg	0.0024			
3-DEC-2007 06:51	bkg	0.0000			
4-DEC-2007 05:16	bkg	0.0030			
5-DEC-2007 05:10	bkg	0.0030			
6-DEC-2007 05:22	bkg	0.0040			
9-DEC-2007 07:21	bkg	0.0030			
13-DEC-2007 07:56	bkg	0.0020			

## -- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-DEC-2007 11:54	bkg		0.0012		
3-DEC-2007 06:51	bkg		0.0000		
4-DEC-2007 05:16	bkg		0.0010		
5-DEC-2007 05:10	bkg		0.0020		
6-DEC-2007 05:22	bkg		0.0010		
9-DEC-2007 07:21	bkg		0.0010		
13-DEC-2007 07:56	bkg		0.0000		

## -- 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
1-DEC-2007 11:54	bkg		0.0016		
3-DEC-2007 06:51	bkg		0.0000		
4-DEC-2007 05:16	bkg		0.0030		
5-DEC-2007 05:10	bkg		0.0030		
6-DEC-2007 05:22	bkg		0.0010		
9-DEC-2007 07:21	bkg		0.0030		
13-DEC-2007 07:56	bkg		0.0010		

## -- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-DEC-2007 11:54	bkg		0.0004		
3-DEC-2007 06:51	bkg		0.0000		
4-DEC-2007 05:16	bkg		0.0000		
5-DEC-2007 05:10	bkg		0.0010		
6-DEC-2007 05:22	bkg		0.0000		
9-DEC-2007 07:21	bkg		0.0000		
13-DEC-2007 07:56	bkg		0.0000		

## Quality Assurance Report.

Generated 26-DEC-2007 15:37:37.07

QA Filename : RDND06::RDND06\$DKA100:[ALP117.QA]GROUP\_1\_CHK.QAF;1

## -- Multi-Test Full Report --

Description : Efficiency, Am-241

Parameter Units : % Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
26-NOV-2007 07:06	chk		0.3612		
27-NOV-2007 04:34	chk		0.3546		
28-NOV-2007 05:26	chk		0.3600		
29-NOV-2007 13:25	chk		0.3476		
30-NOV-2007 06:16	chk		0.3561		
8-DEC-2007 08:08	chk		0.3537		
12-DEC-2007 15:06	chk		0.3564		

## -- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
26-NOV-2007 07:06	chk		7.6667		
27-NOV-2007 04:34	chk		8.5000		
28-NOV-2007 05:26	chk		8.3333		
29-NOV-2007 13:25	chk		7.8333		
30-NOV-2007 06:16	chk		8.0000		
8-DEC-2007 08:08	chk		8.1667		
12-DEC-2007 15:06	chk		8.0000		

## -- Multi-Test Full Report --

Description : Centroid, Am-241

Parameter Units : channels Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

26-NOV-2007 07:06	chk	353.7563			
27-NOV-2007 04:34	chk	354.1107			
28-NOV-2007 05:26	chk	353.7618			
29-NOV-2007 13:25	chk	354.0370			
30-NOV-2007 06:16	chk	354.0503			
8-DEC-2007 08:08	chk	354.1419			
12-DEC-2007 15:06	chk	354.1337			

## -- 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-NOV-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.364165              Std Deviation : 0.001731

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

26-NOV-2007 07:06	chk	0.3653			
27-NOV-2007 04:34	chk	0.3630			
28-NOV-2007 05:26	chk	0.3654			
29-NOV-2007 13:25	chk	0.3636			
30-NOV-2007 06:16	chk	0.3666			
8-DEC-2007 08:08	chk	0.3614			
12-DEC-2007 15:06	chk	0.3638			

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
 Parameter Units : keV/chan              Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

26-NOV-2007 07:06	chk	7.5169			
27-NOV-2007 04:34	chk	7.4810			
28-NOV-2007 05:26	chk	7.5391			

29-NOV-2007 13:25	chk	7.4819			
30-NOV-2007 06:16	chk	7.5008			
8-DEC-2007 08:08	chk	7.4083			
12-DEC-2007 15:06	chk	7.4725			

Quality Assurance Report.                      Generated 26-DEC-2007 15:37:38.11

QA Filename     : RDND06::RDND06\$DKA100:[ALP117.QA]GROUP\_1\_BKG.QAF;1

-- 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
-----				
1-DEC-2007 11:54	bkg		0.0016	
3-DEC-2007 06:51	bkg		0.0000	
5-DEC-2007 05:10	bkg		0.0010	
6-DEC-2007 05:22	bkg		0.0000	
7-DEC-2007 05:18	bkg		0.0000	
9-DEC-2007 07:21	bkg		0.0000	
13-DEC-2007 07:56	bkg		0.0010	

-- 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
-----				
1-DEC-2007 11:54	bkg		0.0004	
3-DEC-2007 06:51	bkg		0.0010	
5-DEC-2007 05:10	bkg		0.0020	
6-DEC-2007 05:22	bkg		0.0010	
7-DEC-2007 05:18	bkg		0.0030	
9-DEC-2007 07:21	bkg		0.0000	
13-DEC-2007 07:56	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
1-DEC-2007 11:54	bkg		0.0000		
3-DEC-2007 06:51	bkg		0.0000		
5-DEC-2007 05:10	bkg		0.0010		
6-DEC-2007 05:22	bkg		0.0020		
7-DEC-2007 05:18	bkg		0.0020		
9-DEC-2007 07:21	bkg		0.0000		
13-DEC-2007 07:56	bkg		0.0010		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-DEC-2007 11:54	bkg		0.0012		
3-DEC-2007 06:51	bkg		0.0000		

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
5-DEC-2007 05:10	bkg		0.0020		
6-DEC-2007 05:22	bkg		0.0000		
7-DEC-2007 05:18	bkg		0.0000		
9-DEC-2007 07:21	bkg		0.0000		
13-DEC-2007 07:56	bkg		0.0000		

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-DEC-2007 11:54	bkg		0.0012		
3-DEC-2007 06:51	bkg		0.0000		
5-DEC-2007 05:10	bkg		0.0020		
6-DEC-2007 05:22	bkg		0.0000		
7-DEC-2007 05:18	bkg		0.0000		

9-DEC-2007 07:21 bkg	0.0000	
13-DEC-2007 07:56 bkg	0.0000	

## -- 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
-----				
1-DEC-2007 11:54 bkg			0.0000	
3-DEC-2007 06:51 bkg			0.0000	
5-DEC-2007 05:10 bkg			0.0000	
6-DEC-2007 05:22 bkg			0.0020	
7-DEC-2007 05:18 bkg			0.0010	
9-DEC-2007 07:21 bkg			0.0010	
13-DEC-2007 07:56 bkg			0.0010	

## -- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
1-DEC-2007 11:54 bkg			0.0000	
3-DEC-2007 06:51 bkg			0.0000	
5-DEC-2007 05:10 bkg			0.0010	
6-DEC-2007 05:22 bkg			0.0000	
7-DEC-2007 05:18 bkg			0.0000	
9-DEC-2007 07:21 bkg			0.0000	
13-DEC-2007 07:56 bkg			0.0000	

## -- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cpm Parameter Type :

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

```

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1-DEC-2007 11:54 bkg          0.0008  | | |
3-DEC-2007 06:51 bkg          0.0010  | | |
5-DEC-2007 05:10 bkg          0.0020  | | |
6-DEC-2007 05:22 bkg          0.0010  | | |
7-DEC-2007 05:18 bkg          0.0010  | | |
9-DEC-2007 07:21 bkg          0.0000  | | |
13-DEC-2007 07:56 bkg         0.0000  | | |

```

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
Parameter Units : cpm                    Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-DEC-2007 11:54	bkg		0.0012	
3-DEC-2007 06:51	bkg		0.0020	
5-DEC-2007 05:10	bkg		0.0010	
6-DEC-2007 05:22	bkg		0.0020	
7-DEC-2007 05:18	bkg		0.0000	
9-DEC-2007 07:21	bkg		0.0000	
13-DEC-2007 07:56	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
Parameter Units : cpm                    Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-DEC-2007 11:54	bkg		0.0008	
3-DEC-2007 06:51	bkg		0.0000	
5-DEC-2007 05:10	bkg		0.0010	
6-DEC-2007 05:22	bkg		0.0000	
7-DEC-2007 05:18	bkg		0.0000	
9-DEC-2007 07:21	bkg		0.0000	
13-DEC-2007 07:56	bkg		0.0000	

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
Parameter Units : cpm                    Parameter Type :



Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-DEC-2007 11:54	bkg		0.0008		
3-DEC-2007 06:51	bkg		0.0010		
5-DEC-2007 05:10	bkg		0.0020		
6-DEC-2007 05:22	bkg		0.0000		
7-DEC-2007 05:18	bkg		0.0000		
9-DEC-2007 07:21	bkg		0.0000		
13-DEC-2007 07:56	bkg		0.0010		

Quality Assurance Report. Generated 13-DEC-2007 20:24:32.28

QA Filename : RDND06::RDND06\$DKA100:[ALP117.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Am-241  
 Parameter Units : % Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:38	chk		0.0000	

-- Multi-Test Full Report --

Description : Constant FWHM  
 Parameter Units : channels Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:38	chk		5.3333	

-- 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-NOV-2007 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.364165 Std Deviation : 0.001731

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:38	chk		0.0036	Ac

-- Multi-Test Full Report --

Description : Energy Calibration Slope  
 Parameter Units : keV/chan Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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20-OCT-2007 09:38	chk		9.9123	
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Quality Assurance Report. Generated 13-DEC-2007 20:14:14.95

QA Filename : RDND06::RDND06\$DKA100:[ALP116.QA]GROUP\_1\_CHK.QAF;2

-- Multi-Test Full Report --

Description : U-238 Centroid  
 Parameter Units : channel Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:38	chk		178.6942	

-- Multi-Test Full Report --

Description : Constant FWHM  
 Parameter Units : channels Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:38	chk		9.1667	

-- Multi-Test Full Report --

Description : Cf-252 Centroid  
 Parameter Units : channels Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:38	chk		432.6640	

-- Multi-Test Full Report --

Description : Average Efficiency  
 Parameter Units : counts/decay Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:38	chk		0.1733	

-- Multi-Test Full Report --

Description : Am-241 Efficiency

Parameter Units : counts/decay Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:38	chk		0.1702	

Quality Assurance Report. Generated 13-DEC-2007 20:14:15.87

QA Filename : RDND06::RDND06\$DKA100:[ALP116.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0000		

Quality Assurance Multi-Test Full Report (continued)      Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0000		

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0000		

-----  
 21-OCT-2007 10:05 bkg 0.0000 | | |

-- 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
21-OCT-2007 10:05	bkg		0.0000	

-----  
 21-OCT-2007 10:05 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
21-OCT-2007 10:05	bkg		0.0010	

-----  
 21-OCT-2007 10:05 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
21-OCT-2007 10:05	bkg		0.0010	

-----  
 21-OCT-2007 10:05 bkg 0.0010 | | |

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0010	

-----  
 21-OCT-2007 10:05 bkg 0.0010 | | |

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0010	

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-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0040	

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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
21-OCT-2007 10:05	bkg		0.0040	

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-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0060	

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-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0080	

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-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0080	

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21-OCT-2007 10:05 bkg 0.0050 | | |

-- 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
-----					
21-OCT-2007 10:05	bkg		0.0080		

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
-----					
21-OCT-2007 10:05	bkg		0.0040		

Quality Assurance Report.

Generated 26-DEC-2007 15:35:33.64

QA Filename : RDND06::RDND06\$DKA100:[ALP113.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description : Efficiency, Pu-239

Parameter Units : % Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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8-DEC-2007 08:08	chk		0.3278		
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12-DEC-2007 15:06	chk		0.3352		
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-- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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8-DEC-2007 08:08	chk		5.8333		
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12-DEC-2007 15:06	chk		6.0000		
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-- Multi-Test Full Report --

Description : Centroid, Pu-239

Parameter Units : channels Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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8-DEC-2007 08:08	chk		312.1105		
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12-DEC-2007 15:06	chk		312.1440		
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-- Multi-Test Full Report --

Description : Average Efficiency

Parameter Units : % Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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8-DEC-2007 08:08	chk	0.3386	
12-DEC-2007 15:06	chk	0.3411	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
 Parameter Units : keV/chan      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
8-DEC-2007 08:08	chk		7.6602	
12-DEC-2007 15:06	chk		7.6792	

## -- Multi-Test Full Report --

Description : Efficiency, Am-241  
 Parameter Units : %      Parameter Type :

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
8-DEC-2007 08:08	chk		0.3278	
12-DEC-2007 15:06	chk		0.3352	

## -- Multi-Test Full Report --

Description : Centroid, Am-241  
 Parameter Units : channels      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
8-DEC-2007 08:08	chk		356.4388	
12-DEC-2007 15:06	chk		356.1655	

Quality Assurance Report.      Generated 26-DEC-2007 15:35:34.78

QA Filename : RDND06::RDND06\$DKA100:[ALP113.QA]GROUP\_1\_BKG.QAF;1

## -- Multi-Test Full Report --

Description : 4010, Th-232 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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9-DEC-2007 07:21	bkg		0.0010		
------------------	-----	--	--------	--	--

13-DEC-2007 07:56	bkg		0.0010		
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-- Multi-Test Full Report --

Description : 4196, U-238 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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9-DEC-2007 07:21	bkg		0.0010		
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13-DEC-2007 07:56	bkg		0.0000		
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-- Multi-Test Full Report --

Description : 4396, U-235 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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9-DEC-2007 07:21	bkg		0.0000		
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13-DEC-2007 07:56	bkg		0.0000		
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-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
------------------	-----------	----------------	-------	-------------	-----

9-DEC-2007 07:21	bkg		0.0000		
------------------	-----	--	--------	--	--

13-DEC-2007 07:56	bkg		0.0000		
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-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
9-DEC-2007 07:21	bkg		0.0000	
13-DEC-2007 07:56	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

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
9-DEC-2007 07:21	bkg		0.0000	
13-DEC-2007 07:56	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
9-DEC-2007 07:21	bkg		0.0000	
13-DEC-2007 07:56	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
9-DEC-2007 07:21	bkg		0.0000	
13-DEC-2007 07:56	bkg		0.0000	

-- 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
9-DEC-2007 07:21	bkg		0.0000		
13-DEC-2007 07:56	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
9-DEC-2007 07:21	bkg		0.0010		
13-DEC-2007 07:56	bkg		0.0000		

-- 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
9-DEC-2007 07:21	bkg		0.0020		
13-DEC-2007 07:56	bkg		0.0010		

-- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)

Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
9-DEC-2007 07:21	bkg		0.0010		
13-DEC-2007 07:56	bkg		0.0020		

Quality Assurance Multi-Test Full Report (continued)      Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
9-DEC-2007 07:21	bkg		0.0010		
13-DEC-2007 07:56	bkg		0.0020		

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
9-DEC-2007 07:21	bkg		0.0010		
13-DEC-2007 07:56	bkg		0.0020		

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
9-DEC-2007 07:21	bkg		0.0020		
13-DEC-2007 07:56	bkg		0.0030		

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
9-DEC-2007 07:21	bkg		0.0030		
13-DEC-2007 07:56	bkg		0.0010		

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
9-DEC-2007 07:21	bkg		0.0030		
13-DEC-2007 07:56	bkg		0.0010		

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)

Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
9-DEC-2007 07:21	bkg		0.0010	
13-DEC-2007 07:56	bkg		0.0020	

-- 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
Quality Assurance Multi-Test Full Report (continued)				Page : 4

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
9-DEC-2007 07:21	bkg		0.0000	
13-DEC-2007 07:56	bkg		0.0020	

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
9-DEC-2007 07:21	bkg		0.0010	
13-DEC-2007 07:56	bkg		0.0000	



Quality Assurance Report.                      Generated 13-DEC-2007 20:36:26.90

QA Filename        : RDND06::RDND06\$DKA100:[ALP120.QA]GROUP\_1\_CHK.QAF;1

-- Multi-Test Full Report --

Description        : Efficiency, Am-241  
Parameter Units    : %                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:39	chk		0.2547	

-- Multi-Test Full Report --

Description        : Constant FWHM  
Parameter Units    : channels                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:39	chk		10.0000	

-- Multi-Test Full Report --

Description        : Centroid, Am-241  
Parameter Units    : channels                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:39	chk		356.2349	

-- 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        : 10-DEC-2000 00:00 End Date        : 30-MAY-2030 00:00  
Mean             : 0.244947                      Std Deviation   : 0.004551

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:39	chk		0.2526	

-- Multi-Test Full Report --

Description : Energy Calibration Slope  
 Parameter Units : keV/chan Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
20-OCT-2007 09:39	chk		7.1242	

Quality Assurance Report. Generated 13-DEC-2007 20:36:28.22

QA Filename : RDND06::RDND06\$DKA100:[ALP120.QA]GROUP\_1\_BKG.QAF;1

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0010	

-- Multi-Test Full Report --

Description : 4396, U-235 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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-----  
 21-OCT-2007 10:05 bkg 0.0000 | | |

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0000	

-----  
 21-OCT-2007 10:05 bkg 0.0000 | | |

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0020	

-----  
 21-OCT-2007 10:05 bkg 0.0020 | | |

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0020	

-----  
 21-OCT-2007 10:05 bkg 0.0020 | | |

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0020	

-----  
 Quality Assurance Multi-Test Full Report (continued) Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0020	

-----  
 21-OCT-2007 10:05 bkg 0.0020 | | |

## -- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0020		

## -- 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
21-OCT-2007 10:05	bkg		0.0020		

## -- 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
21-OCT-2007 10:05	bkg		0.0000		

## -- 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
21-OCT-2007 10:05	bkg		0.0000		

## -- Multi-Test Full Report --

Description : 5305, Po-210 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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21-OCT-2007 10:05 bkg 0.0010 | | |

-- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0020		

21-OCT-2007 10:05 bkg 0.0020 | | |

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0030		

Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0000		

21-OCT-2007 10:05 bkg 0.0030 | | |

-- Multi-Test Full Report --

Description : 5486, Am-241 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0010		

21-OCT-2007 10:05 bkg 0.0000 | | |

-- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
21-OCT-2007 10:05	bkg		0.0010		

21-OCT-2007 10:05 bkg 0.0010 | | |

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0130	

-- 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
21-OCT-2007 10:05	bkg		0.0140	

-- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
21-OCT-2007 10:05	bkg		0.0040	

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		

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		

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
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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
19-NOV-2007 05:26	bkg		0.0010		
9-DEC-2007 07:20	bkg		0.0010		

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 : 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	

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

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
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
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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
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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
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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
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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
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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 : 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
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19-NOV-2007 05:26	bkg		0.0000		
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9-DEC-2007 07:20	bkg		0.0000		
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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 : 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
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19-NOV-2007 05:26	bkg		0.0000		
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9-DEC-2007 07:20	bkg		0.0010		
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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 : 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: F7K200219; 12/20/2007  
Client, Site: 445691; Phs2 Smpling Tronox Prcl CDFG  
QC Batch No., Method Test: 7330521; RUIISO Uiso by ALP  
SDG, Matrix: 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

*Joe Johnson*

Date

*12/20/07*

## Data Review Checklist

### RADIOCHEMISTRY

#### Second Level Review

Batch Number: 7330521

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 Jordan Date: 12/20/17

12/5/2007 8:59:27 PM  
 445691, Basic Remediation Company  
 Basic Remediation Company  
 AnalyzeDate: 12/14/2007

Balance Id:1120373922  
 Pipet #: \_\_\_\_\_  
 Sep1 DT/Tm Tech:  
 Sep2 DT/Tm Tech:

Sample Preparation/Analysis  
 7U Ulso PprRC5013, SepRC5079(5039)  
 SR Uranium-234,235,238 by Alpha Spec  
 01 STANDARD TEST SET

**PRIORITY**

PM, Quote: JAE, 77571

Prep Tech: WoodT

Batch: 7330521  
 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:
1 KCMNL-1-AD	2.01g.in	2.01g	2.01g	UITC18985	11/27/07.pd 05/05/87.r	700	Scr:	Alpha:	Beta:	
F7K200219-1-SAMP 11/19/2007 08:40	AmtRec: 500SL #Containers: 1									
2 KCMNW-1-AD	2.00g.in	2.00g	2.00g	UITC18986	11/27/07.pd 05/05/87.r		Scr:	Alpha:	Beta:	
F7K200219-2-SAMP 11/19/2007 08:40	AmtRec: 500SL #Containers: 1									
3 KCMNX-1-AD	2.00g.in	2.00g	2.00g	UITC18987	11/27/07.pd 05/05/87.r		Scr:	Alpha:	Beta:	
F7K200219-3-SAMP 11/19/2007 09:05	AmtRec: 500SL #Containers: 1									
4 KCMN5-1-AD	2.00g.in	2.00g	2.00g	UITC18988	11/27/07.pd 05/05/87.r		Scr:	Alpha:	Beta:	
F7K200219-4-SAMP 11/19/2007 09:45	AmtRec: 500SL #Containers: 1									
5 KCMN5-1-AG-X	2.00g.in	2.00g	2.00g	UITC18989	11/27/07.pd 05/05/87.r		Scr:	Alpha:	Beta:	
F7K200219-4-DUP 11/19/2007 09:45	AmtRec: 500SL #Containers: 1									
6 KCMN8-1-AD	2.01g.in	2.01g	2.01g	UITC18990	11/27/07.pd 05/05/87.r		Scr:	Alpha:	Beta:	
F7K200219-5-SAMP 11/19/2007 10:05	AmtRec: 500SL #Containers: 1									
7 KCMFK-1-AD	2.02g.in	2.02g	2.02g	UITC18991	11/27/07.pd 05/05/87.r		Scr:	Alpha:	Beta:	
F7K200219-6-SAMP 11/19/2007 06:40	AmtRec: 500SL #Containers: 1									

TAL RICHLAND

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12/5/2007 8:59:31 PM

445691, Basic Remediation Company  
Basic Remediation Company

# Sample Preparation/Analysis

7U Uiso PpRC5013, SepRC5079(5039)  
SR Uranium-234,235,238 by Alpha Spec  
01 STANDARD TEST SET

Balance Id:1120373922

Pipet #:

AnalyDueDate: 12/14/2007

Sep1 DT/Tm Tech:

Batch: 7330521

PM, Quote: JAE, 77571

pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,WoodT

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 KCMPPR-1-AD			2.02g.in	2.02g	UITC18992	11/27/07.pd 05/05/87.r				
F7K200219-7-SAMP										
11/19/2007 06:40										
9 KCMPPT-1-AD			2.01g.in	2.01g	UITC18993	11/27/07.pd 05/05/87.r				
F7K200219-8-SAMP										
11/19/2007 07:00										
10 KCMPV-1-AD			2.01g.in	2.01g	UITC18994	11/27/07.pd 05/05/87.r				
F7K200219-9-SAMP										
11/19/2007 07:15										
11 KCMPX-1-AD			2.00g.in	2.00g	UITC18995	11/27/07.pd 05/05/87.r				
F7K200219-10-SAMP										
11/19/2007 07:25										
12 KCMP5-1-AD			2.01g.in	2.01g	UITC18996	11/27/07.pd 05/05/87.r				
F7K200219-11-SAMP										
11/19/2007 07:45										
13 KCMQF-1-AD			2.03g.in	2.03g	UITC18997	11/27/07.pd 05/05/87.r				
F7K200219-12-SAMP										
11/19/2007 07:55										
14 KCMQH-1-AD			2.00g.in	2.00g	UITC18998	11/27/07.pd 05/05/87.r				
F7K200219-13-SAMP										
11/19/2007 08:15										

TAL RICHLAND

8 9 10 450 11 12 13 14

12/5/2007 8:59:34 PM

445691, Basic Remediation Company  
Basic Remediation Company

### Sample Preparation/Analysis

7U UIso PpRC5013, SepRC5079(5039)  
SR Uranium-234,235,238 by Alpha Spec  
01 STANDARD TEST SET

Balance Id:1120373922

Pipet #:

AnalytDueDate: 12/14/2007

Sep1 DT/Tm Tech:

Batch: 7330521

PM, Quote: JAE, 77571

pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,WoodT

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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15KCMQJ-1-AD	2.01g.in	2.01g	UITC18999	11/27/07.pd 05/05/87.r	200					
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16KCV2R-1-AA-B	2.04g.in	2.04g	UITC19000	11/27/07.pd 05/05/87.r						
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17KCV2R-1-AC-C	2.02g.in	2.02g	UISG1546	11/27/07.pd 05/05/87.r						
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Comments: *Samples have been crashed 1/5/07 JAV*

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

KCMNL1AD-SAMP Constituent List:

KCV2R1AA-BLK:	RDL:	U-232	RDL:6.00E-01	pCi/g	U-234	RDL:6.00E-01	pCi/g	RPD:	UCL:	RPD:
		U-235	RDL:6.00E-01	pCi/g	U-238	RDL:6.00E-01	pCi/g		UCL:	RPD:
KCV2R1AC-LCS:	RDL:	U-232	RDL:	pCi/g	Uranium	RDL:	pCi/g		UCL:130	RPD:35

KCMNL1AD-SAMP Calc Info:  
 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

12/5/2007 8:59:36 PM

### Sample Preparation/Analysis

Balance Id:1120373922

7U Uiso PrpRC5013, SepRC5079(5039)  
SR Uranium-234,235,238 by Alpha Spec  
01 STANDARD TEST SET

# PRIORITY

Pipet #:

AnalyDueDate: 12/14/2007

Sep1 DT/Tm Tech:

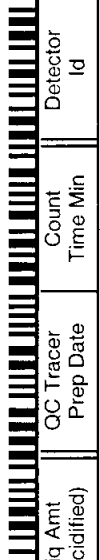
Batch: 7330521

pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,WoodT



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:
Uncert Level (#s) : 4	Decay to Sabt: 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: '7330521', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
<b>7330521</b>				
AC	CalcC	WoodT	12/5/2007 8:55:28 PM	
SC		wagarr	IsBatched	11/26/2007 2:51:34 PM ICOC_RADCALC v4.8.29
SC		WoodT	InPrep	12/5/2007 8:55:28 PM RICH-RC-5013 REVISION 7
SC		WoodT	Prep1C	12/5/2007 8:55:55 PM RICH-RC-5013 REVISION 7
SC		WoodT	InPrep2	12/5/2007 8:56:13 PM RICH-RC-5086 REVISION 3
SC		WoodT	Prep2C	12/5/2007 8:56:32 PM RICH-RC-5086 REVISION 3
SC		AshworthA	Sep1C	12/17/2007 8:36:27 PM RICH-RC-5067 REV8
SC		AshworthA	Sep2C	12/18/2007 12:35:26 PM RICH-RC-5039 REV5
SC		DAWKINSO	CalcC	12/18/2007 9:04:11 PM RICH-RD-0008 REVISION 4
AC		WoodT	12/5/2007 8:55:55 PM	
AC		WoodT	12/5/2007 8:56:13 PM	
AC		WoodT	12/5/2007 8:56:32 PM	
AC		AshworthA	12/17/2007 8:36:27	
AC		AshworthA	12/18/2007 12:35:26	
AC		DAWKINSO	12/18/2007 9:04:11	

AC: Accepting Entry; SC: Status Change

## Rpt DB Transfer log (Batch Results)

<i>SDG or Batch Isotope</i>	<i>Rpt Db Id Method</i>	<i>RTst_Qc</i>	<i>LotSample Analysis Date</i>	<i>Client Id Result</i>	<i>Matrix</i>	<i>Received Date</i>			<i>Sample Date</i>		<i>Volumes</i>
					<i>Cnt Uncert</i>	<i>Tot Uncert</i>	<i>mgg</i>	<i>Units</i>	<i>Expected</i>	<i>Yield</i>	
TRNC/D-7RD	9KCMN510		F7K2002194	TSB-GJ-04-0'	SOLID	11/20/2007	9:30:00	11/19/2007	9:45:00 AM		
U-234	7USR	0	12/18/2007 2:35:08	PM1.2253E+00	6.166E-02	1.17E-01	2.537E-02	pCi/g	0.969		2.0E+0
U-235	7USR	0	12/18/2007 2:35:08	PM2.4098E-02	8.76E-03	8.976E-03	1.48E-02	pCi/g	0.969		2.0E+0
U-238	7USR	0	12/18/2007 2:35:08	PM7.3902E-01	4.788E-02	7.676E-02	2.122E-02	pCi/g	0.969		2.0E+0
TRNC/D-7RD	9KCMN810		F7K2002195	TSB-GJ-04-5'	SOLID	11/20/2007	9:30:00	11/19/2007	10:05:00 AM		
U-234	7USR	0	12/18/2007 2:35:20	PM5.0434E-01	4.144E-02	5.857E-02	1.918E-02	pCi/g	0.862		2.01E+0
U-235	7USR	0	12/18/2007 2:35:20	PM1.2896E-02	6.822E-03	6.903E-03	1.626E-02	pCi/g	0.862		2.01E+0
U-238	7USR	0	12/18/2007 2:35:20	PM3.6586E-01	3.528E-02	4.632E-02	1.626E-02	pCi/g	0.862		2.01E+0
TRNC/D-7RD	9KCMNL10		F7K2002191	TSB-GR-02-0'	SOLID	11/20/2007	9:30:00	11/19/2007	8:40:00 AM		
U-234	7USR	0	12/18/2007 2:34:56	PM3.9307E-01	3.486E-02	4.727E-02	1.741E-02	pCi/g	0.954		2.01E+0
U-235	7USR	0	12/18/2007 2:34:56	PM2.4027E-02	8.735E-03	8.95E-03	1.476E-02	pCi/g	0.954		2.01E+0
U-238	7USR	0	12/18/2007 2:34:56	PM2.9203E-01	3.003E-02	3.827E-02	1.476E-02	pCi/g	0.954		2.01E+0
TRNC/D-7RD	9KCMNW10		F7K2002192	TSB-GR-02-0'FD	SOLID	11/20/2007	9:30:00	11/19/2007	8:40:00 AM		
U-234	7USR	0	12/18/2007 2:34:57	PM3.0221E-01	3.082E-02	3.939E-02	1.768E-02	pCi/g	1.02		2.0E+0
U-235	7USR	0	12/18/2007 2:34:57	PM1.1262E-02	6.319E-03	6.385E-03	1.768E-02	pCi/g	1.02		2.0E+0
U-238	7USR	0	12/18/2007 2:34:57	PM2.9533E-01	3.051E-02	3.88E-02	1.975E-02	pCi/g	1.02		2.0E+0
TRNC/D-7RD	9KCMNX10		F7K2002193	TSB-GR-02-5'	SOLID	11/20/2007	9:30:00	11/19/2007	9:05:00 AM		
U-234	7USR	0	12/18/2007 2:35:04	PM4.9338E-01	4.048E-02	5.717E-02	1.588E-02	pCi/g	0.903		2.0E+0
U-235	7USR	0	12/18/2007 2:35:04	PM6.6172E-04	3.571E-03	3.572E-03	2.278E-02	pCi/g	0.903		2.0E+0
U-238	7USR	0	12/18/2007 2:35:04	PM3.309E-01	3.336E-02	4.297E-02	2.588E-02	pCi/g	0.903		2.0E+0
TRNC/D-7RD	9KCOMP510		F7K20021911	TSB-GJ-05-0'	SOLID	11/20/2007	9:30:00	11/19/2007	7:45:00 AM		
U-234	7USR	0	12/18/2007 2:35:59	PM4.4035E-01	3.839E-02	5.268E-02	1.6E-02	pCi/g	0.875		2.01E+0
U-235	7USR	0	12/18/2007 2:35:59	PM9.3548E-03	5.825E-03	5.876E-03	1.6E-02	pCi/g	0.875		2.01E+0
U-238	7USR	0	12/18/2007 2:35:59	PM3.2074E-01	3.274E-02	4.198E-02	1.6E-02	pCi/g	0.875		2.01E+0
TRNC/D-7RD	9KCOMPK10		F7K2002196	TSB-GJ-02-0'	SOLID	11/20/2007	9:30:00	11/19/2007	6:40:00 AM		
U-234	7USR	0	12/18/2007 2:35:24	PM1.2765E+00	6.584E-02	1.238E-01	1.626E-02	pCi/g	0.879		2.02E+0
U-235	7USR	0	12/18/2007 2:35:24	PM3.395E-02	1.076E-02	1.111E-02	1.626E-02	pCi/g	0.879		2.02E+0
U-238	7USR	0	12/18/2007 2:35:24	PM7.9443E-01	5.194E-02	8.34E-02	1.626E-02	pCi/g	0.879		2.02E+0
TRNC/D-7RD	9KCMPR10		F7K2002197	TSB-GJ-02-0'FD	SOLID	11/20/2007	9:30:00	11/19/2007	6:40:00 AM		
U-234	7USR	0	12/18/2007 2:35:30	PM7.5897E-01	5.165E-02	8.113E-02	1.683E-02	pCi/g	0.817		2.02E+0
U-235	7USR	0	12/18/2007 2:35:30	PM1.7569E-02	7.888E-03	8.02E-03	1.683E-02	pCi/g	0.817		2.02E+0
U-238	7USR	0	12/18/2007 2:35:30	PM4.2165E-01	3.85E-02	5.187E-02	1.683E-02	pCi/g	0.817		2.02E+0
TRNC/D-7RD	9KCMPT10		F7K2002198	TSB-GJ-02-05'	SOLID	11/20/2007	9:30:00	11/19/2007	7:00:00 AM		
U-234	7USR	0	12/18/2007 2:35:45	PM1.0008E+00	5.577E-02	9.859E-02	1.489E-02	pCi/g	0.953		2.01E+0
U-235	7USR	0	12/18/2007 2:35:45	PM2.4242E-02	8.813E-03	9.03E-03	1.489E-02	pCi/g	0.953		2.01E+0
U-238	7USR	0	12/18/2007 2:35:45	PM5.7809E-01	4.239E-02	6.327E-02	1.489E-02	pCi/g	0.953		2.01E+0
TRNC/D-7RD	9KCOMPV10		F7K2002199	TSB-GJ-07-0'	SOLID	11/20/2007	9:30:00	11/19/2007	7:15:00 AM		
U-234	7USR	0	12/18/2007 2:35:46	PM4.3108E-01	3.777E-02	5.167E-02	2.257E-02	pCi/g	0.947		2.01E+0
U-235	7USR	0	12/18/2007 2:35:46	PM6.5714E-03	4.693E-03	4.724E-03	1.574E-02	pCi/g	0.947		2.01E+0
U-238	7USR	0	12/18/2007 2:35:46	PM3.312E-01	3.303E-02	4.272E-02	1.574E-02	pCi/g	0.947		2.01E+0
TRNC/D-7RD	9KCOMPX10		F7K20021910	TSB-GJ-07-5'	SOLID	11/20/2007	9:30:00	11/19/2007	7:25:00 AM		
U-234	7USR	0	12/18/2007 2:35:52	PM7.8907E-01	4.728E-02	7.92E-02	1.356E-02	pCi/g	0.975		2.0E+0
U-235	7USR	0	12/18/2007 2:35:52	PM2.2642E-02	8.025E-03	8.23E-03	1.356E-02	pCi/g	0.975		2.0E+0
U-238	7USR	0	12/18/2007 2:35:52	PM5.4737E-01	3.943E-02	5.914E-02	1.786E-02	pCi/g	0.975		2.0E+0
TRNC/D-7RD	9KCMQF10		F7K20021912	TSB-GJ-05-5'	SOLID	11/20/2007	9:30:00	11/19/2007	7:55:00 AM		
U-234	7USR	0	12/18/2007 2:36:21	PM1.2082E+00	6.067E-02	1.153E-01	1.519E-02	pCi/g	0.923		2.03E+0
U-235	7USR	0	12/18/2007 2:36:21	PM3.2765E-02	1.011E-02	1.045E-02	1.519E-02	pCi/g	0.923		2.03E+0
U-238	7USR	0	12/18/2007 2:36:21	PM6.6687E-01	4.506E-02	7.043E-02	1.226E-02	pCi/g	0.923		2.03E+0
TRNC/D-7RD	9KCMQH10		F7K20021913	TSB-GJ-03-0'	SOLID	11/20/2007	9:30:00	11/19/2007	8:15:00 AM		
U-234	7USR	0	12/18/2007 2:36:27	PM1.9838E-01	2.687E-02	3.148E-02	1.807E-02	pCi/g	0.857		2.0E+0
U-235	7USR	0	12/18/2007 2:36:27	PM1.3621E-02	7.263E-03	7.349E-03	1.807E-02	pCi/g	0.857		2.0E+0
U-238	7USR	0	12/18/2007 2:36:27	PM1.6606E-01	2.457E-02	2.815E-02	1.656E-02	pCi/g	0.857		2.0E+0

7330521, \*\*Samples inserted | Updated | NotUpdated => 17 | 0 | 0,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 50 | 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 mgg	Units	Expected	Yield	Volumes
<b>TRNC/D-7RD</b>	<b>9KCMQJ10</b>		<b>F7K20021914</b>	TSB-GJ-03-5'	SOLID	11/20/2007 9:30:00	11/19/2007 8:30:00 AM				
U-234	7USR	0	12/18/2007 2:36:35 PM	<b>3.995E-01</b>	3.936E-02	5.154E-02	2.289E-02	pCi/g		0.877	2.01E+0
U-235	7USR	0	12/18/2007 2:36:35 PM	<b>2.6706E-02</b>	1.022E-02	1.045E-02	1.553E-02	pCi/g		0.877	2.01E+0
U-238	7USR	0	12/18/2007 2:36:35 PM	<b>2.1164E-01</b>	2.862E-02	3.362E-02	1.764E-02	pCi/g		0.877	2.01E+0
<b>TRNC/D-7RD</b>	<b>KCMN51GR</b>		<b>F7K2002194</b>	TSB-GJ-04-0' DUP	SOLID	11/20/2007 9:30:00	11/19/2007 9:45:00 AM				
U-234	7USR	0 R	12/18/2007 2:35:13 PM	<b>1.1689E+00</b>	5.867E-02	1.112E-01	2.408E-02	pCi/g		0.929	2.0E+0
U-235	7USR	0 R	12/18/2007 2:35:13 PM	<b>4.6335E-02</b>	1.175E-02	1.233E-02	1.405E-02	pCi/g		0.929	2.0E+0
U-238	7USR	0 R	12/18/2007 2:35:13 PM	<b>7.3491E-01</b>	4.669E-02	7.552E-02	2.908E-02	pCi/g		0.929	2.0E+0
<b>TRNC/D-7RD</b>	<b>KCV2R1AB</b>		<b>J7K260000521</b>	INTRA-LAB BLANK	SOLID	11/20/2007 9:30:00	11/19/2007 8:40:00 AM				
U-234	7USR	0 B	12/18/2007 2:36:41 PM	<b>8.7609E-03</b>	6.205E-03	6.249E-03	1.763E-02	pCi/g		0.98	2.04E+0
U-235	7USR	0 B	12/18/2007 2:36:41 PM	<b>1.4022E-03</b>	4.436E-03	4.438E-03	2.34E-02	pCi/g		0.98	2.04E+0
U-238	7USR	0 B	12/18/2007 2:36:41 PM	<b>4.0299E-03</b>	4.394E-03	4.408E-03	1.763E-02	pCi/g		0.98	2.04E+0
<b>TRNC/D-7RD</b>	<b>KCV2R1CS</b>		<b>J7K260000521</b>	INTRA-LAB CHECK	SOLID	11/20/2007 9:30:00	11/19/2007 8:40:00 AM				
U-234	7USR	0 S	12/18/2007 2:36:44 PM	<b>9.1085E-01</b>	7.87E-02	1.143E-01	3.256E-02	pCi/g	8.5835E-01	0.479	2.02E+0
U-238	7USR	0 S	12/18/2007 2:36:44 PM	<b>9.7882E-01</b>	8.158E-02	1.208E-01	3.256E-02	pCi/g	8.9895E-01	0.479	2.02E+0

7330521, \*\*Samples Inserted | Updated | NotUpdated => 17 | 0 | 0,  
\*\*Results Inserted | ReTestInserted | Updated | NotInserted => 50 | 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	SOLID	KCMNL1AD	U-234	3.93E-01	(4.73E-02)		pCi/g	R	4.53E-03	1.74E-02		95%	
Calc	SR	SOLID	KCMNL1AD	U-235	2.40E-02	(8.95E-03)		pCi/g	R	3.21E-03	1.48E-02		95%	
Calc	SR	SOLID	KCMNL1AD	U-238	2.92E-01	(3.83E-02)		pCi/g	R	3.21E-03	1.48E-02		95%	
Calc	SR	SOLID	KCMNW1AD	U-234	3.02E-01	(3.94E-02)		pCi/g	R	4.60E-03	1.77E-02		102%	
Calc	SR	SOLID	KCMNW1AD	U-235	1.13E-02	(6.38E-03)		pCi/g	R	4.60E-03	1.77E-02		102%	
Calc	SR	SOLID	KCMNW1AD	U-238	2.95E-01	(3.88E-02)		pCi/g	R	5.64E-03	1.97E-02		102%	
Calc	SR	SOLID	KCMNX1AD	U-234	4.93E-01	(5.72E-02)		pCi/g	R	3.45E-03	1.59E-02		90%	
Calc	SR	SOLID	KCMNX1AD	U-235	6.62E-04	(3.57E-03)	U4	pCi/g	R	6.90E-03	2.28E-02		90%	
Calc	SR	SOLID	KCMNX1AD	U-238	3.31E-01	(4.30E-02)		pCi/g	R	8.45E-03	2.59E-02		90%	
Calc	SR	SOLID	KCMN51AD	U-234	1.23E+00	(1.17E-01)		pCi/g	R	8.50E-03	2.54E-02		97%	
Calc	SR	SOLID	KCMN51AD	U-235	2.41E-02	(8.98E-03)		pCi/g	R	3.21E-03	1.48E-02		97%	
Calc	SR	SOLID	KCMN51AD	U-238	7.39E-01	(7.68E-02)		pCi/g	R	6.43E-03	2.12E-02		97%	
Calc	SR	SOLID	KCMN51AG	U-234	1.17E+00	(1.11E-01)		pCi/g	R	8.07E-03	2.41E-02	R	93%	
Calc	SR	SOLID	KCMN51AG	U-235	4.63E-02	(1.23E-02)		pCi/g	R	3.05E-03	1.40E-02	R	93%	
Calc	SR	SOLID	KCMN51AG	U-238	7.35E-01	(7.55E-02)		pCi/g	R	1.06E-02	2.91E-02	R	93%	
Calc	SR	SOLID	KCMN81AD	U-234	5.04E-01	(5.86E-02)		pCi/g	R	5.00E-03	1.92E-02		86%	
Calc	SR	SOLID	KCMN81AD	U-235	1.29E-02	(6.90E-03)		pCi/g	R	3.53E-03	1.63E-02		86%	
Calc	SR	SOLID	KCMN81AD	U-238	3.66E-01	(4.63E-02)		pCi/g	R	3.53E-03	1.63E-02		86%	
Calc	SR	SOLID	KCMPK1AD	U-234	1.28E+00	(1.24E-01)		pCi/g	R	3.53E-03	1.63E-02		88%	
Calc	SR	SOLID	KCMPK1AD	U-235	3.40E-02	(1.11E-02)		pCi/g	R	3.53E-03	1.63E-02		88%	
Calc	SR	SOLID	KCMPK1AD	U-238	7.94E-01	(8.34E-02)		pCi/g	R	3.53E-03	1.63E-02		88%	
Calc	SR	SOLID	KCMPR1AD	U-234	7.59E-01	(8.11E-02)		pCi/g	R	3.66E-03	1.68E-02		82%	
Calc	SR	SOLID	KCMPR1AD	U-235	1.76E-02	(8.02E-03)		pCi/g	R	3.66E-03	1.68E-02		82%	
Calc	SR	SOLID	KCMPR1AD	U-238	4.22E-01	(5.19E-02)		pCi/g	R	3.66E-03	1.68E-02		82%	
Calc	SR	SOLID	KCMPT1AD	U-234	1.00E+00	(9.86E-02)		pCi/g	R	3.23E-03	1.49E-02		95%	
Calc	SR	SOLID	KCMPT1AD	U-235	2.42E-02	(9.03E-03)		pCi/g	R	3.23E-03	1.49E-02		95%	
Calc	SR	SOLID	KCMPT1AD	U-238	5.78E-01	(6.33E-02)		pCi/g	R	3.23E-03	1.49E-02		95%	
Calc	SR	SOLID	KCMPV1AD	U-234	4.31E-01	(5.17E-02)		pCi/g	R	6.84E-03	2.26E-02		95%	
Calc	SR	SOLID	KCMPV1AD	U-235	6.57E-03	(4.72E-03)	U4	pCi/g	R	3.42E-03	1.57E-02		95%	
Calc	SR	SOLID	KCMPV1AD	U-238	3.31E-01	(4.27E-02)		pCi/g	R	3.42E-03	1.57E-02		95%	
Calc	SR	SOLID	KCMPX1AD	U-234	7.89E-01	(7.92E-02)		pCi/g	R	2.94E-03	1.36E-02		98%	
Calc	SR	SOLID	KCMPX1AD	U-235	2.26E-02	(8.23E-03)		pCi/g	R	2.94E-03	1.36E-02		98%	
Calc	SR	SOLID	KCMPX1AD	U-238	5.47E-01	(5.91E-02)		pCi/g	R	5.10E-03	1.79E-02		98%	
Calc	SR	SOLID	KCMP51AD	U-234	4.40E-01	(5.27E-02)		pCi/g	R	3.48E-03	1.60E-02		87%	
Calc	SR	SOLID	KCMP51AD	U-235	9.35E-03	(5.88E-03)	U4	pCi/g	R	3.48E-03	1.60E-02		87%	

( ) - (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	KCMP51AD	U-238	3.21E-01	(4.20E-02)		pCi/g	R	3.48E-03	1.60E-02			87%		
Calc	SR	SOLID	KCMQF1AD	U-234	1.21E+00	(1.15E-01)		pCi/g	R	3.47E-03	1.52E-02			92%		
Calc	SR	SOLID	KCMQF1AD	U-235	3.28E-02	(1.05E-02)		pCi/g	R	3.47E-03	1.52E-02			92%		
Calc	SR	SOLID	KCMQF1AD	U-238	6.67E-01	(7.04E-02)		pCi/g	R	2.00E-03	1.23E-02			92%		
Calc	SR	SOLID	KCMQH1AD	U-234	1.98E-01	(3.15E-02)		pCi/g	R	4.13E-03	1.81E-02			86%		
Calc	SR	SOLID	KCMQH1AD	U-235	1.36E-02	(7.35E-03)		pCi/g	R	4.13E-03	1.81E-02			86%		
Calc	SR	SOLID	KCMQH1AD	U-238	1.66E-01	(2.81E-02)		pCi/g	R	3.37E-03	1.66E-02			86%		
Calc	SR	SOLID	KCMQJ1AD	U-234	4.00E-01	(5.15E-02)		pCi/g	R	6.22E-03	2.29E-02			88%		
Calc	SR	SOLID	KCMQJ1AD	U-235	2.67E-02	(1.05E-02)		pCi/g	R	2.54E-03	1.55E-02			88%		
Calc	SR	SOLID	KCMQJ1AD	U-238	2.12E-01	(3.36E-02)		pCi/g	R	3.59E-03	1.76E-02			88%		
Calc	SR	SOLID	KCV2R1AA	U-234	8.76E-03	(6.25E-03)	U4	pCi/g	R	2.88E-03	1.76E-02	B		98%		
Calc	SR	SOLID	KCV2R1AA	U-235	-1.40E-03	(4.44E-03)	U4	pCi/g	R	5.77E-03	2.34E-02	B		98%		
Calc	SR	SOLID	KCV2R1AA	U-238	4.03E-03	(4.41E-03)	U4	pCi/g	R	2.88E-03	1.76E-02	B		98%		
Calc	SR	SOLID	KCV2R1AC	U-234	9.11E-01	(1.14E-01)		pCi/g	R	7.07E-03	3.26E-02	S		48%	106%	
Calc	SR	SOLID	KCV2R1AC	U-235	5.44E-02	(1.99E-02)		pCi/g	R	7.07E-03	3.26E-02	S		48%	139%	
Calc	SR	SOLID	KCV2R1AC	U-238	9.79E-01	(1.21E-01)		pCi/g	R	7.07E-03	3.26E-02	S		48%	109%	

RER =

U234 = 0.3720

U235 = Below RIDL

U238 = 0.0371

OK  
Limit  
12/19/07

( ) - (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

Detailed Report

Sq	Calc	SR	SOLID	STLE	AlpIsoWoBS	KCMNL1AD	pCi/g	SOLID	QC/BB	Sa/On	Date	AnalysisDate/PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy	Vol	Final/Count	Vol
1	445691	TSB-GR-02-0		*STLE	AlpIsoWoBS	KCMNL1AD	pCi/g	SOLID	QC/BB	Sa/On	Date	AnalysisDate/PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy	Vol	Final/Count	Vol
											11/19/07 08:40	12/18/07 14:34			UJTC18985	Alq	1	2.01	g		
0	12/18/07	12:54	U-232	728	7	ALP1	ED	Y	N	3.8124E-01		Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
				200.1166666	1000.1833			Y		(1.144E-02)			N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00		
1	12/18/07	12:54	U-234	128	2	ALP1	ED	N	N	3.8124E-01		Efficiency 1	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
				200.1166666	1000.1833			Y		(1.144E-02)			N	95%	N		1.0000E+00	4.5045E-01	1.0000E+00		
2	12/18/07	12:54	U-235	8	1	ALP1	ED	N	N	3.8124E-01		Efficiency 1	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
				200.1166666	1000.1833			Y		(1.144E-02)			N	95%	N		1.0000E+00	4.5045E-01	1.0000E+00		
3	12/18/07	12:54	U-238	95	1	ALP1	ED	N	N	3.8124E-01		Efficiency 1	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
				200.1166666	1000.1833			Y		(1.144E-02)			N	95%	N		1.0000E+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	BlkLcC/MDC	StdDwMdc/LcC						
	12/18/07	U-232	R	2.134325			3.63088E+00	9.523796	9.523796	2.01 G	95%										
	2.238E+00			(0.148695)			(1.3485E-01)	(0.454701)	(0.454701)	(0.017321)											
	12/18/07	U-234	R	0.393068			6.37627E-01	1.753949	1.753949	2.01 G	95%										
	2.238E+00			(0.047275)			(5.6553E-02)	(0.191259)	(0.191259)	(0.017321)											
	12/18/07	U-235	R	0.024027			3.89769E-02	0.107215	0.107215	2.01 G	95%										
	2.238E+00			(0.00895)			(1.4169E-02)	(0.039565)	(0.039565)	(0.017321)											
	12/18/07	U-238	R	0.292029			4.73723E-01	1.303091	1.303091	2.01 G	95%										
	2.238E+00			(0.03827)			(4.8716E-02)	(0.157451)	(0.157451)	(0.017321)											
Sq	Calc	SR	SOLID	*STLE	AlpIsoWoBS	KCMNW1AD	pCi/g	SOLID	QC/BB	Sa/On <th>Date</th> <th>AnalysisDate/PptWt</th> <th>Sep1/Sep2</th> <th>Date</th> <th>QC/Tracer</th> <th>Vial</th> <th>Multi/EntYld</th> <th>Total/Analy</th> <th>Vol</th> <th>Final/Count</th> <th>Vol</th>	Date	AnalysisDate/PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy	Vol	Final/Count	Vol
2	445691	TSB-GR-02-0		*STLE	AlpIsoWoBS	KCMNW1AD	pCi/g	SOLID	QC/BB	Sa/On	Date	AnalysisDate/PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy	Vol	Final/Count	Vol
											11/19/07 08:40	12/18/07 14:34			UJTC18986	Alq	1	2.00	g		
0	12/18/07	12:54	U-232	736	13	ALP2	ED	Y	N	3.5984E-01		Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
				200.0666666	1000.0833			Y		(1.080E-02)			N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00		
1	12/18/07	12:54	U-234	97	2	ALP2	ED	N	N	3.5984E-01		Efficiency 1	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
				200.0666666	1000.0833			Y		(1.080E-02)			N	102%	N		1.0000E+00	4.5045E-01	1.0000E+00		
2	12/18/07	12:54	U-235	4	2	ALP2	ED	N	N	3.5984E-01		Efficiency 1	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
				200.0666666	1000.0833			Y		(1.080E-02)			N	102%	N		1.0000E+00	4.5045E-01	1.0000E+00		
3	12/18/07	12:54	U-238	95	3	ALP2	ED	N	N	3.5984E-01		Efficiency 1	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
				200.0666666	1000.0833			Y		(1.080E-02)			N	102%	N		1.0000E+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/LcC	BkLcCMDC	StdDvMdC/LcC
	12/18/07	U-232	R	2.294409		3.66577E+00	10.187188	10.187188	2.00 G	102%				
	2.249E+00			(0.159693)		(1.3565E-01)	(0.485291)	(0.485291)	(0.017321)					
	12/18/07	U-234	R	0.302209		4.82839E-01	1.341808	1.341808	2.00 G	102%		0.01768		
	2.249E+00			(0.039395)		(4.9248E-02)	(0.161115)	(0.161115)	(0.017321)			0.004604		
	12/18/07	U-235	R	0.011262		1.79935E-02	0.050004	0.050004	2.00 G	102%		0.01768		
	2.249E+00			(0.006385)		(1.0096E-02)	(0.028236)	(0.028236)	(0.017321)			0.004604		
	12/18/07	U-238	R	0.295326		4.71842E-01	1.311249	1.311249	2.00 G	102%		0.019748		
	2.249E+00			(0.038803)		(4.8749E-02)	(0.158917)	(0.158917)	(0.017321)			0.005638		

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

3 Calc SR SOLID \*STLE AlpisoWoBS KCMN51AD pCi/g 11/19/07 09:05 12/18/07 14:35 1 UITC18987 Alq 2.00 g

445691,TSB-GR-02-5 ,F7K200219-3 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	12/18/07 12:55	U-232	683	11	ALP3	ED	Y	N	3.7580E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.1166666	1000.05			Y		(1.127E-02)					(0.0000E+00)	0.50			
1	12/18/07 12:55	U-234	149	1	ALP3	ED	N	N	3.7580E-01		N	90%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.1166666	1000.05			Y		(1.127E-02)			5%	N	(0.0000E+00)	0.50			
2	12/18/07 12:55	U-235	1	4	ALP3	ED	N	N	3.7580E-01		N	90%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.1166666	1000.05			Y		(1.127E-02)			5%	N	(0.0000E+00)	0.50			
3	12/18/07 12:55	U-238	101	6	ALP3	ED	N	N	3.7580E-01		N	90%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.1166666	1000.05			Y		(1.127E-02)			5%	N	(0.0000E+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/LcC	BkLcCMDC	StdDvMdC/LcC
	12/18/07	U-232	R	2.038905		3.40201E+00	9.052748	9.052748	2.00 G	90%				
	2.257E+00			(0.143443)		(1.3064E-01)	(0.441136)	(0.441136)	(0.017321)					
	12/18/07	U-234	R	0.493376		7.43566E-01	2.190589	2.190589	2.00 G	90%		0.015883		
	2.257E+00			(0.057167)		(6.1005E-02)	(0.228186)	(0.228186)	(0.017321)			0.003451		
	12/18/07	U-235	R	0.000662	U4	9.97285E-04	0.002938	0.002938	2.00 G	90%		0.022779		
	2.257E+00			(0.003572)		(5.3824E-03)	(0.015858)	(0.015858)	(0.017321)			0.006901		
	12/18/07	U-238	R	0.330904		4.98706E-01	1.469217	1.469217	2.00 G	90%		0.02588		
	2.257E+00			(0.042966)		(5.0280E-02)	(0.175596)	(0.175596)	(0.017321)			0.008452		

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 KCMN51AD pCi/g 11/19/07 09:45 12/18/07 14:35 1 UITC18988 Alq 2.00 g

445691,TSB-GJ-04-0 ,F7K200219-4 v4.8.29 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	12/18/07 12:55	U-232	733	10	ALP4	ED	Y	N	3.7608E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
			200.0166666	1000.2166			Y		(1.128E-02)					(0.0000E+00)	0.50			

Alpha Spec, Also 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	StdDvMdc/LcC
1	12/18/07 12:55	U-234	398	7	ALP4	ED	N	N	3.7608E-01	N	97%	N	4.5045E-01	1.0000E+00
			200.0166666	1000.2166			Y	(1.128E-02)	(0.017321)		5%		(0.000E+00)	0.50
2	12/18/07 12:55	U-235	8	1	ALP4	ED	N	N	3.7608E-01	N	97%	N	4.5045E-01	1.0000E+00
			200.0166666	1000.2166			Y	(1.128E-02)	(0.017321)		5%		(0.000E+00)	0.50
3	12/18/07 12:55	U-238	240	4	ALP4	ED	N	N	3.7608E-01	N	97%	N	4.5045E-01	1.0000E+00
			200.0166666	1000.2166			Y	(1.128E-02)	(0.017321)		5%		(0.000E+00)	0.50

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	SR	SOLID	*STLE	AlpIsoWoBS	KCMN51AG	pci/g		R	11/19/07 09:45	12/18/07 14:35						
								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	12/18/07 12:55	U-232	769	4	ALP5	ED	Y	N	4.1305E-01		N	100%	N					
			200.0666666	1000.1166			Y		(1.239E-02)									
1	12/18/07 12:55	U-234	400	7	ALP5	ED	N	N	4.1305E-01		N	93%	N					
			200.0666666	1000.1166			Y		(1.239E-02)									
2	12/18/07 12:55	U-235	16	1	ALP5	ED	N	N	4.1305E-01		N	93%	N					
			200.0666666	1000.1166			Y		(1.239E-02)									
3	12/18/07 12:55	U-238	253	12	ALP5	ED	N	N	4.1305E-01		N	93%	N					
			200.0666666	1000.1166			Y		(1.239E-02)									

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
12/18/07	U-232		R	2.093683		3.85972E+00	9.29596	9.29596	2.00 G	93%				
				(0.144727)		(1.38662E-01)	(0.436353)	(0.436353)	(0.017321)					
12/18/07	U-234		R	1.168938		1.99233E+00	5.190088	5.190088	2.00 G	93%				
				(0.111157)		(1.0000E-01)	(0.417394)	(0.417394)	(0.017321)					
12/18/07	U-235		R	0.046335		7.89735E-02	0.205728	0.205728	2.00 G	93%				
				(0.012327)		(2.0018E-02)	(0.053727)	(0.053727)	(0.017321)					
12/18/07	U-238		R	0.734911		1.25258E+00	3.263006	3.263006	2.00 G	93%				
				(0.075519)		(7.9579E-02)	(0.29157)	(0.29157)	(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	
6	Calc	SR	SOLID	*STLE	AlpIsoWoBS	KCMN81AD	pCi/g			11/19/07 10:05	12/18/07 14:35				1	g		
445691	TSB-GJ-04-5			F7K200219-5	v4.8.29	SOLID										2.01 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 Fc/VolAdj	Decay	Abn
0	12/18/07 12:55	U-232	663	6	ALP6	ED	Y	N	3.8270E-01	(1.148E-02)	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.1333333	1000.05			Y								(0.0000E+00)	0.497512		
1	12/18/07 12:55	U-234	149	2	ALP6	ED	N	N	3.8270E-01	(1.148E-02)	N	86%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.1333333	1000.05			Y					5%			(0.0000E+00)	0.497512		
2	12/18/07 12:55	U-235	4	1	ALP6	ED	N	N	3.8270E-01	(1.148E-02)	N	86%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.1333333	1000.05			Y					5%			(0.0000E+00)	0.497512		
3	12/18/07 12:55	U-238	108	1	ALP6	ED	N	N	3.8270E-01	(1.148E-02)	N	86%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.1333333	1000.05			Y					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,EntFct	LCSYld,EFctU	IDC/LcC	BikLcC/MDC	StdDvMdc/LcC				
	12/18/07	U-232	R	1.936408		3.30679E+00	8.640647	8.640647	2.01 G	86%								
	2.246E+00			(0.136768)		(1.2868E-01)	(0.424565)	(0.424565)	(0.017321)									
	12/18/07	U-234	R	0.504335		7.42504E-01	2.250447	2.250447	2.01 G	86%								
	2.246E+00			(0.058565)		(6.1009E-02)	(0.235066)	(0.235066)	(0.017321)									
	12/18/07	U-235	R	0.012896		1.89867E-02	0.057547	0.057547	2.01 G	86%								
	2.246E+00			(0.006903)		(1.0043E-02)	(0.030665)	(0.030665)	(0.017321)									
	12/18/07	U-238	R	0.365864		5.38640E-01	1.63256	1.63256	2.01 G	86%								
	2.246E+00			(0.046323)		(5.1937E-02)	(0.189379)	(0.189379)	(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	
7	Calc	SR	SOLID	*STLE	AlpIsoWoBS	KCMPK1AD	pCi/g			11/19/07 06:40	12/18/07 14:35				1	g		
445691	TSB-GJ-02-0			F7K200219-6	v4.8.29	SOLID										2.02 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 Fc/VolAdj	Decay	Abn
0	12/18/07 12:55	U-232	659	10	ALP7	ED	Y	N	3.7341E-01	(1.120E-02)	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200	1000.2333			Y								(0.0000E+00)	0.49505		
1	12/18/07 12:55	U-234	376	0	ALP7	ED	N	N	3.7341E-01	(1.120E-02)	N	88%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200	1000.2333			Y					5%			(0.0000E+00)	0.49505		
2	12/18/07 12:55	U-235	10	0	ALP7	ED	N	N	3.7341E-01	(1.120E-02)	N	88%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200	1000.2333			Y					5%			(0.0000E+00)	0.49505		
3	12/18/07 12:55	U-238	234	0	ALP7	ED	N	N	3.7341E-01	(1.120E-02)	N	88%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200	1000.2333			Y					5%			(0.0000E+00)	0.49505		

Alpha Spec, Also 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	BKlC-CMDC	StdDvMdc/LcC
12/18/07	U-232		R	1.96174		3.28500E+00	8.797236	8.797236	2.02 G	88%				
	2.231E+00			(0.138732)		(1.2839E-01)	(0.433448)	(0.433448)	(0.017321)					
12/18/07	U-234		R	1.276525		1.88000E+00	5.724455	5.724455	2.02 G	88%				
	2.231E+00			(0.123802)		(9.6959E-02)	(0.473172)	(0.473172)	(0.017321)					
12/18/07	U-235		R	0.03395		5.00000E-02	0.152246	0.152246	2.02 G	88%				
	2.231E+00			(0.011113)		(1.5843E-02)	(0.049233)	(0.049233)	(0.017321)					
12/18/07	U-238		R	0.794433		1.17000E+00	3.562559	3.562559	2.02 G	88%				
	2.231E+00			(0.083398)		(7.6492E-02)	(0.327421)	(0.327421)	(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	
8	Calc	SR	SOLID	*STLE	AlpIsoWoBS	KCMPRTIAD	pc/g				11/19/07 06:40	12/18/07 14:35							1		g	
	445691,TSB-GJ-02-05							F7K200219-7														2.02 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	12/18/07 12:55	U-232	636	6	ALP8	ED	Y	N	3.8820E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.0833333	1000.15			Y		(1.165E-02)						(0.000E+00)	0.49505		
1	12/18/07 12:55	U-234	216	0	ALP8	ED	N	N	3.8820E-01		N	82%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.0833333	1000.15			Y		(1.165E-02)						(0.000E+00)	0.49505		
2	12/18/07 12:55	U-235	5	0	ALP8	ED	N	N	3.8820E-01		N	82%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.0833333	1000.15			Y		(1.165E-02)						(0.000E+00)	0.49505		
3	12/18/07 12:55	U-238	120	0	ALP8	ED	N	N	3.8820E-01		N	82%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.0833333	1000.15			Y		(1.165E-02)						(0.000E+00)	0.49505		

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	BKlC-CMDC	StdDvMdc/LcC
12/18/07	U-232		R	1.822497		3.17268E+00	8.172815	8.172815	2.02 G	82%				
	2.231E+00			(0.129543)		(1.2607E-01)	(0.406911)	(0.406911)	(0.017321)					
12/18/07	U-234		R	0.758969		1.07955E+00	3.403525	3.403525	2.02 G	82%				
	2.231E+00			(0.081134)		(7.3461E-02)	(0.320261)	(0.320261)	(0.017321)					
12/18/07	U-235		R	0.017569		2.49896E-02	0.078785	0.078785	2.02 G	82%				
	2.231E+00			(0.00802)		(1.1220E-02)	(0.035743)	(0.035743)	(0.017321)					
12/18/07	U-238		R	0.42165		5.99750E-01	1.890847	1.890847	2.02 G	82%				
	2.231E+00			(0.05187)		(5.4759E-02)	(0.211909)	(0.211909)	(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	
9	Calc	SR	SOLID	*STLE	AlpIsoWoBS	KCMPRTIAD	pc/g				11/19/07 07:00	12/18/07 14:35							1		g	
	445691,TSB-GJ-02-05							F7K200219-8														2.01 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	12/18/07 12:55	U-232	726	4	ALP9	ED	Y	N	3.7821E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.05	1000.0833			Y		(1.135E-02)						(0.000E+00)	0.497512		



Batch Nbr: 7330521 Alpha Spec, Uiso by ALP , Calculated Results 12/18/2007 8:27:21 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	StdDvMdc/LcC	
1	12/18/07 12:55	U-234	322	0	ALP9	ED	N	N	3.7821E-01 (1.135E-02)	95%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.497512	1.0000E+00 1.0000E+00
2	12/18/07 12:55	U-235	200.05	1000.0833	ALP9	ED	N	N	3.7821E-01 (1.135E-02)	95%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.497512	1.0000E+00 1.0000E+00
3	12/18/07 12:55	U-238	186	0	ALP9	ED	N	N	3.7821E-01 (1.135E-02)	95%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.497512	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	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC	
0	12/18/07 12:55	U-232	681	4	ALP10	ED	Y	N	3.5997E-01 (1.080E-02)	100%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.497512	1.0000E+00 1.0000E+00
1	12/18/07 12:55	U-234	200	1000.0166	ALP10	ED	Y	N	3.5997E-01 (1.080E-02)	95%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.497512	1.0000E+00 1.0000E+00
2	12/18/07 12:55	U-235	200	1000.0166	ALP10	ED	Y	N	3.5997E-01 (1.080E-02)	5%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.497512	1.0000E+00 1.0000E+00
3	12/18/07 12:55	U-238	101	1	ALP10	ED	Y	N	3.5997E-01 (1.080E-02)	95%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.497512	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	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC	
0	12/18/07 12:55	U-232	200	1000.0166	ALP10	ED	Y	N	3.5997E-01 (1.080E-02)	100%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.497512	1.0000E+00 1.0000E+00
1	12/18/07 12:55	U-234	192	4	ALP10	ED	Y	N	3.5997E-01 (1.080E-02)	95%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.497512	1.0000E+00 1.0000E+00
2	12/18/07 12:55	U-235	200	1000.0166	ALP10	ED	Y	N	3.5997E-01 (1.080E-02)	5%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.497512	1.0000E+00 1.0000E+00
3	12/18/07 12:55	U-238	101	1	ALP10	ED	Y	N	3.5997E-01 (1.080E-02)	95%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.497512	1.0000E+00 1.0000E+00

10 Calc SR SOLID \*STLE AlpisoWoBS KCMPVIAD pCi/g  
 445691.TSB-GJ-07-0 F7K200219-9 v4.8.29 SOLID

UIC:18994 Alq 1 2.01 g

11/19/07 07:15 12/18/07 14:35

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

12/18/07 U-232 R 2.147985 3.62509E+00 9.584746 9.584746 9.584746 2.01 G 95% 2.01 G (0.017321) 0.14886 0.003234 0.014886 0.003234 0.014886 0.003234

12/18/07 U-234 R 1.000773 1.60960E+00 4.465654 4.465654 4.465654 2.01 G 95% 2.01 G (0.017321) 0.014886 0.003234 0.014886 0.003234 0.014886 0.003234

12/18/07 U-235 R 0.024242 3.89901E-02 0.108174 0.108174 0.108174 2.01 G 95% 2.01 G (0.017321) 0.014886 0.003234 0.014886 0.003234 0.014886 0.003234

12/18/07 U-238 R 0.578086 9.29768E-01 2.579539 2.579539 2.579539 2.01 G 95% 2.01 G (0.017321) 0.014886 0.003234 0.014886 0.003234 0.014886 0.003234

12/18/07 U-232 R 2.117334 3.40100E+00 9.447978 9.447978 9.447978 2.01 G 95% 2.01 G (0.017321) 0.22569 0.006837 0.015737 0.003418 0.015737 0.003418

12/18/07 U-234 R 0.431081 6.56000E-01 1.923571 1.923571 1.923571 2.01 G 95% 2.01 G (0.017321) 0.015737 0.003418 0.015737 0.003418 0.015737 0.003418

12/18/07 U-235 R 0.006571 1.00000E-02 0.029323 0.029323 0.029323 2.01 G 95% 2.01 G (0.017321) 0.015737 0.003418 0.015737 0.003418 0.015737 0.003418

12/18/07 U-238 R 0.331196 5.04000E-01 1.477866 1.477866 1.477866 2.01 G 95% 2.01 G (0.017321) 0.015737 0.003418 0.015737 0.003418 0.015737 0.003418

Sq	Calc	SR	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sept1/Sept2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol			
11	445691	TSB-GJ-07-5	SOLID	*STLE	AlpisoWoBS	KCMPX1AD	pCi/g	SOLID	11/19/07 07:25	12/18/07 14:35		UIC:18995	Alq	1	2.00 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	12/18/07 12:55	U-232	798	18	ALP11	ED	Y	N	4.0783E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			200.03333333	1000.1333			Y	Y	(1.223E-02)							(0.000E+00)	0.50		
1	12/18/07 12:55	U-234	279	1	ALP11	ED	N	N	4.0783E-01		N	98%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			200.03333333	1000.1333			Y	Y	(1.223E-02)							(0.000E+00)	0.50		
2	12/18/07 12:55	U-235	8	0	ALP11	ED	N	N	4.0783E-01		N	98%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			200.03333333	1000.1333			Y	Y	(1.223E-02)							(0.000E+00)	0.50		
3	12/18/07 12:55	U-238	194	3	ALP11	ED	N	N	4.0783E-01		N	98%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			200.03333333	1000.1333			Y	Y	(1.223E-02)							(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	LCStYld,EFctU	IDC/LcC	BlkC/MDC	StdvMdc/LcC					
	12/18/07	U-232	R	2.193178		3.97134E+00	9.73772	9.73772	2.00 G	98%									
	2.248E+00			(0.151006)		(1.4128E-01)	(0.453161)	(0.453161)	(0.017321)										
	12/18/07	U-234	R	0.78907		1.39377E+00	3.503472	3.503472	2.00 G	98%									
	2.248E+00			(0.079204)		(8.3509E-02)	(0.303418)	(0.303418)	(0.017321)										
	12/18/07	U-235	R	0.022642		3.99933E-02	0.10053	0.10053	2.00 G	98%									
	2.248E+00			(0.00823)		(1.4175E-02)	(0.036182)	(0.036182)	(0.017321)										
	12/18/07	U-238	R	0.547367		9.66839E-01	2.430314	2.430314	2.00 G	98%									
	2.248E+00			(0.059145)		(6.9652E-02)	(0.231842)	(0.231842)	(0.017321)										

Sq	Calc	SR	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sept1/Sept2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol			
12	445691	TSB-GJ-05-0	SOLID	*STLE	AlpisoWoBS	KCMP51AD	pCi/g	SOLID	11/19/07 07:45	12/18/07 14:35		UIC:18996	Alq	1	2.01 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	Vol/Adj	Decay	Abn
0	12/18/07 12:55	U-232	673	7	ALP12	ED	Y	N	3.8329E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			200.06666666	1000.0666			Y	Y	(1.150E-02)							(0.000E+00)	0.497512		
1	12/18/07 12:55	U-234	132	1	ALP12	ED	N	N	3.8329E-01		N	87%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			200.06666666	1000.0666			Y	Y	(1.150E-02)							(0.000E+00)	0.497512		
2	12/18/07 12:55	U-235	3	1	ALP12	ED	N	N	3.8329E-01		N	87%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			200.06666666	1000.0666			Y	Y	(1.150E-02)							(0.000E+00)	0.497512		
3	12/18/07 12:55	U-238	96	0	ALP12	ED	N	N	3.8329E-01		N	87%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00		
			200.06666666	1000.0666			Y	Y	(1.150E-02)							(0.000E+00)	0.497512		

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
0	12/18/07	U-232	R	1.962729 (0.138327)		3.35688E+00 (1.2969E-01)	8.758098 (0.428405)	8.758098 (0.428405)	2.01 G (0.017321)	87%				
1	12/18/07	U-234	R	0.440352 (0.052682)		6.58780E-01 (5.7435E-02)	1.964941 (0.212892)	1.964941 (0.212892)	2.01 G (0.017321)	87%		0.016003 0.003476		
2	12/18/07	U-235	R	0.009355 (0.005876)	U4	1.39951E-02 (8.7149E-03)	0.041743 (0.026132)	0.041743 (0.026132)	2.01 G (0.017321)	87%		0.016003 0.003476		
3	12/18/07	U-238	R	0.320742 (0.041983)		4.79840E-01 (4.8984E-02)	1.431217 (0.172689)	1.431217 (0.172689)	2.01 G (0.017321)	87%		0.016003 0.003476		

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
13	Calc SR	SOLID	*STLE	AlpIsoWoBS	KCMQH1AD	pCi/g		11/19/07 07:55	12/18/07 14:36						
445691	TSB-GJ-05-5						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 Fc/VolAdj	Decay	Abn
0	12/18/07 12:56	U-232	733	15	ALP69	ED	Y	N	3.9463E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.05	2500			Y		(1.184E-02)						(0.000E+00)	0.492611		
1	12/18/07 12:56	U-234	397	3	ALP69	ED	N	N	3.9463E-01		N	92%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.05	2500			Y		(1.184E-02)			5%	N		(0.000E+00)	0.492611		
2	12/18/07 12:56	U-235	11	3	ALP69	ED	N	N	3.9463E-01		N	92%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.05	2500			Y		(1.184E-02)			5%	N		(0.000E+00)	0.492611		
3	12/18/07 12:56	U-238	219	0	ALP69	ED	N	N	3.9463E-01		N	92%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.05	2500			Y		(1.184E-02)			5%	N		(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	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
0	12/18/07	U-232	R	2.056889 (0.143123)		3.65808E+00 (1.3534E-01)	9.269585 (0.441539)	9.269585 (0.441539)	2.03 G (0.017321)	92%				
1	12/18/07	U-234	R	1.208166 (0.115306)		1.98330E+00 (9.9602E-02)	5.444726 (0.440176)	5.444726 (0.440176)	2.03 G (0.017321)	92%		0.01519 0.003471		
2	12/18/07	U-235	R	0.032765 (0.010452)		5.37863E-02 (1.6593E-02)	0.147658 (0.046504)	0.147658 (0.046504)	2.03 G (0.017321)	92%		0.01519 0.003471		
3	12/18/07	U-238	R	0.666873 (0.070427)		1.09473E+00 (7.3976E-02)	3.005331 (0.278381)	3.005331 (0.278381)	2.03 G (0.017321)	92%		0.012258 0.002004		

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
14	Calc SR	SOLID	*STLE	AlpIsoWoBS	KCMQH1AD	pCi/g		11/19/07 08:15	12/18/07 14:36						
445691	TSB-GJ-03-0						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 Fc/VolAdj	Decay	Abn
0	12/18/07 12:56	U-232	624	15	ALP71	ED	Y	N	3.6258E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.0166666	2500.1			Y		(1.088E-02)						(0.000E+00)	0.50		

(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:14 RADCALC v4.8.29  
 TA Richland

Alpha Spec, Uiso by ALP, Calculated Results

Batch Nbr: 7330521

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	12/18/07 12:56	U-234	55	200.0166666	2500.1	3	ALP71 ED	N N 3.6258E-01 (1.088E-02)	N	86%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.50	1.0000E+00
2	12/18/07 12:56	U-235	4	200.0166666	2500.1	3	ALP71 ED	N N 3.6258E-01 (1.088E-02)	N	86%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.50	1.0000E+00
3	12/18/07 12:56	U-238	46	200.0166666	2500.1	2	ALP71 ED	N N 3.6258E-01 (1.088E-02)	N	86%	N	5%	1.0000E+00 (0.000E+00)	4.5045E-01 0.50	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
12/18/07	U-232	R	1.934164	3.11374E+00	8.587696	8.587696	(1.2490E-01)	(0.430156)	2.00 G	86%	2.00 G	(0.017321)		
12/18/07	U-234	R	0.198378	2.73777E-01	0.880797	0.880797	(3.7084E-02)	(0.132418)	2.00 G	86%	2.00 G	(0.017321)	0.01807	0.004129
12/18/07	U-235	R	0.013621	1.87984E-02	0.060478	0.060478	(1.0023E-02)	(0.032487)	2.00 G	86%	2.00 G	(0.017321)	0.01807	0.004129
12/18/07	U-238	R	0.166063	2.29181E-01	0.737322	0.737322	(3.3914E-02)	(0.119235)	2.00 G	86%	2.00 G	(0.017321)	0.016556	0.003371

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	KCMQJAD	pCi/g	SOLID	15	11/19/07 08:30	12/18/07 14:36	UITC:18999	Alq	g
445691	TSB-GJ-03-5													

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	12/18/07 12:56	U-232	584	14	ALP84	ED	Y	N	3.3113E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
1	12/18/07 12:56	U-234	200.05	2500.0833	ALP84	ED	Y	N	(9.934E-03)		N	88%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
2	12/18/07 12:56	U-235	200.05	2500.0833	ALP84	ED	Y	N	(9.934E-03)		N	5%	N	1.0000E+00	1.0000E+00	4.5045E-01	1.0000E+00	
3	12/18/07 12:56	U-238	200.05	2500.0833	ALP84	ED	Y	N	(9.934E-03)		N	88%	N	1.0000E+00	1.0000E+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
12/18/07	U-232	R	1.971959	2.91367E+00	8.799285	8.799285	(1.2081E-01)	(0.450329)	2.01 G	88%	2.01 G	(0.017321)		
12/18/07	U-234	R	0.399503	5.17470E-01	1.782665	1.782665	(5.0987E-02)	(0.211472)	2.01 G	88%	2.01 G	(0.017321)	0.022893	0.006221
12/18/07	U-235	R	0.026706	3.45913E-02	0.119166	0.119166	(1.3231E-02)	(0.046257)	2.01 G	88%	2.01 G	(0.017321)	0.015535	0.00254
12/18/07	U-238	R	0.211638	2.74131E-01	0.944372	0.944372	(3.7076E-02)	(0.142147)	2.01 G	88%	2.01 G	(0.017321)	0.017637	0.003592

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:16

RADCALC v4.8.29

TA Richland

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		
16	Calc	SR	SOLID	*STLE	AlpIsoWoBS	KCV2R1AA	pCi/g	B	11/19/07 08:40	12/18/07 14:36			1					
			0.INTRA-LAB BLANK		.J7K260000-521		SOLID						UITC:19000	Alq	2.04 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	12/18/07 12:56	U-232	513	0	ALP85	ED	Y	N	2.5700E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.08333333	2500.1333			Y		(7.710E-03)						(0.000E+00)	0.490196		
1	12/18/07 12:56	U-234	2	0	ALP85	ED	N	N	2.5700E-01		N	98%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.08333333	2500.1333			Y		(7.710E-03)						(0.000E+00)	0.490196		
2	12/18/07 12:56	U-235	0	4	ALP85	ED	N	N	2.5700E-01		N	98%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.08333333	2500.1333			Y		(7.710E-03)						(0.000E+00)	0.490196		
3	12/18/07 12:56	U-238	1	1	ALP85	ED	N	N	2.5700E-01		N	98%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.08333333	2500.1333			Y		(7.710E-03)						(0.000E+00)	0.490196		
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rf	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EntFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC				
	12/18/07	U-232	R	2.179134		2.53633E+00	9.868872	9.868872	2.04 G	98%								
	2.223E+00			(0.161105)		(1.1325E-01)	(0.530876)	(0.530876)	(0.017321)									
	12/18/07	U-234	R	0.008761	U4	9.99584E-03	0.039676	0.039676	2.04 G	98%					0.017633			
	2.223E+00			(0.006249)		(7.0794E-03)	(0.02823)	(0.02823)	(0.017321)						0.002883			
	12/18/07	U-235	R	-0.001402	U4	-1.59991E-03	-0.00635	-0.00635	2.04 G	98%					0.023395			
	2.223E+00			(0.004438)		(5.0615E-03)	(0.020095)	(0.020095)	(0.017321)						0.005766			
	12/18/07	U-238	R	0.00403	U4	4.59794E-03	0.01825	0.01825	2.04 G	98%					0.017633			
	2.223E+00			(0.004408)		(5.0139E-03)	(0.01994)	(0.01994)	(0.017321)						0.002883			
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			
17	Calc	SR	SOLID	*STLE	AlpIsoWoBS	KCV2R1AC	pCi/g	S	11/19/07 08:40	12/18/07 14:36			1					
			0.INTRA-LAB CHECK		.J7K260000-521		SOLID						UISG:1546	Alq	2.02 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	12/18/07 12:56	U-232	328	5	ALP88	ED	Y	N	3.4235E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.01666666	1000.2666			Y		(1.027E-02)						(0.000E+00)	0.49505		
1	12/18/07 12:56	U-234	134	0	ALP88	ED	N	N	3.4235E-01		N	48%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.01666666	1000.2666			Y		(1.027E-02)						(0.000E+00)	0.49505		
2	12/18/07 12:56	U-235	8	0	ALP88	ED	N	N	3.4235E-01		N	48%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.01666666	1000.2666			Y		(1.027E-02)						(0.000E+00)	0.49505		
3	12/18/07 12:56	U-238	144	0	ALP88	ED	N	N	3.4235E-01		N	48%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			200.01666666	1000.2666			Y		(1.027E-02)						(0.000E+00)	0.49505		

Alpha Spec, Uiso by ALP, Calculated Results

BkLc/MDC StdDvMdc/LcC

IDC/LcC

LCSYldjEFctU

Vol Used

Dpm-Blk

Dpm Wo Blk

Net Cnt Rt

Q

Sa Act, Total U

Avg

Sq	CalcDate,TrcAct	Parameter	Avg	R	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYldjEnFct	LCSYldjEFctU	IDC/LcC	BkLc/MDC	StdDvMdc/LcC
12/18/07	U-232		1.064899		1.63486E+00		4.77544	4.77544	2.02 G	48%					
2.223E+00			(0.086137)		(9.0574E-02)		(0.300865)	(0.300865)	(0.017321)						
12/18/07	U-234		0.910848		6.69944E-01		4.08461	4.08461	2.02 G	48%	106%	0.032555			
2.223E+00			(0.11432)		(5.7883E-02)		(0.468914)	(0.468914)	(0.017321)			0.007071			
12/18/07	U-235		0.054379		3.99967E-02		0.243857	0.243857	2.02 G	48%	139%	0.032555			
2.223E+00			(0.019899)		(1.4176E-02)		(0.088376)	(0.088376)	(0.017321)			0.007071			
12/18/07	U-238		0.978822		7.19940E-01		4.389432	4.389432	2.02 G	48%	109%	0.032555			
2.223E+00			(0.120812)		(6.0003E-02)		(0.493895)	(0.493895)	(0.017321)			0.007071			

# URANIUM ISOTOPIC COUNTING REQUEST

1615

C.R. Technician 60  
Date Counted 12/18/07

Counting Time 20 Minutes  
Sample Background See Alpha Regions Report

SOP's Operating: RICHRD008  
Review: RICHRD0016  
BRCO 11/19/07

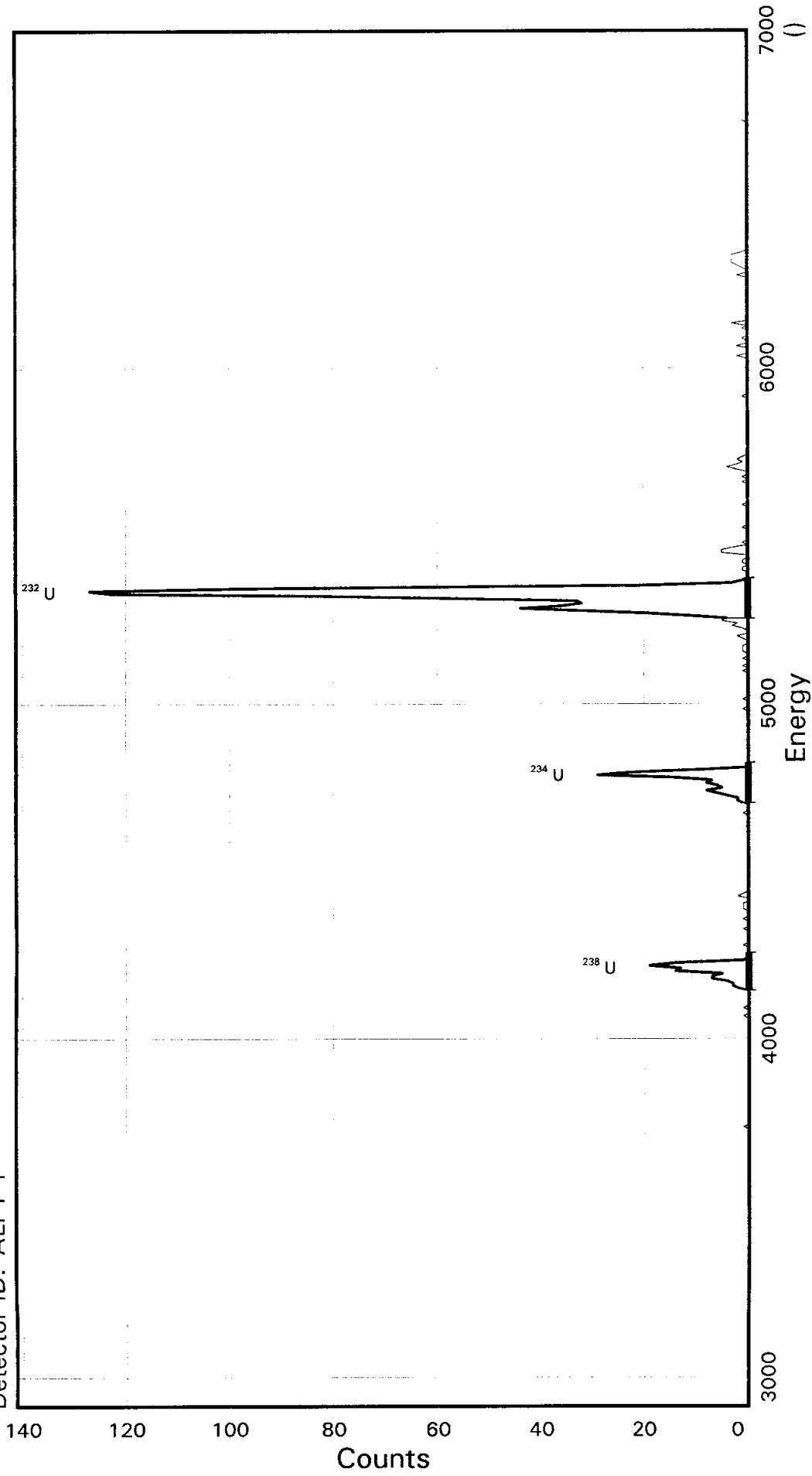
WorkOrder #	U-232 (5320 KeV) Tracer	TOTAL COUNTS			Det #	Comments/Edits
		U-238 (4196 KeV)	U-235 (4396 KeV)	U-234 (4776 KeV)		
KCMNWLAD	See Counting Room Printout for ROI information				1	
KCMNWLAD	See Counting Room Printout for ROI information				2	
KCMNXIAD	See Counting Room Printout for ROI information				3	
KCMNSIAD	See Counting Room Printout for ROI information				4	
KCMNSIAG	See Counting Room Printout for ROI information				5	
KCMNSIAD	See Counting Room Printout for ROI information				6	
KCMPEIAD	See Counting Room Printout for ROI information				7	
KCMPRIAD	See Counting Room Printout for ROI information				8	
Comments:						

STL Richland WA.

U BRCO

Batch ID: 7330521

Sample ID: KCMNL1AD  
Detector ID: ALP1 1



Energy Coefficients:  
Offset: 2.89248E + 03  
Slope: 7.48523E + 00  
Quadrature: 3.51425E-05

Acquisition Start: 18-DEC-2007 12:54:52.12  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:07.00



SAMPLE IDENTIITY: KCMNL1AD

TITLE : U BRCO

DETECTOR : ALP1 1  
CONFIGURATION NAME : \$DISK1:[ALP1.SAMPLE] KCMNL1AD\_181271254.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:20

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:54:52 CALIB DATE : 02-DEC-2007 08:32:25

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:07

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: KCMNL1AD

Flags Key

Detector: ALP1 1 Report Date: 18-Dec-07 04:15 PM Acquire Date: 18-DEC-2007 12:54:52.12 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		Right		Flags
					Energy keV	Width keV	Chnl	Chnl	Wdth Mult	Wdth Mult		
U-232	728 ✓	7	0	3.631	5332.5	120.1	315	331	0.00	0.00	P	
U-234	128 ✓	2	0	0.638	4786.9	120.0	242	258	0.00	0.00	P	
U-235	8	1	0	0.039	4410.1	120.0	192	208	0.00	0.00		
U-238	95 ✓	1	0	0.474	4210.3	112.5	167	182	0.00	0.00	P	

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:15:22

```

Configuration      : $DISK1:[ALP1.SAMPLE]KCMNL1AD_181271254.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : U BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:54:52
Sample ID         : KCMNL1AD Sample quantity : 0.000000E+00 GRAMS
Sample type       : disk Sample geometry :
Detector name     : ALP1 Detector geometry:
Elapsed live time: 0 03:20:07.00 Elapsed real time: 0 03:20:07.00 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	4212.16	95	0	37.48	176.16	167	15	7.91E-03	10.3	
2	0	4789.03	128	0	37.43	253.07	242	16	1.07E-02	8.8	
3	0	5332.47	728	0	29.94	325.48	315	16	6.06E-02	3.7	

Alpha Spectrum Listing  
(Version: 1-Apr-07)

Sample Identity: KCMNLIAD  
Detector: ALP1 I  
Report Date: 18 Dec 07 04:15 PM  
Acquire Date: 18 DEC 2007 12:54:52.12

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	51	0	101	0	151	1+	201	7+	251	0	301	1	351	0	401	2	451	0	501			
0	2	52	0	102	0	152	1+	202	14+	252	1	302	0	352	0	402	0	452	0	502			
0	3	53	0	103	0	153	0+	203	29+	253	1	303	0	353	1	403	0	453	0	503			
0	4	54	0	104	0	154	0+	204	23+	254	1	304	0	354	0	404	1	454	0	504			
0	5	55	0	105	0	155	2+	205	10+	255	0	305	0	355	0	405	2	455	0	505			
0	6	56	0	106	0	156	1+	206	0+	256	0	306	0	356	0	406	3	456	0	506			
0	7	57	0	107	1	157	0+	207	0+	257	1	307	0	357	0	407	3	457	0	507			
0	8	58	0	108	0	158	0+	208	0	258	2	308	0	358	0	408	3	458	0	508			
0	9	59	0	109	0	159	0	209	0	259	0	309	0	359	0	409	3	459	0	509			
0	10	60	0	110	1	160	0	210	0	260	0	310	1	360	0	410	1	460	0	510			
0	11	61	0	111	0	161	0	211	0	261	1	311	0	361	0	411	0	461	0	511			
0	12	62	0	112	0	162	0	212	0	262	3	312	0	362	0	412	0	462	1	512			
0	13	63	1	113	0	163	0	213	0	263	2	313	0	363	0	413	0	463					
0	14	64	0	114	0	164	0	214	0	264	5	314	0	364	0	414	0	464					
0	15	65	0	115	0	165	0	215	0	265	4+	315	0	365	0	415	0	465					
0	16	66	0	116	0	166	0	216	0	266	11+	316	0	366	0	416	0	466					
0	17	67	0	117	0+	167	0	217	0	267	19+	317	0	367	0	417	0	467					
0	18	68	0	118	2+	168	0	218	0	268	31+	318	0	368	0	418	0	468					
0	19	69	0	119	3+	169	0	219	0	269	44+	319	1	369	2	419	0	469					
0	20	70	0	120	3+	170	0	220	0	270	36+	320	0	370	0	420	0	470					
0	21	71	0	121	4+	171	0	221	0	271	32+	321	1	371	0	421	0	471					
0	22	72	0	122	7+	172	0	222	0	272	33+	322	0	372	0	422	0	472					
0	23	73	0	123	7+	173	0	223	0	273	57+	323	0	373	2	423	0	473					
0	24	74	0	124	5+	174	0	224	0	274	82+	324	2	374	0	424	0	474					
0	25	75	0	125	14+	175	0	225	0	275	123+	325	4	375	0	425	0	475					
0	26	76	0	126	13+	176	0	226	0	276	127+	326	2	376	1	426	0	476					
0	27	77	0	127	19+	177	0	227	0	277	96+	327	1	377	0	427	0	477					
0	28	78	0	128	14+	178	0	228	0	278	20+	328	2	378	0	428	0	478					
0	29	79	0	129	1+	179	0	229	1	279	3+	329	1	379	0	429	0	479					
0	30	80	0	130	0+	180	0	230	0	280	1+	330	0	380	1	430	0	480					
0	31	81	0	131	0+	181	0	231	0	281	0	331	0	381	0	431	0	481					
0	32	82	0	132	0	182	0	232	0	282	0	332	0	382	3	432	0	482					
0	33	83	0	133	0	183	0	233	1	283	0	333	0	383	0	433	0	483					
0	34	84	0	134	0	184	0	234	0	284	1	334	0	384	0	434	0	484					
0	35	85	0	135	1	185	0	235	0	285	1	335	0	385	0	435	0	485					
0	36	86	0	136	0	186	0	236	0	286	0	336	0	386	0	436	0	486					
0	37	87	0	137	0	187	0	237	0	287	1	337	0	387	0	437	0	487					
0	38	88	0	138	0	188	1	238	0	288	1	338	0	388	0	438	0	488					
0	39	89	0	139	0	189	0	239	0	289	0	339	0	389	0	439	0	489					
0	40	90	0	140	0	190	0	240	0	290	0	340	0	390	0	440	0	490					
0	41	91	0	141	0	191	0	241	0	291	5	341	0	391	0	441	0	491					
0	42	92	0	142	1+	192	1+	242	0	292	5	342	0	392	0	442	0	492					
0	43	93	0	143	0+	193	2+	243	0	293	3	343	0	393	0	443	0	493					
0	44	94	0	144	0+	194	2+	244	1	294	0	344	0	394	0	444	0	494					
0	45	95	0	145	0+	195	4+	245	0	295	1	345	0	395	0	445	0	495					
0	46	96	0	146	1+	196	6+	246	1	296	0	346	0	396	0	446	0	496					
0	47	97	0	147	0+	197	8+	247	0	297	0	347	0	397	0	447	0	497					
0	48	98	0	148	0+	198	5+	248	0	298	0	348	0	398	0	448	0	498					
0	49	99	0	149	0+	199	6+	249	1	299	0	349	0	399	0	449	0	499					
0	50	100	0	150	1+	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]KCMNL1AD\_181271254.CNF;1

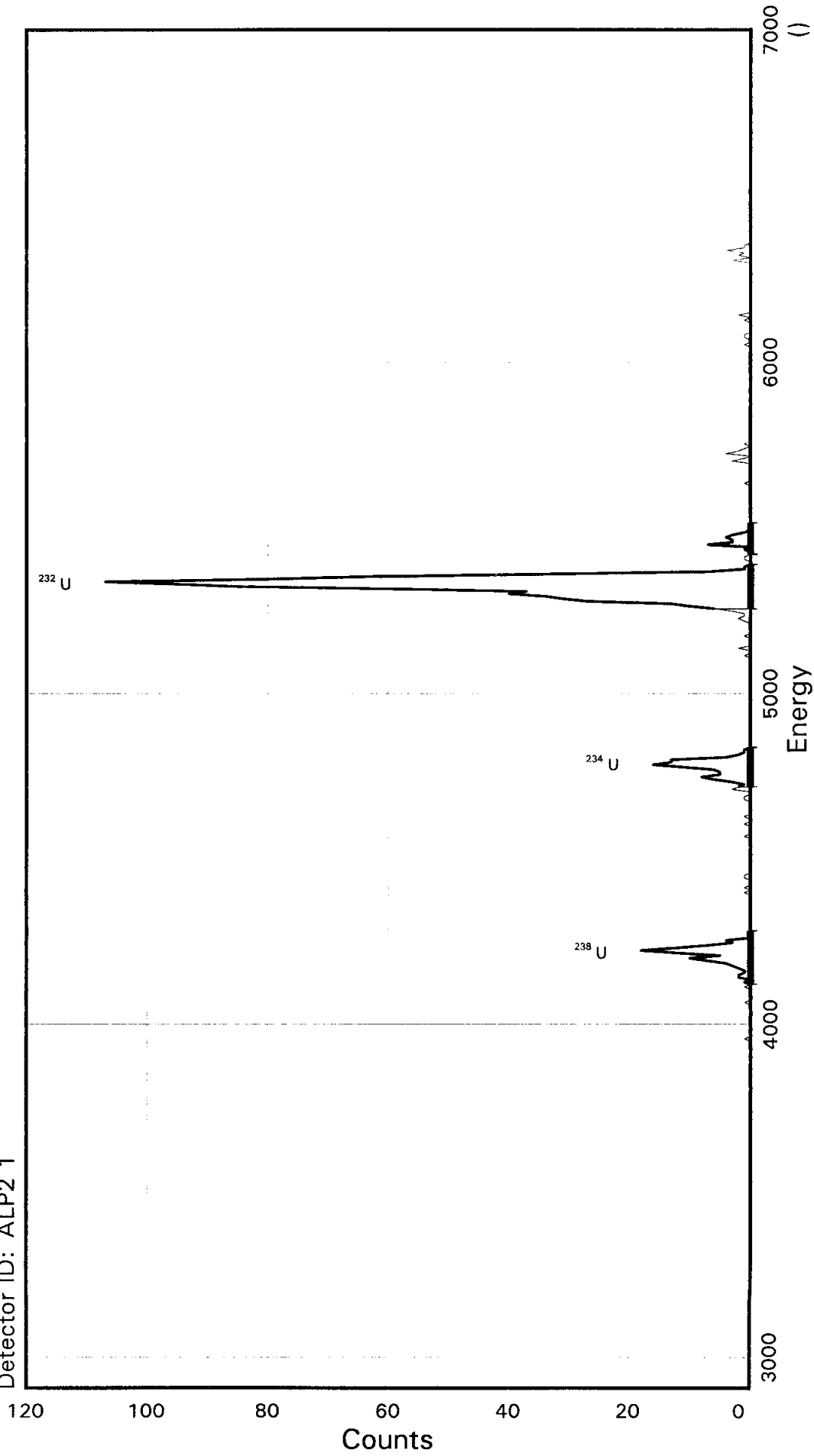
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4212.15	167	182	95	92	0.31		
4789.02	242	258	128	125	0.27		
5332.47	315	331	728	719	0.33		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCMNW1AD  
Detector ID: ALP2 1

Batch ID: 7330521



Acquisition Start: 18-DEC-2007 12:54:54.90  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:04.00

Energy Coefficients:  
Offset: 2.88584E + 03  
Slope: 7.36165E + 00  
Quadrature: 1.28252E - 04

SAMPLE IDENTIITY: KCMNW1AD

TITLE : U BRCO

DETECTOR : ALP2 1  
CONFIGURATION NAME : \$DISK1:[ALP2.SAMPLE]KCMNW1AD\_181271254.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:25

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:54:54 CALIB DATE : 02-DEC-2007 09:13:03

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:04

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: KCMNW1AD

Flags Key

Detector: ALP2 1  
 Report Date: 18-Dec-07 04:15 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:54:54.90 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	Intrscct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
U-232	736 ✓	13	0	3.666	5330.4	134.0	320	338	0.00	0.00	P
U-234	97 ✓	2	0	0.483	4784.8	118.8	248	264	0.00	0.00	P
U-235	4	2	0	0.018	4408.0	133.5	196	214	0.00	0.00	
U-238	95 ✓	3	0	0.472	4208.2	163.0	167	189	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:15:15

Configuration : \$DISK1:[ALP2.SAMPLE]KCMNW1AD\_181271254.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:54:54  
 Sample ID : KCMNW1AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP2 Detector geometry:  
 Elapsed live time: 0 03:20:04.00 Elapsed real time: 0 03:20:04.00 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	4216.81	95	0	51.53 ✓	180.23	167	22	7.91E-03	10.3	
2	0	4786.90	97	0	51.53 ✓	257.09	248	16	8.08E-03	10.2	
3	0	5330.37	736	0	51.53 ✓	330.16	320	18	6.13E-02	3.7	
4	0	5457.97	24	0	36.81	347.29	342	13	2.00E-03	20.4	





ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP2.SAMPLE]KCMNW1AD\_181271254.CNF;1

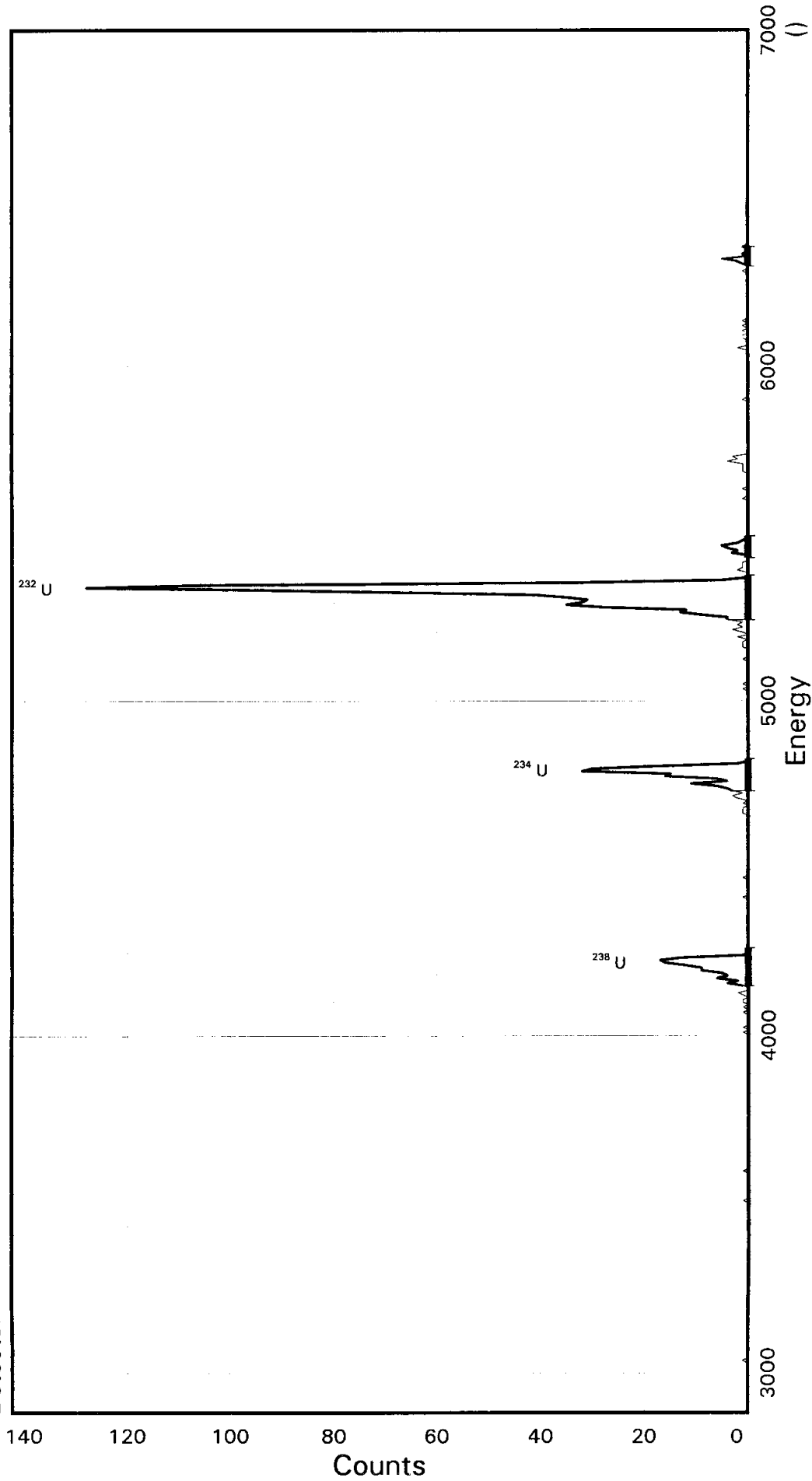
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4216.81	167	189	95	94	0.10		
4786.90	248	264	97	97	0.00		
5330.36	320	338	736	730	0.22		
5457.97	342	355	24	22	0.41		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCMNX1AD  
Detector ID: ALP3 1

Batch ID: 7330521



Acquisition Start: 18-DEC-2007 12:55:00.14  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:07.00

Energy Coefficients:  
Offset: 2.86025E + 03  
Slope: 7.36921E + 00  
Quadrature: 1.47559E-05

SAMPLE IDENTIITY: KCMNX1AD

TITLE : U BRCO

DETECTOR : ALP3 1  
CONFIGURATION NAME : \$DISK1:[ALP3.SAMPLE] KCMNX1AD\_181271255.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:27

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:55:00 CALIB DATE : 02-DEC-2007 08:33:11

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:07

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^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: KCMNX1AD

Flags Key

Detector: ALP3 1  
 Report Date: 18-Dec-07 04:15 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:55:00.14 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	Intrsect	Count	Centrd	Region	Left	Right	Left	Right	Flags
Name	Count	Count	Count	Rate	Energy	Width	Chnl	Chnl	Wdth	Wdth	
U-232	683✓	11	0	3.402	5334.9	132.8	323	341	0.00	0.00	P
U-234	149✓	1	0	0.744	4789.3	95.9	254	267	0.00	0.00	P
U-235	1	4	0	0.001	4412.5	132.8	198	216	0.00	0.00	
U-238	101✓	6	0	0.499	4212.7	110.6	175	190	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:15:28

Configuration : \$DISK1:[ALP3.SAMPLE]KCMNX1AD\_181271255.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:55:00  
 Sample ID : KCMNX1AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP3 Detector geometry:  
 Elapsed live time: 0 03:20:07.00 Elapsed real time: 0 03:20:07.00 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	4217.14	101	0	36.85✓	184.06	175	15	8.41E-03	10.0	
2	0	4795.09	149	0	29.48✓	262.42	254	13	1.24E-02	8.2	
3	0	5334.89	683	0	29.48✓	335.58	323	18	5.69E-02	3.8	
4	0	5457.42	18	0	36.85	352.19	348	9	1.50E-03	23.6	
5	0	6316.37	10	0	29.48	468.56	466	8	8.33E-04	31.6	



ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP3.SAMPLE]KCMNX1AD\_181271255.CNF;1

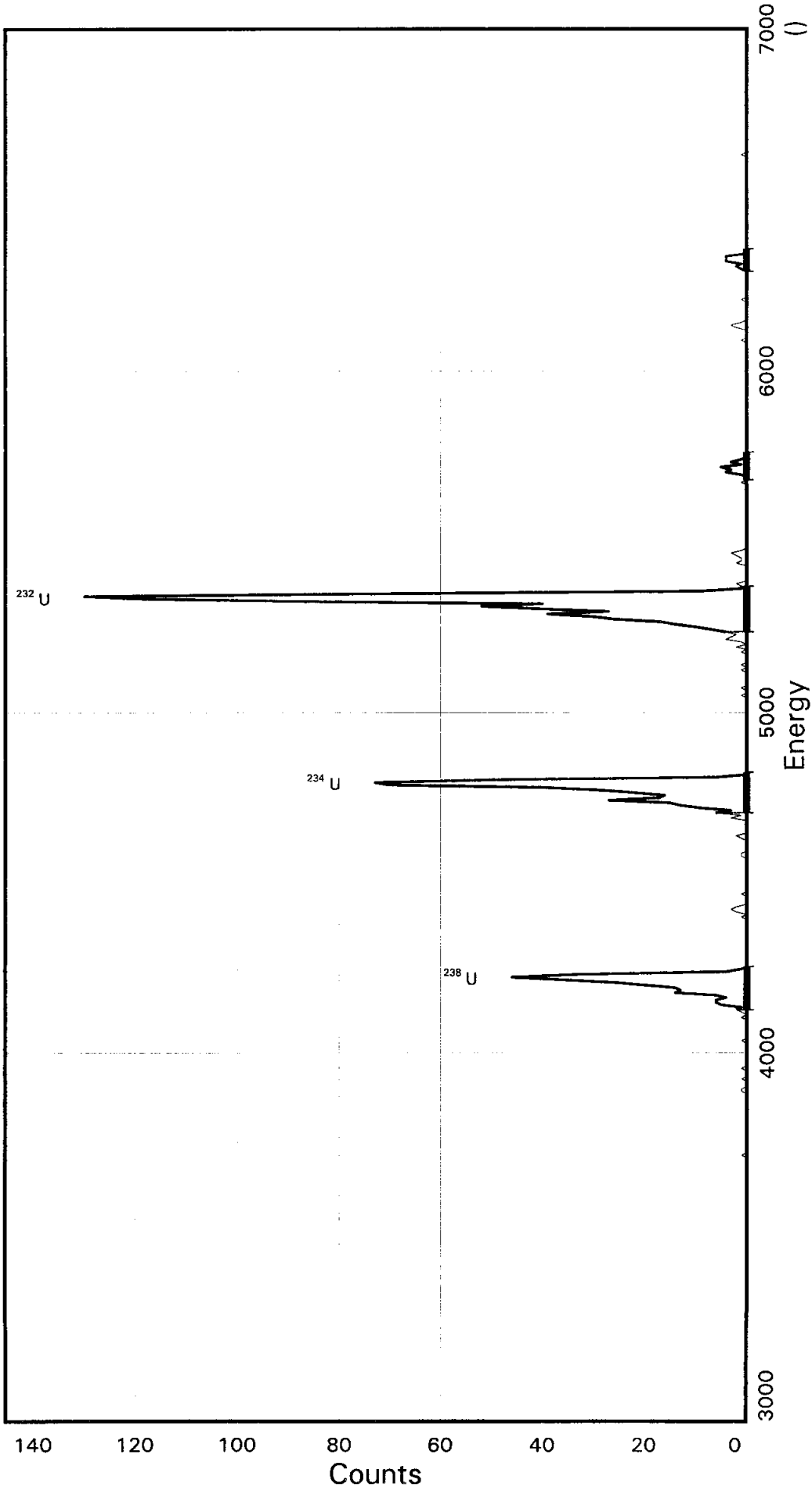
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4217.13	175	190	101	99	0.20		
4795.08	254	267	149	147	0.16		
5334.89	323	341	683	679	0.15		
5457.42	348	357	18	17	0.24		
6316.37	466	474	10	10	0.00		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCMN51AD  
Detector ID: ALP4 1

Batch ID: 7330521



Acquisition Start: 18-DEC-2007 12:55:07.16  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:01.00

Energy Coefficients:  
Offset: 2.90291E+03  
Slope: 7.46125E+00  
Quadrature: -3.23275E-05

SAMPLE IDENTIITY: KCMN51AD

TITLE : U BRCO

DETECTOR : ALP4 1  
CONFIGURATION NAME : \$DISK1:[ALP4.SAMPLE]KCMN51AD\_181271255.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:32

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:55:07 CALIB DATE : 02-DEC-2007 08:33:03

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:01

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: KCMN51AD

Flags Key

Detector: ALP4 1  
 Report Date: 18-Dec-07 04:15 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:55:07.16 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	733	10	0	3.655	5332.5	133.9	313	331	0.00	0.00	P
U-234	398	7	0	1.983	4786.9	119.1	242	258	0.00	0.00	P
U-235	8	1	0	0.039	4410.1	134.1	189	207	0.00	0.00	
U-238	240	4	0	1.196	4210.3	126.7	164	181	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:15:34

Configuration : \$DISK1:[ALP4.SAMPLE]KCMN51AD\_181271255.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:55:07  
 Sample ID : KCMN51AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP4 Detector geometry:  
 Elapsed live time: 0 03:20:01.00 Elapsed real time: 0 03:20:01.00 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	4218.71	240	0	29.85	176.49	164	17	2.00E-02	6.5	
2	0	4792.03	398	0	29.85	253.47	242	16	3.32E-02	5.0	
3	0	5332.52	733	0	37.31	326.09	313	18	6.11E-02	3.7	
4	0	5714.93	20	0	29.85	377.50	373	11	1.67E-03	22.4	
5	0	6325.39	16	0	29.85	459.62	455	9	1.33E-03	25.0	



ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP4.SAMPLE]KCMN51AD\_181271255.CNF;1

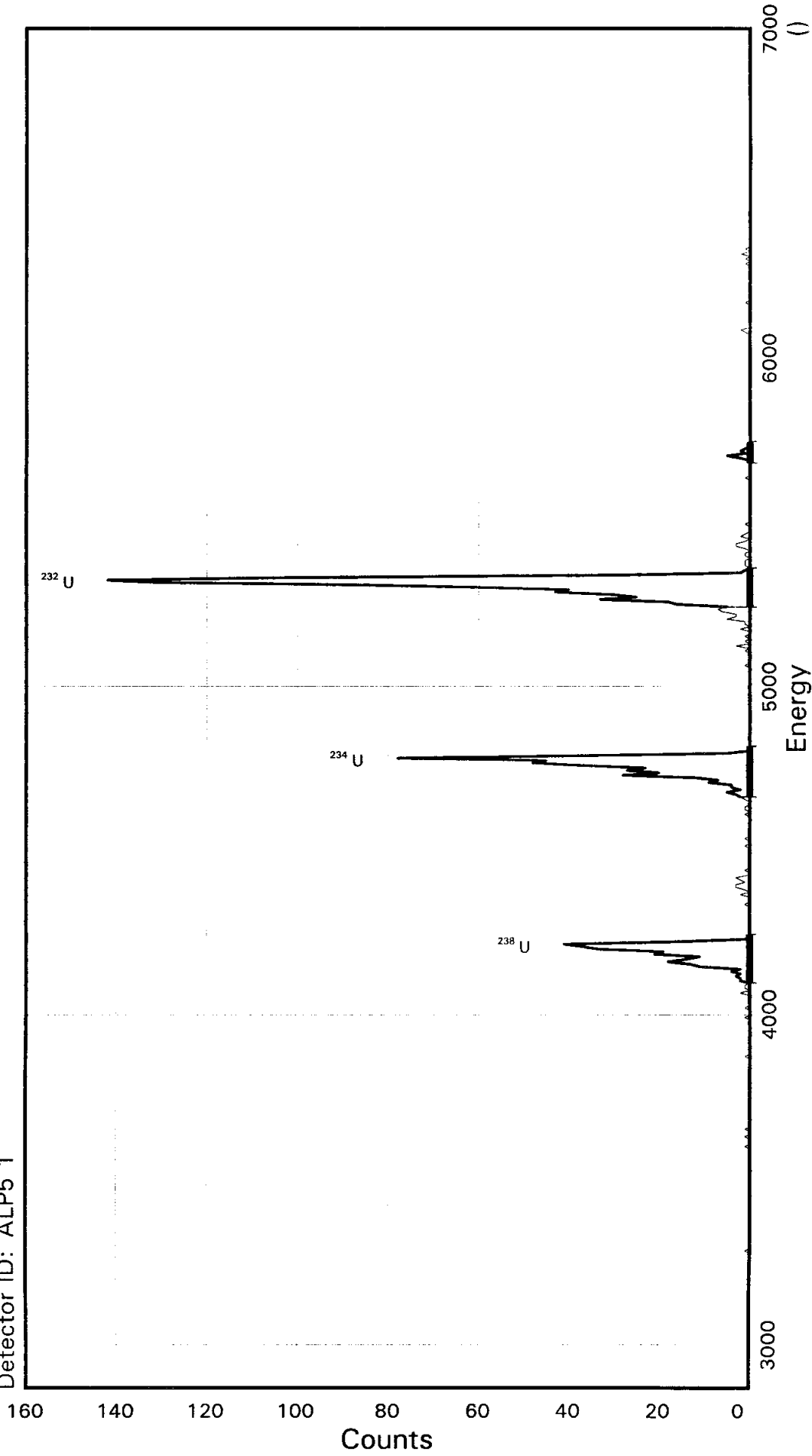
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4218.70	164	181	240	238	0.13		
4792.02	242	258	398	396	0.10		
5332.51	313	331	733	726	0.26		
5714.92	373	384	20	18	0.45		
6325.39	455	464	16	16	0.00		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCMN51AG  
Detector ID: ALP5 1

Batch ID: 7330521



Acquisition Start: 18-DEC-2007 12:55:11.01  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:04.00

Energy Coefficients:  
Offset: 2.84800E+03  
Slope: 7.37036E+00  
Quadrature: 5.27821E-05

SAMPLE IDENTIITY: KCMN51AG

TITLE : U BRCO

DETECTOR : ALP5 1  
CONFIGURATION NAME : \$DISK1:[ALP5.SAMPLE]KCMN51AG\_181271255.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:37

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:55:11 CALIB DATE : 02-DEC-2007 08:33:21

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:04

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: KCMN51AG

Flags Key

Detector: ALP5 1  
 Report Date: 18-Dec-07 04:15 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:55:11.01 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 Mult	Right Wdth Mult	Flags
U-232	769	4	0	3.840	5316.9	118.5	324	340	0.00	0.00	P
U-234	400	7	0	1.992	4771.3	155.3	246	267	0.00	0.00	P
U-235	16	1	0	0.079	4394.5	118.3	199	215	0.00	0.00	
U-238	253	12	0	1.253	4194.7	147.8	169	189	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:15:41

Configuration : \$DISK1:[ALP5.SAMPLE]KCMN51AG\_181271255.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:55:11  
 Sample ID : KCMN51AG Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP5 Detector geometry:  
 Elapsed live time: 0 03:20:04.00 Elapsed real time: 0 03:20:04.00 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	4205.47	253	0	36.85	183.94	169	20	2.11E-02	6.3	
2	0	4775.67	400	0	36.85	261.06	246	21	3.33E-02	5.0	
3	0	5316.86	769	0	36.85	334.17	324	16	6.41E-02	3.6	
4	0	5704.53	12	0	29.48	386.50	383	9	1.00E-03	28.9	



ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP5.SAMPLE]KCMN51AG\_181271255.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4205.46	169	189	253	250	0.19		
4775.67	246	267	400	396	0.20		
5316.85	324	340	769	761	0.29		
5704.52	383	392	12	11	0.29		

End of Report

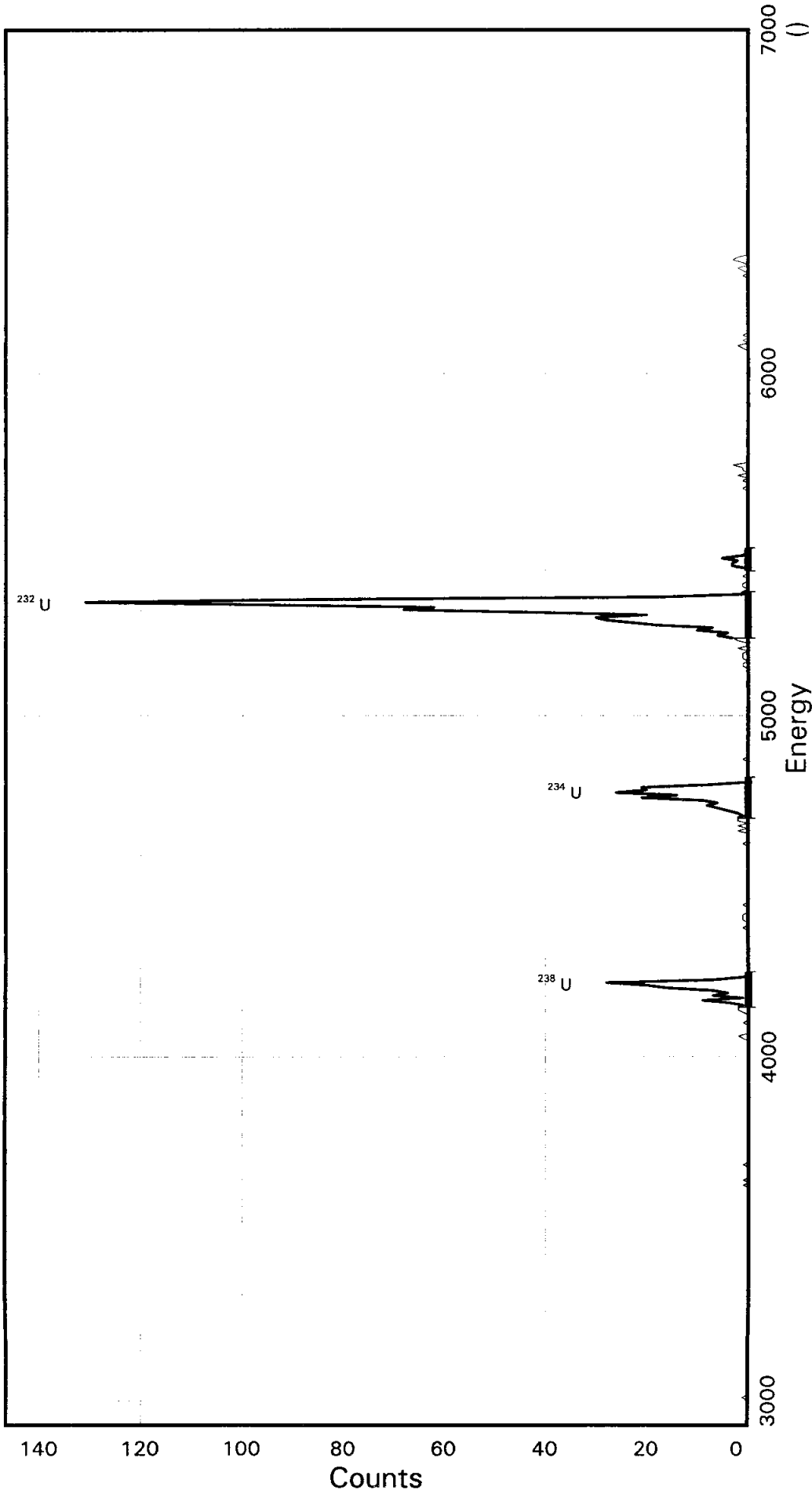


STL Richland WA.

U BRCO

Batch ID: 7330521

Sample ID: KCMN81AD  
Detector ID: ALP6 1



Acquisition Start: 18-DEC-2007 12:55:16.15  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:08.00

Energy Coefficients:  
Offset: 2.90724E+03  
Slope: 7.29933E+00  
Quadrature: 3.48723E-04

SAMPLE IDENTIITY: KCMN81AD

TITLE : U BRCO

DETECTOR : ALP6 1  
CONFIGURATION NAME : \$DISK1:[ALP6.SAMPLE]KCMN81AD\_181271255.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:41

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:55:16 CALIB DATE : 02-DEC-2007 08:33:28

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:08

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: KCMN81AD

Flags Key

Detector: ALP6 1  
 Report Date: 18-Dec-07 04:15 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:55:16.15 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	663	6	0	3.307	5325.2	135.4	313	331	0.00	0.00	P
U-234	149	2	0	0.743	4779.6	119.6	243	259	0.00	0.00	P
U-235	4	1	0	0.019	4402.8	133.9	190	208	0.00	0.00	
U-238	108	1	0	0.539	4203.0	103.9	168	182	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:15:46

Configuration : \$DISK1:[ALP6.SAMPLE]KCMN81AD\_181271255.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:55:16  
 Sample ID : KCMN81AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP6 Detector geometry:  
 Elapsed live time: 0 03:20:08.00 Elapsed real time: 0 03:20:08.00 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	4213.10	108	0	29.20	177.40	168	14	8.99E-03	9.6	
2	0	4776.69	149	0	36.50	253.05	243	16	1.24E-02	8.2	
3	0	5325.17	663	0	36.50	326.17	313	18	5.52E-02	3.9	
4	0	5449.43	16	0	29.20	342.67	339	9	1.33E-03	25.0	



ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP6.SAMPLE]KCMN81AD\_181271255.CNF;1

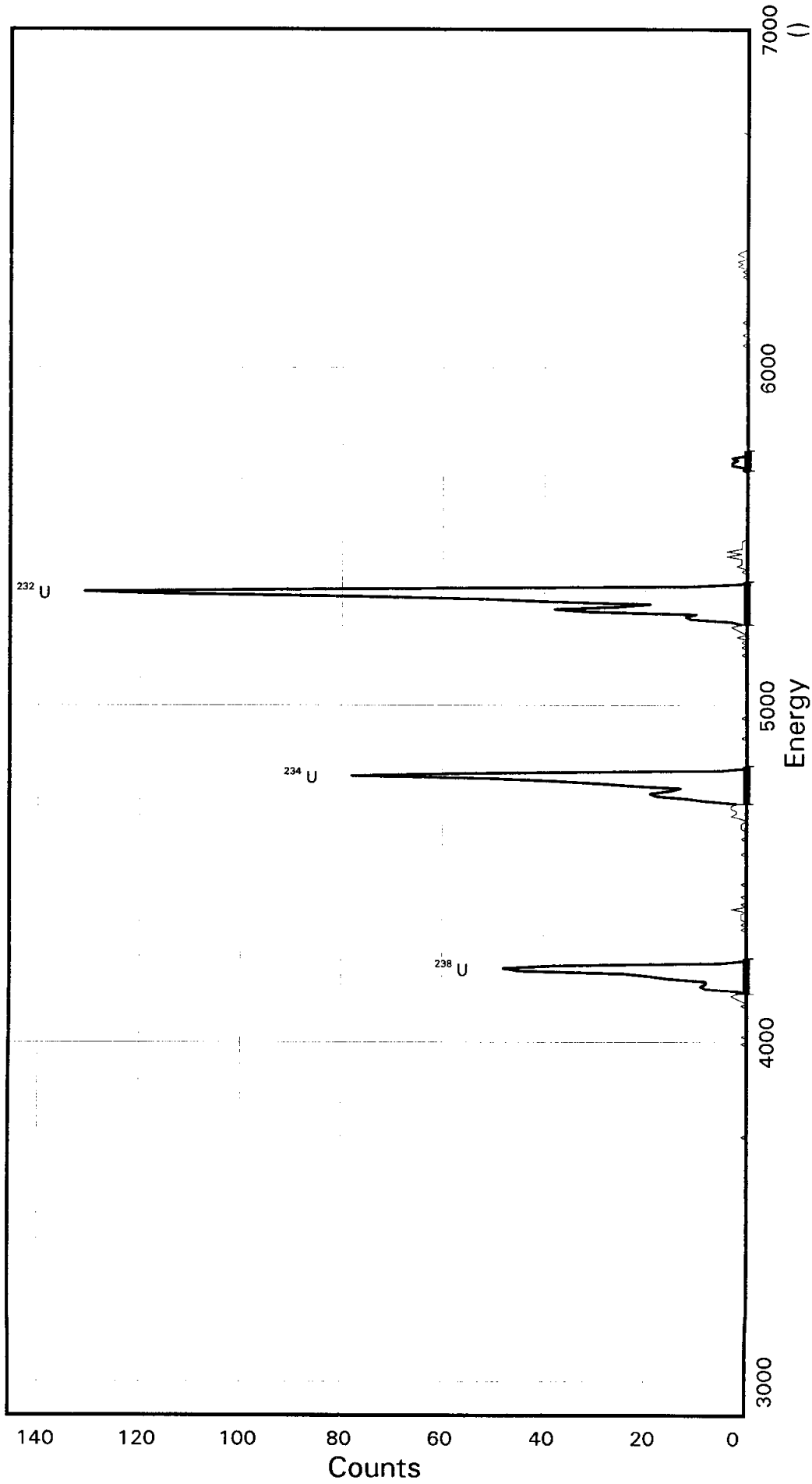
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4213.09	168	182	108	107	0.10		
4776.68	243	259	149	148	0.08		
5325.17	313	331	663	657	0.23		
5449.42	339	348	16	14	0.50		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCMFK1AD  
Detector ID: ALP7 1

Batch ID: 7330521



Acquisition Start: 18-DEC-2007 12:55:23.92  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:00.00

Energy Coefficients:  
Offset: 2.87851E+03  
Slope: 7.43174E+00  
Quadrature: 4.56151E-05

SAMPLE IDENTIITY: KCMPK1AD

TITLE : U BRCO

DETECTOR : ALP7 1  
CONFIGURATION NAME : \$DISK1:[ALP7.SAMPLE] KCMPK1AD\_181271255.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:45

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:55:23 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: KCMPK1AD

Flags Key

Detector: ALP7 1  
 Report Date: 18-Dec-07 04:15 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:55:23.92 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	659	10	0	3.285	5331.8	126.8	317	334	0.00	0.00	P
U-234	376	0	0	1.880	4786.3	111.8	246	261	0.00	0.00	P
U-235	10	0	0	0.050	4409.5	126.7	193	210	0.00	0.00	
U-238	234	0	0	1.170	4209.7	104.3	170	184	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:15:52

Configuration : \$DISK1:[ALP7.SAMPLE] KCMPK1AD\_181271255.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:55:23  
 Sample ID : KCMPK1AD 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	4214.06	234	0	29.73	179.51	170	14	1.95E-02	6.5	
2	0	4787.86	376	0	29.73	256.51	246	15	3.13E-02	5.2	
3	0	5331.82	659	0	29.73	329.45	317	17	5.49E-02	3.9	
4	0	5720.36	12	0	29.73	381.50	378	8	1.00E-03	28.9	





ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP7.SAMPLE] KCMPK1AD\_181271255.CNF;1

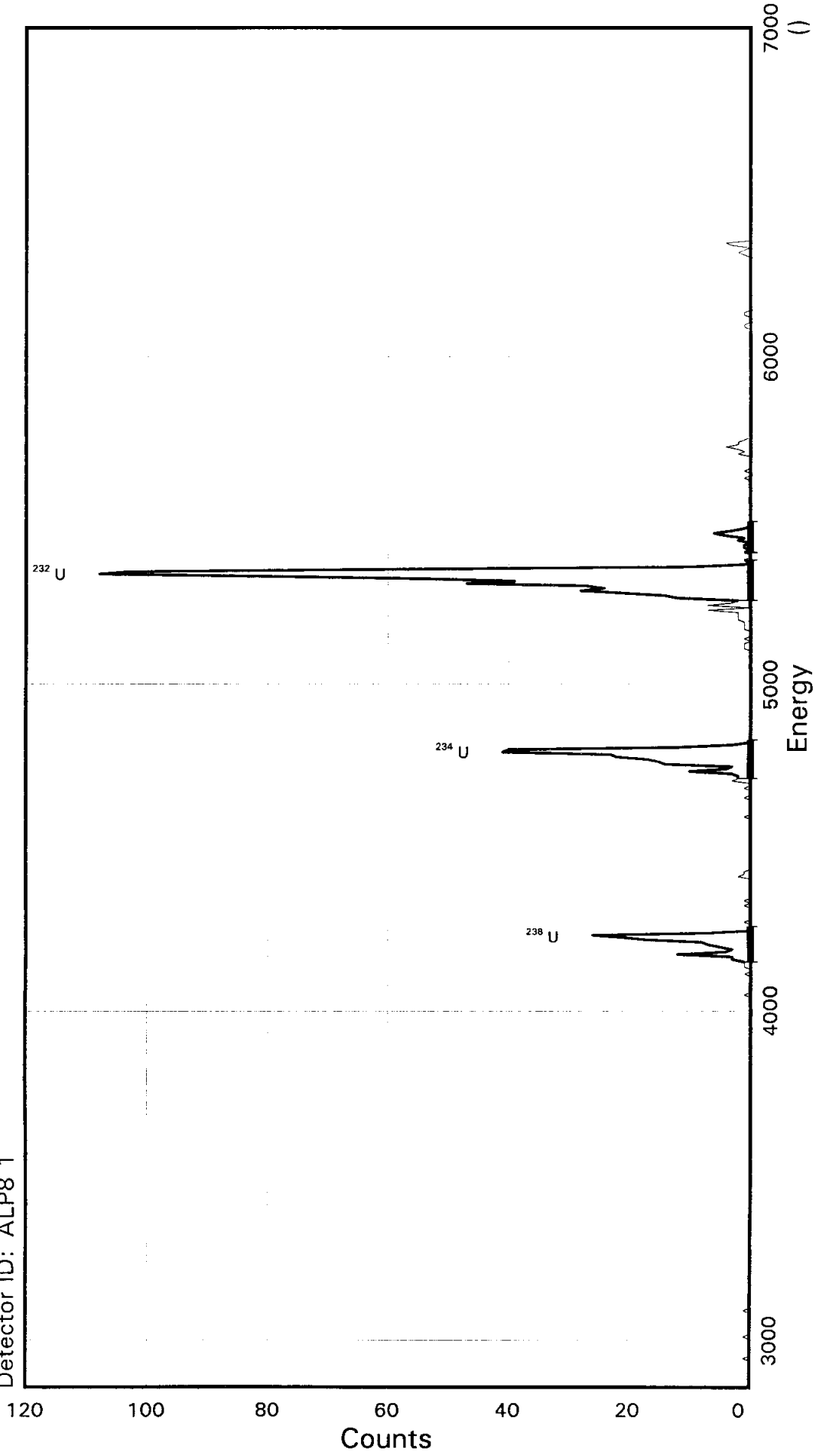
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4214.05	170	184	234	230	0.26		
4787.86	246	261	376	368	0.41		
5331.82	317	334	659	651	0.31		
5720.36	378	386	12	12	0.00		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCMPR1AD  
Detector ID: ALP8 1

Batch ID: 7330521



Acquisition Start: 18-DEC-2007 12:55:27.55  
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: KCMPR1AD

TITLE : U BRCO

DETECTOR : ALP8 1  
CONFIGURATION NAME : \$DISK1:[ALP8.SAMPLE]KCMPR1AD\_181271255.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:49

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:55:27 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<sup>2</sup> SUM SENSITIVITY: 1.00000 %

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

Sample Identity: KCMPR1AD

Flags Key

Detector: ALP8 1  
 Report Date: 18-Dec-07 04:15 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:55:27.55 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	Intrscpt Count	Count Rate C/Min	Centrd Region Energy keV	Width keV	Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
U-232	636	6	0	3.173	5336.5	124.5	331	348	0.00	0.00	P
U-234	216	0	0	1.080	4790.9	117.1	257	273	0.00	0.00	P
U-235	5	0	0	0.025	4414.1	124.3	205	222	0.00	0.00	
U-238	120	0	0	0.600	4214.3	109.7	180	195	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:15:56

Configuration : \$DISK1:[ALP8.SAMPLE]KCMPR1AD\_181271255.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:55:27  
 Sample ID : KCMPR1AD Sample quantity : 0.000000E+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	4226.63	120	0	29.20	190.32	180	15	1.00E-02	9.1	
2	0	4794.54	216	0	36.50	267.96	257	16	1.80E-02	6.8	
3	0	5336.48	636	0	36.50	342.01	331	17	5.30E-02	4.0	
4	0	5457.23	21	0	29.20	358.50	351	13	1.75E-03	21.8	

Alpha Spectrum Listing

(Version: 1 Apr 07)

Sample Identity: KCMPRIAD

Detector: ALP8 1

Report Date: 18 Dec 07 04:15 PM

Acquire Date: 18 DEC 2007 12:55:27.55

Flags Key

Intersect Region: 0

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	Cnt	F	Chn
0	1	0	51	0	101	0	151	0	201	0	251	0	301	1	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	0	103	0	153	0	203	1	253	0	303	1	353	0	403	0	453	0	503					
0	4	0	54	0	104	0	154	1	204	0	254	0	304	1	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	1+	206	3	256	0	306	2	356	0	406	0	456	0	506					
0	7	0	57	0	107	0	157	0+	207	2+	257	0	307	1	357	0	407	0	457	0	507					
0	8	0	58	0	108	0	158	0+	208	2+	258	0	308	4	358	0	408	0	458	0	508					
0	9	0	59	0	109	0	159	0+	209	3+	259	0	309	6	359	0	409	0	459	0	509					
0	10	0	60	0	110	0	160	0+	210	10+	260	0	310	3	360	0	410	0	460	0	510					
0	11	0	61	0	111	0	161	0+	211	4+	261	1	311	1	361	0	411	0	461	0	511					
0	12	0	62	0	112	0	162	0+	212	3+	262	1	312	0	362	0	412	0	462	0	512					
0	13	0	63	0	113	0	163	0+	213	14+	263	1	313	0	363	0	413	0	463							
0	14	0	64	0	114	0	164	0+	214	15+	264	0	314	0	364	0	414	0	464							
1	15	0	65	0	115	0	165	0+	215	17+	265	1	315	0	365	0	415	0	465							
0	16	0	66	0	116	1	166	2+	216	22+	266	0	316	0	366	0	416	0	466							
0	17	0	67	0	117	0	167	1+	217	23+	267	0	317	0	367	0	417	0	467							
0	18	0	68	0	118	0	168	1+	218	41+	268	0	318	0	368	0	418	0	468							
0	19	0	69	0	119	0	169	0+	219	40+	269	1	319	0	369	0	419	0	469							
0	20	0	70	0	120	0	170	0+	220	12+	270	1	320	0	370	0	420	0	470							
0	21	0	71	0	121	0	171	0+	221	3+	271	1	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	2	323	0	373	0	423	0	473							
1	24	0	74	0	124	0	174	0	224	0	274	2	324	0	374	0	424	0	474							
0	25	0	75	0	125	1	175	0	225	0	275	2	325	0	375	0	425	1	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	7	327	0	377	0	427	1	477							
0	28	0	78	0	128	1	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	7	329	0	379	0	429	3	479							
0	30	0	80	0	130	1+	180	0	230	0	280	3	330	0	380	0	430	4	480							
0	31	0	81	0	131	3+	181	0	231	0	281	2+	331	0	381	0	431	0	481							
0	32	0	82	0	132	3+	182	0	232	0	282	12+	332	1	382	0	432	0	482							
0	33	0	83	0	133	12+	183	0	233	0	283	14+	333	0	383	0	433	0	483							
0	34	0	84	0	134	4+	184	0	234	0	284	21+	334	0	384	0	434	0	484							
1	35	0	85	0	135	3+	185	0	235	0	285	28+	335	1	385	0	435	0	485							
0	36	0	86	0	136	5+	186	0	236	0	286	24+	336	0	386	0	436	0	486							
0	37	0	87	0	137	7+	187	0	237	0	287	27+	337	0	387	0	437	0	487							
0	38	0	88	0	138	8+	188	0	238	0	288	47+	338	0	388	0	438	0	488							
0	39	0	89	0	139	17+	189	0	239	0	289	39+	339	0	389	0	439	0	489							
0	40	0	90	0	140	21+	190	0	240	0	290	54+	340	0	390	0	440	0	490							
0	41	0	91	0	141	26+	191	1	241	0	291	81+	341	0	391	0	441	0	491							
0	42	0	92	0	142	7+	192	0	242	0	292	108+	342	2	392	0	442	0	492							
0	43	0	93	0	143	0+	193	0	243	0	293	103+	343	1	393	0	443	0	493							
0	44	0	94	0	144	0+	194	0	244	0	294	59+	344	2	394	0	444	0	494							
0	45	0	95	0	145	0	195	0	245	0	295	10+	345	4	395	1	445	0	495							
0	46	0	96	0	146	0	196	0	246	0	296	1+	346	2	396	1	446	0	496							
0	47	0	97	0	147	1	197	0	247	0	297	0+	347	2	397	0	447	0	497							
0	48	0	98	0	148	0	198	0	248	0	298	1	348	1	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	0	250	0	300	0	350	0	400	1	450	0	500							

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP8.SAMPLE]KCMR1AD\_181271255.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4226.63	180	195	120	117	0.27		
4794.53	257	273	216	211	0.34		
5336.47	331	348	636	631	0.20		
5457.23	351	364	21	20	0.22		

End of Report

# URANIUM ISOTOPIC COUNTING REQUEST

16/14

C.R. Technician CS  
 Date Counted 12/18/07

Counting Time 200 Minutes  
 Sample Blow  
 Background See Alpha Regions Report

SOP's  
 Operating: RICHRD008  
 Review: RICHRD0016  
733550

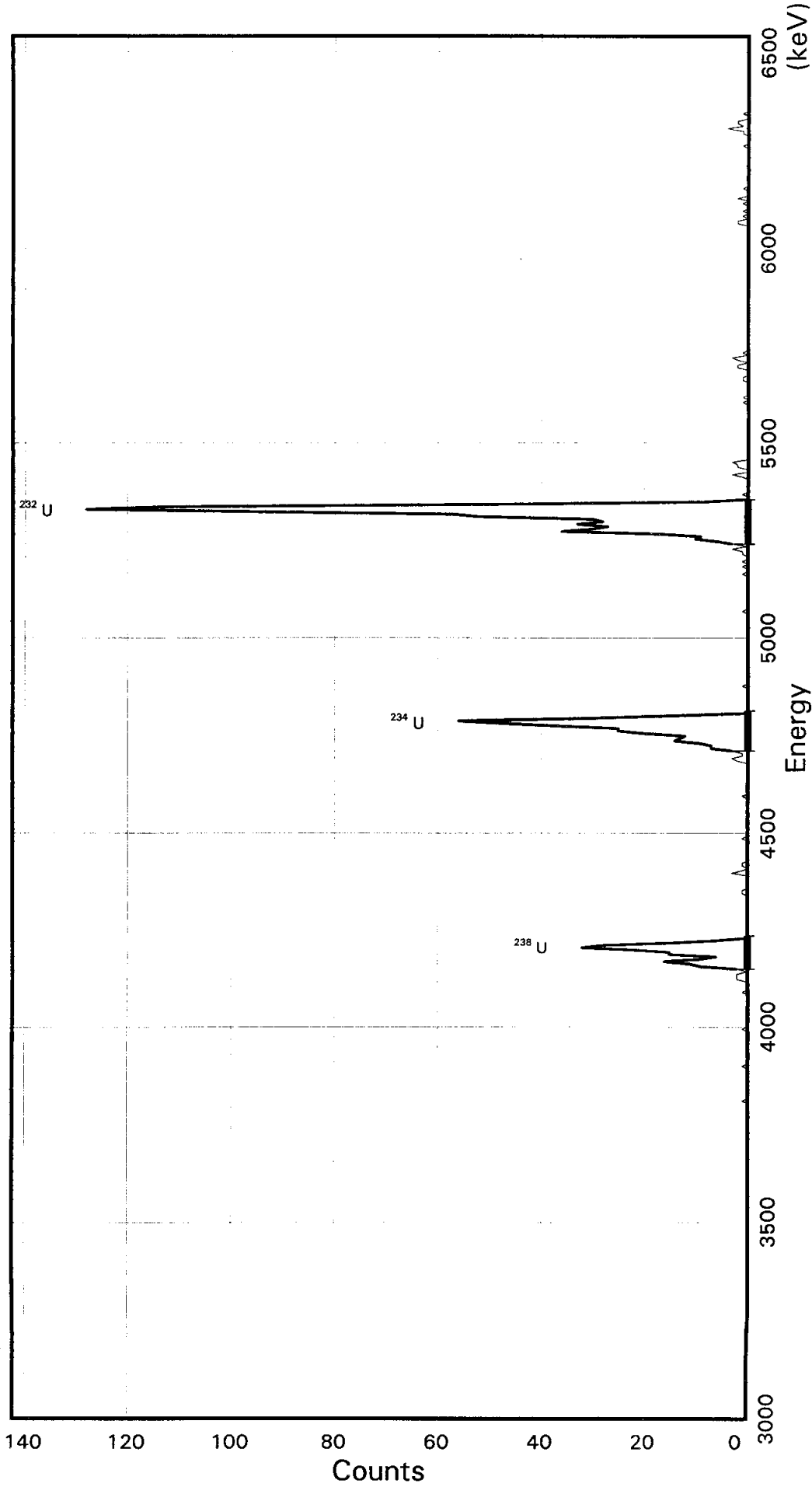
WorkOrder #	U-232 (5320 KeV) Tracer	TOTAL COUNTS			Det #	Comments/Edits
		U-238 (4196 KeV)	U-235 (4396 KeV)	U-234 (4776 KeV)		
<u>KCmPT1AD</u>	See Counting Room Printout for ROI information				<u>9</u>	
<u>KCmPV1AD</u>	See Counting Room Printout for ROI information				<u>10</u>	
<u>KCmPX1AD</u>	See Counting Room Printout for ROI information				<u>11</u>	
<u>KCmPS1AD</u>	See Counting Room Printout for ROI information				<u>12</u>	
<u>KCmQF1AD</u>	See Counting Room Printout for ROI information				<u>69</u>	
<u>KCmGH1AD</u>	See Counting Room Printout for ROI information				<u>71</u>	
<u>KCmG11AD</u>	See Counting Room Printout for ROI information				<u>84</u>	
<u>KCVR1AA</u>	See Counting Room Printout for ROI information				<u>85</u>	<u>ANUAL</u>
<u>KVZR1AC</u>	See Counting Room Printout for ROI information				<u>84</u>	
Comments:						



STL Richland WA.  
U BRCO

Sample ID: KCMPT1AD  
Detector ID: ALP9 1

Batch ID: 7330521



Acquisition Start: 18-DEC-2007 12:55:43.26  
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: KCMPT1AD

TITLE : U BRCO

DETECTOR : ALP9 1  
CONFIGURATION NAME : \$DISK1:[ALP9.SAMPLE]KCMPT1AD\_181271255.CNF;1

ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:51:56

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:55:43 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: KCMPT1AD

Flags Key

Detector: ALP9 1  
 Report Date: 18-Dec-07 05:01 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:55:43.26 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 Mult	Right Wdth Mult	Flags
U-232	726	4	0	3.625	5327.9	114.9	308	326	0.00	0.00	P
U-234	322	0	0	1.610	4782.3	102.2	225	241	0.00	0.00	P
U-235	8	1	0	0.039	4405.5	115.0	164	182	0.00	0.00	
U-238	186	0	0	0.930	4205.7	89.5	137	151	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 17:01:17

Configuration : \$DISK1:[ALP9.SAMPLE] KCMPT1AD\_181271255.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:55:43  
 Sample ID : KCMPT1AD 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 03:20:04.00 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	4205.76	186	0	32.02	146.02	137	14	1.55E-02	7.3	
2	0	4781.63	322	0	32.02	236.14	225	16	2.68E-02	5.6	
3	0	5327.86	726	0	25.61	321.70	308	18	6.05E-02	3.7	



ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP9.SAMPLE]KCMPT1AD\_181271255.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4205.76	137	151	186	186	0.00		
4781.63	225	241	322	321	0.06		
5327.85	308	326	726	724	0.07		

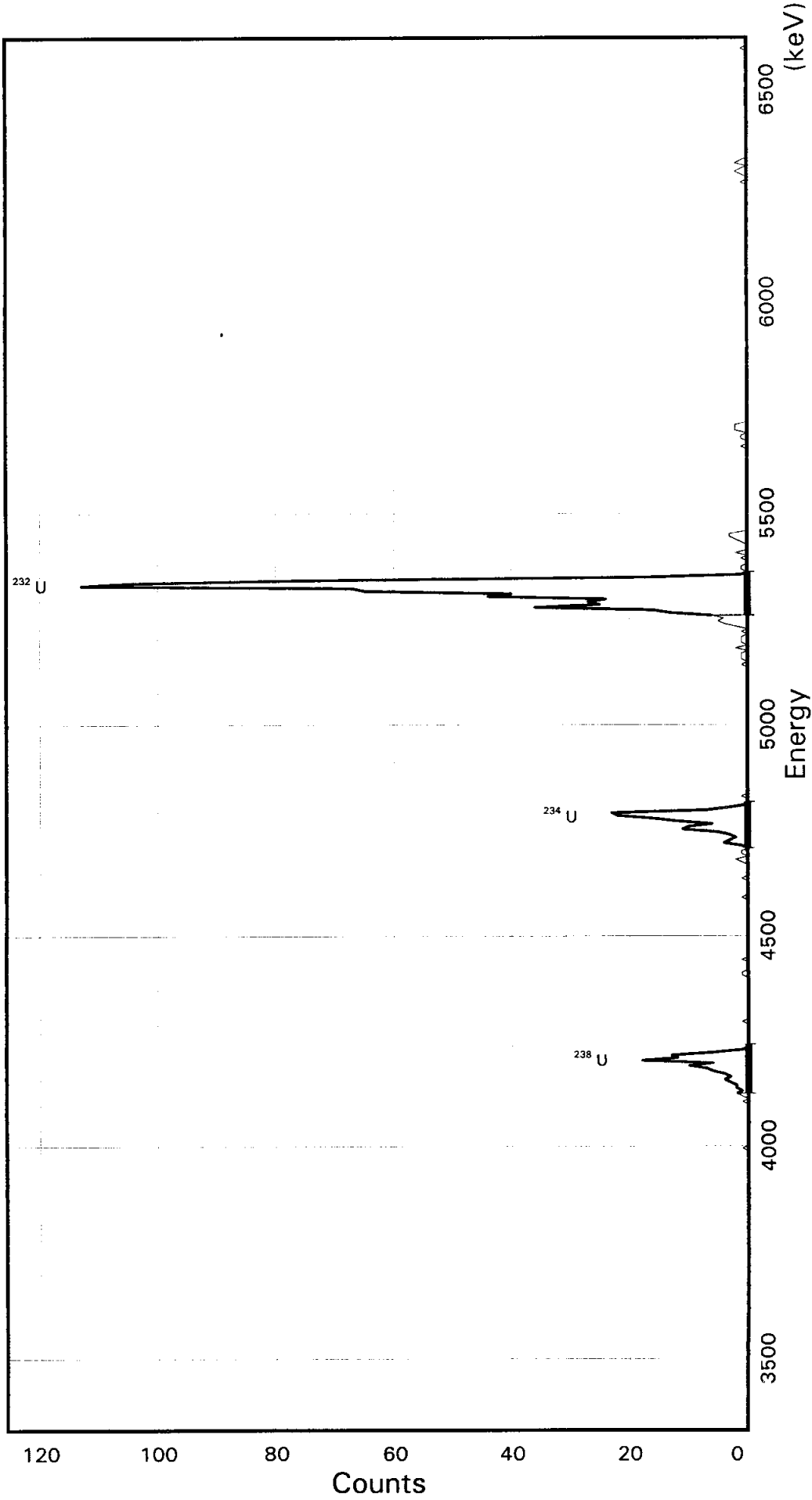
End of Report

STL Richland WA.

U BRCO

Batch ID: 7330521

Sample ID: KCMPV1AD  
Detector ID: ALP10 1



Acquisition Start: 18-DEC-2007 12:55:46.47  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:00.00

Energy Coefficients:  
Offset: 3.31165E + 03  
Slope: 6.51407E + 00  
Quadrature: -9.02777E - 05

SAMPLE IDENTIITY: KCMPV1AD

TITLE : U BRCO

DETECTOR : ALP10 1  
CONFIGURATION NAME : \$DISK1:[ALP10.SAMPLE] KCMPV1AD\_181271255.CNF;

1  
ACQUIRE DATE of BACKGROUND: 02-DEC-2007 09:52:00

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:55:46 CALIB DATE : 02-DEC-2007 08:33:54

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

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: KCMPV1AD

Flags Key

Detector: ALP10 1	
Report Date: 18-Dec-07 04:16 PM	P: Peak Identified
Acquire Date: 18-DEC-2007 12:55:46.47	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		Right		Flags
					Energy keV	Width keV	Chnl	Chnl	Wdth Mult	Wdth Mult		
U-232	681	4	0	3.401	5329.2	103.3	300	316	0.00	0.00	P	
U-234	132	4	0	0.656	4783.7	110.1	215	232	0.00	0.00	P	
U-235	2	0	0	0.010	4406.9	103.7	157	173	0.00	0.00		
U-238	101	1	0	0.504	4207.1	116.8	125	143	0.00	0.00	P	

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:16:04

```

Configuration      : $DISK1:[ALP10.SAMPLE] KCMPV1AD_181271255.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : U BRCO
Sample date       : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:55:46
Sample ID         : KCMPV1AD Sample quantity : 0.000000E+00 GRAMS
Sample type       : disk Sample geometry :
Detector name     : ALP10 Detector geometry:
Elapsed live time: 0 03:20:00.00 Elapsed real time: 0 03:20:00.00 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	4203.38	101	0	32.57	137.15	125	18	8.42E-03	10.0	
2	0	4783.37	132	0	39.08	226.64	215	17	1.10E-02	8.7	
3	0	5329.24	681	0	32.57	311.07	300	16	5.67E-02	3.8	



Alpha Spectrum Listing

(Version: 1-Apr-07)

Sample Identity: KCMPVIAD

Flags Key

Detector: ALP10 L

Report Date: 18-Dec-07 04:16 PM

Intersect Region: -

Acquire Date: 18 DEC 2007 12:55:46.47

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	0		251	13+		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	35+		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	1		204	0		254	25+		304	0		354	0		404	0		454	0		504
0		5	0		55	1		105	0		155	0		205	0		255	27+		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	0		256	24+		306	0		356	0		406	0		456	0		506
0		7	0		57	0		107	0+		157	0		207	0		257	44+		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0+		158	0		208	0		258	40+		308	0		358	0		408	0		458	1		508
0		9	0		59	0		109	0+		159	0		209	0		259	65+		309	0		359	0		409	1		459	0		509
0		10	0		60	0		110	0+		160	1		210	0		260	67+		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0+		161	2		211	0		261	113+		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0+		162	0		212	0		262	105+		312	1		362	0		412	1		462	0		512
0		13	0		63	0		113	0+		163	1		213	0		263	75+		313	0		363	0		413	2		463			
0		14	0		64	0		114	0+		164	1		214	0		264	18+		314	0		364	0		414	1		464			
0		15	0		65	0		115	0+		165	0+		215	0		265	1+		315	1		365	0		415	0		465			
0		16	0		66	0		116	0+		166	1+		216	0		266	0		316	1		366	0		416	2		466			
0		17	0		67	0		117	0+		167	4+		217	0		267	1		317	0		367	0		417	1		467			
0		18	0		68	0		118	1+		168	3+		218	0		268	1		318	2		368	0		418	0		468			
0		19	0		69	0		119	1+		169	2+		219	0		269	0		319	2		369	0		419	0		469			
0		20	0		70	0		120	0+		170	3+		220	0		270	0		320	2		370	0		420	0		470			
0		21	0		71	0		121	0+		171	5+		221	0		271	1		321	0		371	0		421	0		471			
0		22	0		72	1		122	0+		172	11+		222	0		272	0		322	0		372	0		422	0		472			
0		23	0		73	0		123	0+		173	10+		223	0		273	2		323	0		373	0		423	0		473			
0		24	0		74	1		124	1		174	6+		224	0		274	0		324	0		374	0		424	0		474			
0		25	0		75	2+		125	0		175	12+		225	0		275	0		325	0		375	0		425	0		475			
0		26	0		76	1+		126	0		176	16+		226	0		276	0		326	0		376	0		426	0		476			
0		27	0		77	2+		127	0		177	22+		227	0		277	1		327	0		377	0		427	0		477			
0		28	0		78	2+		128	0		178	23+		228	0		278	2		328	0		378	0		428	0		478			
0		29	0		79	3+		129	0		179	7+		229	0		279	3		329	0		379	0		429	0		479			
0		30	0		80	4+		130	0		180	3+		230	0		280	3		330	0		380	0		430	0		480			
0		31	0		81	3+		131	0		181	0+		231	0		281	0		331	0		381	0		431	0		481			
0		32	0		82	4+		132	0		182	0		232	1		282	0		332	0		382	0		432	0		482			
0		33	0		83	6+		133	0		183	0		233	0		283	0		333	0		383	0		433	0		483			
0		34	0		84	7+		134	0		184	1		234	1		284	0		334	0		384	0		434	0		484			
0		35	0		85	10+		135	0		185	0		235	1		285	0		335	0		385	0		435	0		485			
0		36	0		86	6+		136	0		186	0		236	1		286	0		336	0		386	0		436	0		486			
0		37	0		87	18+		137	0		187	0		237	0		287	0		337	0		387	0		437	0		487			
0		38	0		88	12+		138	0		188	0		238	2		288	0		338	0		388	0		438	0		488			
0		39	0		89	13+		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	1		290	0		340	0		390	0		440	0		490			
0		41	0		91	1+		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	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	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	1		197	0		247	4		297	0		347	0		397	0		447	0		497			
0		48	0		98	0		148	0		198	0		248	5		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	0		200	0		250	6+		300	0		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP10.SAMPLE]KCMPV1AD\_181271255.CNF;1

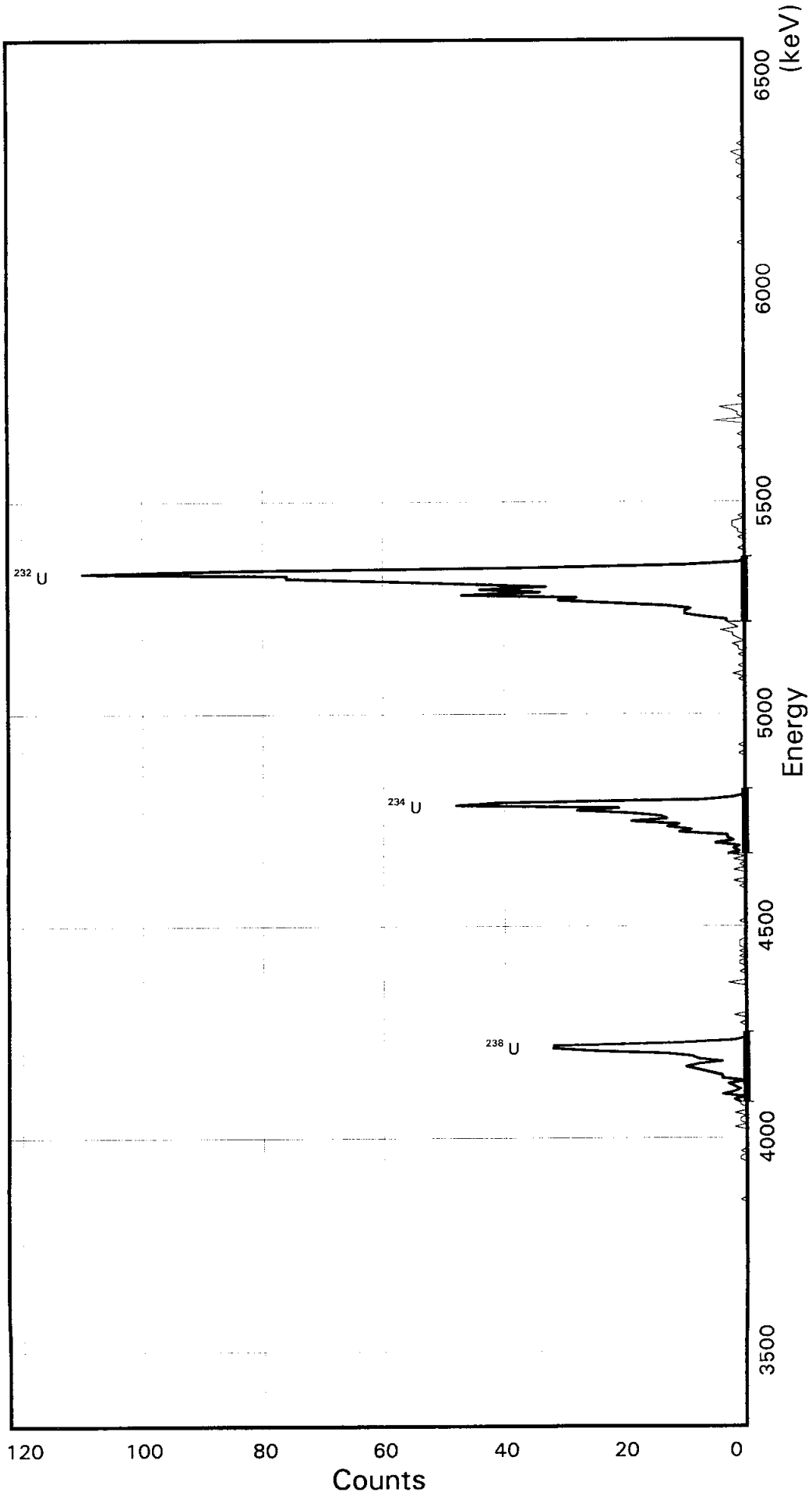
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4203.37	125	143	101	100	0.10		
4783.36	215	232	132	128	0.35		
5329.23	300	316	681	675	0.23		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCM PX1AD  
Detector ID: ALP11 1

Batch ID: 7330521



Energy Coefficients:  
Offset: 3.30505E + 03  
Slope: 6.36413E + 00  
Quadrature: 8.47967E-05

Acquisition Start: 18-DEC-2007 12:55:51.49  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:02.00

SAMPLE IDENTIITY: KCMPX1AD

TITLE : U BRCO

DETECTOR : ALP11 1  
CONFIGURATION NAME : \$DISK1:[ALP11.SAMPLE] KCMPX1AD\_181271255.CNF;

1  
ACQUIRE DATE of BACKGROUND: 08-DEC-2007 07:30:59

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:55:51 CALIB DATE : 02-DEC-2007 08:34:00

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:02

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: KCMPX1AD

Flags Key

Detector: ALP11 1  
 Report Date: 18-Dec-07 04:16 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:55:51.49 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	798	18	0	3.971	5325.0	154.0	299	323	0.00	0.00	P
U-234	279	1	0	1.394	4779.4	153.7	214	238	0.00	0.00	P
U-235	8	0	0	0.040	4402.6	153.4	155	179	0.00	0.00	
U-238	194	3	0	0.967	4202.8	166.1	122	148	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:16:12

Configuration : \$DISK1:[ALP11.SAMPLE]KCMPX1AD\_181271255.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:55:51  
 Sample ID : KCMPX1AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP11 Detector geometry:  
 Elapsed live time: 0 03:20:02.00 Elapsed real time: 0 03:20:02.00 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	4210.16	194	0	31.82	141.95	122	26	1.62E-02	7.2	
2	0	4782.73	279	0	38.18	231.48	214	24	2.32E-02	6.0	
3	0	5325.00	798	0	44.55	316.07	299	24	6.65E-02	3.5	

Alpha Spectrum Listing

(Version: 1-Apr-07)

Sample Identity: KCMFX1AD

Detector: ALP11 J

Report Date: 18 Dec 07 04:16 PM

Acquire Date: 18 DEC 2007 12:55:51.49

Flags Key

Intersect Region: 0

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									
0		1	0		51	1		101	1		151	0		201	1		251	7+		301	0		351	0		401	0		451	0		501
0		2	0		52	1		102	0		152	0		202	0		252	10+		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	0		253	10+		303	0		353	0		403	0		453	0		503
0		4	0		54	1		104	2		154	2		204	1		254	9+		304	0		354	0		404	1		454	0		504
0		5	0		55	0		105	0+		155	0		205	0		255	13+		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0+		156	0		206	0		256	22+		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	0		108	0+		158	2		208	0		258	28+		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	0+		159	0		209	0		259	47+		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0+		160	1		210	0		260	34+		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0+		161	0		211	0		261	44+		311	0		361	0		411	0		461	0		511
0		12	0		62	0		112	0+		162	2		212	0		262	33+		312	0		362	0		412	1		462	0		512
0		13	0		63	2		113	0+		163	0		213	0		263	46+		313	1		363	0		413	0		463			
0		14	0		64	0		114	0+		164	3+		214	0		264	59+		314	0		364	0		414	0		464			
0		15	0		65	1		115	0+		165	1+		215	0		265	76+		315	0		365	0		415	0		465			
0		16	0		66	1		116	3+		166	2+		216	0		266	76+		316	0		366	0		416	0		466			
0		17	0		67	0		117	0+		167	1+		217	0		267	110+		317	0		367	0		417	1		467			
0		18	0		68	2		118	0+		168	5+		218	0		268	86+		318	1		368	0		418	1		468			
0		19	0		69	0		119	0+		169	2+		219	0		269	34+		319	0		369	0		419	0		469			
0		20	0		70	0		120	1+		170	3+		220	0		270	10+		320	0		370	0		420	1		470			
0		21	0		71	1		121	0+		171	3+		221	0		271	1+		321	0		371	0		421	2		471			
0		22	0		72	1+		122	0+		172	11+		222	0		272	0+		322	0		372	0		422	0		472			
0		23	0		73	2+		123	1+		173	9+		223	0		273	0		323	5		373	0		423	0		473			
0		24	0		74	0+		124	1+		174	13+		224	0		274	0		324	0		374	0		424	1		474			
0		25	0		75	4+		125	0+		175	11+		225	0		275	0		325	1		375	0		425	0		475			
0		26	0		76	2+		126	1+		176	19+		226	0		276	1		326	1		376	0		426	0		476			
0		27	0		77	1+		127	0+		177	13+		227	0		277	0		327	2		377	0		427	0		477			
0		28	0		78	2+		128	1+		178	14+		228	1		278	0		328	4		378	0		428	0		478			
0		29	0		79	3+		129	0+		179	19+		229	0		279	0		329	0		379	0		429	0		479			
0		30	0		80	0+		130	1		180	28+		230	2		280	1		330	0		380	0		430	0		480			
0		31	0		81	4+		131	1		181	21+		231	0		281	0		331	0		381	0		431	0		481			
0		32	0		82	4+		132	1		182	48+		232	0		282	1		332	1		382	0		432	0		482			
0		33	0		83	6+		133	0		183	41+		233	1		283	1		333	0		383	0		433	0		483			
0		34	0		84	8+		134	0		184	7+		234	0		284	2		334	0		384	0		434	0		484			
0		35	0		85	10+		135	0		185	2+		235	0		285	2		335	0		385	0		435	0		485			
0		36	1		86	8+		136	0		186	0+		236	0		286	2		336	0		386	0		436	0		486			
0		37	0		87	4+		137	0		187	0+		237	1		287	0		337	0		387	0		437	0		487			
0		38	0		88	8+		138	0		188	0		238	0		288	1		338	0		388	1		438	0		488			
0		39	0		89	9+		139	1		189	0		239	1		289	0		339	0		389	0		439	0		489			
0		40	0		90	13+		140	0		190	0		240	1		290	0		340	0		390	0		440	0		490			
0		41	0		91	25+		141	0		191	0		241	2		291	0		341	0		391	0		441	0		491			
0		42	0		92	32+		142	0		192	0		242	0		292	0		342	0		392	0		442	0		492			
0		43	0		93	32+		143	0		193	0		243	1		293	0		343	0		393	0		443	0		493			
0		44	0		94	11+		144	0		194	0		244	2		294	0		344	0		394	0		444	0		494			
0		45	0		95	2+		145	0		195	0		245	2		295	0		345	0		395	0		445	0		495			
0		46	0		96	0+		146	0		196	0		246	4		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	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	3+		299	0		349	0		399	0		449	0		499			
0		50	0		100	0		150	0		200	0		250	3+		300	0		350	0		400	0		450	0		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP11.SAMPLE]KCMPX1AD\_181271255.CNF;1

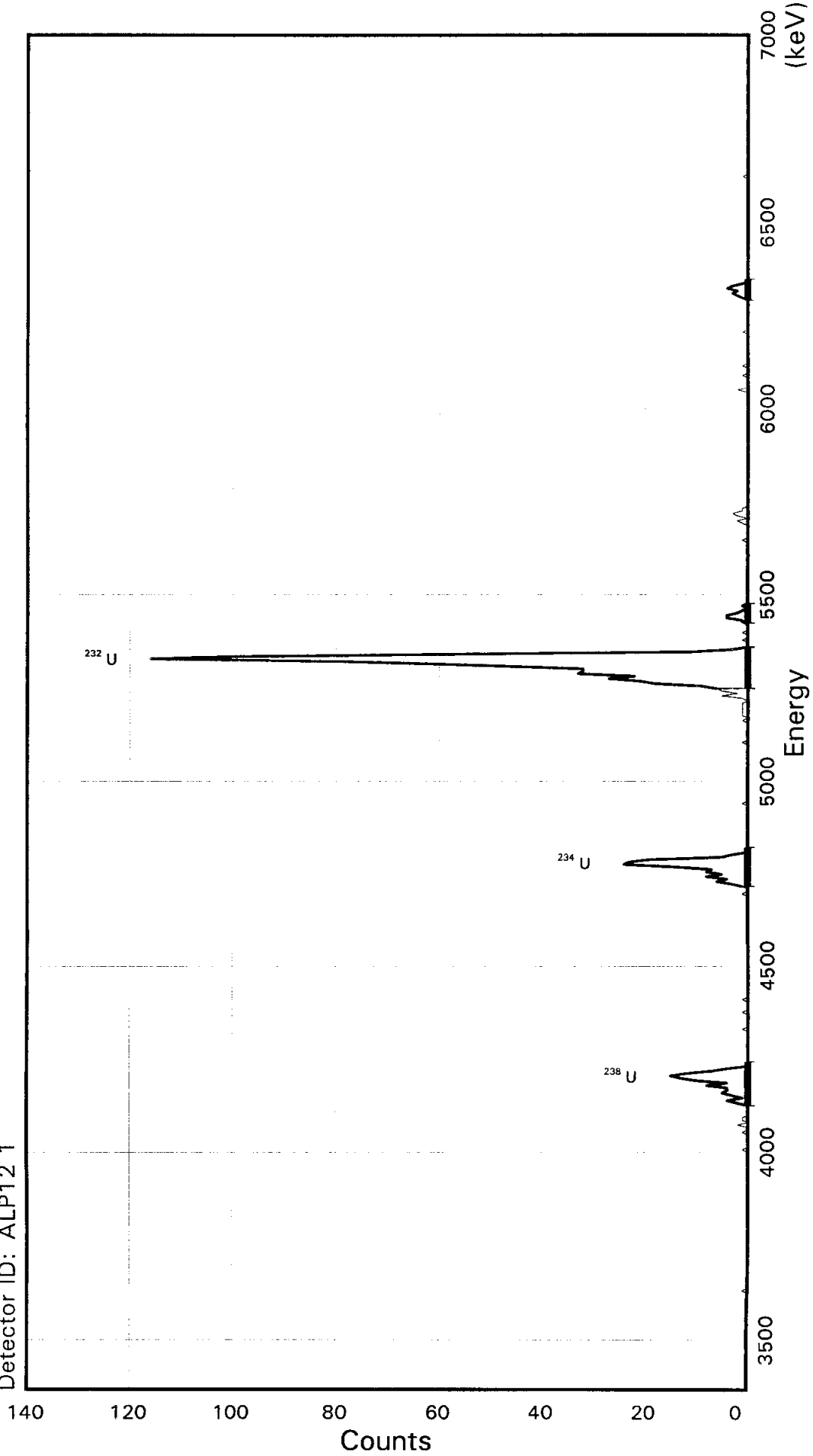
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4210.16	122	148	194	191	0.22		
4782.72	214	238	279	276	0.18		
5325.00	299	323	798	792	0.21		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCMP51AD  
Detector ID: ALP12 1

Batch ID: 7330521



Energy Coefficients:  
Offset: 3.34773E + 03  
Slope: 6.61137E + 00  
Quadrature: -1.24415E-04

Acquisition Start: 18-DEC-2007 12:55:57.29  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:04.00



SAMPLE IDENTIITY: KCMP51AD

TITLE : U BRCO

DETECTOR : ALP12 1  
CONFIGURATION NAME : \$DISK1:[ALP12.SAMPLE] KCMP51AD\_181271255.CNF;  
1

ACQUIRE DATE of BACKGROUND: 07-DEC-2007 14:26:42

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:55:57 CALIB DATE : 02-DEC-2007 08:34:06

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:04

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: KCMP51AD

Flags Key

Detector: ALP12 1  
 Report Date: 18-Dec-07 04:16 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:55:57.29 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	Intrscpt Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
U-232	673 ✓	7	0	3.357	5326.6	111.1	289	306	0.00	0.00	P
U-234	132 ✓	1	0	0.659	4781.0	104.9	208	224	0.00	0.00	P
U-235	3 ✓	1	0	0.014	4404.2	111.7	148	165	0.00	0.00	
U-238	96 ✓	0	0	0.480	4204.4	118.4	118	136	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:16:18

Configuration : \$DISK1:[ALP12.SAMPLE]KCMP51AD\_181271255.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:55:57  
 Sample ID : KCMP51AD Sample quantity : 0.000000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP12 Detector geometry:  
 Elapsed live time: 0 03:20:04.00 Elapsed real time: 0 03:20:04.00 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	4202.54	96	0	39.67 ✓	129.61	118	18	8.00E-03	10.2	
2	0	4780.16	132	0	26.45 ✓	217.55	208	16	1.10E-02	8.7	
3	0	5326.56	673	0	33.06 ✓	301.01	289	17	5.61E-02	3.9	
4	0	5439.02	13	0	19.83	318.22	316	8	1.08E-03	27.7	
5	0	6318.65	15	0	33.06	453.23	449	9	1.25E-03	25.8	

Alpha Spectrum Listing  
(Version: 1-Apr-07)

Sample Identity: KCMP51AD

Flags Key

Detector: ALP12 I

Report Date: 18-Dec-07 04:16 PM

Intersect Region: +

Acquire Date: 18 DEC 2007 12:55:57.29

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	116+	301	0		351	0		401	2		451	0		501
0		2	0		52	0		102	0+	152	0		202	0		252	89+	302	0		352	0		402	3		452	0		502
0		3	0		53	0		103	0+	153	0		203	0		253	58+	303	0		353	0		403	2		453	0		503
0		4	0		54	0		104	0+	154	0		204	0		254	11+	304	0		354	0		404	4		454	0		504
0		5	0		55	0		105	0+	155	1		205	0		255	3+	305	0		355	0		405	3		455	0		505
0		6	0		56	0		106	1+	156	0		206	0		256	0	306	0		356	0		406	1		456	0		506
0		7	0		57	1		107	0+	157	0		207	0		257	0	307	1		357	0		407	0		457	0		507
0		8	0		58	0		108	0+	158	1+		208	0		258	0	308	2		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	2		110	0+	160	6+		210	0		260	0	310	2		360	0		410	0		460	0		510
0		11	0		61	0		111	1+	161	4+		211	0		261	0	311	3		361	0		411	0		461	0		511
0		12	0		62	1		112	0+	162	8+		212	0		262	1	312	1		362	2		412	0		462	0		512
0		13	0		63	1		113	0+	163	5+		213	0		263	0	313	1		363	0		413	0		463			
0		14	0		64	0		114	0+	164	8+		214	0		264	0	314	0		364	0		414	0		464			
0		15	0		65	0		115	0+	165	7+		215	0		265	0	315	0		365	0		415	0		465			
0		16	0		66	0		116	0	166	14+		216	0		266	1	316	0		366	0		416	0		466			
0		17	0		67	0		117	0	167	24+		217	1		267	1	317	0		367	0		417	0		467			
0		18	0		68	0+		118	0	168	23+		218	0		268	4	318	0		368	1		418	0		468			
0		19	0		69	2+		119	0	169	19+		219	0		269	4	319	0		369	0		419	0		469			
0		20	0		70	4+		120	0	170	5+		220	0		270	2	320	0		370	0		420	0		470			
0		21	0		71	1+		121	0	171	3+		221	0		271	1	321	0		371	0		421	0		471			
0		22	0		72	3+		122	0	172	0+		222	0		272	0	322	0		372	1		422	0		472			
0		23	0		73	5+		123	0	173	0+		223	0		273	1	323	0		373	0		423	0		473			
0		24	0		74	4+		124	0	174	0		224	0		274	0	324	0		374	0		424	0		474			
0		25	0		75	4+		125	0	175	0		225	0		275	0	325	0		375	0		425	0		475			
0		26	0		76	8+		126	0	176	0		226	1		276	0	326	0		376	0		426	0		476			
0		27	0		77	4+		127	0	177	0		227	0		277	0	327	0		377	0		427	0		477			
0		28	0		78	10+		128	0	178	0		228	1		278	0	328	0		378	0		428	0		478			
0		29	0		79	13+		129	0	179	0		229	1		279	0	329	0		379	0		429	0		479			
0		30	0		80	15+		130	0	180	0		230	1		280	0	330	0		380	0		430	0		480			
0		31	0		81	12+		131	0	181	0		231	1		281	0	331	0		381	0		431	0		481			
0		32	0		82	7+		132	0	182	0		232	1		282	0	332	0		382	0		432	0		482			
0		33	0		83	4+		133	0	183	0		233	1		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	1		285	0	335	0		385	0		435	0		485			
0		36	0		86	0		136	0	186	0		236	5		286	0	336	0		386	1		436	0		486			
0		37	0		87	0		137	0	187	0		237	2		287	0	337	0		387	0		437	0		487			
0		38	0		88	0		138	0	188	0		238	5		288	0	338	0		388	0		438	0		488			
0		39	0		89	0		139	0	189	0		239	6+		289	0	339	0		389	0		439	0		489			
0		40	0		90	0		140	0	190	0		240	9+		290	0	340	0		390	0		440	0		490			
0		41	0		91	0		141	0	191	0		241	18+		291	0	341	0		391	0		441	0		491			
0		42	0		92	0		142	0	192	1		242	21+		292	0	342	0		392	0		442	0		492			
1		43	0		93	0		143	0	193	0		243	27+		293	0	343	0		393	0		443	0		493			
0		44	0		94	0		144	0	194	0		244	22+		294	0	344	0		394	0		444	0		494			
0		45	0		95	0		145	0	195	0		245	33+		295	0	345	0		395	0		445	0		495			
0		46	0		96	0		146	0	196	0		246	32+		296	0	346	0		396	0		446	0		496			
0		47	0		97	0		147	0	197	0		247	32+		297	0	347	0		397	0		447	0		497			
0		48	0		98	0+		148	0	198	0		248	46+		298	0	348	0		398	0		448	0		498			
0		49	0		99	1+		149	0	199	0		249	61+		299	0	349	0		399	0		449	0		499			
0		50	1		100	0+		150	0	200	0		250	79+		300	1	350	0		400	1		450	1		500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP12.SAMPLE]KCMP51AD\_181271255.CNF;1

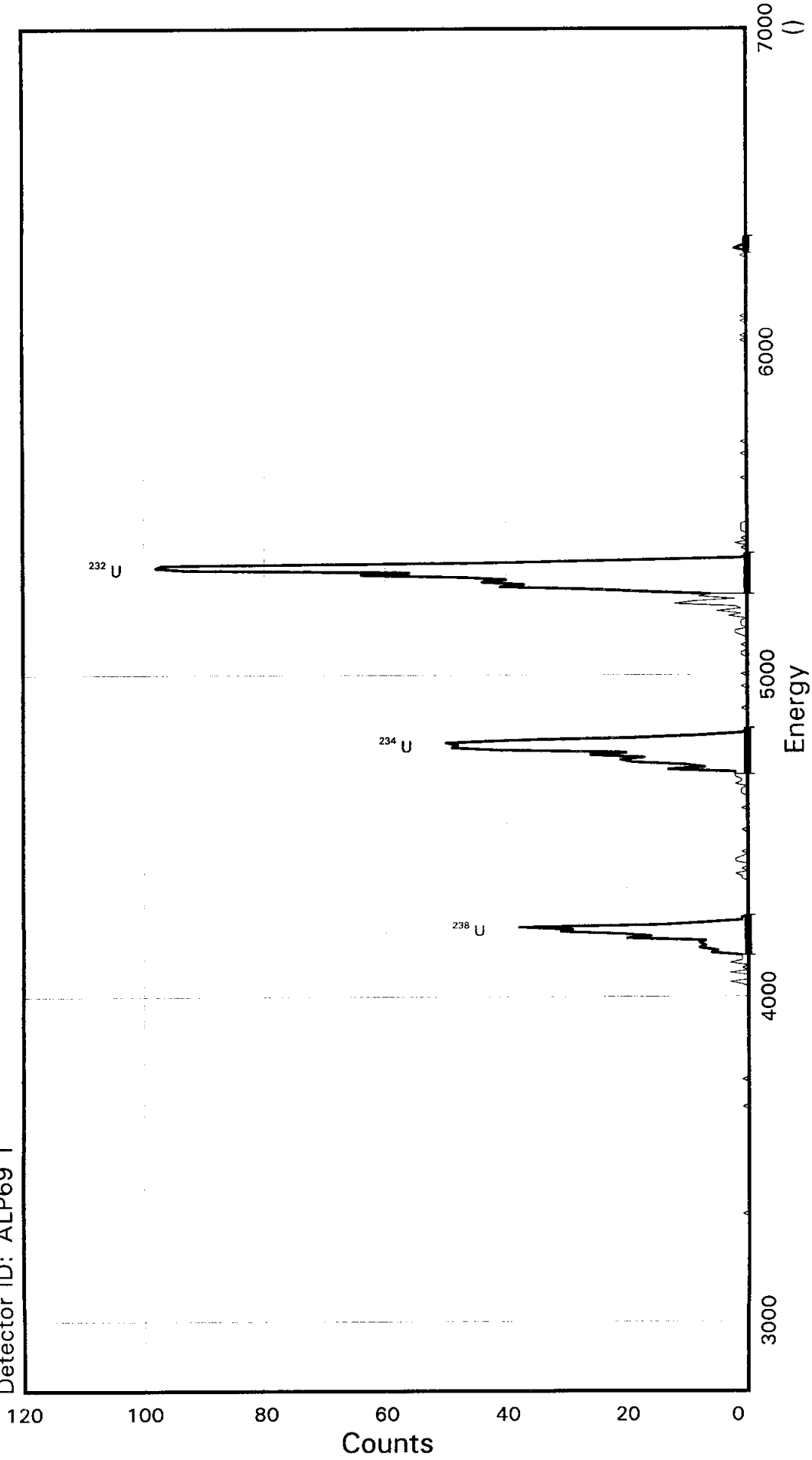
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4202.53	118	136	96	96	0.00		
4780.15	208	224	132	130	0.17		
5326.56	289	306	673	673	0.00		
5439.01	316	324	13	14	-0.28		
6318.64	449	458	15	16	-0.26		

End of Report

STL Richland WA.  
U BRCO

Batch ID: 7330521

Sample ID: KCMQF1AD  
Detector ID: ALP69 1



Energy Coefficients:  
Offset: 2.76191E+03  
Slope: 7.56804E+00  
Quadrature: -8.94581E-05

Acquisition Start: 18-DEC-2007 12:56:19.04  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:03.00

SAMPLE IDENTIITY: KCMQF1AD

TITLE : U BRCO

DETECTOR : ALP69 1  
CONFIGURATION NAME : RDND06\$DKA100: [ALP69.SAMPLE] KCMQF1AD\_1812712  
56.CNF;1  
ACQUIRE DATE of BACKGROUND: 15-DEC-2007 08:31:28

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:56:19 CALIB DATE : 14-DEC-2007 23:33:00

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

OFFSET : 2761.91 keV CONSTANT FWHM : 7.83333 Channels  
SLOPE : 7.56804 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.894581E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: KCMQF1AD

Flags Key

Detector: ALP69 1  
 Report Date: 18-Dec-07 04:16 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:56:19.04 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: 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	Right Chnl	Left Wdth	Right Wdth	Flags
U-232	733	15	0	3.658	5326.1	127.6	330	347	0.00	0.00	P
U-234	397	3	0	1.983	4780.6	142.9	256	275	0.00	0.00	P
U-235	11	3	0	0.054	4403.8	128.0	207	224	0.00	0.00	
U-238	219	0	0	1.095	4204.0	128.1	181	198	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:16:39

Configuration : RDND06\$DKA100: [ALP69.SAMPLE]KCMQF1AD\_\_181271256.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:56:19  
 Sample ID : KCMQF1AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP69 Detector geometry:  
 Elapsed live time: 0 03:20:03.00 Elapsed real time: 0 03:20:03.00 0.0%  
 Start energy : 2784.62 End energy : 6613.30  
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4208.36	219	0	45.41	191.56	181	17	1.82E-02	6.8	
2	0	4780.99	397	0	45.41	267.64	256	19	3.31E-02	5.0	
3	0	5326.14	733	0	52.98	340.19	330	17	6.11E-02	3.7	
4	0	6325.32	4	0	30.27	473.50	471	7	3.33E-04	50.0	

Alpha Spectrum Listing

(Version: 1-Apr-07)

Sample Identity: KCMOF1AD

Flags Key

Detector: ALP69 1

Report Date: 18 Dec 07 04:16 PM

Intersect Region: 1

Acquire Date: 18 DEC 2007 12:56:19.04

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	0		201	0		251	0		301	2		351	0		401	0		451	0		501
0		2	0		52	0		102	0		152	0		202	2		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0		203	1		253	0		303	1		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0		204	1		254	0		304	0		354	0		404	0		454	0		504
0		5	0		55	0		105	0		155	0		205	2		255	1		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0		206	2+		256	1		306	1		356	0		406	0		456	0		506
0		7	0		57	0		107	0		157	0+		207	2+		257	0		307	1		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	0+		208	13+		258	0		308	1		358	0		408	0		458	0		508
0		9	0		59	0		109	0		159	0+		209	7+		259	1		309	1		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	0+		210	10+		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	0		161	0+		211	19+		261	0		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	0		462	0		512
0		13	0		63	0		113	0		163	1+		213	17+		263	1		313	0		363	0		413	0		463			
0		14	0		64	0		114	0		164	1+		214	26+		264	2		314	0		364	0		414	0		464			
0		15	0		65	0		115	0		165	2+		215	20+		265	2		315	0		365	0		415	0		465			
0		16	0		66	0		116	0		166	0+		216	41+		266	0		316	0		366	0		416	0		466			
0		17	0		67	0		117	0		167	1+		217	49+		267	1		317	0		367	0		417	0		467			
0		18	0		68	0		118	0		168	0+		218	48+		268	1		318	0		368	0		418	0		468			
0		19	0		69	1		119	1		169	0+		219	50+		269	1		319	0		369	0		419	0		469			
0		20	0		70	0		120	3		170	2+		220	39+		270	0		320	0		370	0		420	1		470			
0		21	0		71	0		121	0		171	2+		221	19+		271	3		321	0		371	0		421	0		471			
0		22	0		72	0		122	0		172	1+		222	8+		272	1		322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	0+		223	1+		273	5		323	0		373	0		423	2		473			
0		24	0		74	0		124	3		174	1+		224	0+		274	1		324	0		374	0		424	1		474			
0		25	1		75	0		125	0		175	0		225	0		275	2		325	0		375	0		425	0		475			
0		26	0		76	0		126	1		176	0		226	0		276	12		326	0		376	0		426	0		476			
0		27	0		77	0		127	0		177	0		227	0		277	9		327	0		377	0		427	0		477			
0		28	0		78	0		128	3		178	0		228	0		278	2		328	1		378	0		428	0		478			
0		29	0		79	0		129	1		179	0		229	0		279	8		329	0		379	0		429	0		479			
0		30	0		80	1		130	1		180	0		230	0		280	6+		330	0		380	0		430	0		480			
0		31	0		81	0		131	1+		181	0		231	0		281	17+		331	0		381	0		431	0		481			
0		32	0		82	0		132	6+		182	0		232	0		282	26+		332	0		382	0		432	0		482			
0		33	0		83	0		133	5+		183	1		233	1		283	41+		333	0		383	0		433	0		483			
0		34	0		84	0		134	8+		184	0		234	0		284	37+		334	0		384	0		434	0		484			
0		35	0		85	0		135	7+		185	0		235	0		285	44+		335	0		385	1		435	0		485			
0		36	0		86	0		136	8+		186	0		236	0		286	40+		336	0		386	0		436	0		486			
0		37	0		87	0		137	7+		187	0		237	0		287	47+		337	0		387	1		437	0		487			
0		38	0		88	0		138	20+		188	0		238	0		288	64+		338	1		388	0		438	0		488			
0		39	0		89	0		139	16+		189	0		239	0		289	56+		339	0		389	0		439	0		489			
0		40	0		90	0		140	21+		190	0		240	0		290	93+		340	0		390	0		440	0		490			
0		41	0		91	0		141	31+		191	0		241	0		291	98+		341	0		391	0		441	0		491			
0		42	0		92	0		142	29+		192	1		242	1		292	97+		342	0		392	0		442	0		492			
0		43	0		93	0		143	38+		193	0		243	0		293	42+		343	1		393	1		443	0		493			
0		44	0		94	0		144	14+		194	0		244	0		294	20+		344	0		394	0		444	0		494			
0		45	0		95	0		145	7+		195	0		245	0		295	1+		345	0		395	1		445	0		495			
0		46	0		96	0		146	1+		196	0		246	0		296	0+		346	0		396	0		446	0		496			
0		47	0		97	0		147	1+		197	0		247	1		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	1		349	0		399	0		449	0		499			
0		50	0		100	0		150	0		200	1		250	0		300	0		350	0		400	0		450	0		500			





ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: RDND06\$DKA100:[ALP69.SAMPLE]KCMQF1AD\_181271256.CNF;1

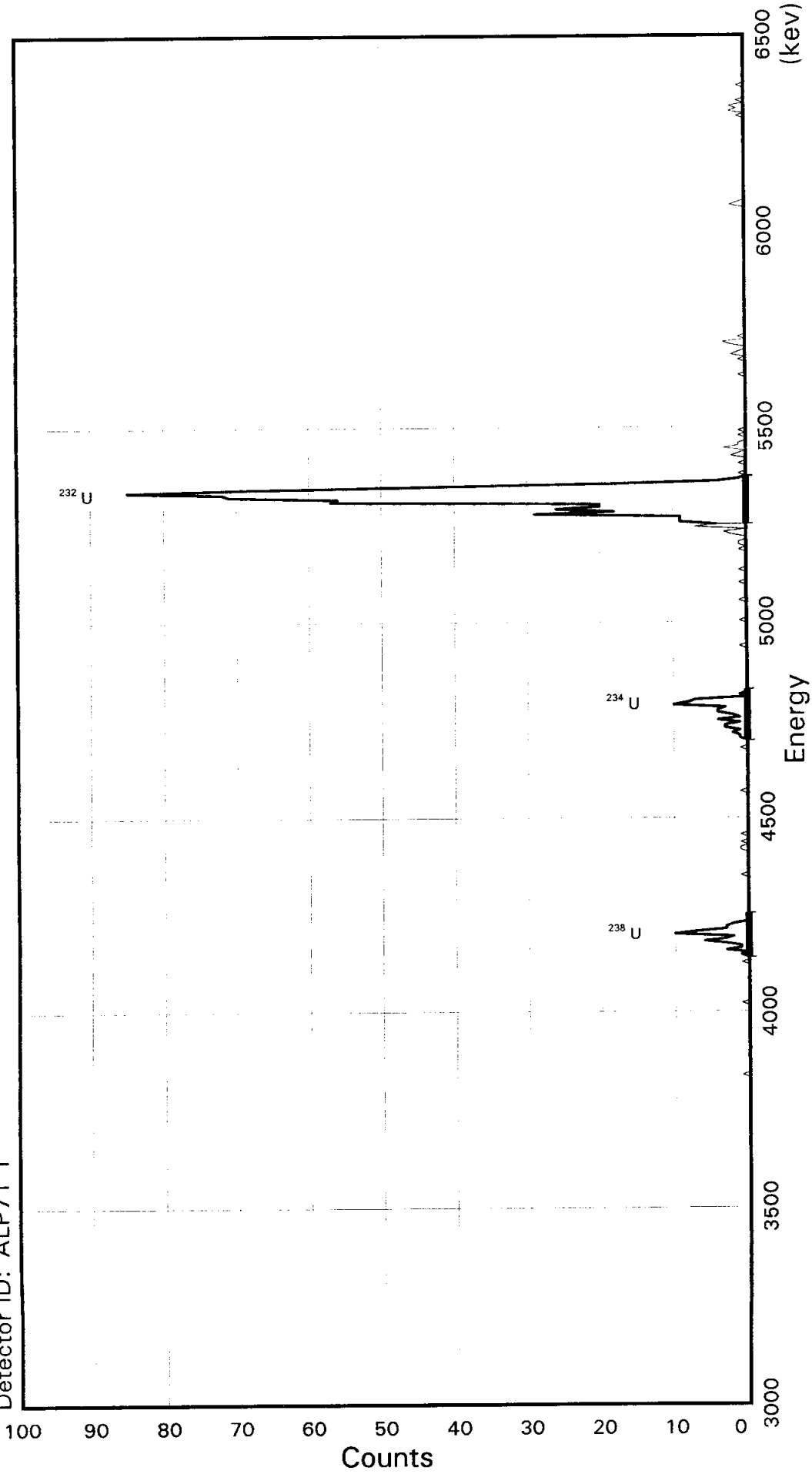
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4208.36	181	198	219	220	-0.07		
4780.99	256	275	397	392	0.25		
5326.13	330	347	733	729	0.15		
6325.32	471	478	4	3	0.50		

End of Report

STL Richland WA.  
U BRCO

Batch ID: 7330521

Sample ID: KCMQH1AD  
Detector ID: ALP71 1



Energy Coefficients:  
Offset: 3.13977E+03  
Slope: 6.53498E+00  
Quadrature: -6.11607E-05

Acquisition Start: 18-DEC-2007 12:56:26.78  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:01.00

SAMPLE IDENTIITY: KCMQH1AD

TITLE : U BRCO

DETECTOR : ALP71 1  
CONFIGURATION NAME : RDND06\$DKA100: [ALP71.SAMPLE] KCMQH1AD\_\_1812712  
56.CNF;1  
ACQUIRE DATE of BACKGROUND: 15-DEC-2007 08:31:32

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:56:26 CALIB DATE : 14-DEC-2007 23:33:09

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:01

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: KCMQH1AD

Flags Key

Detector: ALP71 1  
 Report Date: 18-Dec-07 04:16 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:56:26.78 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: 2500 minutes 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	624	15	0	3.114	5328.8	123.4	324	343	0.00	0.00	P
U-234	55	3	0	0.274	4783.3	130.1	239	259	0.00	0.00	P
U-235	4	3	0	0.019	4406.5	123.7	182	201	0.00	0.00	
U-238	46	2	0	0.229	4206.7	117.3	153	171	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:16:48

Configuration : RDND06\$DKA100: [ALP71.SAMPLE] KCMQH1AD\_181271256.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:56:26  
 Sample ID : KCMQH1AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP71 Detector geometry:  
 Elapsed live time: 0 03:20:01.00 Elapsed real time: 0 03:20:01.00 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	4203.73	46	0	45.74	163.06	153	18	3.83E-03	14.7	
2	0	4791.76	55	0	39.21	253.39	239	20	4.58E-03	13.5	
3	0	5328.82	624	0	45.74	336.03	324	19	5.20E-02	4.0	

Alpha Spectrum Listing  
(Version: 1 Apr 07)

Sample Identity: KCMQH1AD  
Detector: ALP71 1

Flags Key

Report Date: 18 Dec 07 04:16 PM

Intersect Region: \*

Acquire Date: 18 DEC 2007 12:56:26.78

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	1		151	0+		201	4+		251	1		301	2		351	0		401	1		451	0		501
		2	0		52	0		102	0		152	1		202	1+		252	0		302	1		352	0		402	0		452	0		502
0		3	0		53	0		103	0+		153	0		203	10+		253	0		303	0		353	0		403	0		453	0		503
0		4	0		54	0		104	1+		154	0		204	8+		254	0		304	3		354	0		404	0		454	0		504
0		5	0		55	0		105	0+		155	0		205	7+		255	0		305	1		355	0		405	0		455	0		505
0		6	0		56	0		106	3+		156	0		206	0+		256	1		306	1		356	0		406	0		456	0		506
0		7	0		57	1		107	1+		157	0		207	1+		257	0		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	1+		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	1		359	0		409	0		459	0		509
0		10	0		60	0		110	6+		160	0		210	0		260	0		310	0		360	0		410	0		460	0		510
0		11	0		61	0		111	3+		161	0		211	0		261	0		311	1		361	0		411	0		461	0		511
0		12	0		62	0		112	2+		162	0		212	0		262	0		312	0		362	0		412	0		462	0		512
0		13	0		63	0		113	10+		163	0		213	0		263	0		313	0		363	0		413	0		463			
0		14	0		64	0		114	7+		164	0		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	0		116	3+		166	0		216	0		266	1		316	0		366	0		416	0		466			
0		17	0		67	0		117	2+		167	0		217	0		267	1		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	1		219	0		269	0		319	0		369	0		419	0		469			
0		20	0		70	0		120	0+		170	0		220	0		270	2		320	0		370	0		420	0		470			
0		21	0		71	0		121	0		171	0		221	0		271	3		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	7		323	0		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	0		274	4+		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	0		176	0		226	1		276	9+		326	0		376	0		426	0		476			
0		27	0		77	0		127	0		177	0		227	0		277	9+		327	0		377	0		427	0		477			
0		28	0		78	0		128	0		178	0		228	0		278	29+		328	0		378	0		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	0		130	0		180	0		230	0		280	26+		330	0		380	0		430	0		480			
0		31	0		81	0		131	0		181	0		231	0		281	20+		331	0		381	0		431	0		481			
0		32	0		82	0		132	0+		182	0		232	0		282	20+		332	0		382	0		432	0		482			
0		33	0		83	0		133	0+		183	0		233	0		283	57+		333	1		383	0		433	0		483			
0		34	0		84	0		134	0+		184	0		234	0		284	56+		334	0		384	0		434	0		484			
0		35	0		85	1		135	0+		185	0		235	0		285	71+		335	0		385	0		435	1		485			
0		36	0		86	0		136	1+		186	1		236	1		286	72+		336	0		386	0		436	0		486			
0		37	0		87	0		137	0+		187	0		237	0		287	85+		337	0		387	0		437	2		487			
0		38	0		88	0		138	0+		188	0		238	0		288	69+		338	0		388	0		438	1		488			
0		39	0		89	0		139	0+		189	0+		239	0		289	44+		339	1		389	0		439	2		489			
0		40	0		90	0		140	0+		190	1+		240	0		290	18+		340	0		390	0		440	0		490			
0		41	0		91	0		141	0+		191	1+		241	0		291	4+		341	2		391	0		441	1		491			
0		42	0		92	0		142	0+		192	2+		242	0		292	1+		342	1		392	0		442	0		492			
0		43	0		93	0		143	0+		193	1+		243	0		293	0		343	0		393	0		443	0		493			
0		44	0		94	0		144	0+		194	3+		244	1		294	1		344	0		394	0		444	0		494			
0		45	0		95	0		145	0+		195	3+		245	0		295	0		345	2		395	0		445	0		495			
0		46	0		96	0		146	1+		196	1+		246	0		296	0		346	3		396	0		446	0		496			
0		47	0		97	0		147	1+		197	4+		247	0		297	0		347	0		397	0		447	1		497			
0		48	0		98	0		148	0+		198	1+		248	0		298	1		348	1		398	0		448	0		498			
0		49	0		99	0		149	1+		199	2+		249	0		299	0		349	0		399	0		449	0		499			
0		50	0		100	0		150	0+		200	4+		250	0		300	0		350	0		400	2		450	0		500			



ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: RDND06\$DKA100:[ALP71.SAMPLE]KCMQH1AD\_181271256.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4203.72	153	171	46	45	0.15		
4791.76	239	259	55	56	-0.13		
5328.82	324	343	624	621	0.12		

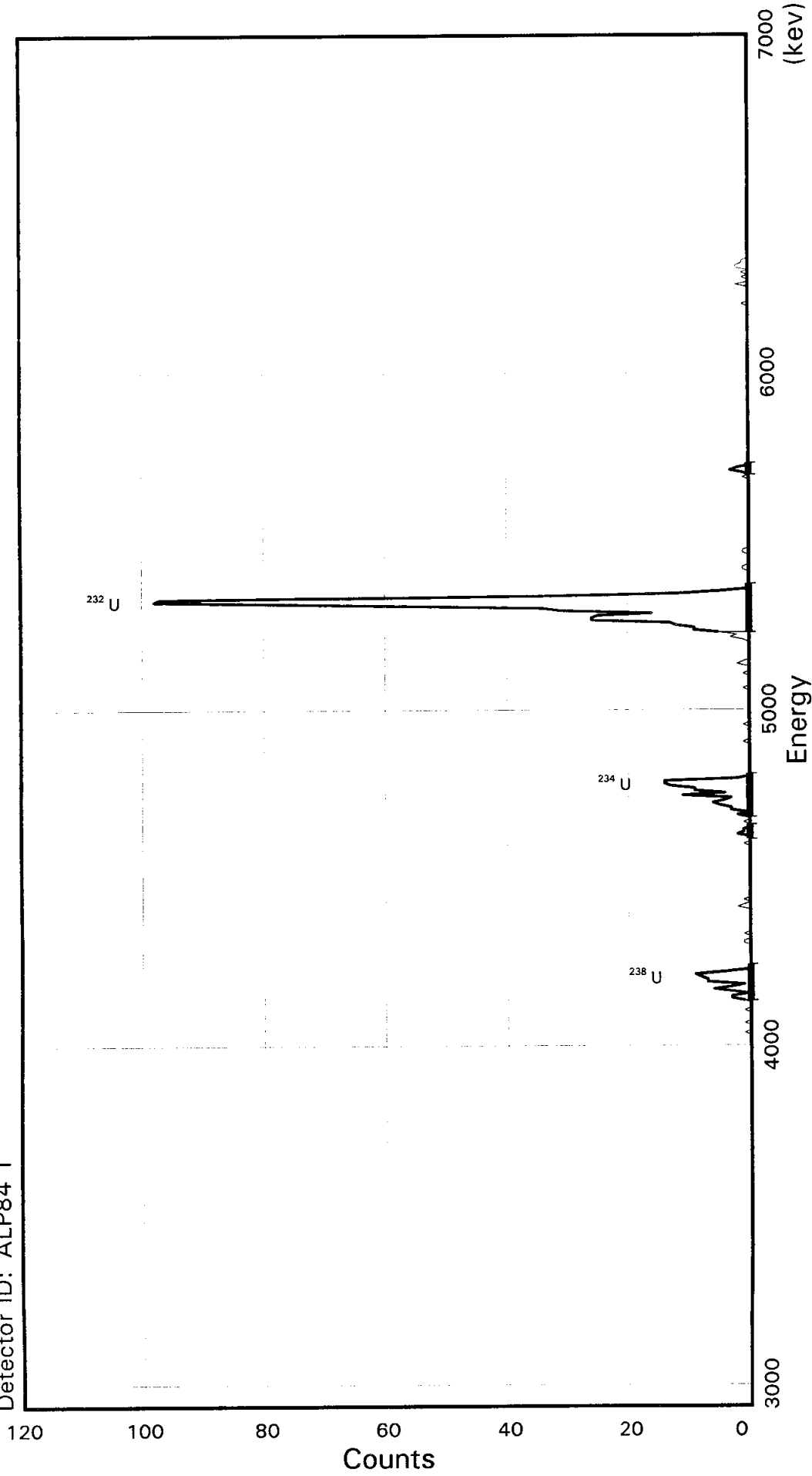
End of Report



STL Richland WA.  
U BRCO

Batch ID: 7330521

Sample ID: KCMQJ1AD  
Detector ID: ALP84 1



Energy Coefficients:  
Offset: 2.91459E + 03  
Slope: 7.27268E + 00  
Quadrature: -1.29158E-04

Acquisition Start: 18-DEC-2007 12:56:33.52  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:03.00

SAMPLE IDENTIITY: KCMQJ1AD

TITLE : U BRCO

DETECTOR : ALP84 1  
CONFIGURATION NAME : RDND06\$DKA100: [ALP84.SAMPLE] KCMQJ1AD\_1812712  
56.CNF;1  
ACQUIRE DATE of BACKGROUND: 16-DEC-2007 09:01:15

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:56:33 CALIB DATE : 14-DEC-2007 23:32:00

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

OFFSET : 2914.59 keV CONSTANT FWHM : 4.50000 Channels  
SLOPE : 7.27268 keV/C SENSITIVITY : 3.00000 Std Dev's  
QUAD COEFF : -.129158E-03 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: KCMQJ1AD

Flags Key

Detector: ALP84 1  
 Report Date: 18-Dec-07 04:16 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:56:33.52 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: 2500 minutes A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrsc Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
U-232	584	14	0	2.914	5319.8	143.7	320	340	0.00	0.00	P
U-234	104	6	0	0.517	4774.2	129.7	244	262	0.00	0.00	P
U-235	7	1	0	0.035	4397.4	144.4	192	212	0.00	0.00	
U-238	55	2	0	0.274	4197.6	108.4	168	183	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:16:43

Configuration : RDND06\$DKA100:[ALP84.SAMPLE]KCMQJ1AD\_181271256.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:56:33  
 Sample ID : KCMQJ1AD Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP84 Detector geometry:  
 Elapsed live time: 0 03:20:03.00 Elapsed real time: 0 03:20:03.00 0.0%  
 Start energy : 2936.41 kev End energy : 6604.35 kev  
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4202.55	55	0	29.09	177.66	168	15	4.58E-03	13.5	
2	0	4632.77	5	0	21.82	237.25	235	6	4.17E-04	44.7	
3	0	4779.20	104	0	29.09	257.56	244	18	8.66E-03	9.8	
4	0	5319.82	584	0	29.09	332.69	320	20	4.87E-02	4.1	
5	0	5711.21	5	0	21.82	387.20	385	5	4.17E-04	44.7	

Alpha Spectrum Listing  
(Version: 1 Apr 07)

Sample Identity: KCMQJIAD  
 Detector: ALP84 1  
 Report Date: 18 Dec 07 04:16 PM  
 Acquire Date: 18 DEC 2007 12:56:33.52

Flags Key

Intersect Region: 0

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	Cnt	F	Chn	Cnt	F	Chn			
0		1	0		51	0		101	0		151	0+		201	4+		251	0		301	0		351	0		401	0		451	0		501
0		2	0		52	0		102	0		152	0+		202	3+		252	0		302	0		352	0		402	0		452	0		502
0		3	0		53	0		103	0		153	0+		203	11+		253	1		303	1		353	0		403	0		453	0		503
0		4	0		54	0		104	0		154	0+		204	4+		254	0		304	1		354	0		404	0		454	0		504
0		5	0		55	0		105	1		155	0+		205	9+		255	0		305	0		355	0		405	0		455	0		505
0		6	0		56	0		106	0		156	0+		206	9+		256	0		306	0		356	0		406	1		456	0		506
0		7	0		57	0		107	0		157	2+		207	13+		257	2		307	0		357	0		407	0		457	0		507
0		8	0		58	0		108	0		158	1+		208	14+		258	1		308	0		358	0		408	0		458	0		508
0		9	0		59	0		109	1		159	0+		209	14+		259	0		309	0		359	0		409	0		459	0		509
0		10	0		60	0		110	0		160	1+		210	2+		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	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	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	1		317	0		367	0		417	1		467			
0		18	0		68	0		118	1+		168	0		218	0		268	3		318	0		368	0		418	0		468			
0		19	0		69	0		119	3+		169	0		219	0		269	2		319	0		369	0		419	1		469			
0		20	0		70	0		120	3+		170	0		220	0		270	5+		320	0		370	0		420	0		470			
0		21	0		71	0		121	0+		171	0		221	0		271	9+		321	0		371	0		421	2		471			
0		22	0		72	0		122	3+		172	0		222	0		272	9+		322	0		372	0		422	2		472			
0		23	0		73	0		123	6+		173	0		223	0		273	12+		323	0		373	0		423	1		473			
0		24	0		74	0		124	3+		174	0		224	0		274	13+		324	0		374	0		424	1		474			
0		25	0		75	0		125	1+		175	0		225	1		275	26+		325	0		375	0		425	0		475			
0		26	0		76	0		126	7+		176	0		226	0		276	26+		326	0		376	0		426	0		476			
0		27	0		77	0		127	7+		177	0		227	0		277	25+		327	0		377	0		427	0		477			
0		28	0		78	0		128	8+		178	0		228	0		278	16+		328	0		378	0		428	0		478			
0		29	0		79	0		129	9+		179	0		229	0		279	31+		329	0		379	0		429	0		479			
0		30	0		80	0		130	4+		180	0		230	0		280	34+		330	0		380	0		430	0		480			
0		31	0		81	0		131	0+		181	0		231	0		281	54+		331	0		381	0		431	0		481			
0		32	0		82	0		132	0+		182	0		232	1		282	76+		332	0		382	0		432	0		482			
0		33	0		83	0		133	0		183	1		233	0		283	98+		333	0		383	0		433	0		483			
0		34	0		84	0		134	0		184	0		234	0		284	97+		334	1		384	0		434	0		484			
0		35	0		85	0		135	0		185	0		235	0		285	35+		335	0		385	0		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	12+		336	1		386	0		436	0		486			
0		37	0		87	0		137	0		187	2		237	0		287	5+		337	3		387	0		437	0		487			
0		38	0		88	0		138	0		188	1		238	0		288	0+		338	2		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	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	1+		192	1		242	0		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	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	1+		196	0+		246	0		296	1		346	0		396	0		446	0		496			
0		47	0		97	0		147	0+		197	3+		247	1		297	1		347	0		397	0		447	0		497			
0		48	0		98	0		148	0+		198	3+		248	0		298	0		348	0		398	0		448	0		498			
0		49	0		99	0		149	0+		199	5+		249	0		299	0		349	0		399	0		449	0		499			
0		50	0		100	0		150	0+		200	6+		250	0		300	0		350	0		400	0		450	0		500			



ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: RDND06\$DKA100: [ALP84.SAMPLE] KCMQJ1AD\_181271256.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4202.54	168	183	55	55	0.00		
4632.76	235	241	5	4	0.45		
4779.19	244	262	104	102	0.20		
5319.81	320	340	584	583	0.04		
5711.21	385	390	5	6	-0.45		

End of Report

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

Sample Identity: KCV2R1AA

Detector: ALP85 1

Report Date: 18-Dec-07 07:35 PM

Acquire Date: 18-DEC-2007 12:56:38.18

Tracer Nuclide: U-232

Sample Live Time: 200 minutes

Bkgrnd Live Time: 2500 minutes

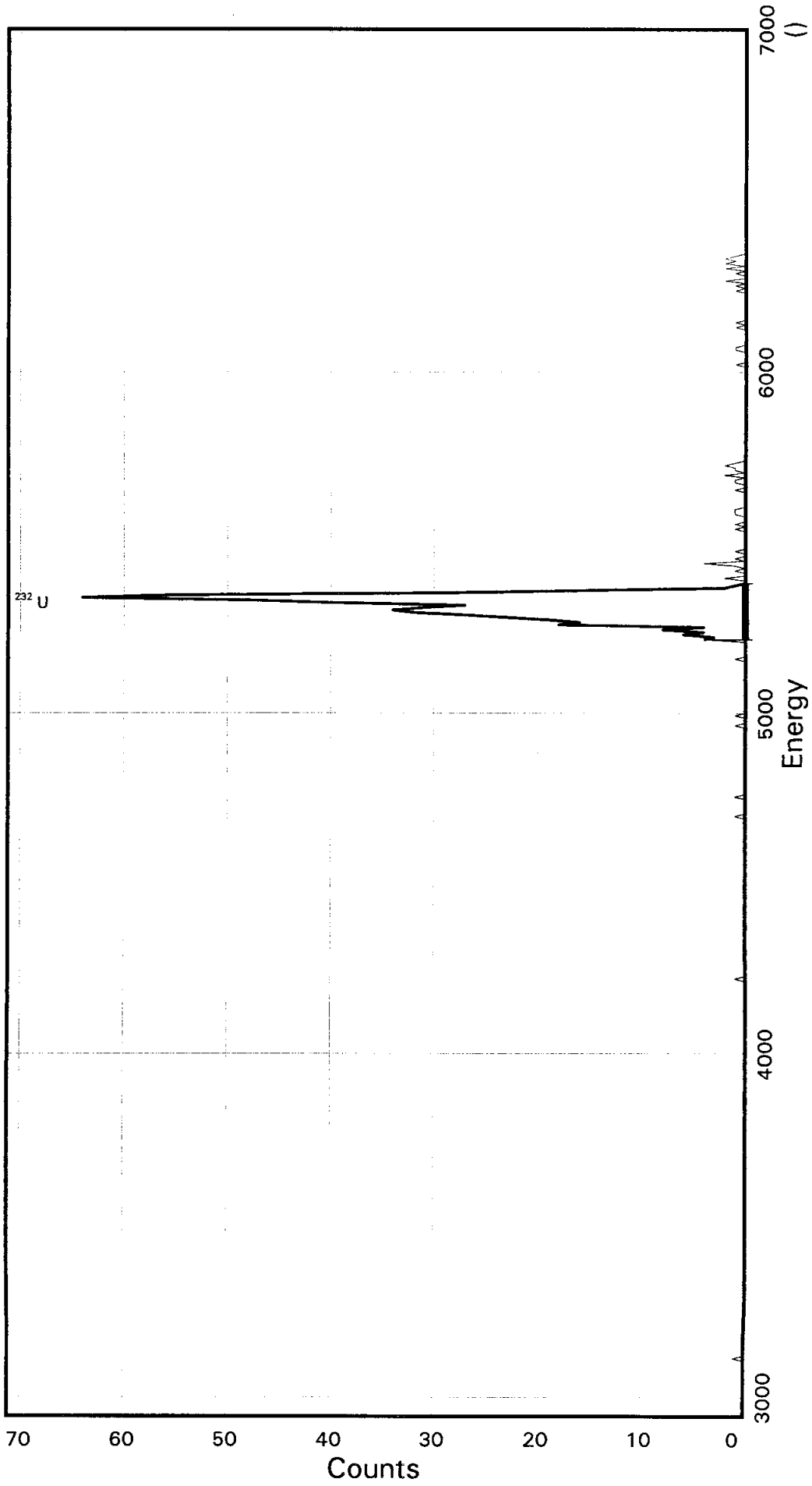
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
U-232	513	69	2.536	5320.2	172.3	321	345
U-234	2	0	0.010	4774.6	143.1	245	265
U-235	0	4	-0.002	4397.8	142.7	193	213
U-238	1	1	0.005	4198.0	142.5	165	185

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
U BRCO

Batch ID: 7330521

Sample ID: KCV2R1AA  
Detector ID: ALP85 1



Energy Coefficients:  
Offset: 2.92311E+03  
Slope: 7.06468E+00  
Quadrature: 1.74838E-04

Acquisition Start: 18-DEC-2007 12:56:38.18  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:05.00



SAMPLE IDENTIITY: KCV2R1AA

TITLE : U BRCO

DETECTOR : ALP85 1  
CONFIGURATION NAME : RDND06\$DKA100: [ALP85.SAMPLE] KCV2R1AA\_1812712  
56.CNF;1  
ACQUIRE DATE of BACKGROUND: 15-DEC-2007 08:32:35

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:56:38 CALIB DATE : 14-DEC-2007 23:32:26

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:05

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: KCV2R1AA

Flags Key

Detector: ALP85 1  
 Report Date: 18-Dec-07 05:12 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:56:38.18 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: 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	Right Chnl	Left Wdth	Right Wdth	Flags
U-232	514	61	0	2.545	5323.7	165.2	322	345	0.00	0.00	P
U-234	2	0	0	0.010	4778.1	164.6	246	269	0.00	0.00	
U-235	0	4	0	-0.002	4401.3	164.1	193	216	0.00	0.00	
U-238	1	1	0	0.005	4201.5	163.9	165	188	0.00	0.00	

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 17:12:48

Configuration : RDND06\$DKA100: [ALP85.SAMPLE] KCV2R1AA\_181271256.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:56:38  
 Sample ID : KCV2R1AA Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP85 Detector geometry:  
 Elapsed live time: 0 03:20:05.00 Elapsed real time: 0 03:20:05.00 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	5323.69	514	0	70.65	336.99	322	23	4.28E-02	4.4	





ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: RDND06\$DKA100:[ALP85.SAMPLE]KCV2R1AA\_181271256.CNF;1

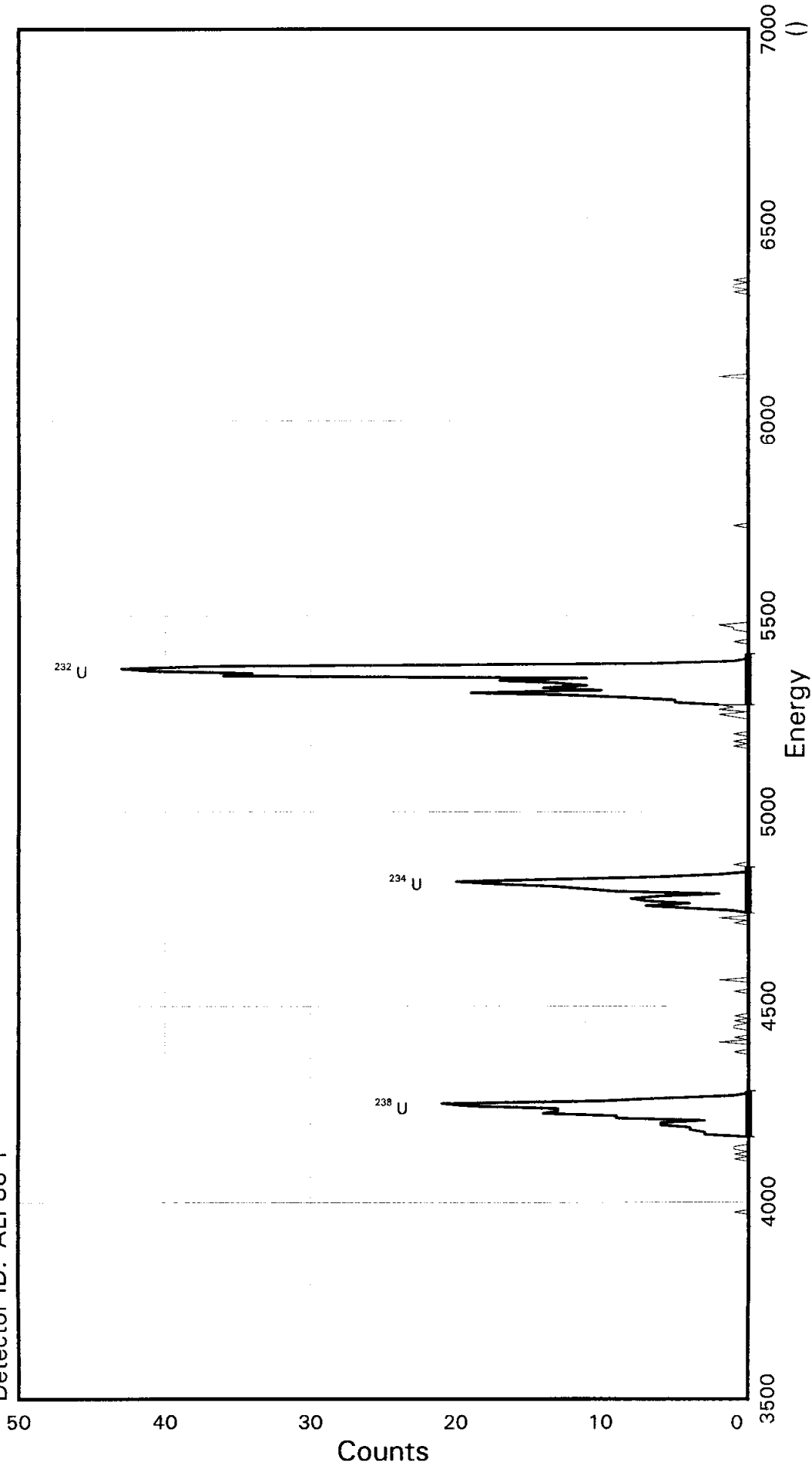
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5323.68	322	345	514	513	0.04		

End of Report

STL Richland WA.  
U BRCO

Batch ID: 7330521

Sample ID: KCV2R1AC  
Detector ID: ALP88 1



Acquisition Start: 18-DEC-2007 12:56:43.01  
Preset Live Time: 0 03:20:00.00  
Elapsed Live Time: 0 03:20:01.00

Energy Coefficients:  
Offset: 3.54726E + 03  
Slope: 6.18655E + 00  
Quadrature: -1.07509E-05

SAMPLE IDENTIITY: KCV2R1AC

TITLE : U BRCO

DETECTOR : ALP88 1  
CONFIGURATION NAME : RDND06\$DKA100: [ALP88.SAMPLE] KCV2R1AC\_1812712  
56.CNF;1  
ACQUIRE DATE of BACKGROUND: 15-DEC-2007 08:32:45

REPORT DATE : 18-Dec-07 SAMPLE DATE: 19-NOV-2007 12:00:00  
ACQUIRE DATE: 18-DEC-2007 12:56:43 CALIB DATE : 14-DEC-2007 23:32:31

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:01

OFFSET : 3547.26 keV CONSTANT FWHM : 12.16670 Channels  
SLOPE : 6.18655 keV/C SENSITIVITY : 4.00000 Std Dev's  
QUAD COEFF : -.107509E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: KCV2R1AC

Flags Key

Detector: ALP88 1  
 Report Date: 18-Dec-07 04:16 PM P: Peak Identified  
 Acquire Date: 18-DEC-2007 12:56:43.01 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	328	5	0	1.635	5356.8	129.8	279	300	0.00	0.00	P
U-234	134	0	0	0.670	4811.3	117.5	193	212	0.00	0.00	P
U-235	8	0	0	0.040	4434.5	129.9	130	151	0.00	0.00	
U-238	144	0	0	0.720	4234.7	117.5	100	119	0.00	0.00	P

End of Alpha Region Report  
(Produced by Alp\_rgn\_cnts)

VMS Peak Search Report V1.9 Generated 18-DEC-2007 16:16:51

Configuration : RDND06\$DKA100: [ALP88.SAMPLE] KCV2R1AC\_181271256.CNF;1  
 Analyses by : ALPHA V1.8  
 Sample title : U BRCO  
 Sample date : 19-NOV-2007 12:00:00 Acquisition date : 18-DEC-2007 12:56:43  
 Sample ID : KCV2R1AC Sample quantity : 0.00000E+00 GRAMS  
 Sample type : disk Sample geometry :  
 Detector name : ALP88 Detector geometry:  
 Elapsed live time: 0 03:20:01.00 Elapsed real time: 0 03:20:01.00 0.0%  
 Start energy : 3565.82 End energy : 6711.95  
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4241.25	144	0	43.31	112.20	100	19	1.20E-02	8.3	
2	0	4815.22	134	0	30.92	205.03	193	19	1.12E-02	8.6	
3	0	5356.83	328	0	37.12	292.65	279	21	2.73E-02	5.5	



Alpha Spectrum Listing  
(Version: 1-Apr-07)

Sample Identity: KCV2RIAC  
 Detector: ALP88 1  
 Report Date: 18 Dec-07 04:16 PM  
 Acquire Date: 18 DEC 2007 12:53:43.01

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	3+	101	0+	151	2+	201	0	251	0	301	0	351	0	401	0	451	0	501			
0		2	0		52	3+	102	0	152	3+	202	0	252	0	302	0	352	0	402	1	452	0	502			
0		3	0		53	4+	103	0	153	11+	203	0	253	0	303	1	353	0	403	1	453	0	503			
0		4	0		54	4+	104	0	154	13+	204	0	254	0	304	0	354	0	404	0	454	0	504			
0		5	0		55	6+	105	0	155	17+	205	0	255	1	305	0	355	0	405	1	455	0	505			
0		6	0		56	6+	106	0	156	20+	206	0	256	0	306	0	356	0	406	0	456	0	506			
0		7	0		57	3+	107	0	157	13+	207	0	257	0	307	0	357	0	407	0	457	0	507			
0		8	0		58	9+	108	0	158	6+	208	0	258	0	308	0	358	0	408	0	458	0	508			
0		9	0		59	9+	109	0	159	2+	209	0	259	0	309	0	359	0	409	0	459	0	509			
0		10	0		60	14+	110	1	160	0+	210	0	260	1	310	0	360	0	410	0	460	0	510			
0		11	0		61	13+	111	0	161	0+	211	0	261	1	311	0	361	0	411	0	461	0	511			
0		12	0		62	13+	112	0	162	0	212	1	262	2	312	0	362	0	412	0	462	0	512			
0		13	0		63	19+	113	0	163	1	213	0	263	0	313	0	363	0	413	0	463					
0		14	0		64	21+	114	0	164	0	214	1	264	0	314	0	364	0	414	0	464					
0		15	0		65	10+	115	2	165	0	215	0	265	0	315	0	365	2	415	0	465					
0		16	0		66	6+	116	0	166	0	216	0	266	0	316	0	366	0	416	0	466					
0		17	0		67	1+	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	0	318	0	368	0	418	0	468					
0		19	1		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	1	274	0	324	0	374	0	424	0	474					
0		25	0		75	0	125	0	175	0	225	2	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	2	277	0	327	0	377	0	427	0	477					
0		28	0		78	0	128	0	178	0	228	1	278	0	328	0	378	0	428	0	478					
0		29	0		79	0	129	0	179	0	229	2+	279	0	329	0	379	0	429	0	479					
0		30	0		80	0+	130	0	180	0	230	5+	280	0	330	0	380	0	430	0	480					
0		31	0		81	0+	131	0	181	0	231	5+	281	0	331	0	381	0	431	0	481					
0		32	0		82	0+	132	0	182	0	232	8+	282	0	332	0	382	0	432	0	482					
0		33	0		83	0+	133	0	183	0	233	12+	283	0	333	0	383	0	433	0	483					
0		34	0		84	0+	134	0	184	0	234	19+	284	0	334	0	384	0	434	0	484					
0		35	0		85	1+	135	0	185	0	235	10+	285	0	335	0	385	0	435	0	485					
0		36	0		86	0+	136	0	186	0	236	14+	286	0	336	0	386	0	436	0	486					
0		37	0		87	0+	137	0	187	0	237	11+	287	0	337	0	387	0	437	0	487					
0		38	0		88	0+	138	0	188	0	238	13+	288	0	338	0	388	0	438	0	488					
0		39	0		89	2+	139	1	189	0	239	17+	289	0	339	0	389	0	439	0	489					
0		40	0		90	0+	140	0	190	0	240	11+	290	0	340	0	390	0	440	0	490					
0		41	1		91	1+	141	2	191	0	241	36+	291	0	341	0	391	0	441	0	491					
0		42	0		92	0+	142	0	192	0	242	34+	292	0	342	0	392	0	442	0	492					
0		43	1		93	0+	143	0+	193	0	243	41+	293	0	343	0	393	0	443	0	493					
0		44	0		94	0+	144	1+	194	0	244	43+	294	0	344	0	394	0	444	0	494					
0		45	1		95	1+	145	4+	195	0	245	37+	295	0	345	0	395	0	445	0	495					
0		46	1		96	1+	146	7+	196	0	246	7+	296	0	346	0	396	0	446	0	496					
0		47	0		97	0+	147	4+	197	0	247	1+	297	0	347	0	397	0	447	0	497					
0		48	0		98	1+	148	7+	198	0	248	0+	298	0	348	0	398	0	448	0	498					
0		49	0		99	0+	149	8+	199	0	249	0+	299	0	349	0	399	0	449	0	499					
0		50	0+		100	1+	150	6+	200	0	250	0	300	0	350	0	400	1	450	0	500					



ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: RDND06\$DKA100:[ALP88.SAMPLE]KCV2R1AC\_181271256.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4241.25	100	119	144	144	0.00		
4815.22	193	212	134	130	0.35		
5356.82	279	300	328	326	0.11		

End of Report

URANIUM ISOTOPIC  
STANDARDS AND TRACEABILITY

## Standard Material Fractions (Vials)

Vial Prep: 12/25/06 to 12/27/07, SMFractionIdentifier Between UITC18985 and UITC19000, 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	
UITC18985	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
UITC18986	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
UITC18987	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
UITC18988	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
UITC18989	U-232	1.0008E+01 ± 2.909E-01 DPM	0.2006 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18990	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
UITC18991	U-232	1.0008E+01 ± 2.909E-01 DPM	0.2006 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18992	U-232	1.0008E+01 ± 2.909E-01 DPM	0.2006 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18993	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
UITC18994	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
UITC18995	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
UITC18996	U-232	1.0018E+01 ± 2.912E-01 DPM	0.2008 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18997	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
UITC18998	U-232	1.0023E+01 ± 2.913E-01 DPM	0.2009 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G
UITC18999	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
UITC19000	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

1.0021E+001 ± 2.696E-002 ( 16) 0.269% 9.9785E+000 , 1.0073E+001

# Standard Material Fractions (Vials)

Vial Prep:12/25/06 to 12/27/07,SMFractionIdentifier Like: UISG1546%, 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>UISG1546</b>	U-232	<b>9.9735E+00 ± 2.899E-01</b> DPM	0.1999 g	11/27/2007 11/27/2007	Armstron	4.9892E+01 ± 1.450E+00 DPM/G

9.9735E+000 ± 9.973E+000 ( 1)

9.9735E+000 , 9.9735E+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**

$$7) \% \text{ Error of Wt. used} = (0.0048 / \text{Weight of Source Material used} * 100)$$

$$10) \% \text{ error of Dilution Wt.} = (0.3 / \text{Total Weight of Dilution} * 100)$$

$$11) \text{ Specific Activity} = \text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$$

$$12) \% \text{ Total Uncertainty} = \sqrt{(\% \text{ error of Source Activity}^2 + \% \text{ error of Wt. Used}^2 + \% \text{ error of Dilution Wt.}^2)}$$

Form: CC-006, 7/15/99, Rev 3

**ISOTOPE DILUTION RECORD**

1) Prepared by W.G 2) Date Prepared 4/23/2001

**3) Source Identification Number / Ref. Number** U23283D170 4886

4) Source Activity (dpm ± dpm/g) 2.9709E+02 ± 1.366E+01

5) Percent error of Source Activity 4.596 %

6) Weight of Source Material used (g) 3.5636

7) (% Error) of Weight of Source Material used 0.1347 %

8) Diluent 2M HNO3-P0100141

9) Total Weight of the Dilution (g) 105.12

10) (% Error) of Total Weight of the Dilution 0.2854 %

**11) Specific Activity of Diluted Solution dpm/g** 1.0071E+01 ± 4.640E-01

12) Total Uncertainty 4.607 %

**13) Dilution Identification Number / Ref. Number** U23283D171 4887

14) Calibration Reference Date 4/23/2001

15) Isotope Inventory File update by/date W.G 4/23/2001

16) Reviewed by/date \_\_\_\_\_

17) Location QCLAB/STWT0388 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>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

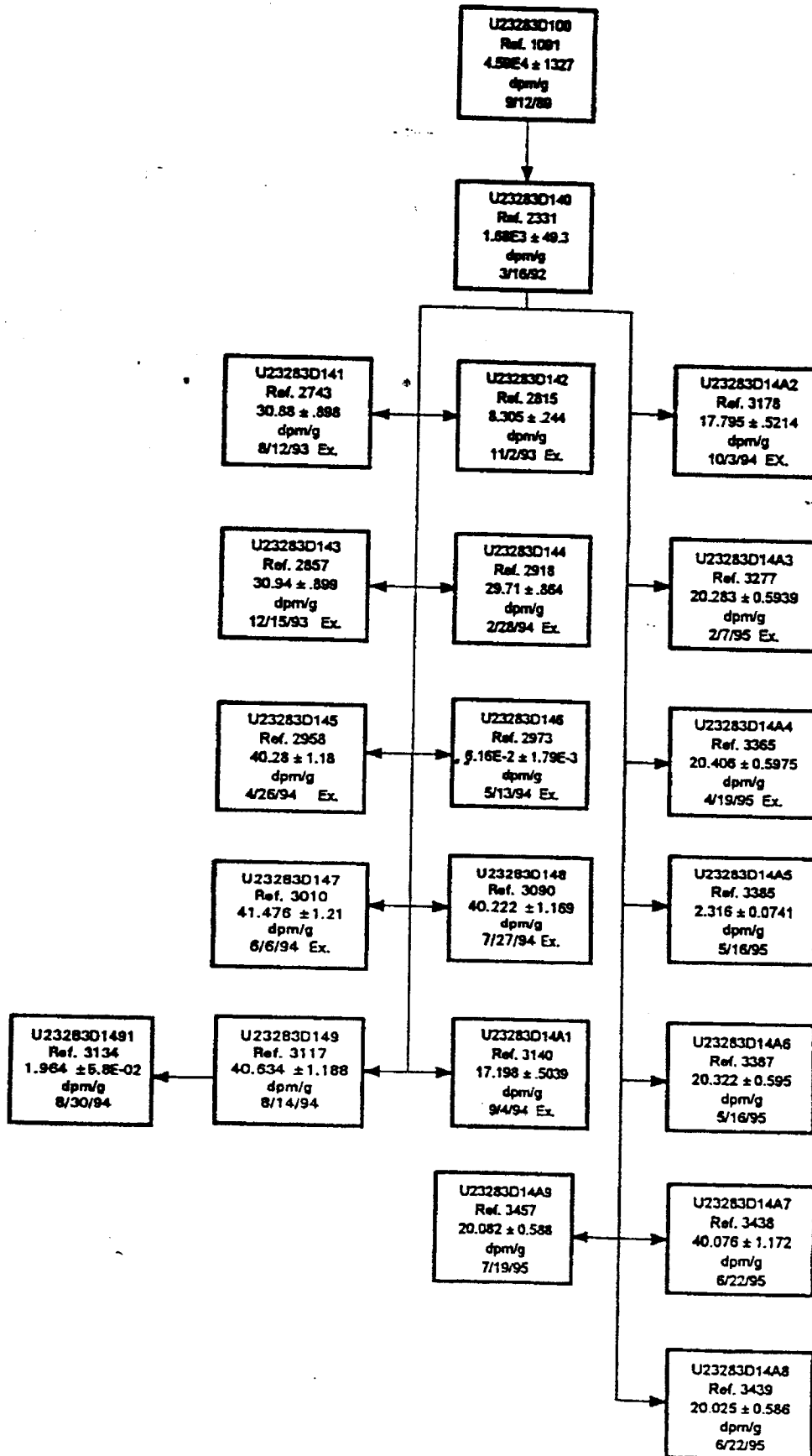
SPIKE PREPARATION RECORD  
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Prepared By: WG      Preparation Date: 18OCT93      Reference date 01FEB86  
 Source Identification: U30886A149      Isotope: UN-AT  
 Source Activity (dpm +- dpm per wt/vol unit): 1.9054E+01 +- 8.1000E-02

VIAL ID	WT/VOL	ACTIVITY*	TOTAL ERROR
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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**

$$7) \% \text{ Error of Wt. used} = (0.0048 / \text{Weight of Source Material used} * 100) ^2$$

$$10) \% \text{ error of Dilution Wt.} = (0.3 / \text{Total Weight of Dilution} * 100) ^2$$

$$11) \text{ Specific Activity} = \text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$$

$$12) \% \text{ Total Uncertainty} = \sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$$

Form: CC-006, 5/5/94, Rev 2

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>W.G.</u>	2) Date Prepared	<u>3/16/92</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>4.4808E+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>	<b><u>1.6892E+03</u></b>	±	<b><u>4.929E+01</u></b>
12) Total Uncertainty	<u>2.918</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>U23283D140</u></b>		<b><u>2331</u></b>
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**

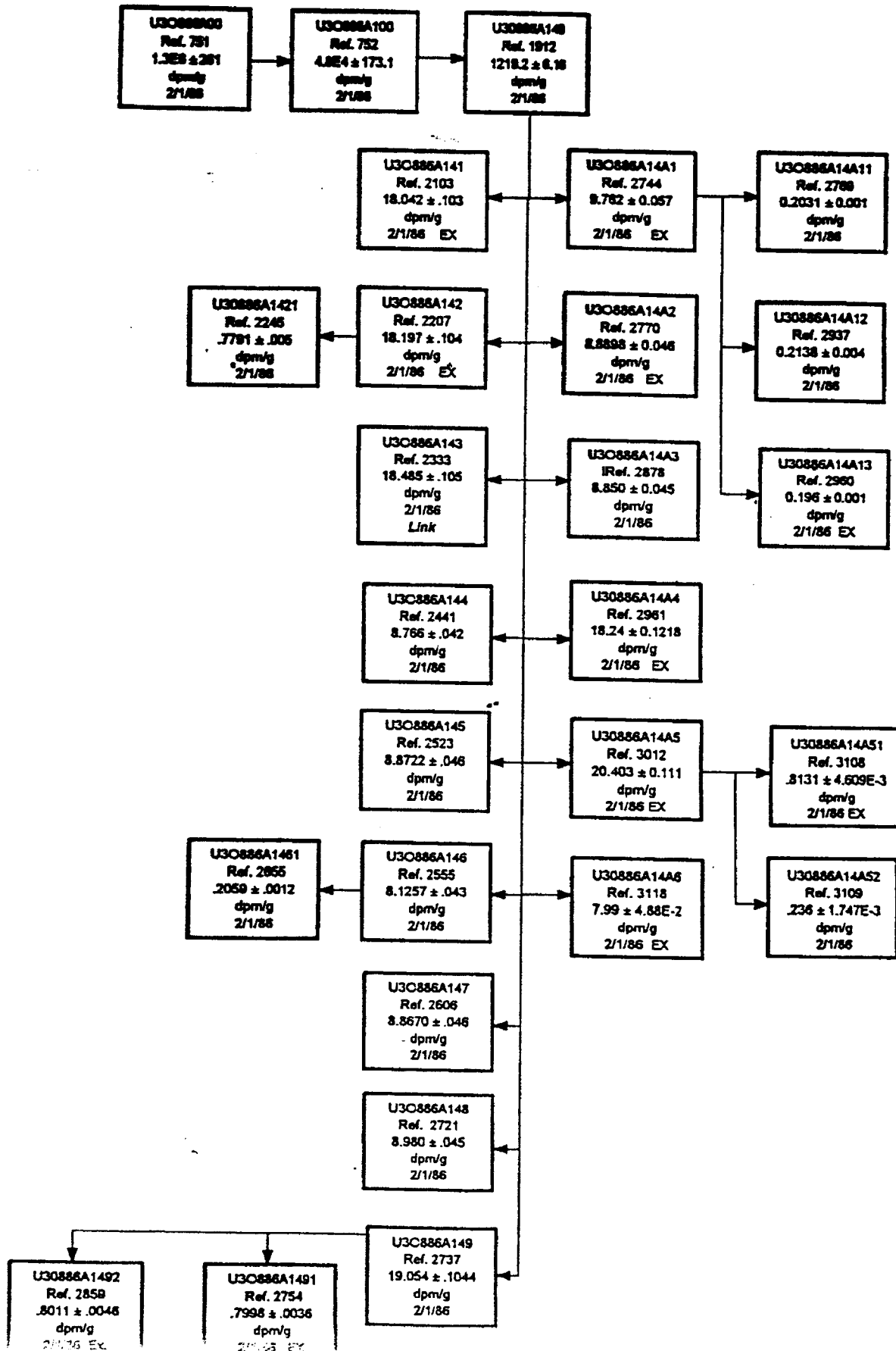
7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

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 =  $(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})$

**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)



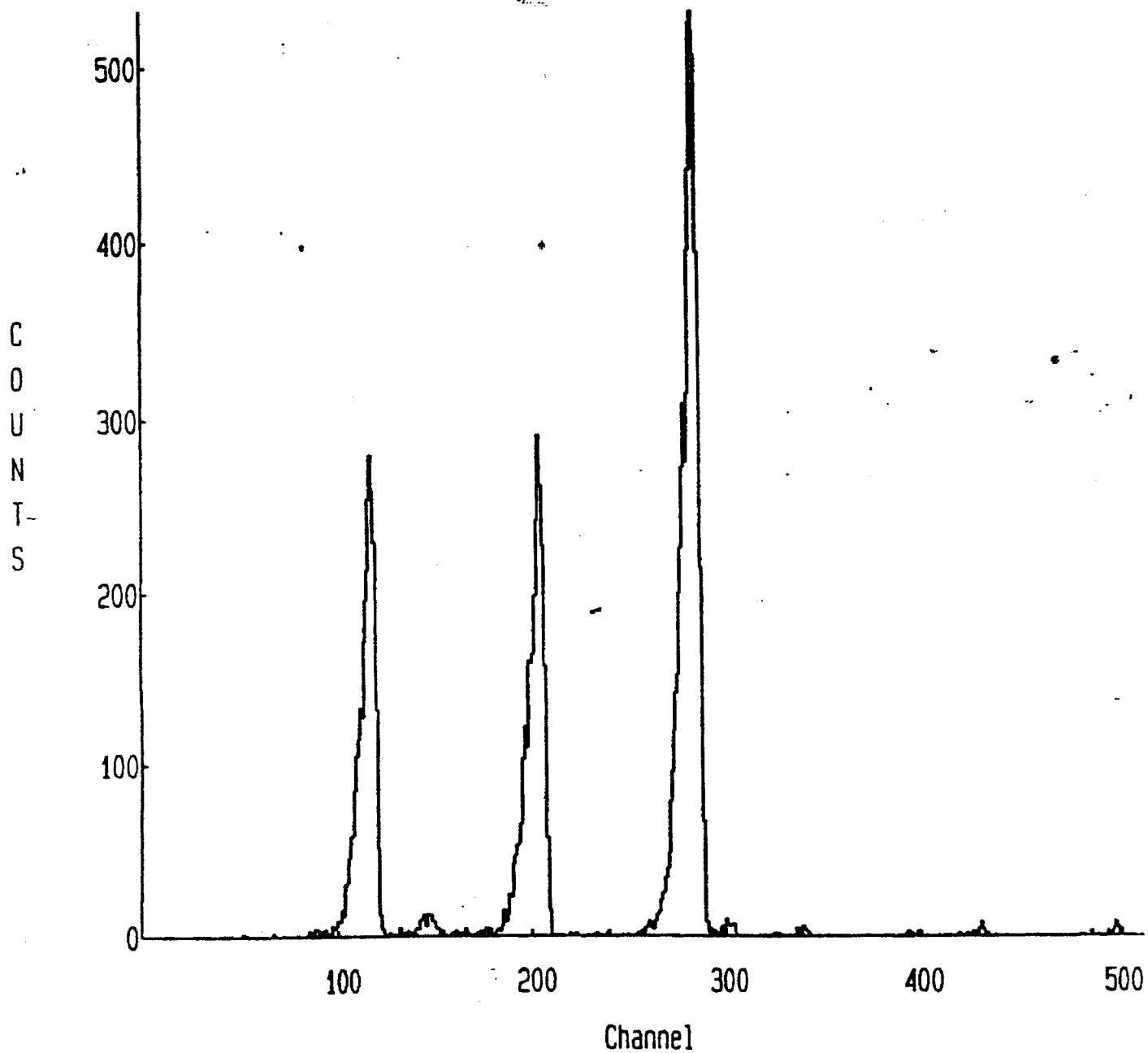
IT-NO # <i>Cal 626</i>	ISO	CUSTOMER ID <i>IT</i>	RECEIVE DATE	DUE DATE
SA TYPE:	RPT UNITS: PCI <i>DEH</i> 6 L CH <i>SA</i>		STORAGE	
PROC	VIAL			
GA	GB	CO	CS	
REQUESTED COUNTING TIME <i>1000</i>	REQ'D BY <i>CCG</i>	SAMPLE DATE/ON TIME <i>10-18-73</i>	SAMPLE DATE/OFF TIME	COUNTING DATE DAY MON YR TIME
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 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: 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
0		1	0		51	9		101	5+		151	165+		201	1		251
		2	2		52	15		102	4+		152	199+		202	0		252
0		3	1		53	12+		103	1+		153	243+		203	1		253
0		4	1		54	30+		104	3+		154	291+		204	2		254
0		5	0		55	31+		105	1+		155	263+		205	0		255
0		6	0		56	45+		106	0+		156	228+		206	3		256
0		7	0		57	58+		107	0+		157	158+		207	2		257
0		8	0		58	59+		108	0		158	58+		208	5		258
0		9	0		59	85+		109	2		159	15+		209	6		259
0		10	0		60	105+		110	0		160	1+		210	8		260
0		11	0		61	115+		111	3		161	1		211	5		261
0		12	0		62	133+		112	2		162	0		212	4		262
0		13	0		63	128+,		113	1		163	1		213	9		263
0		14	0		64	172+		114	2		164	0		214	12		264
0		15	0		65	196+		115	0		165	1		215	14		265
0		16	0		66	214+		116	4		166	0		216	21+		266
0		17	2		67	255+		117	2		167	0		217	25+		267
0		18	0		68	280+		118	1		168	0		218	26+		268
0		19	0		69	260+		119	0		169	2		219	34+		269
0		20	0		70	230+		120	1		170	0		220	39+		270
0		21	0		71	132+		121	1		171	0		221	48+		271
0		22	1		72	51+		122	2		172	2		222	79+		272
0		23	0		73	12+		123	0		173	1		223	96+		273
0		24	0		74	4+		124	3		174	0		224	120+		274
0		25	0		75	2		125	2		175	0		225	142+		275
0		26	0		76	0		126	3		176	0		226	153+		276
0		27	0		77	0+		127	5		177	0		227	201+		277
0		28	0		78	2+		128	2		178	1		228	227+		278
0		29	1		79	1+		129	4		179	0		229	273+		279
0		30	0		80	0+		130	1		180	0		230	309+		280
0		31	0		81	1+		131	0		181	1		231	276+		281
0		32	0		82	1+		132	3		182	0		232	315+		282
0		33	1		83	5+		133	4		183	2		233	396+		283
0		34	0		84	0+		134	3		184	0		234	442+		284
0		35	3		85	2+		135	6		185	1		235	527+		285
0		36	0		86	0+		136	15+		186	0		236	533+		286
0		37	0		87	3+		137	9+		187	0		237	508+		287
0		38	4		88	2+		138	13+		188	2		238	395+		288
0		39	4		89	2+		139	24+		189	3		239	215+		289
0		40	0		90	1+		140	23+		190	0		240	67+		290
1		41	3		91	4+		141	42+		191	0		241	8+		291
0		42	2		92	4+		142	47+		192	0		242	2+		292
1		43	4		93	9+		143	53+		193	0		243	4		293
0		44	2		94	10+		144	55+		194	0		244	0		294
0		45	2		95	12+		145	66+		195	0		245	3		295
1		46	2		96	6+		146	104+		196	1		246	2		296
0		47	6		97	13+		147	122+		197	0		247	1		297
0		48	5		98	12+		148	111+		198	1		248	5		298
0		49	6		99	9+		149	161+		199	1		249	6		299
0		50	9		100	8+		150	160+		200	0		250	1		300

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
				<del>ASPEC</del> LEPD AGC BGC
SPIKE #		TECH COMMENTS		
BLANK #		<i>CCG-Data Cal CK 2726</i>		

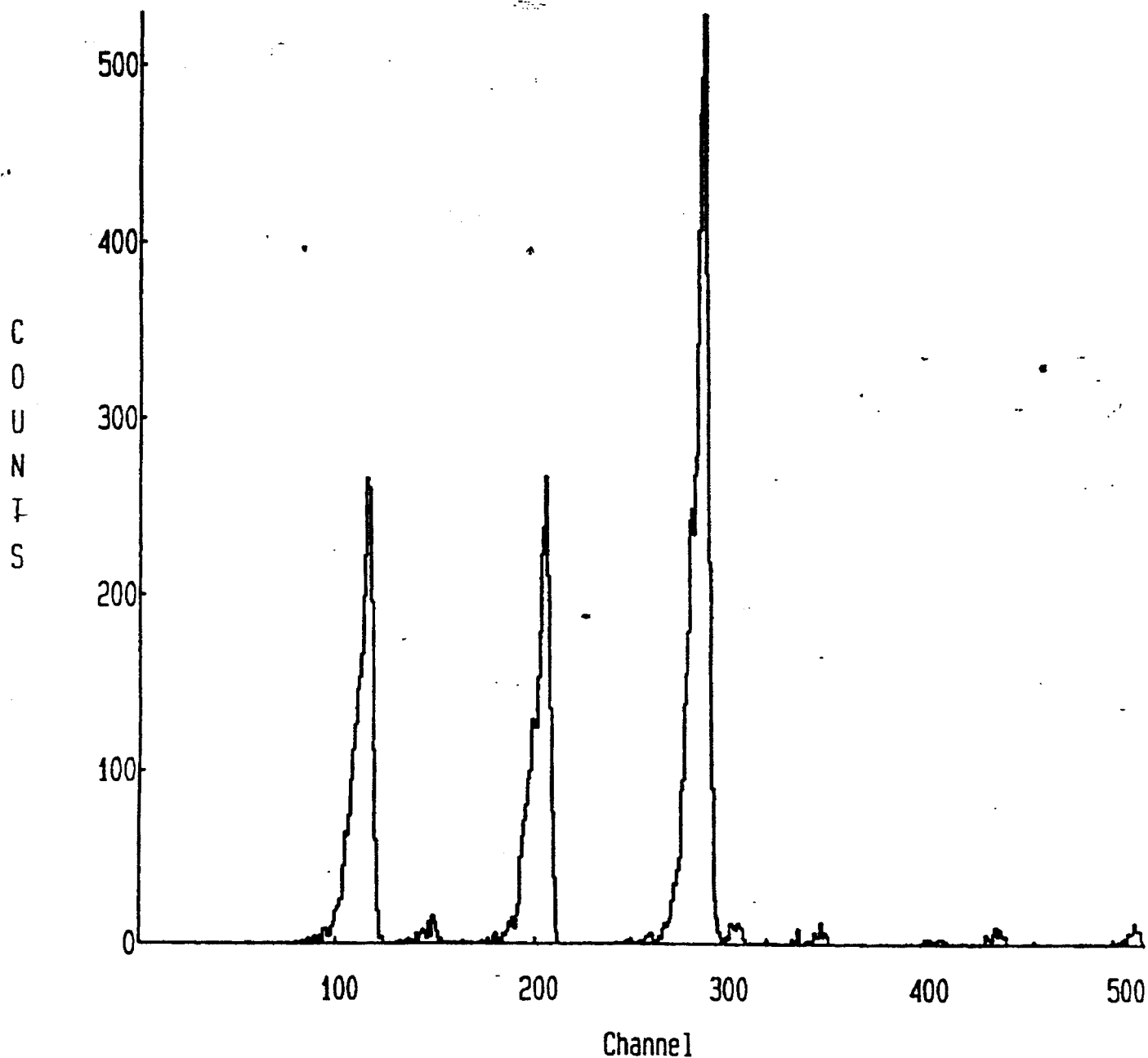
*U-232*



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)



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

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>		
TOTAL SAMPLE WEIGHT OR VOLUME	UNIT	SUGGESTED ALIQUOT	SAMPLE ANALYZED WEIGHT OR VOLUME	UNIT
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"/> ASPEC <input type="checkbox"/> LEPO <input type="checkbox"/> ASC <input type="checkbox"/> BGC
Spike #		TECH	COMMENTS	
BLANK #		<i>WA</i>	<i>CCG-Data Cal CK 23266</i>	

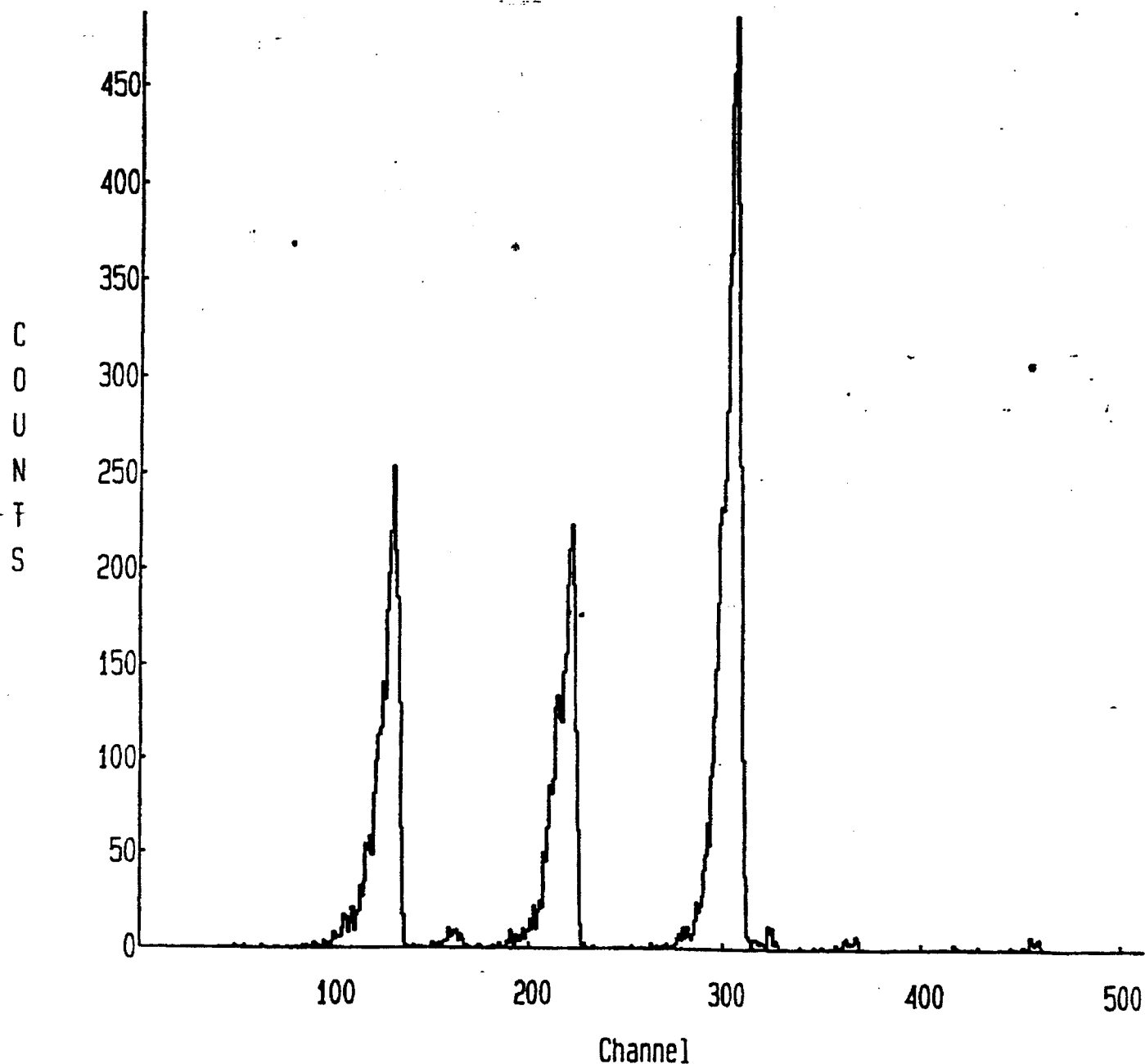
*U-232*

*SA* 25 50 100 200 300 400 500 MA MB  
14 44 64 83 108 208

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	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	

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			

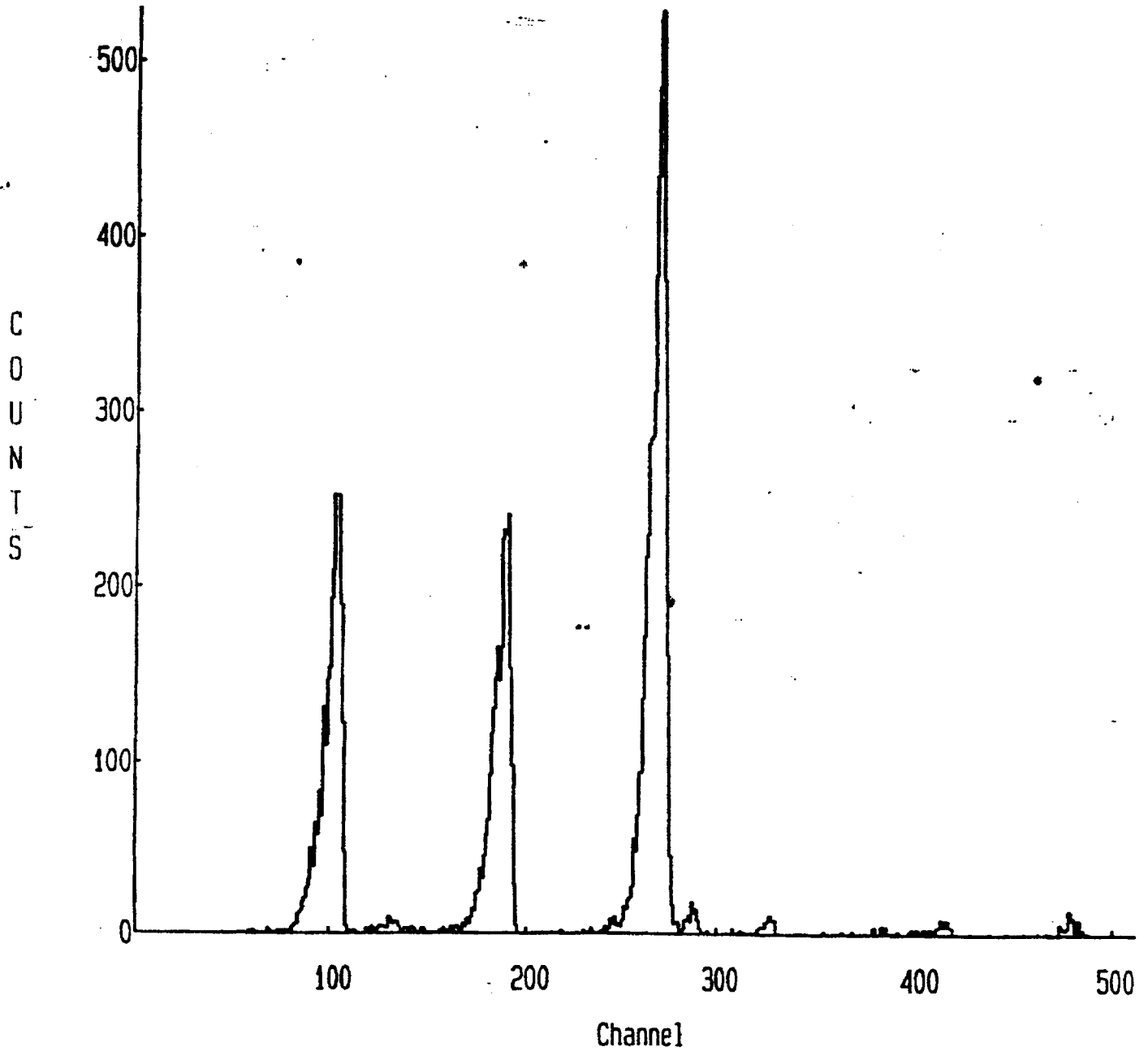
Grand Total Activity : 0.000E+00 0.000E+00

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						
					<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 REF 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						
COUNTING INSTRUMENT CHECK ONE				OTHER	DETECTOR NUMBER	ACTUAL COUNT TIME					
NAI	<input type="checkbox"/> 3	<input type="checkbox"/> 5	<input type="checkbox"/> 9	GER	<input checked="" type="checkbox"/> ASPEC	LEPD	ASC	BGC			
CANNOP		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  
 "E" = Manually edited

"M" = Manually accepted  
 "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	
UISG1546	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)

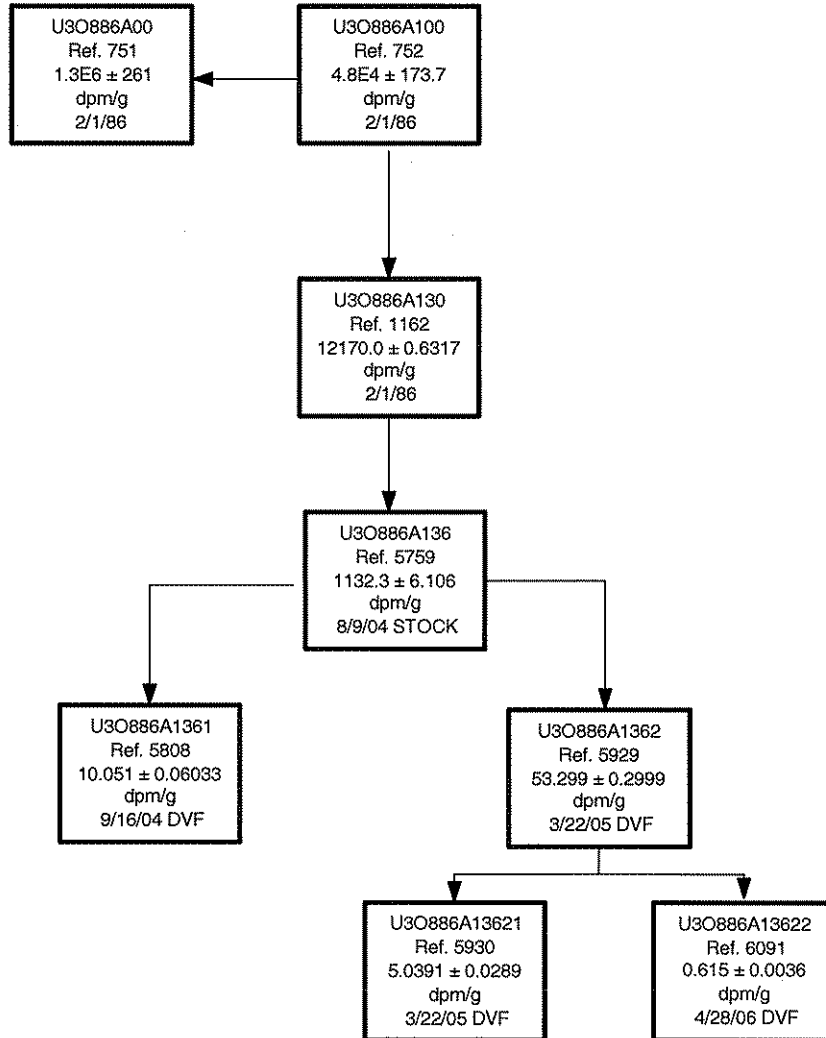
5.2380E+000 , 5.2380E+000

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	
UISG1546	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 \_\_\_\_\_

\*\*\*\*\*  
**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 ± 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 18:49:54.04

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		

## -- 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
------------------	-----------	----------------	-------	-------------	-----

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

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

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

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

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
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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	

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
Quality Assurance Multi-Test Full Report (continued)				
				Page : 2
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
------------------	-----------	----------------	-------	-------------	-----

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

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

```
-----
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	

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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```
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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
3-NOV-2007 10:30	bkg		0.0010	
2-DEC-2007 09:51	bkg		0.0010	

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-- 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	

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

```
-----
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
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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		0.0010		

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

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	

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	

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
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```
-----
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
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```
-----
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
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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
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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		0.0110		
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
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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 10:29	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
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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
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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		

## -- 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
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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 10:29 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

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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
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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
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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		0.0060		
2-DEC-2007 09:51	bkg		0.0090		

## -- 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
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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
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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	

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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	

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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		0.3710	
1-DEC-2007 15:51	chk		0.3743	

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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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```
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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

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 : 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 : 0.004740 Std Deviation : 0.003465

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:29	bkg		0.0090	
2-DEC-2007 09:51	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 : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00  
 Mean : 0.005407 Std Deviation : 0.003749

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		0.0150	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 : 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
------------------	-----------	----------------	-------	-----------------

```
-----
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		

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		

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
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```
-----
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
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```
-----
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
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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
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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 : 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
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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		0.0000	
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
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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		
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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 : 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
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3-NOV-2007 10:29	bkg		0.1030		
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2-DEC-2007 09:51	bkg		0.0980		
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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 : 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
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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
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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			0.1070		
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
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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
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```
-----
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
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```
-----
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		

---

## -- 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		

---

## -- 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		

---

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
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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 : 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
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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
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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
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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
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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 12:18:52.76

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

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	

## -- 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
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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
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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
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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		

## Quality Assurance Report.

Generated 24-DEC-2007 12:16:25.99

QA Filename : RDND06::RDND06\$DKA100:[ALP84.QA]GROUP\_1\_CHK.QAF;2

## -- Multi-Test Full Report --

Description : Centroid, U-238

Parameter Units : channel Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:23	chk		176.6859		
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14-DEC-2007 06:51	chk		176.7613		
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## -- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:23	chk		5.7500		
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14-DEC-2007 06:51	chk		4.5000		
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## -- Multi-Test Full Report --

Description : Average Efficiency

Parameter Units : % Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:23	chk		0.3138		
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14-DEC-2007 06:51	chk		0.3138		
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## -- Multi-Test Full Report --

Description : Efficiency, Po-210

Parameter Units : % Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:23	chk	0.3299	
14-DEC-2007 06:51	chk	0.3374	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
 Parameter Units : keV/chan      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:23	chk		7.2556	
14-DEC-2007 06:51	chk		7.2727	

Quality Assurance Report.      Generated 24-DEC-2007 12:16:26.88

QA Filename : RDND06::RDND06\$DKA100:[ALP84.QA]GROUP\_1\_BKG.QAF;2

## -- 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
4-NOV-2007 11:25	bkg		0.0008	
16-DEC-2007 09:01	bkg		0.0008	

## -- 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
4-NOV-2007 11:25	bkg		0.0004	
16-DEC-2007 09:01	bkg		0.0008	

## -- Multi-Test Full Report --

Description : 5499, Pu-238 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0312	
16-DEC-2007 09:01	bkg		0.0360	

-- Multi-Test Full Report --

Description : 5770, Pu-236 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0284	
16-DEC-2007 09:01	bkg		0.0256	

-- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cpm      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0008	
16-DEC-2007 09:01	bkg		0.0008	

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cpm      Parameter Type :

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 11:25	bkg		0.0004	
16-DEC-2007 09:01	bkg		0.0016	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cpm      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0012	
16-DEC-2007 09:01	bkg		0.0008	

-- Multi-Test Full Report --

Description : 5423, Th-228 bkg (cnts/min)  
 Parameter Units : cpm                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0384	
16-DEC-2007 09:01	bkg		0.0412	

-- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cpm                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0000	
16-DEC-2007 09:01	bkg		0.0008	

-- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cpm                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:25	bkg		0.0004	
16-DEC-2007 09:01	bkg		0.0004	

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cpm                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 11:25 bkg	0.0012	
16-DEC-2007 09:01 bkg	0.0024	

## -- Multi-Test Full Report --

Description : 5320, U-232 bkg (cnts/min)  
 Parameter Units : cpm                      Parameter Type :

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	0.0068	
16-DEC-2007 09:01 bkg	0.0044	

## -- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cpm                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 11:25 bkg	0.0012	
16-DEC-2007 09:01 bkg	0.0024	

## -- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cpm                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 11:25 bkg	0.0004	
16-DEC-2007 09:01 bkg	0.0008	

## -- Multi-Test Full Report --

Description : 5305, Po-210 bkg (cnts/min)  
 Parameter Units : cpm                      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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4-NOV-2007 11:25 bkg	0.0056			
16-DEC-2007 09:01 bkg	0.0024			

## 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
10-NOV-2007 11:33	chk		0.3539	
13-NOV-2007 10:06	chk		0.3506	
14-DEC-2007 06:51	chk		0.3515	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

-- 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
11-NOV-2007 06:50	bkg		0.0010		

Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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 : 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
11-NOV-2007 06:50	bkg		0.0010		
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 : 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
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11-NOV-2007 06:50	bkg		0.0010	
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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 : 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
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11-NOV-2007 06:50	bkg		0.0020	
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14-NOV-2007 09:46	bkg		0.0008	
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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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7-DEC-2007 14:27	bkg		0.0008	
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15-DEC-2007 08:31	bkg		0.0020	
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-- 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
-----				
15-DEC-2007 08:31	bkg		0.0052	

-- 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
-----				
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
-----				
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 12:04:06.37

QA Filename : RDND06::RDND06\$DKA100:[ALP69.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 : 1-JAN-2002 00:00 End Date : -----

Mean : 0.391562 Std Deviation : 0.022912

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
10-NOV-2007 11:33	chk		0.3969		
13-NOV-2007 10:06	chk		0.3851		
14-DEC-2007 06:50	chk		0.3983		

-- 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 : 1-JAN-2002 00:00 End Date : -----

Mean : 7.757028 Std Deviation : 0.263268

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
10-NOV-2007 11:33	chk		8.0000		
13-NOV-2007 10:06	chk		8.0000		
14-DEC-2007 06:50	chk		7.8333		

-- 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 : 1-JAN-2002 00:00 End Date : -----

Mean : 317.148315      Std Deviation : 0.471847

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
10-NOV-2007 11:33	chk		317.1008	
13-NOV-2007 10:06	chk		317.1343	
14-DEC-2007 06:50	chk		317.2676	

-- 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 : 1-JAN-2002 00:00 End Date : -----

Mean : 0.374570      Std Deviation : 0.022013

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
10-NOV-2007 11:33	chk		0.3781	
13-NOV-2007 10:06	chk		0.3731	
14-DEC-2007 06:50	chk		0.3770	

Quality Assurance Multi-Test Full Report (continued)      Page : 2

-- 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 : 1-JAN-2002 00:00 End Date : -----  
Mean : 7.540196      Std Deviation : 0.051122

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
10-NOV-2007 11:33	chk		7.4677	
13-NOV-2007 10:06	chk		7.4250	In
14-DEC-2007 06:50	chk		7.5680	

Quality Assurance Report.      Generated 24-DEC-2007 12:04:09.09

QA Filename : RDND06::RDND06\$DKA100:[ALP69.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 : 0.001808      Std Deviation : 0.004286

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		0.0004	
15-DEC-2007 08:31	bkg		0.0016	

## -- 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 : 0.002717 Std Deviation : 0.005308

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		0.0020	
7-DEC-2007 14:27	bkg		0.0016	
15-DEC-2007 08:31	bkg		0.0008	

-- 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 : 0.000953 Std Deviation : 0.001178

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		0.0008	
15-DEC-2007 08:31	bkg		0.0008	

-- 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 : 0.002570 Std Deviation : 0.003787

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		0.0020	
14-NOV-2007 09:46	bkg		0.0016	
7-DEC-2007 14:27	bkg		0.0016	
15-DEC-2007 08:31	bkg		0.0008	

-- 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 : 0.002905 Std Deviation : 0.003392

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		0.0016	
7-DEC-2007 14:27	bkg		0.0020	
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 : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.002705 Std Deviation : 0.003139

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		0.0016	
7-DEC-2007 14:27	bkg		0.0020	
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 : 1-JAN-2002 00:00 End Date : -----  
 Mean : 0.001799 Std Deviation : 0.001384

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
11-NOV-2007 06:50	bkg		0.0000		

Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
14-NOV-2007 09:46	bkg		0.0008		
7-DEC-2007 14:27	bkg		0.0016		
15-DEC-2007 08:31	bkg		0.0012		

## -- 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 : 0.001270 Std Deviation : 0.000856

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		0.0016		
15-DEC-2007 08:31	bkg		0.0004		

## -- 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 : 0.001032      Std Deviation : 0.000729

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		0.0004	

-- 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 : 0.001594      Std Deviation : 0.000912

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		0.0024	

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		0.0000	
15-DEC-2007 08:31	bkg		0.0008	

-- 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 : 0.002893 Std Deviation : 0.001621

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0070	In
14-NOV-2007 09:46	bkg		0.0044	
7-DEC-2007 14:27	bkg		0.0024	
15-DEC-2007 08:31	bkg		0.0032	

## -- 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 : 0.003821 Std Deviation : 0.002304

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0120	Ac
14-NOV-2007 09:46	bkg		0.0052	
7-DEC-2007 14:27	bkg		0.0044	
15-DEC-2007 08:31	bkg		0.0036	

## -- 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 : 0.004828 Std Deviation : 0.002844

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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11-NOV-2007 06:50 bkg 0.0130 |In| |  
 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
15-DEC-2007 08:31	bkg		0.0048		

-- 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 : 0.035073 Std Deviation : 0.017546

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		0.0584		
7-DEC-2007 14:27	bkg		0.0596		
15-DEC-2007 08:31	bkg		0.0568		

-- 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 : 0.035201 Std Deviation : 0.017542

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
11-NOV-2007 06:50	bkg		0.0520		
14-NOV-2007 09:46	bkg		0.0568		
7-DEC-2007 14:27	bkg		0.0620		

15-DEC-2007 08:31 bkg 0.0576 | | |

-- 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 : 0.033200 Std Deviation : 0.016775

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0510	
14-NOV-2007 09:46	bkg		0.0540	
7-DEC-2007 14:27	bkg		0.0572	
15-DEC-2007 08:31	bkg		0.0540	

-- 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 : 0.029446 Std Deviation : 0.014807

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
11-NOV-2007 06:50	bkg		0.0370	
14-NOV-2007 09:46	bkg		0.0472	
7-DEC-2007 14:27	bkg		0.0428	
15-DEC-2007 08:31	bkg		0.0532	

-- 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 : 0.026069 Std Deviation : 0.013049

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0320	
14-NOV-2007 09:46	bkg		0.0412	
7-DEC-2007 14:27	bkg		0.0400	
15-DEC-2007 08:31	bkg		0.0472	

-- 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 : 0.009472 Std Deviation : 0.004600

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
11-NOV-2007 06:50	bkg		0.0150	
14-NOV-2007 09:46	bkg		0.0148	
7-DEC-2007 14:27	bkg		0.0156	
15-DEC-2007 08:31	bkg		0.0156	



Quality Assurance Report.

Generated 24-DEC-2007 12:29:59.76

QA Filename : RDND06::RDND06\$DKA100:[ALP88.QA]GROUP\_1\_CHK.QAF;2

-- Multi-Test Full Report --

Description : Centroid, U-238

Parameter Units : channel Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:24	chk		108.4366		
14-DEC-2007 06:51	chk		105.2209		

-- Multi-Test Full Report --

Description : Constant FWHM

Parameter Units : channels Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:24	chk		9.8333		
14-DEC-2007 06:51	chk		12.1667		

-- Multi-Test Full Report --

Description : Average Efficiency

Parameter Units : % Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
3-NOV-2007 10:24	chk		0.3543		
14-DEC-2007 06:51	chk		0.3524		

-- Multi-Test Full Report --

Description : Efficiency, U-234

Parameter Units : % Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-NOV-2007 10:24	chk	0.3588	
14-DEC-2007 06:51	chk	0.3507	

## -- Multi-Test Full Report --

Description : Energy Calibration Slope  
 Parameter Units : keV/chan      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
3-NOV-2007 10:24	chk		6.1794	
14-DEC-2007 06:51	chk		6.1866	

Quality Assurance Report.      Generated 24-DEC-2007 12:30:00.67

QA Filename : RDND06::RDND06\$DKA100:[ALP88.QA]GROUP\_1\_BKG.QAF;3

## -- Multi-Test Full Report --

Description : 4010, Th-232 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:26	bkg		0.0000	
15-DEC-2007 08:32	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 4196, U-238 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:26	bkg		0.0000	
15-DEC-2007 08:32	bkg		0.0000	

## -- Multi-Test Full Report --

Description : 4396, U-235 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:26	bkg		0.0010	
15-DEC-2007 08:32	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4688, Th-230 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:26	bkg		0.0000	
15-DEC-2007 08:32	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4776, U-234 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:26	bkg		0.0000	
15-DEC-2007 08:32	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4788, Np-237 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

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 11:26	bkg		0.0000	
15-DEC-2007 08:32	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4845, Th-229 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:26	bkg		0.0000	
15-DEC-2007 08:32	bkg		0.0000	

-- Multi-Test Full Report --

Description : 4882, Po-209 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:26	bkg		0.0000	
15-DEC-2007 08:32	bkg		0.0000	

-- 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
4-NOV-2007 11:26	bkg		0.0000	
15-DEC-2007 08:32	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
4-NOV-2007 11:26	bkg		0.0000	
15-DEC-2007 08:32	bkg		0.0000	

-- 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
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4-NOV-2007 11:26 bkg	0.0020	
15-DEC-2007 08:32 bkg	0.0000	

## -- Multi-Test Full Report --

Description : 5305, Po-210 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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 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 11:26 bkg	0.0030	
15-DEC-2007 08:32 bkg	0.0010	

## -- Multi-Test Full Report --

Description : 5320, U-232 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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4-NOV-2007 11:26 bkg	0.0040	
15-DEC-2007 08:32 bkg	0.0020	

## -- Multi-Test Full Report --

Description : 5423, Th-228 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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4-NOV-2007 11:26 bkg	0.0170	
15-DEC-2007 08:32 bkg	0.0070	

## -- Multi-Test Full Report --

Description : 5486, Am-241 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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4-NOV-2007 11:26 bkg	0.0180	
15-DEC-2007 08:32 bkg	0.0200	

## -- Multi-Test Full Report --

Description : 5499, Pu-238 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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4-NOV-2007 11:26 bkg			0.0160	
15-DEC-2007 08:32 bkg			0.0190	

## -- Multi-Test Full Report --

Description : 5770, Pu-236 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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4-NOV-2007 11:26 bkg			0.0100	
15-DEC-2007 08:32 bkg			0.0140	

## -- 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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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 11:26 bkg			0.0080	
15-DEC-2007 08:32 bkg			0.0140	

## -- Multi-Test Full Report --

Description : 6113, Cm-242 bkg (cnts/min)  
 Parameter Units : cnts/min      Parameter Type :

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
4-NOV-2007 11:26	bkg		0.0040	
15-DEC-2007 08:32	bkg		0.0050	

GAMMA  
SAMPLE AND QC DATA



Lot No., Due Date: F7K200219; 12/20/2007  
Client, Site: 445691; Phs2 Smpling Tronox Prcl CDFG  
QC Batch No., Method Test: 7330517; RGAMMA10 Gamma by GER 10D  
SDG, Matrix: 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

*Thomas E. Michael*

Date

12/24/07

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

Batch Number: 73305<sup>17</sup>214912/26/17

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: *Ernie J. [Signature]* Date: 12/26/17

# ICOC Fraction Transfer/Status Report

ByDate: 12/24/2006, 12/29/2007, Batch: '7330517', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
<b>7330517</b>				
AC		<b>CalcC</b>	<b>Barcotl</b> 11/29/2007 11:23:41	
SC		wagarr	IsBatched 11/26/2007 2:51:34 PM	ICOC_RADCALC v4.8.29
SC		Barcotl	InPrep 11/29/2007 11:23:41 AM	RICH-RC-5013 REVISION 7
SC		Barcotl	Prep1C 11/29/2007 11:24:01 AM	RICH-RC-5013 REVISION 7
SC		Barcotl	InPrep2 11/29/2007 11:24:21 AM	RICH-RC-5017 REVISION 6
SC		Barcotl	Prep2C 11/29/2007 11:24:58 AM	RICH-RC-5017 REVISION 6
SC		BlackCL	InCnt1 11/29/2007 12:16:48 PM	RICH-RD-0007 REVISION 6
SC		BlackCL	CalcC 12/22/2007 8:48:48 AM	RICH-RD-0007 REVISION 6
AC		<b>Barcotl</b>	11/29/2007 11:24:01	
AC		<b>Barcotl</b>	11/29/2007 11:24:21	
AC		<b>Barcotl</b>	11/29/2007 11:24:58	
AC		<b>BlackCL</b>	11/29/2007 12:16:48	
AC		<b>BlackCL</b>	12/22/2007 8:48:48	

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	Units	Expected Yield	Volumes
<b>TRNC/D-7RD</b>	<b>9KCMN510</b>		<b>F7K2002194</b>	TSB-GJ-04-0'	SOLID	11/20/2007 9:30:00	11/19/2007 9:45:00 AM			
RA-226DA	AXT9	0	12/19/2007 10:04:40	1.057E+00	8.673E-02	8.673E-02	6.358E-02	PCI/GRAM		4.63E+1
RA-228DA	AXT9	0	12/19/2007 10:04:40	1.7188E+00	1.444E-01	1.444E-01	1.31E-01	PCI/GRAM		4.63E+1
TH-228	D2S1	0	12/19/2007 9:10:58	2.1703E+00	1.707E-01	2.438E-01	6.424E-02	pCi/g	0.817	1.0E+0
TH-230	D2S1	0	12/19/2007 9:10:58	1.9791E+00	1.605E-01	2.258E-01	6.236E-02	pCi/g	0.817	1.0E+0
TH-232	D2S1	0	12/19/2007 9:10:58	1.6536E+00	1.468E-01	1.978E-01	6.236E-02	pCi/g	0.817	1.0E+0
U-234	7USR	0	12/18/2007 2:35:08	PM1.2253E+00	6.166E-02	1.17E-01	2.537E-02	pCi/g	0.969	2.0E+0
U-235	7USR	0	12/18/2007 2:35:08	PM2.4098E-02	8.76E-03	8.976E-03	1.48E-02	pCi/g	0.969	2.0E+0
U-238	7USR	0	12/18/2007 2:35:08	PM7.3902E-01	4.788E-02	7.676E-02	2.122E-02	pCi/g	0.969	2.0E+0
<b>TRNC/D-7RD</b>	<b>9KCMN810</b>		<b>F7K2002195</b>	TSB-GJ-04-5'	SOLID	11/20/2007 9:30:00	11/19/2007 10:05:00 AM			
RA-226DA	AXT9	0	12/19/2007 10:06:41	9.7716E-01	8.283E-02	8.283E-02	7.578E-02	PCI/GRAM		4.81E+1
RA-228DA	AXT9	0	12/19/2007 10:06:41	1.8379E+00	1.996E-01	1.996E-01	1.413E-01	PCI/GRAM		4.81E+1
TH-228	D2S1	0	12/19/2007 9:11:37	1.6045E+00	1.365E-01	1.874E-01	6.542E-02	pCi/g	0.899	1.02E+0
TH-230	D2S1	0	12/19/2007 9:11:37	1.2249E+00	1.173E-01	1.529E-01	5.382E-02	pCi/g	0.899	1.02E+0
TH-232	D2S1	0	12/19/2007 9:11:37	1.2002E+00	1.163E-01	1.508E-01	5.382E-02	pCi/g	0.899	1.02E+0
U-234	7USR	0	12/18/2007 2:35:20	PM5.0434E-01	4.144E-02	5.857E-02	1.918E-02	pCi/g	0.862	2.01E+0
U-235	7USR	0	12/18/2007 2:35:20	PM1.2896E-02	6.822E-03	6.903E-03	1.626E-02	pCi/g	0.862	2.01E+0
U-238	7USR	0	12/18/2007 2:35:20	PM3.6586E-01	3.528E-02	4.632E-02	1.626E-02	pCi/g	0.862	2.01E+0
<b>TRNC/D-7RD</b>	<b>9KCMNL10</b>		<b>F7K2002191</b>	TSB-GR-02-0'	SOLID	11/20/2007 9:30:00	11/19/2007 8:40:00 AM			
RA-226DA	AXT9	0	12/19/2007 10:01:32	1.0342E+00	8.085E-02	8.085E-02	7.694E-02	PCI/GRAM		4.62E+1
RA-228DA	AXT9	0	12/19/2007 10:01:32	1.6742E+00	1.563E-01	1.563E-01	1.352E-01	PCI/GRAM		4.62E+1
TH-228	D2S1	0	12/19/2007 9:10:58	1.6855E+00	1.419E-01	1.961E-01	6.726E-02	pCi/g	0.755	1.01E+0
TH-230	D2S1	0	12/19/2007 9:10:58	1.1739E+00	1.167E-01	1.5E-01	6.529E-02	pCi/g	0.755	1.01E+0
TH-232	D2S1	0	12/19/2007 9:10:58	1.4419E+00	1.292E-01	1.735E-01	5.534E-02	pCi/g	0.755	1.01E+0
U-234	7USR	0	12/18/2007 2:34:56	PM3.9307E-01	3.486E-02	4.727E-02	1.741E-02	pCi/g	0.954	2.01E+0
U-235	7USR	0	12/18/2007 2:34:56	PM2.4027E-02	8.735E-03	8.95E-03	1.476E-02	pCi/g	0.954	2.01E+0
U-238	7USR	0	12/18/2007 2:34:56	PM2.9203E-01	3.003E-02	3.827E-02	1.476E-02	pCi/g	0.954	2.01E+0
<b>TRNC/D-7RD</b>	<b>9KCMNW10</b>		<b>F7K2002192</b>	TSB-GR-02-0'FD	SOLID	11/20/2007 9:30:00	11/19/2007 8:40:00 AM			
RA-226DA	AXT9	0	12/19/2007 10:02:24	1.0236E+00	7.854E-02	7.854E-02	7.703E-02	PCI/GRAM		4.83E+1
RA-228DA	AXT9	0	12/19/2007 10:02:24	1.9734E+00	1.765E-01	1.765E-01	1.671E-01	PCI/GRAM		4.83E+1
TH-228	D2S1	0	12/19/2007 9:10:58	1.6555E+00	1.326E-01	1.876E-01	5.083E-02	pCi/g	0.835	1.01E+0
TH-230	D2S1	0	12/19/2007 9:10:58	1.1001E+00	1.066E-01	1.383E-01	4.934E-02	pCi/g	0.835	1.01E+0
TH-232	D2S1	0	12/19/2007 9:10:58	1.2237E+00	1.124E-01	1.492E-01	4.934E-02	pCi/g	0.835	1.01E+0
U-234	7USR	0	12/18/2007 2:34:57	PM3.0221E-01	3.082E-02	3.939E-02	1.768E-02	pCi/g	1.02	2.0E+0
U-235	7USR	0	12/18/2007 2:34:57	PM1.1262E-02	6.319E-03	6.385E-03	1.768E-02	pCi/g	1.02	2.0E+0
U-238	7USR	0	12/18/2007 2:34:57	PM2.9533E-01	3.051E-02	3.88E-02	1.975E-02	pCi/g	1.02	2.0E+0
<b>TRNC/D-7RD</b>	<b>9KCMNX10</b>		<b>F7K2002193</b>	TSB-GR-02-5'	SOLID	11/20/2007 9:30:00	11/19/2007 9:05:00 AM			
RA-226DA	AXT9	0	12/19/2007 10:03:22	9.507E-01	8.34E-02	8.34E-02	7.623E-02	PCI/GRAM		4.77E+1
RA-228DA	AXT9	0	12/19/2007 10:03:22	1.9874E+00	1.609E-01	1.609E-01	1.467E-01	PCI/GRAM		4.77E+1
TH-228	D2S1	0	12/19/2007 9:10:58	1.7686E+00	1.292E-01	1.916E-01	6.455E-02	pCi/g	0.923	1.01E+0
TH-230	D2S1	0	12/19/2007 9:10:58	1.1384E+00	1.02E-01	1.368E-01	4.369E-02	pCi/g	0.923	1.01E+0
TH-232	D2S1	0	12/19/2007 9:10:58	1.7568E+00	1.267E-01	1.893E-01	5.155E-02	pCi/g	0.923	1.01E+0
U-234	7USR	0	12/18/2007 2:35:04	PM4.9338E-01	4.048E-02	5.717E-02	1.588E-02	pCi/g	0.903	2.0E+0
U-235	7USR	0	12/18/2007 2:35:04	PM6.6172E-04	3.571E-03	3.572E-03	2.278E-02	pCi/g	0.903	2.0E+0
U-238	7USR	0	12/18/2007 2:35:04	PM3.309E-01	3.336E-02	4.297E-02	2.588E-02	pCi/g	0.903	2.0E+0
<b>TRNC/D-7RD</b>	<b>9KCMNP510</b>		<b>F7K20021911</b>	TSB-GJ-05-0'	SOLID	11/20/2007 9:30:00	11/19/2007 7:45:00 AM			
RA-226DA	AXT9	0	12/20/2007 10:20:58	9.138E-01	8.908E-02	8.908E-02	7.377E-02	PCI/GRAM		4.58E+1
RA-228DA	AXT9	0	12/20/2007 10:20:58	1.6857E+00	1.915E-01	1.915E-01	1.416E-01	PCI/GRAM		4.58E+1
TH-228	D2S1	0	12/19/2007 12:46:26	1.7816E+00	1.321E-01	1.944E-01	4.688E-02	pCi/g	0.914	1.0E+0
TH-230	D2S1	0	12/19/2007 12:46:26	1.0526E+00	1.001E-01	1.308E-01	4.55E-02	pCi/g	0.914	1.0E+0
TH-232	D2S1	0	12/19/2007 12:46:26	1.8962E+00	1.344E-01	2.027E-01	5.368E-02	pCi/g	0.914	1.0E+0
U-234	7USR	0	12/18/2007 2:35:59	PM4.4035E-01	3.839E-02	5.268E-02	1.6E-02	pCi/g	0.875	2.01E+0

7330517,7330517, \*\*Samples Inserted | Updated | NotUpdated => 3 | 0 | 14,  
 \*\*Results Inserted | ReTestInserted | Updated | NotInserted => 33 | 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 µg/g	Units	Expected Yield	Volumes
U-235	7USR	0	12/18/2007 2:35:59	PM9.3548E-03	5.825E-03	5.876E-03	1.6E-02	pCi/g	0.875	2.01E+0
U-238	7USR	0	12/18/2007 2:35:59	PM3.2074E-01	3.274E-02	4.198E-02	1.6E-02	pCi/g	0.875	2.01E+0
<b>TRNC/D-7RD 9KCMPPK10</b>			<b>F7K2002196</b>	TSB-GJ-02-0'	SOLID	11/20/2007 9:30:00	11/19/2007 6:40:00 AM			
RA-226DA	AXT9	0	12/20/2007 10:15:48	1.298E+00	9.403E-02	9.403E-02	7.29E-02	PCI/GRAM		4.7E+1
RA-228DA	AXT9	0	12/20/2007 10:15:48	1.618E+00	1.549E-01	1.549E-01	1.403E-01	PCI/GRAM		4.7E+1
TH-228	D2S1	0	12/19/2007 9:11:47	1.642E+00	1.162E-01	1.757E-01	3.936E-02	pCi/g	0.774	1.01E+0
TH-230	D2S1	0	12/19/2007 9:11:47	1.7628E+00	1.186E-01	1.846E-01	3.821E-02	pCi/g	0.774	1.01E+0
TH-232	D2S1	0	12/19/2007 9:11:47	1.4198E+00	1.064E-01	1.559E-01	3.821E-02	pCi/g	0.774	1.01E+0
U-234	7USR	0	12/18/2007 2:35:24	PM1.2765E+00	6.584E-02	1.238E-01	1.626E-02	pCi/g	0.879	2.02E+0
U-235	7USR	0	12/18/2007 2:35:24	PM3.395E-02	1.076E-02	1.111E-02	1.626E-02	pCi/g	0.879	2.02E+0
U-238	7USR	0	12/18/2007 2:35:24	PM7.9443E-01	5.194E-02	8.34E-02	1.626E-02	pCi/g	0.879	2.02E+0
<b>TRNC/D-7RD 9KCMR10</b>			<b>F7K2002197</b>	TSB-GJ-02-0'FD	SOLID	11/20/2007 9:30:00	11/19/2007 6:40:00 AM			
RA-226DA	AXT9	0	12/20/2007 10:17:09	1.2795E+00	8.942E-02	8.942E-02	7.677E-02	PCI/GRAM		4.86E+1
RA-228DA	AXT9	0	12/20/2007 10:17:09	2.0352E+00	1.739E-01	1.739E-01	1.625E-01	PCI/GRAM		4.86E+1
TH-228	D2S1	0	12/19/2007 9:11:53	1.8673E+00	1.159E-01	1.89E-01	4.527E-02	pCi/g	0.876	1.04E+0
TH-230	D2S1	0	12/19/2007 9:11:53	1.6133E+00	1.06E-01	1.67E-01	3.334E-02	pCi/g	0.876	1.04E+0
TH-232	D2S1	0	12/19/2007 9:11:53	1.4435E+00	1.004E-01	1.53E-01	4.394E-02	pCi/g	0.876	1.04E+0
U-234	7USR	0	12/18/2007 2:35:30	PM7.5897E-01	5.165E-02	8.113E-02	1.683E-02	pCi/g	0.817	2.02E+0
U-235	7USR	0	12/18/2007 2:35:30	PM1.7569E-02	7.888E-03	8.02E-03	1.683E-02	pCi/g	0.817	2.02E+0
U-238	7USR	0	12/18/2007 2:35:30	PM4.2165E-01	3.85E-02	5.187E-02	1.683E-02	pCi/g	0.817	2.02E+0
<b>TRNC/D-7RD 9KCMPT10</b>			<b>F7K2002198</b>	TSB-GJ-02-05'	SOLID	11/20/2007 9:30:00	11/19/2007 7:00:00 AM			
RA-226DA	AXT9	0	12/20/2007 10:18:05	1.2438E+00	1.04E-01	1.04E-01	7.62E-02	PCI/GRAM		4.59E+1
RA-228DA	AXT9	0	12/20/2007 10:18:05	1.7711E+00	1.522E-01	1.522E-01	1.559E-01	PCI/GRAM		4.59E+1
TH-228	D2S1	0	12/19/2007 9:12:06	1.6916E+00	1.512E-01	2.032E-01	7.61E-02	pCi/g	0.773	1.0E+0
TH-230	D2S1	0	12/19/2007 9:12:06	1.3857E+00	1.346E-01	1.746E-01	6.261E-02	pCi/g	0.773	1.0E+0
TH-232	D2S1	0	12/19/2007 9:12:06	1.2915E+00	1.301E-01	1.663E-01	6.261E-02	pCi/g	0.773	1.0E+0
U-234	7USR	0	12/18/2007 2:35:45	PM1.0008E+00	5.577E-02	9.859E-02	1.489E-02	pCi/g	0.953	2.01E+0
U-235	7USR	0	12/18/2007 2:35:45	PM2.4242E-02	8.813E-03	9.03E-03	1.489E-02	pCi/g	0.953	2.01E+0
U-238	7USR	0	12/18/2007 2:35:45	PM5.7809E-01	4.239E-02	6.327E-02	1.489E-02	pCi/g	0.953	2.01E+0
<b>TRNC/D-7RD 9KCMRV10</b>			<b>F7K2002199</b>	TSB-GJ-07-0'	SOLID	11/20/2007 9:30:00	11/19/2007 7:15:00 AM			
RA-226DA	AXT9	0	12/20/2007 10:19:07	7.9458E-01	6.828E-02	6.828E-02	6.267E-02	PCI/GRAM		4.95E+1
RA-228DA	AXT9	0	12/20/2007 10:19:07	1.8126E+00	1.44E-01	1.44E-01	1.227E-01	PCI/GRAM		4.95E+1
TH-228	D2S1	0	12/19/2007 9:12:12	1.5215E+00	1.967E-01	2.325E-01	1.836E-01	pCi/g	0.433	1.01E+0
TH-230	D2S1	0	12/19/2007 9:12:12	1.2347E+00	1.73E-01	2.001E-01	1.16E-01	pCi/g	0.433	1.01E+0
TH-232	D2S1	0	12/19/2007 9:12:12	1.1814E+00	1.695E-01	1.949E-01	1.16E-01	pCi/g	0.433	1.01E+0
U-234	7USR	0	12/18/2007 2:35:46	PM4.3108E-01	3.777E-02	5.167E-02	2.257E-02	pCi/g	0.947	2.01E+0
U-235	7USR	0	12/18/2007 2:35:46	PM6.5714E-03	4.693E-03	4.724E-03	1.574E-02	pCi/g	0.947	2.01E+0
U-238	7USR	0	12/18/2007 2:35:46	PM3.312E-01	3.303E-02	4.272E-02	1.574E-02	pCi/g	0.947	2.01E+0
<b>TRNC/D-7RD 9KCMRX10</b>			<b>F7K20021910</b>	TSB-GJ-07-5'	SOLID	11/20/2007 9:30:00	11/19/2007 7:25:00 AM			
RA-226DA	AXT9	0	12/20/2007 10:19:58	1.2666E+00	9.099E-02	9.099E-02	6.382E-02	PCI/GRAM		4.84E+1
RA-228DA	AXT9	0	12/20/2007 10:19:58	1.6561E+00	1.377E-01	1.377E-01	1.265E-01	PCI/GRAM		4.84E+1
TH-228	D2S1	0	12/19/2007 12:46:26	1.284E+00	1.09E-01	1.497E-01	5.814E-02	pCi/g	0.966	1.02E+0
TH-230	D2S1	0	12/19/2007 12:46:26	1.5875E+00	1.193E-01	1.741E-01	5.051E-02	pCi/g	0.966	1.02E+0
TH-232	D2S1	0	12/19/2007 12:46:26	1.3747E+00	1.109E-01	1.561E-01	4.281E-02	pCi/g	0.966	1.02E+0
U-234	7USR	0	12/18/2007 2:35:52	PM7.8907E-01	4.728E-02	7.92E-02	1.356E-02	pCi/g	0.975	2.0E+0
U-235	7USR	0	12/18/2007 2:35:52	PM2.2642E-02	8.025E-03	8.23E-03	1.356E-02	pCi/g	0.975	2.0E+0
U-238	7USR	0	12/18/2007 2:35:52	PM5.4737E-01	3.943E-02	5.914E-02	1.786E-02	pCi/g	0.975	2.0E+0
<b>TRNC/D-7RD 9KCMQF10</b>			<b>F7K20021912</b>	TSB-GJ-05-5'	SOLID	11/20/2007 9:30:00	11/19/2007 7:55:00 AM			
RA-226DA	AXT9	0	12/20/2007 10:21:57	1.1092E+00	9.366E-02	9.366E-02	8.977E-02	PCI/GRAM		5.0E+1
RA-228DA	AXT9	0	12/20/2007 10:21:57	1.888E+00	1.621E-01	1.621E-01	1.713E-01	PCI/GRAM		5.0E+1
TH-228	D2S1	0	12/19/2007 12:46:26	1.7575E+00	1.316E-01	1.926E-01	6.737E-02	pCi/g	0.876	1.02E+0
TH-230	D2S1	0	12/19/2007 12:46:26	1.6237E+00	1.245E-01	1.799E-01	5.378E-02	pCi/g	0.876	1.02E+0
TH-232	D2S1	0	12/19/2007 12:46:26	1.6237E+00	1.245E-01	1.799E-01	5.378E-02	pCi/g	0.876	1.02E+0
U-234	7USR	0	12/18/2007 2:36:21	PM1.2082E+00	6.067E-02	1.153E-01	1.519E-02	pCi/g	0.923	2.03E+0

7330517,7330517, \*\*Samples Inserted | Updated | NotUpdated => 3 | 0 | 14,  
\*\*Results Inserted | ReTestInserted | Updated | NotInserted => 33 | 0 | 0 | 0.  
\*\*Diff RptDb | Qiims => .

SDG or Batch Isotope	Rpt Db Id Method	RTst Qc	LotSample Analysis Date	Client Id Result	Matrix	Received Date	Sample Date	Expected Yield	Volumes
U-235	7USR	0	12/18/2007 2:36:21	PM3.2765E-02	1.011E-02	1.045E-02	1.519E-02	pCi/g 0.923	2.03E+0
U-238	7USR	0	12/18/2007 2:36:21	PM6.6687E-01	4.506E-02	7.043E-02	1.226E-02	pCi/g 0.923	2.03E+0
<b>TRNC/D-7RD 9KCMQH10</b>			<b>F7K20021913</b>	TSB-GJ-03-0'	SOLID	11/20/2007 9:30:00	11/19/2007 8:15:00 AM		
RA-226DA	AXT9	0	12/20/2007 10:31:12	8.7001E-01	7.978E-02	7.978E-02	7.344E-02	PCI/GRAM	5.19E+1
RA-228DA	AXT9	0	12/20/2007 10:31:12	1.6958E+00	1.625E-01	1.625E-01	1.471E-01	PCI/GRAM	5.19E+1
TH-228	D2S1	0	12/19/2007 12:46:26	1.7748E+00	2.055E-01	2.512E-01	1.136E-01	pCi/g 0.457	1.01E+0
TH-230	D2S1	0	12/19/2007 12:46:26	1.3586E+00	1.769E-01	2.086E-01	1.103E-01	pCi/g 0.457	1.01E+0
TH-232	D2S1	0	12/19/2007 12:46:26	1.9343E+00	2.111E-01	2.633E-01	1.103E-01	pCi/g 0.457	1.01E+0
U-234	7USR	0	12/18/2007 2:36:27	PM1.9838E-01	2.687E-02	3.148E-02	1.807E-02	pCi/g 0.857	2.0E+0
U-235	7USR	0	12/18/2007 2:36:27	PM1.3621E-02	7.263E-03	7.349E-03	1.807E-02	pCi/g 0.857	2.0E+0
U-238	7USR	0	12/18/2007 2:36:27	PM1.6606E-01	2.457E-02	2.815E-02	1.656E-02	pCi/g 0.857	2.0E+0
<b>TRNC/D-7RD 9KCMQJ10</b>			<b>F7K20021914</b>	TSB-GJ-03-5'	SOLID	11/20/2007 9:30:00	11/19/2007 8:30:00 AM		
RA-226DA	AXT9	0	12/21/2007 9:37:18	8.9027E-01	6.695E-02	6.695E-02	6.107E-02	PCI/GRAM	5.01E+1
RA-228DA	AXT9	0	12/21/2007 9:37:18	1.9382E+00	1.578E-01	1.578E-01	1.178E-01	PCI/GRAM	5.01E+1
TH-228	D2S1	0	12/19/2007 12:46:48	1.5778E+00	1.312E-01	1.82E-01	6.849E-02	pCi/g 0.969	1.01E+0
TH-230	D2S1	0	12/19/2007 12:46:48	1.0742E+00	1.064E-01	1.367E-01	5.044E-02	pCi/g 0.969	1.01E+0
TH-232	D2S1	0	12/19/2007 12:46:48	1.2827E+00	1.163E-01	1.551E-01	5.044E-02	pCi/g 0.969	1.01E+0
U-234	7USR	0	12/18/2007 2:36:35	PM3.995E-01	3.936E-02	5.154E-02	2.289E-02	pCi/g 0.877	2.01E+0
U-235	7USR	0	12/18/2007 2:36:35	PM2.6706E-02	1.022E-02	1.045E-02	1.553E-02	pCi/g 0.877	2.01E+0
U-238	7USR	0	12/18/2007 2:36:35	PM2.1164E-01	2.862E-02	3.362E-02	1.764E-02	pCi/g 0.877	2.01E+0
<b>TRNC/D-7RD KCMN51ER</b>			<b>F7K2002194</b>	TSB-GJ-04-0' DUP	Solid	11/20/2007 9:30:00	11/19/2007 9:45:00 AM		
RA-226DA	AXT9	0 R	12/19/2007 10:05:44	1.1897E+00	8.661E-02	8.661E-02	6.577E-02	PCI/GRAM	4.82E+1
RA-228DA	AXT9	0 R	12/19/2007 10:05:44	1.859E+00	1.516E-01	1.516E-01	1.189E-01	PCI/GRAM	4.82E+1
<b>TRNC/D-7RD KCV2M1AB</b>			<b>J7K260000517</b>	INTRA-LAB BLANK		11/20/2007 9:30:00	11/19/2007 8:40:00 AM		
RA-226DA	AXT9	0 B	12/19/2007 10:08:15	-4.4437E-02	6.664E-02	6.664E-02	1.503E-01	PCI/GRAM	2.52E+1
RA-228DA	AXT9	0 B	12/19/2007 10:08:15	1.8802E-01	7.075E-02	7.075E-02	2.544E-01	PCI/GRAM	2.52E+1
<b>TRNC/D-7RD KCV2M1CS</b>			<b>J7K260000517</b>	INTRA-LAB CHECK		11/20/2007 9:30:00	11/19/2007 8:40:00 AM		
CS-137	AXT9	0 S	12/20/2007 10:23:31	7.9173E+00	5.403E-01	5.403E-01	6.61E-02	PCI/GRAM 7.9664E+00	2.534E+1

7330517,7330517, \*\*Samples Inserted | Updated | NotUpdated => 3 | 0 | 14,  
\*\*Results Inserted | ReTestInserted | Updated | NotInserted => 33 | 0 | 0 | 0.  
\*\*Diff RptDb | Qtimes => .

11/29/2007 11:18:54 AM  
 445691, Basic Remediation Company  
 Basic Remediation Company  
**AnalyteDueDate: 12/14/2007**  
 Balance Id: 1120421763  
 Pipet #: \_\_\_\_\_  
 Sep1 DT/Tm Tech: \_\_\_\_\_  
 Sep2 DT/Tm Tech: \_\_\_\_\_

**Sample Preparation/Analysis**  
**PRIORITY**  
 AX Gamma PrpRC5013/5017  
 T9 Gamma by HPC  
 01 STANDARD TEST SET  
 PM, Quote: JAE, 77571  
 pCi/g  
 All Tests: 7330513 9NS1, 7330514 7YSR, 7330515 BUTE, 7330516 BUTF, 7330517 AXT9, 7330520 D2S1, 7330521 7USR,

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 KCMNL-1-AA F7K200219-1-SAMP 11/19/2007 08:40	AmtRec: 500SL #Containers: 1	46.20g.in			525	1000	644 65	0410 0241	27787097 12/19/07 RC	10/19/07
2 KCMNW-1-AA F7K200219-2-SAMP 11/19/2007 08:40	AmtRec: 500SL #Containers: 1	48.30g.in					66	0242		
3 KCMNX-1-AA F7K200219-3-SAMP 11/19/2007 09:05	AmtRec: 500SL #Containers: 1	47.70g.in					67	0243		
4 KCMNS-1-AA F7K200219-4-SAMP 11/19/2007 09:45	AmtRec: 500SL #Containers: 1	48.30g.in					68	0244		
5 KCMNS-1-AE-X F7K200219-4-DUP 11/19/2007 09:45	AmtRec: 500SL #Containers: 1	48.20g.in					610	0245		
6 KCMN8-1-AA F7K200219-5-SAMP 11/19/2007 10:05	AmtRec: 500SL #Containers: 1	48.10g.in					613	0246		
7 KCMPPK-1-AA F7K200219-6-SAMP 11/19/2007 06:40	AmtRec: 500SL #Containers: 1	47.00g.in					65	0255	12/20/07 RC	

11/29/2007 11:18:55 AM  
 445691, Basic Remediation Company  
 Basic Remediation Company  
 AnalyDueDate: 12/14/2007  
 Balance Id: 1120421763  
 Pipet #:   
 Sep1 DT/Tm Tech:   
 Sep2 DT/Tm Tech:   
 Prep Tech: ,Barcotl

Sample Preparation/Analysis  
 AX Gamma PrpRC5012/5017  
 T9 Gamma by HPG  
 01 STANDARD TEST SET  
 PM, Quote: JAE, 77571  
 pCi/g

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 KCMPR-1-AA F7K200219-7-SAMP 11/19/2007 06:40 AmtRec: 500SL #Containers: 1		48.60g.in			525	1000	66	0257	12/20/07 PC	
9 KCMP-1-AA F7K200219-8-SAMP 11/19/2007 07:00 AmtRec: 500SL #Containers: 1		45.90g.in					67	0258		Beta:
10 KCMPV-1-AA F7K200219-9-SAMP 11/19/2007 07:15 AmtRec: 500SL #Containers: 1		49.50g.in					68	0259		Beta:
11 KCMPX-1-AA F7K200219-10-SAMP 11/19/2007 07:25 AmtRec: 500SL #Containers: 1		48.40g.in					610	0259		Beta:
12 KCMP5-1-AA F7K200219-11-SAMP 11/19/2007 07:45 AmtRec: 500SL #Containers: 1		45.80g.in					613	0300		Beta:
13 KCMPF-1-AA F7K200219-12-SAMP 11/19/2007 07:55 AmtRec: 500SL #Containers: 1		50.00g.in					614	0301		Beta:
14 KCMPH-1-AA F7K200219-13-SAMP 11/19/2007 08:15 AmtRec: 500SL #Containers: 1		51.90g.in					644	0311	12/20/07 PC	Beta:



11/29/2007 11:18:56 AM  
 445691, Basic Remediation Company  
 Basic Remediation Company  
**Analyte Due Date: 12/14/2007**  
 Batch: 7330517  
 SEQ Batch, Test: None  
 pCi/g  
 PM, Quote: JAE, 77571  
 Balance Id: 1120421763  
 Pipet #: \_\_\_\_\_  
 Sep1 DT/Tm Tech: \_\_\_\_\_  
 Sep2 DT/Tm Tech: \_\_\_\_\_  
 Prep Tech: ,Barcotl

AX Gamma PrpRC5013/5017  
 T9 Gamma by HPGE  
 01 STANDARD TEST SET  
 Count On | Off  
 (24hr) Circle  
 CR Analyst,  
 Init/Date

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 KCMQJ-1-AA  
 50.10g.in  
 525 1000 610 0217 12/21/07 RC  
 AmtRec: 500SL  
 #Containers: 1

16 KCV2M-1-AA-B  
 25.20g.in  
 25 615 0248 12/19/07 RC  
 AmtRec:  
 #Containers: 1

17 KCV2M-1-AC-C  
 25.34g.in  
 GSE1220 0303 12/20/07 RC  
 11/12/07, pd  
 06/08/05  
 AmtRec:  
 #Containers: 1

11/19/2007 08:40  
 11/19/2007 08:40  
 11/19/2007 08:40  
 11/19/2007 08:40

Comments: 6 Day Ingrowth started 11-29-07

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

KCMN11AA-SAMP Constituent List:

Constituent	RDL	UCL	UCL	pCi/g	LCL	LCL	RA-228	RPD	RPD	RDL	RA-228	RPD	UCL	UCL	pCi/g	LCL	LCL	RPD	RPD	
KCV2M1AA-BLK:																				
Ra-226	RDL:--	UCL:	UCL:	pCi/g	LCL:	LCL:	RA-228	RPD:	RPD:	RDL:--	RA-228	RPD:	UCL:	UCL:	pCi/g	LCL:	LCL:	RPD:	RPD:	
RA-228DA	RDL:--	UCL:	UCL:	pCi/g	LCL:	LCL:														
KCV2M1AC-LCS:																				
Cs-137	RDL:0.2	UCL:130	UCL:130	pCi/g	LCL:70	LCL:70	Cs-137DA	RPD:35	RPD:35	RDL:0.2	Cs-137DA	RPD:35	UCL:130	UCL:130	pCi/g	LCL:70	LCL:70	RPD:35	RPD:35	

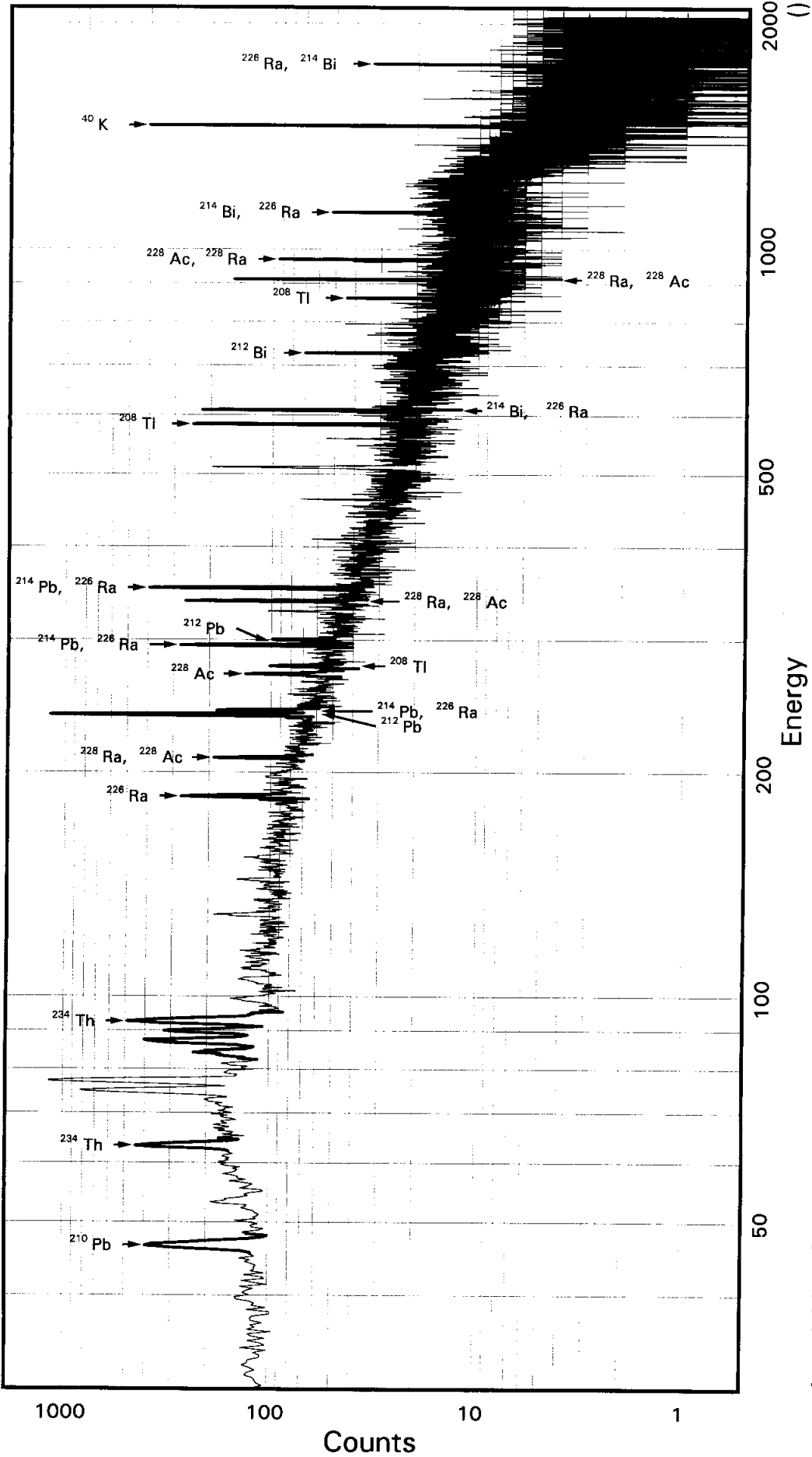
KCMN11AA-SAMP Calc Info:  
 Uncert Level (#s): 4  
 Decay to Sadt: N  
 Blk Subt.: N  
 Sci.Not.: N  
 ODRs: B  
 KCV2M1AA-BLK:  
 Uncert Level (#s): 4  
 Decay to Sadt: N  
 Blk Subt.: N  
 Sci.Not.: N  
 ODRs: B  
 KCV2M1AC-LCS:  
 Uncert Level (#s): 4  
 Decay to Sadt: N  
 Blk Subt.: N  
 Sci.Not.: N  
 ODRs: B

TA Richland  
 Richland Wa.  
 Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2  
 pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added  
 Page 3  
 ISV - Insufficient Volume for Analysis  
 WO Cnt: 17  
 Prep\_SamplePrep v4.8.29

STL Richland WA.  
BRCO SOLID

Sample ID: KCMNL1AA  
Detector ID: GER5 1

Batch ID: 7330517



Acquisition Start: 19-DEC-2007 10:01:31.94  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: -3.54366E-01  
Slope: 2.49390E-01  
Quadrature: -2.75324E-09

SAMPLE IDENTIFICATION: KCMNL1AA

CONFIGURATION ID: GER5:KCMNL1AA\_191271001  
TITLE : BRCO SOLID  
SAMPLE ID : KCMNL1AA

REPORT DATE: 22-DEC-07	SAMPLE DATE: 19-NOV-2007 08:40:00.00
ACQUIRE DATE: 19-DEC-07 10:01:31	CALIB DATE: 19-DEC-2007 05:44:49.33
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: 4.6200E+01	UNITS: GRAMS
SAMPLE GEOMETRY: ES25	SAMPLE TYPE:

ENERGY OFFSET: -.3544E+00 keV	FWHM OFFSET: 7.6690E-01 keV
ENERGY SLOPE: 2.4939E-01 keV/C	FWHM SLOPE: 2.7130E-02 sqr keV
ENERGY Q COEFF: -.2753E-08 keV/C <sup>2</sup>	ITERATIONS: 10
PEAK SENSITIVITY: 5.000	GAUSSIAN SENSITIVITY: 20.00 %

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 22-DEC-2007 08:37:38

```

Configuration      : RDND06$DKA100:[GER5.SAMPLE]KCMNL1AA_191271001.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 08:40:00 Acquisition date : 19-DEC-2007 10:01:31
Sample ID        : KCMNL1AA Sample quantity : 46.200 GRAMS
Sample type      : Sample geometry : ES25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.66 0.0%
Start energy     : 19.60 End energy : 2042.46
Sensitivity      : 5.00 Gaussian : 20.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.59*	339	1383	0.85	188.26	183	12	5.65E-03	28.7	
2	0	53.36	407	1636	1.00	215.39	208	15	6.79E-03	22.2	
3	0	63.29*	409	1696	0.84	255.20	250	11	6.81E-03	24.8	
4	2	74.86	2426	1865	0.86	301.59	294	23	4.04E-02	3.8	1.75E+00
5	2	77.12*	3744	1745	0.87	310.66	294	23	6.24E-02	3.0	
6	4	84.22	639	1579	1.49	339.12	332	53	1.06E-02	13.4	4.57E+00
7	4	87.21	1488	1620	1.22	351.13	332	53	2.48E-02	6.4	
8	4	89.90	1009	1348	1.08	361.89	332	53	1.68E-02	8.2	
9	4	92.65*	846	1380	1.13	372.93	332	53	1.41E-02	13.7	
10	0	129.10	415	1225	1.09	519.11	513	13	6.92E-03	18.1	
11	0	143.82	179	943	1.05	578.11	574	10	2.98E-03	33.0	
12	0	185.75*	495	1548	1.17	746.26	736	18	8.25E-03	22.8	
13	0	209.25	490	1118	0.98	840.48	832	16	8.17E-03	15.9	
14	3	238.58*	4431	918	1.04	958.10	949	29	7.39E-02	2.3	2.87E+00
15	3	241.43	869	1159	1.58	969.50	949	29	1.45E-02	10.2	
16	0	270.34	527	1033	1.08	1085.43	1076	21	8.78E-03	15.9	
17	0	277.19	336	728	1.30	1112.90	1104	16	5.60E-03	18.8	
18	0	295.21	1096	784	1.17	1185.17	1177	17	1.83E-02	6.6	
19	0	300.08	265	630	1.39	1204.71	1199	13	4.42E-03	20.4	
20	0	327.91	273	699	0.96	1316.28	1307	16	4.55E-03	22.5	
21	0	338.31	898	570	1.03	1358.01	1352	13	1.50E-02	6.4	
22	0	351.84	1824	639	1.14	1412.26	1403	17	3.04E-02	3.9	
23	0	462.92	266	410	1.39	1857.69	1847	17	4.43E-03	18.4	
24	0	511.01*	206	715	1.84	2050.49	2039	26	3.44E-03	53.7	
25	0	557.74*	61	348	0.93	2237.91	2230	18	1.02E-03	92.9	
26	0	583.14*	1248	404	1.39	2339.75	2329	21	2.08E-02	5.8	
27	0	609.29	1272	410	1.47	2444.60	2432	22	2.12E-02	4.9	
28	0	727.04	376	331	1.53	2916.81	2903	23	6.27E-03	11.8	
29	0	795.25	210	218	1.02	3190.31	3180	21	3.51E-03	16.5	
30	0	860.53	173	268	1.19	3452.08	3439	24	2.88E-03	22.5	
31	0	911.32*	823	211	1.32	3655.79	3644	25	1.37E-02	6.8	
32	0	969.07*	366	521	1.42	3887.37	3869	29	6.11E-03	17.0	
33	0	1120.22	341	256	1.54	4493.51	4479	30	5.69E-03	12.7	
34	0	1460.75*	2845	171	2.01	5859.11	5843	37	4.74E-02	2.6	
35	0	1764.63	191	90	1.66	7077.78	7064	25	3.18E-03	13.5	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : RDND06\$DKA100:[GER5.SAMPLE]KCMNL1AA\_191271001.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 08:40:00 Acquisition date : 19-DEC-2007 10:01:31  
 Sample ID : KCMNL1AA Sample quantity : 46.200 GRAMS  
 Sample type : Sample geometry : ES25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.66 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	2845	10.67*	1.108E+00	2.348E+01	2.348E+01	6.54
TL-208	277.28	336	6.31	5.327E+00	9.746E-01	1.004E+00	19.72
	583.02	1248	84.50*	2.702E+00	5.330E-01	5.494E-01	8.37
	860.30	173	12.42	1.849E+00	7.346E-01	7.572E-01	23.36
PB-210	46.52	339	4.25*	8.594E+00	9.053E-01	9.076E-01	29.37
PB-212	238.58	4431	43.30*	6.039E+00	1.652E+00	1.703E+00	6.54
	300.03	265	3.28	4.975E+00	1.584E+00	1.632E+00	21.30
BI-214	609.31	1272	46.09*	2.590E+00	1.039E+00	1.039E+00	7.82
	768.35	-----	4.94	2.067E+00	-----	Line Not Found	-----
	1120.27	341	15.10	1.427E+00	1.545E+00	1.545E+00	14.04
PB-214	1764.49	191	15.40	9.356E-01	1.291E+00	1.291E+00	14.73
	241.92	869	7.43	5.981E+00	1.907E+00	1.907E+00	11.86
	295.09	1096	19.30	5.046E+00	1.098E+00	1.098E+00	8.92
RA-226DA	351.87	1824	37.60*	4.323E+00	1.094E+00	1.094E+00	7.11
	186.21	495	3.50	7.344E+00	1.877E+00	1.877E+00	23.59
	241.98	869	7.49	5.981E+00	1.892E+00	1.892E+00	11.86
	295.22	1096	19.20	5.046E+00	1.103E+00	1.103E+00	8.92
	351.92	1824	37.20	4.323E+00	1.106E+00	1.106E+00	7.11
AC-228	609.32	1272	46.30*	2.590E+00	1.034E+00	1.034E+00	7.82
	1120.28	341	15.10	1.427E+00	1.545E+00	1.545E+00	14.04
	1238.11	-----	5.94	1.295E+00	-----	Line Not Found	-----
RA-228DA	1764.49	191	15.80	9.356E-01	1.258E+00	1.258E+00	14.73
	209.39	490	3.89	6.707E+00	1.832E+00	1.850E+00	17.05
	270.26	527	3.46	5.442E+00	2.728E+00	2.756E+00	16.99
	338.42	898	11.27	4.477E+00	1.735E+00	1.753E+00	8.75
TH-234	911.16	823	25.80*	1.747E+00	1.780E+00	1.797E+00	9.33
	968.97	366	15.80	1.645E+00	1.375E+00	1.388E+00	18.10
	209.28	490	4.40	6.707E+00	1.619E+00	1.636E+00	17.05
TH-234	338.32	898	11.40	4.477E+00	1.715E+00	1.733E+00	8.75
	911.07	823	27.70*	1.747E+00	1.657E+00	1.674E+00	9.33
	964.60	-----	5.20	1.652E+00	-----	Line Not Found	-----
TH-234	969.11	366	16.60	1.645E+00	1.308E+00	1.322E+00	18.10
	63.29	409	4.82*	1.059E+01	7.802E-01	7.802E-01	25.51
	92.59	846	6.08	1.068E+01	1.271E+00	1.271E+00	14.91

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	53.36	407	1636	1.00	215.39	208	15	6.79E-03	22.2	9.69E+00	
2	74.86	2426	1865	0.86	301.59	294	23	4.04E-02	3.8	1.09E+01	
2	77.12	3744	1745	0.87	310.66	294	23	6.24E-02	3.0	1.09E+01	
4	84.22	639	1579	1.49	339.12	332	53	1.06E-02	13.4	1.09E+01	
4	87.21	1488	1620	1.22	351.13	332	53	2.48E-02	6.4	1.08E+01	
4	89.90	1009	1348	1.08	361.89	332	53	1.68E-02	8.2	1.07E+01	
0	129.10	415	1225	1.09	519.11	513	13	6.92E-03	18.1	9.32E+00	
0	143.82	179	943	1.05	578.11	574	10	2.98E-03	33.0	8.75E+00	
0	327.91	273	699	0.96	1316.28	1307	16	4.55E-03	22.5	4.60E+00	
0	462.92	266	410	1.39	1857.69	1847	17	4.43E-03	18.4	3.36E+00	
0	511.01	206	715	1.84	2050.49	2039	26	3.44E-03	53.7	3.06E+00	
0	557.74	61	348	0.93	2237.91	2230	18	1.02E-03	92.9	2.82E+00	
0	727.04	376	331	1.53	2916.81	2903	23	6.27E-03	11.8	2.18E+00	T
0	795.25	210	218	1.02	3190.31	3180	21	3.51E-03	16.5	2.00E+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	2.633E+00	13.35	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
		% Abundances Found =		71.76			

Flag: "\*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 22-DEC-2007 08:37:39

```

Configuration      : RDND06$DKA100:[GER5.SAMPLE]KCMNL1AA_191271001.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       : 19-NOV-2007 08:40:00 Acquisition date : 19-DEC-2007 10:01:31
Sample ID        : KCMNL1AA           Sample quantity  : 46.200 GRAMS
Sample type      :                     Sample geometry   : ES25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:09.66    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	2.348E+01	1.535E+00	3.757E-01	1.246E-02	62.491
TL-208	5.494E-01	4.596E-02	3.972E-02	1.340E-03	13.833
PB-210	9.076E-01	2.665E-01	4.703E-01	1.763E-02	1.930
PB-212	1.703E+00	1.114E-01	5.546E-02	1.945E-03	30.710
BI-214	1.039E+00	8.122E-02	7.728E-02	2.665E-03	13.443
PB-214	1.094E+00	7.780E-02	7.130E-02	2.256E-03	15.346
RA-226DA	1.034E+00	8.085E-02	7.694E-02	2.653E-03	13.442
AC-228	1.797E+00	1.678E-01	1.451E-01	5.697E-03	12.385
RA-228DA	1.674E+00	1.563E-01	1.352E-01	5.306E-03	12.386
TH-234	7.802E-01	1.990E-01	3.899E-01	1.195E-02	2.001

---- Non-Identified Nuclides ----

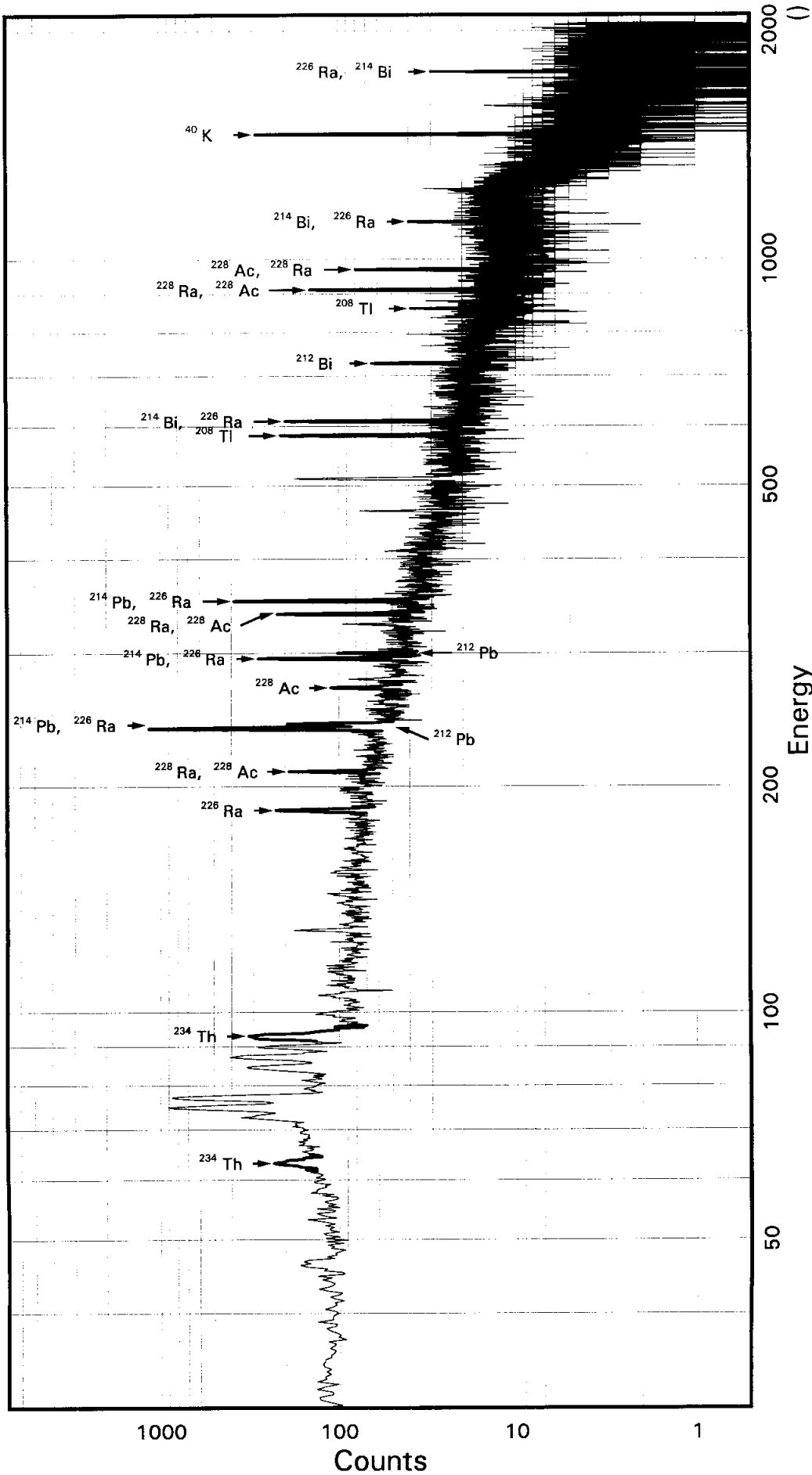
Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-9.394E-02		5.367E-02	1.785E-01	5.844E-03	-0.526
CO-60	-2.990E-03		1.264E-02	4.386E-02	1.446E-03	-0.068
CS-137	5.430E-04		1.276E-02	4.350E-02	1.557E-03	0.012
BI-212	2.633E+00	+	3.515E-01	8.271E-01	3.081E-02	3.184
TH-227	2.717E-01		7.164E-02	2.101E-01	7.375E-03	1.293
AM-241	2.383E-02		1.677E-02	5.263E-02	1.638E-03	0.453



STL Richland WA.  
BRCO SOLID

Batch ID: 7330517

Sample ID: KCMNW1AA  
Detector ID: GER6 1



Energy Coefficients:  
Offset: 3.18974E-01  
Slope: 2.49419E-01  
Quadrature: 1.25497E-08

Acquisition Start: 19-DEC-2007 10:02:24.23  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION: KCMNW1AA

CONFIGURATION ID: GER6:KCMNW1AA\_191271002  
TITLE : BRCO SOLID  
SAMPLE ID : KCMNW1AA

REPORT DATE: 22-DEC-07	SAMPLE DATE: 19-NOV-2007 08:40:00.00
ACQUIRE DATE: 19-DEC-07 10:02:24	CALIB DATE: 19-DEC-2007 05:44:10.91
ELAPSED LIVE TIME: 60000.0 Sec	ELAPSED LIVE TIME: 0 16:40:00
PRESET LIVE TIME: 0 16:40:00	ELAPSED REAL TIME: 0 16:40:10

SAMPLE QUANTITY: 4.8300E+01	UNITS: GRAMS
SAMPLE GEOMETRY: S25	SAMPLE TYPE:

ENERGY OFFSET: 3.1897E-01 keV	FWHM OFFSET: 9.0675E-02 keV
ENERGY SLOPE: 2.4942E-01 keV/C	FWHM SLOPE: 7.1835E-02 sqr keV
ENERGY Q COEFF: 1.2550E-08 keV/C <sup>2</sup>	ITERATIONS: 10
PEAK SENSITIVITY: 5.000	GAUSSIAN SENSITIVITY: 50.00 %

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 22-DEC-2007 08:38:05

```

Configuration      : $DISK1:[GER6.SAMPLE]KCMNW1AA_191271002.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 08:40:00 Acquisition date : 19-DEC-2007 10:02:24
Sample ID        : KCMNW1AA Sample quantity : 48.300 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.84 0.0%
Start energy     : 20.27 End energy : 2044.40
Sensitivity      : 5.00 Gaussian : 50.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.15*	195	1807	1.00	251.90	246	13	3.26E-03	49.6	
2	4	72.85*	2	2013	1.03	290.80	284	30	2.63E-05	*****	3.71E+00
3	4	74.80*	1985	2049	1.04	298.62	284	30	3.31E-02	6.3	
4	4	77.09	3295	1851	1.06	307.80	284	30	5.49E-02	3.3	
5	6	84.54*	377	1647	1.25	337.66	331	34	6.28E-03	27.8	1.14E+00
6	6	87.18*	1275	1704	1.20	348.23	331	34	2.12E-02	8.1	
7	6	89.89	745	1404	0.99	359.13	331	34	1.24E-02	10.9	
8	0	93.11*	1332	1835	1.70	372.02	365	20	2.22E-02	9.1	
9	0	129.16	371	953	0.87	516.57	510	12	6.18E-03	17.5	
10	0	185.92*	496	1242	1.21	744.12	737	16	8.26E-03	19.5	
11	0	209.33	470	909	0.87	837.97	831	14	7.83E-03	14.4	
12	4	238.67*	5200	938	1.13	955.56	947	30	8.67E-02	2.0	2.35E+00
13	4	241.52	1123	1183	1.77	966.99	947	30	1.87E-02	9.9	
14	0	270.13	427	1030	1.59	1081.69	1071	22	7.12E-03	19.8	
15	0	295.25	1326	960	1.24	1182.40	1172	22	2.21E-02	6.6	
16	0	300.14	248	755	0.89	1201.99	1195	17	4.14E-03	26.1	
17	0	327.80	303	762	1.38	1312.90	1304	18	5.06E-03	22.1	
18	0	338.37	1059	836	1.33	1355.26	1348	21	1.77E-02	7.5	
19	0	351.98*	1913	747	1.32	1409.81	1400	20	3.19E-02	4.9	
20	0	462.73	339	518	1.38	1853.76	1842	22	5.65E-03	15.5	
21	0	510.96*	582	792	2.57	2047.11	2031	36	9.70E-03	17.8	
22	0	583.16	1566	534	1.93	2336.50	2323	29	2.61E-02	4.4	
23	0	609.27	1361	532	1.91	2441.18	2429	26	2.27E-02	4.8	
24	0	727.29	337	378	1.70	2914.24	2904	21	5.61E-03	12.3	
25	0	794.75	150	396	1.70	3184.60	3172	27	2.51E-03	28.8	
26	0	860.30	230	325	1.50	3447.32	3432	28	3.83E-03	17.9	
27	0	911.24	1061	407	1.93	3651.50	3635	35	1.77E-02	5.4	
28	0	969.17	505	366	1.76	3883.68	3871	22	8.41E-03	8.6	
29	0	1120.34	342	370	2.49	4489.50	4471	37	5.71E-03	13.3	
30	0	1460.85*	3338	195	3.26	5853.99	5830	46	5.56E-02	2.3	
31	0	1765.12	237	112	2.25	7073.12	7053	40	3.95E-03	12.0	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER6.SAMPLE]KCMNW1AA\_191271002.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 08:40:00 Acquisition date : 19-DEC-2007 10:02:24  
 Sample ID : KCMNW1AA Sample quantity : 48.300 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.84 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
					PCI/GRAM	PCI/GRAM	
K-40	1460.83	3338	10.67*	1.165E+00	2.505E+01	2.505E+01	8.22
TL-208	277.28	-----	6.31	5.503E+00	-----	Line Not Found	-----
	583.02	1566	84.50*	2.790E+00	6.194E-01	6.384E-01	7.42
	860.30	230	12.42	1.932E+00	8.924E-01	9.198E-01	19.23
PB-212	238.58	5200	43.30*	6.246E+00	1.793E+00	1.848E+00	6.65
	300.03	248	3.28	5.135E+00	1.376E+00	1.418E+00	26.81
BI-214	609.31	1361	46.09*	2.678E+00	1.028E+00	1.028E+00	7.67
	768.35	-----	4.94	2.151E+00	-----	Line Not Found	-----
	1120.27	342	15.10	1.500E+00	1.410E+00	1.410E+00	14.80
	1764.49	237	15.40	9.775E-01	1.469E+00	1.469E+00	13.61
PB-214	241.92	1123	7.43	6.185E+00	2.278E+00	2.278E+00	11.74
	295.09	1326	19.30	5.210E+00	1.230E+00	1.230E+00	9.03
	351.87	1913	37.60*	4.452E+00	1.066E+00	1.066E+00	7.75
RA-226DA	186.21	496	3.50	7.548E+00	1.750E+00	1.750E+00	20.51
	241.98	1123	7.49	6.185E+00	2.260E+00	2.260E+00	11.74
	295.22	1326	19.20	5.210E+00	1.237E+00	1.237E+00	9.03
	351.92	1913	37.20	4.452E+00	1.077E+00	1.077E+00	7.75
	609.32	1361	46.30*	2.678E+00	1.024E+00	1.024E+00	7.67
	1120.28	342	15.10	1.500E+00	1.410E+00	1.410E+00	14.80
AC-228	1238.11	-----	5.94	1.363E+00	-----	Line Not Found	-----
	1764.49	237	15.80	9.775E-01	1.432E+00	1.432E+00	13.61
	209.39	470	3.89	6.928E+00	1.626E+00	1.642E+00	15.72
	270.26	427	3.46	5.629E+00	2.044E+00	2.065E+00	20.73
	338.42	1059	11.27	4.613E+00	1.900E+00	1.919E+00	9.62
RA-228DA	911.16	1061	25.80*	1.829E+00	2.098E+00	2.119E+00	8.95
	968.97	505	15.80	1.724E+00	1.728E+00	1.746E+00	11.09
	209.28	470	4.40	6.928E+00	1.437E+00	1.452E+00	15.72
	338.32	1059	11.40	4.613E+00	1.878E+00	1.897E+00	9.62
	911.07	1061	27.70*	1.829E+00	1.954E+00	1.973E+00	8.95
TH-234	964.60	-----	5.20	1.732E+00	-----	Line Not Found	-----
	969.11	505	16.60	1.724E+00	1.645E+00	1.661E+00	11.09
	63.29	195	4.82*	6.073E+00	6.226E-01	6.226E-01	49.96
	92.59	1332	6.08	9.015E+00	2.266E+00	2.266E+00	10.96

Flag: "\*" = Keyline

Unidentified Energy Lines  
Sample ID : KCMNW1AA

Page : 2  
Acquisition date : 19-DEC-2007 10:02:24

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	72.85	2	2013	1.03	290.80	284	30	2.63E-05	****	7.48E+00	
4	74.80	1985	2049	1.04	298.62	284	30	3.31E-02	6.3	7.71E+00	
4	77.09	3295	1851	1.06	307.80	284	30	5.49E-02	3.3	7.95E+00	
6	84.54	377	1647	1.25	337.66	331	34	6.28E-03	27.8	8.57E+00	
6	87.18	1275	1704	1.20	348.23	331	34	2.12E-02	8.1	8.73E+00	
6	89.89	745	1404	0.99	359.13	331	34	1.24E-02	10.9	8.88E+00	
0	129.16	371	953	0.87	516.57	510	12	6.18E-03	17.5	9.08E+00	
0	327.80	303	762	1.38	1312.90	1304	18	5.06E-03	22.1	4.75E+00	
0	462.73	339	518	1.38	1853.76	1842	22	5.65E-03	15.5	3.46E+00	
0	510.96	582	792	2.57	2047.11	2031	36	9.70E-03	17.8	3.16E+00	
0	727.29	337	378	1.70	2914.24	2904	21	5.61E-03	12.3	2.27E+00	T
0	794.75	150	396	1.70	3184.60	3172	27	2.51E-03	28.8	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	0.04	727.25*	6.58	2.170E+00	13.81	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 22-DEC-2007 08:38:07

```

Configuration      : $DISK1:[GER6.SAMPLE]KCMNW1AA_191271002.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       : 19-NOV-2007 08:40:00 Acquisition date : 19-DEC-2007 10:02:24
Sample ID        : KCMNW1AA Sample quantity : 48.300 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.84 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	2.505E+01	2.059E+00	4.426E-01	2.706E-02	56.586
TL-208	6.384E-01	4.734E-02	4.189E-02	1.379E-03	15.240
PB-212	1.848E+00	1.229E-01	5.016E-02	1.961E-03	36.841
BI-214	1.028E+00	7.889E-02	7.738E-02	2.586E-03	13.289
PB-214	1.066E+00	8.260E-02	6.723E-02	2.247E-03	15.853
RA-226DA	1.024E+00	7.854E-02	7.703E-02	2.574E-03	13.289
AC-228	2.119E+00	1.896E-01	1.794E-01	9.152E-03	11.810
RA-228DA	1.973E+00	1.765E-01	1.671E-01	8.524E-03	11.811
TH-234	6.226E-01	3.110E-01	5.037E-01	1.587E-02	1.236

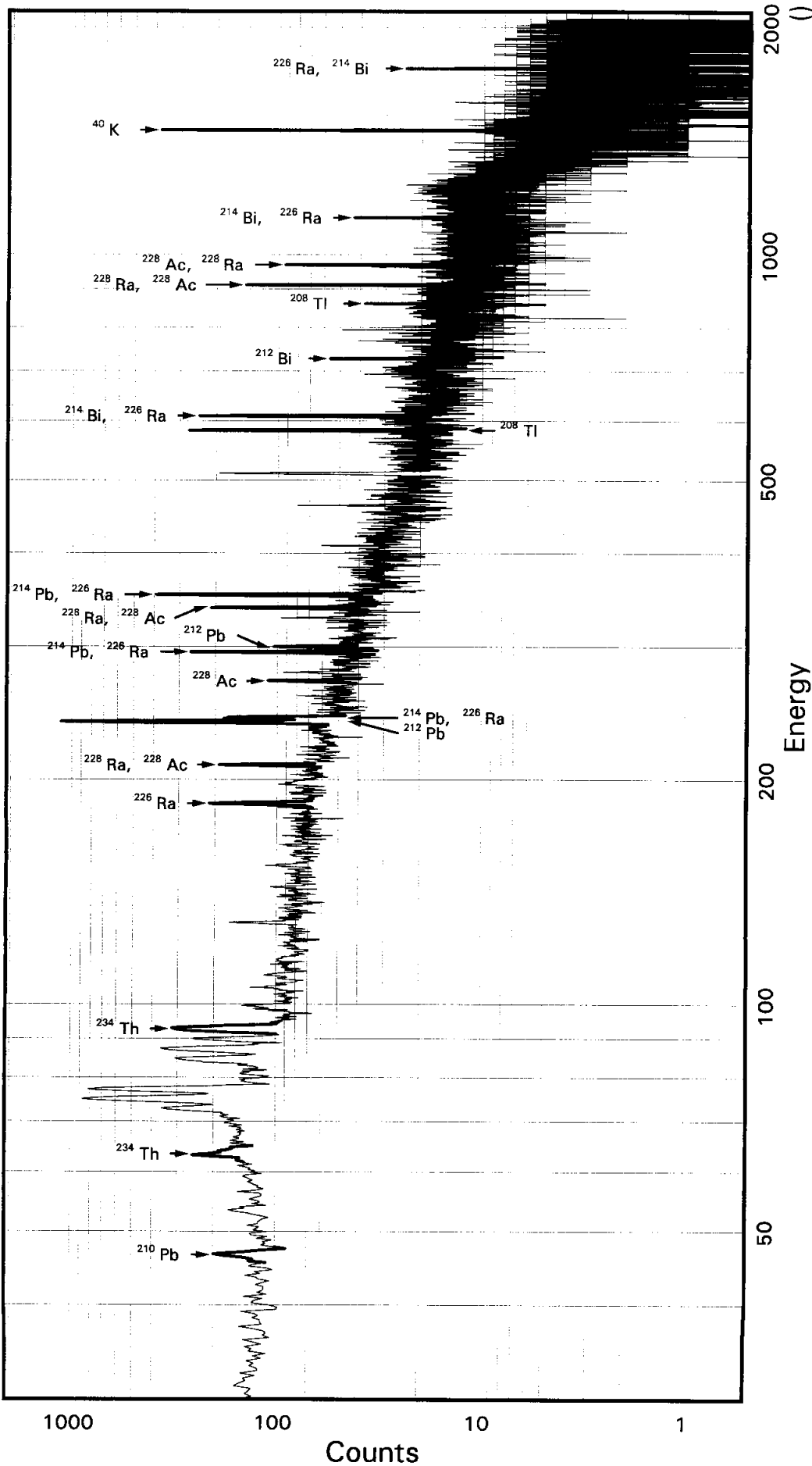
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	4.685E-02		4.442E-02	1.529E-01	5.107E-03	0.306
CO-60	2.089E-02		1.526E-02	5.329E-02	3.562E-03	0.392
CS-137	7.320E-03		1.358E-02	4.652E-02	1.590E-03	0.157
PB-210	9.571E-01		4.523E-01	1.183E+00	7.361E-02	0.809
BI-212	2.170E+00	+	2.996E-01	8.540E-01	3.301E-02	2.541
TH-227	2.771E-01		6.695E-02	1.954E-01	7.648E-03	1.418
AM-241	-2.854E-02		2.136E-02	7.082E-02	2.255E-03	-0.403

STL Richland WA.  
BRCO SOLID

Batch ID: 7330517

Sample ID: KCMNX1AA  
Detector ID: GER7 1



Energy Coefficients:  
Offset: 5.94190E-01  
Slope: 2.49316E-01  
Quadrature: 1.47846E-07

Acquisition Start: 19-DEC-2007 10:03:21.70  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00



SAMPLE IDENTIFICATION: KCMNX1AA

CONFIGURATION ID: GER7:KCMNX1AA\_191271003  
TITLE : BRCO SOLID  
SAMPLE ID : KCMNX1AA

REPORT DATE: 22-DEC-07 SAMPLE DATE: 19-NOV-2007 09:05:00.00  
ACQUIRE DATE: 19-DEC-07 10:03:21 CALIB DATE: 19-DEC-2007 05:44:28.20  
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: 4.7700E+01 UNITS: GRAMS  
SAMPLE GEOMETRY: S25 SAMPLE TYPE:

ENERGY OFFSET: 5.9419E-01 keV FWHM OFFSET: 6.1356E-01 keV  
ENERGY SLOPE: 2.4932E-01 keV/C FWHM SLOPE: 3.2665E-02 sqr keV  
ENERGY Q COEFF: 1.4785E-07 keV/C<sup>2</sup> ITERATIONS: 10  
PEAK SENSITIVITY: 5.000 GAUSSIAN SENSITIVITY: 50.00 %

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 22-DEC-2007 08:38:37

```

Configuration      : $DISK1:[GER7.SAMPLE]KCMNX1AA_191271003.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 09:05:00 Acquisition date : 19-DEC-2007 10:03:21
Sample ID        : KCMNX1AA Sample quantity : 47.700 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.37 0.0%
Start energy     : 20.54 End energy : 2052.92
Sensitivity      : 5.00 Gaussian : 50.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.59*	123	946	0.63	184.47	180	9	2.05E-03	58.7	
2	0	63.36*	292	1830	0.64	251.73	245	13	4.87E-03	34.0	
3	3	72.83*	456	2131	1.17	289.68	281	32	7.60E-03	25.3	1.43E+00
4	3	74.89*	2225	1833	1.09	297.96	281	32	3.71E-02	5.5	
5	3	77.12	3084	1486	1.03	306.89	281	32	5.14E-02	3.2	
6	3	84.63*	316	1872	1.22	337.01	328	26	5.26E-03	35.8	1.29E+00
7	3	87.21*	1090	1504	1.22	347.36	328	26	1.82E-02	9.0	
8	0	89.94	644	1029	1.05	358.27	354	10	1.07E-02	10.1	
9	0	92.87*	1038	1381	1.49	370.03	364	14	1.73E-02	9.7	
10	0	129.11	275	916	0.67	515.30	510	11	4.58E-03	22.1	
11	0	185.85*	463	1358	1.08	742.72	733	19	7.72E-03	22.4	
12	0	209.18	411	822	0.74	836.20	831	12	6.84E-03	14.8	
13	5	238.60*	4687	754	1.10	954.11	944	30	7.81E-02	2.1	1.16E+00
14	5	241.48	1053	797	1.80	965.65	944	30	1.76E-02	7.1	
15	0	270.00	455	708	1.47	1079.88	1071	18	7.59E-03	14.5	
16	0	295.20	1206	653	1.08	1180.82	1173	19	2.01E-02	5.8	
17	0	299.93	371	614	1.22	1199.78	1192	16	6.19E-03	15.8	
18	0	327.80	295	629	1.10	1311.38	1303	17	4.91E-03	20.4	
19	0	338.23	953	714	1.24	1353.18	1344	19	1.59E-02	7.5	
20	0	351.84*	1667	637	1.19	1407.68	1398	18	2.78E-02	4.8	
21	0	409.27	110	435	0.91	1637.59	1629	15	1.83E-03	42.5	
22	0	462.96	249	392	1.12	1852.49	1842	17	4.15E-03	19.3	
23	0	510.77*	471	638	2.02	2043.80	2030	31	7.85E-03	22.5	
24	0	583.15	1396	529	1.40	2333.37	2322	26	2.33E-02	5.3	
25	0	609.31*	1152	433	1.33	2438.03	2428	20	1.92E-02	6.2	
26	0	727.21	345	325	1.80	2909.40	2896	25	5.75E-03	15.1	
27	0	794.99	186	311	1.35	3180.30	3169	25	3.10E-03	22.8	
28	0	860.61	186	235	1.23	3442.46	3431	22	3.11E-03	19.2	
29	0	911.20	976	249	1.76	3644.55	3634	26	1.63E-02	4.9	
30	0	968.98	469	578	1.44	3875.27	3857	31	7.81E-03	13.6	
31	0	1119.96	275	273	2.23	4477.83	4465	25	4.58E-03	15.0	
32	0	1460.69*	3063	138	2.01	5836.19	5818	36	5.11E-02	2.3	
33	0	1764.35	255	53	2.71	7044.94	7029	29	4.24E-03	9.3	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER7.SAMPLE]KCMNX1AA\_191271003.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 09:05:00 Acquisition date : 19-DEC-2007 10:03:21  
 Sample ID : KCMNX1AA Sample quantity : 47.700 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.37 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	3063	10.67*	1.071E+00	2.532E+01	2.532E+01	6.55
TL-208	277.28	-----	6.31	4.814E+00	-----	Line Not Found	-----
	583.02	1396	84.50*	2.572E+00	6.066E-01	6.251E-01	8.18
	860.30	186	12.42	1.788E+00	7.924E-01	8.167E-01	20.25
PB-210	46.52	123	4.25*	1.873E+00	1.457E+00	1.461E+00	59.41
PB-212	238.58	4687	43.30*	5.432E+00	1.882E+00	1.940E+00	6.95
	300.03	371	3.28	4.515E+00	2.369E+00	2.441E+00	17.08
BI-214	609.31	1152	46.09*	2.472E+00	9.550E-01	9.550E-01	8.77
	768.35	-----	4.94	1.994E+00	-----	Line Not Found	-----
	1120.27	275	15.10	1.379E+00	1.247E+00	1.247E+00	16.14
PB-214	1764.49	255	15.40	9.188E-01	1.699E+00	1.699E+00	11.07
	241.92	1053	7.43	5.380E+00	2.488E+00	2.488E+00	9.71
	295.09	1206	19.30	4.574E+00	1.291E+00	1.291E+00	8.79
	351.87	1667	37.60*	3.959E+00	1.057E+00	1.057E+00	7.88
	186.21	463	3.50	6.567E+00	1.903E+00	1.903E+00	23.30
RA-226DA	241.98	1053	7.49	5.380E+00	2.468E+00	2.468E+00	9.71
	295.22	1206	19.20	4.574E+00	1.297E+00	1.297E+00	8.79
	351.92	1667	37.20	3.959E+00	1.069E+00	1.069E+00	7.88
	609.32	1152	46.30*	2.472E+00	9.507E-01	9.507E-01	8.77
	1120.28	275	15.10	1.379E+00	1.247E+00	1.247E+00	16.14
	1238.11	-----	5.94	1.250E+00	-----	Line Not Found	-----
AC-228	1764.49	255	15.80	9.188E-01	1.656E+00	1.656E+00	11.07
	209.39	411	3.89	6.018E+00	1.656E+00	1.673E+00	16.20
	270.26	455	3.46	4.919E+00	2.527E+00	2.552E+00	15.92
	338.42	953	11.27	4.090E+00	1.953E+00	1.972E+00	9.80
	911.16	976	25.80*	1.691E+00	2.113E+00	2.134E+00	8.09
RA-228DA	968.97	469	15.80	1.592E+00	1.760E+00	1.778E+00	14.97
	209.28	411	4.40	6.018E+00	1.464E+00	1.479E+00	16.20
	338.32	953	11.40	4.090E+00	1.930E+00	1.950E+00	9.80
	911.07	976	27.70*	1.691E+00	1.968E+00	1.987E+00	8.09
	964.60	-----	5.20	1.599E+00	-----	Line Not Found	-----
TH-234	969.11	469	16.60	1.592E+00	1.675E+00	1.692E+00	14.97
	63.29	292	4.82*	5.170E+00	1.107E+00	1.107E+00	34.48
	92.59	1038	6.08	8.143E+00	1.980E+00	1.980E+00	11.39

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.83	456	2131	1.17	289.68	281	32	7.60E-03	25.3	6.61E+00	
3	74.89	2225	1833	1.09	297.96	281	32	3.71E-02	5.5	6.86E+00	
3	77.12	3084	1486	1.03	306.89	281	32	5.14E-02	3.2	7.10E+00	
3	84.63	316	1872	1.22	337.01	328	26	5.26E-03	35.8	7.73E+00	
3	87.21	1090	1504	1.22	347.36	328	26	1.82E-02	9.0	7.89E+00	
0	89.94	644	1029	1.05	358.27	354	10	1.07E-02	10.1	8.03E+00	
0	129.11	275	916	0.67	515.30	510	11	4.58E-03	22.1	8.07E+00	
0	327.80	295	629	1.10	1311.38	1303	17	4.91E-03	20.4	4.20E+00	
0	409.27	110	435	0.91	1637.59	1629	15	1.83E-03	42.5	3.49E+00	
0	462.96	249	392	1.12	1852.49	1842	17	4.15E-03	19.3	3.14E+00	
0	510.77	471	638	2.02	2043.80	2030	31	7.85E-03	22.5	2.89E+00	
0	727.21	345	325	1.80	2909.40	2896	25	5.75E-03	15.1	2.10E+00	T
0	794.99	186	311	1.35	3180.30	3169	25	3.10E-03	22.8	1.93E+00	

Flags: "T" = Tentatively associated

Rejected Report  
Sample ID : KCMNX1AA

Page : 3  
Acquisition date : 19-DEC-2007 10:03:21

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	2.428E+00	16.32	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 22-DEC-2007 08:38:39

Configuration : \$DISK1:[GER7.SAMPLE]KCMNX1AA\_191271003.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 : 19-NOV-2007 09:05:00 Acquisition date : 19-DEC-2007 10:03:21  
 Sample ID : KCMNX1AA Sample quantity : 47.700 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.37 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	2.532E+01	1.658E+00	4.160E-01	1.479E-02	60.862
TL-208	6.251E-01	5.115E-02	4.105E-02	1.539E-03	15.231
PB-210	1.461E+00	8.677E-01	1.928E+00	1.496E-01	0.758
PB-212	1.940E+00	1.349E-01	5.424E-02	2.371E-03	35.761
BI-214	9.550E-01	8.378E-02	7.658E-02	2.842E-03	12.471
PB-214	1.057E+00	8.331E-02	7.112E-02	2.673E-03	14.868
RA-226DA	9.507E-01	8.340E-02	7.623E-02	2.829E-03	12.471
AC-228	2.134E+00	1.727E-01	1.575E-01	6.380E-03	13.548
RA-228DA	1.987E+00	1.609E-01	1.467E-01	5.942E-03	13.550
TH-234	1.107E+00	3.815E-01	6.928E-01	2.172E-02	1.597

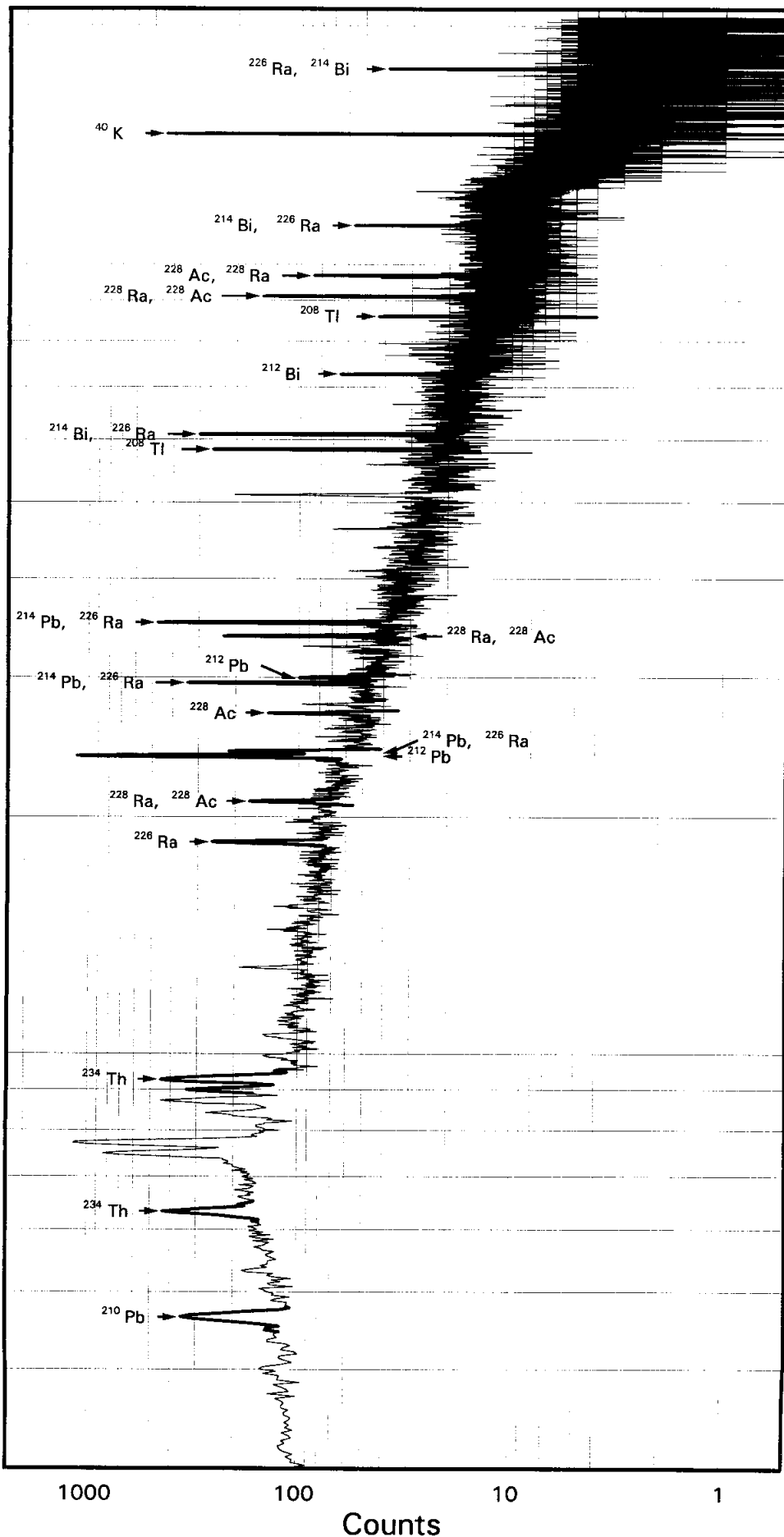
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-8.882E-02		5.310E-02	1.737E-01	6.060E-03	-0.511
CO-60	6.085E-03		1.319E-02	4.630E-02	1.654E-03	0.131
CS-137	-2.730E-02		1.257E-02	4.081E-02	1.467E-03	-0.669
BI-212	2.428E+00	+	3.962E-01	7.968E-01	2.994E-02	3.047
TH-227	9.816E-02		6.928E-02	2.045E-01	8.933E-03	0.480
AM-241	2.818E-02		3.416E-02	1.032E-01	3.345E-03	0.273

**STL Richland WA.  
BRCO SOLID**

Batch ID: 7330517

Sample ID: KCMN51AA  
Detector ID: GER8 1



Energy Coefficients:  
Offset: 4.21397E-02  
Slope: 2.50000E-01  
Quadrature: 1.73664E-08

Acquisition Start: 19-DEC-2007 10:04:40.11  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION: KCMN51AA

CONFIGURATION ID: GER8:KCMN51AA\_191271004  
TITLE : BRCO SOLID  
SAMPLE ID : KCMN51AA

REPORT DATE: 22-DEC-07	SAMPLE DATE: 19-NOV-2007 09:45:00.00
ACQUIRE DATE: 19-DEC-07 10:04:40	CALIB DATE: 19-DEC-2007 05:44:45.01
ELAPSED LIVE TIME: 60000.0 Sec	ELAPSED LIVE TIME: 0 16:40:00
PRESET LIVE TIME: 0 16:40:00	ELAPSED REAL TIME: 0 16:40:10

SAMPLE QUANTITY: 4.8300E+01	UNITS: GRAMS
SAMPLE GEOMETRY: ES25	SAMPLE TYPE:

ENERGY OFFSET: 4.2140E-02 keV	FWHM OFFSET: 9.0959E-01 keV
ENERGY SLOPE: 2.5000E-01 keV/C	FWHM SLOPE: 2.3697E-02 sqr keV
ENERGY Q COEFF: 1.7366E-08 keV/C <sup>2</sup>	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 22-DEC-2007 08:39:06

```

Configuration      : $DISK1:[GER8.SAMPLE]KCMN51AA_191271004.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 09:45:00 Acquisition date : 19-DEC-2007 10:04:40
Sample ID        : KCMN51AA Sample quantity : 48.300 GRAMS
Sample type      : Sample geometry : ES25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.02 0.0%
Start energy     : 20.04 End energy : 2049.21
Sensitivity      : 5.00 Gaussian : 40.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.48*	416	1626	0.98	185.75	178	14	6.94E-03	25.5	
2	0	53.43	133	1564	0.62	213.55	207	12	2.22E-03	60.0	
3	0	63.29*	756	2491	0.88	252.97	245	16	1.26E-02	16.8	
4	1	74.84*	2412	2364	1.03	299.18	292	29	4.02E-02	5.0	1.09E+00
5	1	77.12*	4427	2084	1.09	308.31	292	29	7.38E-02	2.9	
6	0	84.03	684	1772	1.23	335.95	329	14	1.14E-02	13.6	
7	0	87.20	1330	1704	1.08	348.63	343	12	2.22E-02	6.8	
8	2	89.96	858	1245	1.07	359.65	355	26	1.43E-02	8.0	1.31E+00
9	2	92.87*	1243	2188	1.38	371.31	355	26	2.07E-02	10.7	
10	0	129.09	347	1023	0.87	516.16	511	11	5.78E-03	18.7	
11	0	185.93*	758	1317	1.29	743.53	735	17	1.26E-02	13.8	
12	0	209.28	549	1192	1.13	836.88	827	18	9.15E-03	15.4	
13	4	238.65*	5264	826	1.18	954.36	942	33	8.77E-02	2.0	1.30E+00
14	4	241.63	1344	898	1.82	966.28	942	33	2.24E-02	6.5	
15	0	270.48	545	723	0.78	1081.66	1073	18	9.08E-03	12.4	
16	0	295.21*	1235	732	1.17	1180.59	1173	16	2.06E-02	6.6	
17	0	300.01	303	560	1.38	1199.77	1194	13	5.06E-03	17.1	
18	0	327.93	253	564	1.22	1311.43	1305	14	4.22E-03	20.9	
19	0	338.35	996	685	1.26	1353.10	1344	17	1.66E-02	6.8	
20	0	351.79*	1976	793	1.30	1406.85	1395	21	3.29E-02	4.8	
21	0	463.26	196	541	1.30	1852.65	1841	19	3.26E-03	29.4	
22	0	510.83*	372	731	1.88	2042.87	2031	32	6.20E-03	31.2	
23	0	558.40*	19	356	1.58	2233.10	2223	19	3.21E-04	291.4	
24	0	583.16	1497	337	1.43	2332.10	2323	20	2.50E-02	4.0	
25	0	609.17*	1470	474	1.32	2436.10	2423	27	2.45E-02	5.4	
26	0	727.46	320	402	1.83	2909.08	2898	25	5.33E-03	15.4	
27	0	794.79	156	261	1.18	3178.30	3170	19	2.61E-03	22.5	
28	0	860.33	149	226	1.77	3440.32	3433	18	2.48E-03	21.8	
29	0	911.23	949	327	1.82	3643.82	3630	27	1.58E-02	5.5	
30	0	967.91	596	460	1.59	3870.43	3853	34	9.93E-03	10.2	
31	0	1120.23*	270	301	1.70	4479.35	4466	27	4.50E-03	17.7	
32	0	1460.75*	3404	89	1.95	5840.48	5825	28	5.67E-02	2.0	
33	0	1630.81	67	46	1.27	6520.11	6508	23	1.12E-03	25.3	
34	0	1764.36	289	56	1.94	7053.80	7036	30	4.82E-03	8.6	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER8.SAMPLE]KCMN51AA\_191271004.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 09:45:00 Acquisition date : 19-DEC-2007 10:04:40  
 Sample ID : KCMN51AA Sample quantity : 48.300 GRAMS  
 Sample type : Sample geometry : ES25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.02 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	3404	10.67*	1.185E+00	2.512E+01	2.512E+01	6.35
TL-208	277.28	-----	6.31	5.759E+00	-----	Line Not Found	-----
	583.02	1497	84.50*	2.923E+00	5.652E-01	5.825E-01	7.27
	860.30	149	12.42	1.989E+00	5.612E-01	5.783E-01	22.71
PB-210	46.52	416	4.25*	9.023E+00	1.013E+00	1.015E+00	26.22
PB-212	238.58	5264	43.30*	6.523E+00	1.738E+00	1.791E+00	6.47
	300.03	303	3.28	5.384E+00	1.603E+00	1.652E+00	18.11
BI-214	609.31	1470	46.09*	2.802E+00	1.062E+00	1.062E+00	8.21
	768.35	-----	4.94	2.227E+00	-----	Line Not Found	-----
	1120.27	270	15.10	1.527E+00	1.092E+00	1.092E+00	18.71
	1764.49	289	15.40	1.007E+00	1.740E+00	1.740E+00	10.44
PB-214	241.92	1344	7.43	6.457E+00	2.612E+00	2.613E+00	8.94
	295.09	1235	19.30	5.459E+00	1.093E+00	1.093E+00	8.95
	351.87	1976	37.60*	4.682E+00	1.047E+00	1.047E+00	7.67
RA-226DA	186.21	758	3.50	7.922E+00	2.551E+00	2.551E+00	15.04
	241.98	1344	7.49	6.457E+00	2.592E+00	2.592E+00	8.94
	295.22	1235	19.20	5.459E+00	1.099E+00	1.099E+00	8.95
	351.92	1976	37.20	4.682E+00	1.058E+00	1.058E+00	7.67
	609.32	1470	46.30*	2.802E+00	1.057E+00	1.057E+00	8.21
	1120.28	270	15.10	1.527E+00	1.092E+00	1.092E+00	18.71
	1238.11	-----	5.94	1.385E+00	-----	Line Not Found	-----
	1764.49	289	15.80	1.007E+00	1.696E+00	1.696E+00	10.44
AC-228	209.39	549	3.89	7.242E+00	1.818E+00	1.836E+00	16.53
	270.26	545	3.46	5.881E+00	2.496E+00	2.522E+00	13.85
	338.42	996	11.27	4.847E+00	1.701E+00	1.718E+00	9.07
	911.16	949	25.80*	1.877E+00	1.827E+00	1.845E+00	8.40
	968.97	596	15.80	1.767E+00	1.990E+00	2.010E+00	11.97
RA-228DA	209.28	549	4.40	7.242E+00	1.607E+00	1.623E+00	16.53
	338.32	996	11.40	4.847E+00	1.682E+00	1.699E+00	9.07
	911.07	949	27.70*	1.877E+00	1.702E+00	1.719E+00	8.40
	964.60	-----	5.20	1.773E+00	-----	Line Not Found	-----
	969.11	596	16.60	1.767E+00	1.894E+00	1.913E+00	11.97
TH-234	63.29	756	4.82*	1.141E+01	1.282E+00	1.282E+00	17.82
	92.59	1243	6.08	1.155E+01	1.650E+00	1.650E+00	12.20

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	53.43	133	1564	0.62	213.55	207	12	2.22E-03	60.0	1.04E+01	
1	74.84	2412	2364	1.03	299.18	292	29	4.02E-02	5.0	1.18E+01	
1	77.12	4427	2084	1.09	308.31	292	29	7.38E-02	2.9	1.18E+01	
0	84.03	684	1772	1.23	335.95	329	14	1.14E-02	13.6	1.18E+01	
0	87.20	1330	1704	1.08	348.63	343	12	2.22E-02	6.8	1.17E+01	
2	89.96	858	1245	1.07	359.65	355	26	1.43E-02	8.0	1.16E+01	
0	129.09	347	1023	0.87	516.16	511	11	5.78E-03	18.7	1.01E+01	
0	327.93	253	564	1.22	1311.43	1305	14	4.22E-03	20.9	4.98E+00	
0	463.26	196	541	1.30	1852.65	1841	19	3.26E-03	29.4	3.64E+00	
0	510.83	372	731	1.88	2042.87	2031	32	6.20E-03	31.2	3.32E+00	
0	558.40	19	356	1.58	2233.10	2223	19	3.21E-04	****	3.05E+00	
0	727.46	320	402	1.83	2909.08	2898	25	5.33E-03	15.4	2.35E+00	T
0	794.79	156	261	1.18	3178.30	3170	19	2.61E-03	22.5	2.15E+00	
0	1630.81	67	46	1.27	6520.11	6508	23	1.12E-03	25.3	1.07E+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	1.986E+00	16.63	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =				71.76			

Flag: "\*" = Keyline

```

Configuration      : $DISK1:[GER8.SAMPLE]KCMN51AA_191271004.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       : 19-NOV-2007 09:45:00 Acquisition date : 19-DEC-2007 10:04:40
Sample ID        : KCMN51AA           Sample quantity  : 48.300 GRAMS
Sample type      :                     Sample geometry   : ES25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:10.02   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	2.512E+01	1.596E+00	3.402E-01	1.153E-02	73.828
TL-208	5.825E-01	4.237E-02	3.610E-02	1.263E-03	16.137
PB-210	1.015E+00	2.663E-01	4.475E-01	1.712E-02	2.269
PB-212	1.791E+00	1.159E-01	4.916E-02	1.764E-03	36.434
BI-214	1.062E+00	8.712E-02	6.387E-02	2.286E-03	16.625
PB-214	1.047E+00	8.024E-02	6.326E-02	2.071E-03	16.549
RA-226DA	1.057E+00	8.673E-02	6.358E-02	2.276E-03	16.625
AC-228	1.845E+00	1.551E-01	1.407E-01	5.452E-03	13.117
RA-228DA	1.719E+00	1.444E-01	1.310E-01	5.078E-03	13.119
TH-234	1.282E+00	2.285E-01	3.699E-01	1.134E-02	3.466

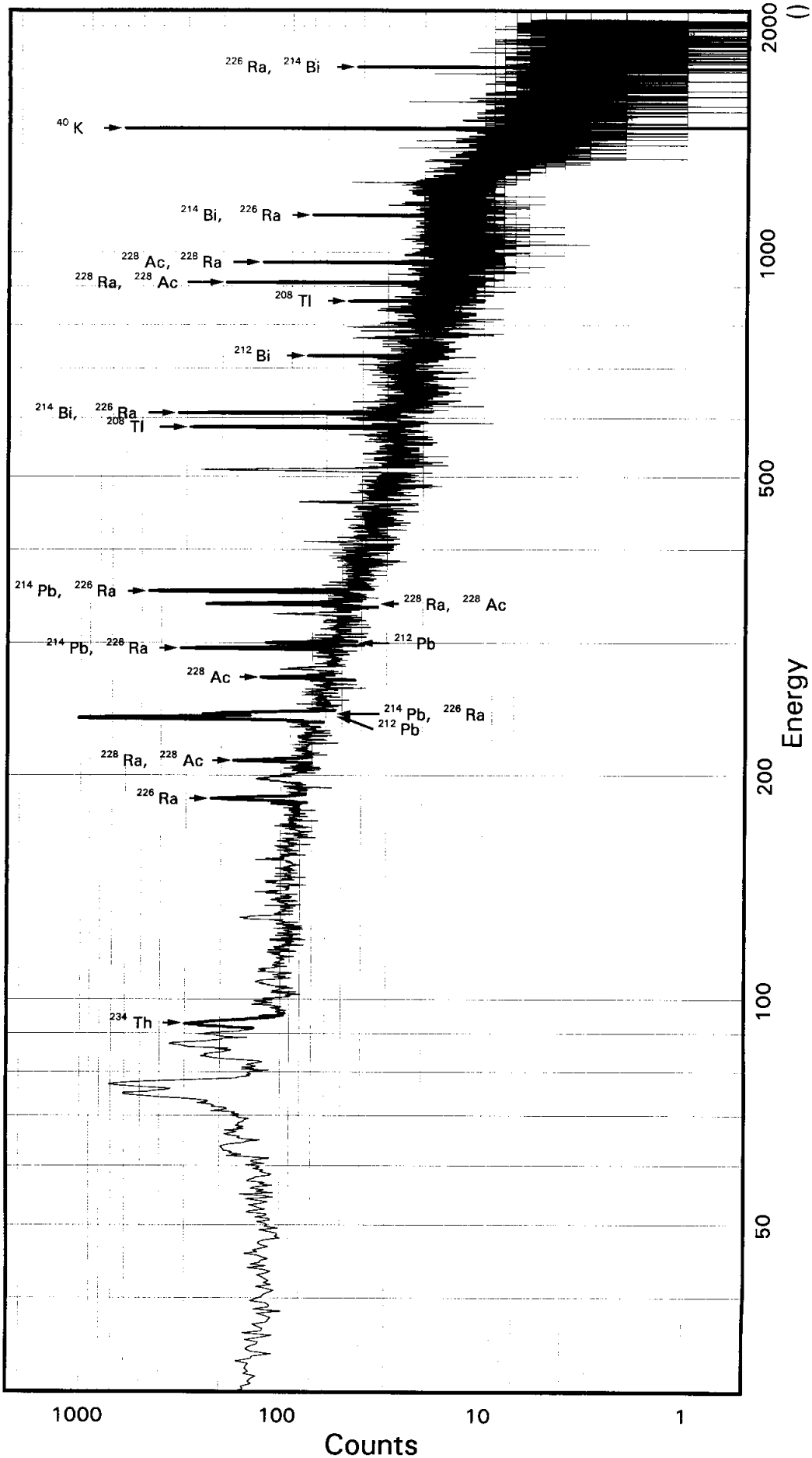
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	1.852E-04		4.980E-02	1.657E-01	5.322E-03	0.001
CO-60	9.599E-03		1.228E-02	4.354E-02	1.473E-03	0.220
CS-137	-9.718E-03		1.157E-02	3.843E-02	1.432E-03	-0.253
BI-212	1.986E+00	+	3.303E-01	7.388E-01	2.830E-02	2.688
TH-227	5.242E-01		7.123E-02	2.045E-01	7.334E-03	2.563
AM-241	3.111E-02		1.676E-02	4.933E-02	1.535E-03	0.631

STL Richland WA.  
BRCO SOLID

Batch ID: 7330517

Sample ID: KCMN51AE  
Detector ID: GER10 1



Acquisition Start: 19-DEC-2007 10:05:43.76  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: 1.46749E+01  
Slope: 2.47272E-01  
Quadrature: 3.91840E-09

SAMPLE IDENTIFICATION: KCMN51AE

CONFIGURATION ID: GER10:KCMN51AE\_191271005  
TITLE : BRCO SOLID  
SAMPLE ID : KCMN51AE

REPORT DATE: 22-DEC-07	SAMPLE DATE: 19-NOV-2007 09:45:00.00
ACQUIRE DATE: 19-DEC-07 10:05:43	CALIB DATE: 19-DEC-2007 06:03:32.92
ELAPSED LIVE TIME: 60000.0 Sec	ELAPSED LIVE TIME: 0 16:40:00
PRESET LIVE TIME: 0 16:40:00	ELAPSED REAL TIME: 0 16:40:12

SAMPLE QUANTITY: 4.8200E+01	UNITS: GRAMS
SAMPLE GEOMETRY: S25	SAMPLE TYPE:

ENERGY OFFSET: 1.4675E+01 keV	FWHM OFFSET: 1.1524E+00 keV
ENERGY SLOPE: 2.4727E-01 keV/C	FWHM SLOPE: 2.2187E-02 sqr keV
ENERGY Q COEFF: 3.9184E-09 keV/C <sup>2</sup>	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 22-DEC-2007 08:39:37

Configuration : \$DISK1:[GER10.SAMPLE]KCMN51AE\_191271005.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 09:45:00 Acquisition date : 19-DEC-2007 10:05:43  
 Sample ID : KCMN51AE Sample quantity : 48.200 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:12.74 0.0%  
 Start energy : 17.15 End energy : 2040.59  
 Sensitivity : 5.00 Gaussian : 40.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	74.81*	2188	3389	1.63	243.21	230	37	3.65E-02	7.8	2.14E+00
2	2	77.03	3415	2725	1.45	252.15	230	37	5.69E-02	4.2	
3	2	87.17	1172	1847	1.43	293.16	287	23	1.95E-02	7.5	1.75E+00
4	2	89.92	488	1605	1.10	304.30	287	23	8.13E-03	17.1	
5	0	93.09	1176	2161	1.60	317.11	310	19	1.96E-02	10.0	
6	0	186.01	941	1879	1.65	692.89	680	23	1.57E-02	12.4	
7	0	209.22	527	1280	1.16	786.77	779	17	8.78E-03	16.2	
8	5	238.62	6222	1228	1.49	905.64	893	37	1.04E-01	1.7	1.43E+00
9	5	241.54	1393	1609	2.04	917.46	893	37	2.32E-02	8.6	
10	0	270.25	433	1086	1.50	1033.55	1023	19	7.22E-03	16.2	
11	0	295.21	1807	1026	1.56	1134.52	1125	21	3.01E-02	4.4	
12	0	299.97	312	866	1.07	1153.75	1146	16	5.20E-03	18.9	
13	0	327.96	269	881	1.02	1266.95	1257	17	4.48E-03	22.5	
14	0	338.23	1431	1098	1.56	1308.45	1295	26	2.39E-02	6.0	
15	0	351.85	2959	1100	1.66	1363.54	1350	26	4.93E-02	3.2	
16	0	462.78	410	617	2.28	1812.13	1802	21	6.83E-03	13.8	
17	0	510.86*	726	1014	2.63	2006.59	1991	35	1.21E-02	17.0	
18	0	583.16	1708	711	1.58	2298.95	2287	24	2.85E-02	4.2	
19	0	609.29	2099	724	1.56	2404.63	2391	27	3.50E-02	3.7	
20	0	727.24	437	411	1.93	2881.59	2871	23	7.29E-03	11.3	
21	0	795.07	157	338	1.28	3155.86	3145	19	2.61E-03	25.3	
22	0	860.53	247	273	1.58	3420.57	3411	21	4.12E-03	15.6	
23	0	911.20	1351	359	1.72	3625.47	3613	26	2.25E-02	4.2	
24	0	969.50	562	583	1.28	3861.22	3846	25	9.37E-03	10.6	
25	0	1120.33	323	391	1.34	4471.09	4459	24	5.38E-03	14.9	
26	0	1460.82*	5096	183	1.99	5847.87	5829	39	8.49E-02	1.6	
27	0	1588.19	121	82	1.11	6362.86	6352	20	2.02E-03	16.7	
28	0	1729.91	87	113	2.52	6935.86	6920	30	1.44E-03	28.8	
29	0	1764.54	369	104	2.21	7075.91	7064	26	6.14E-03	7.7	

Flag: "\*" = Peak area was modified by background subtraction



Configuration : \$DISK1:[GER10.SAMPLE]KCMN51AE\_191271005.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 09:45:00 Acquisition date : 19-DEC-2007 10:05:43  
 Sample ID : KCMN51AE Sample quantity : 48.200 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:12.74 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	5096	10.67*	1.619E+00	2.757E+01	2.757E+01	6.38
TL-208	277.28	-----	6.31	6.598E+00	-----	Line Not Found	-----
	583.02	1708	84.50*	3.698E+00	5.109E-01	5.265E-01	7.49
	860.30	247	12.42	2.612E+00	7.114E-01	7.332E-01	17.03
PB-212	238.58	6222	43.30*	7.319E+00	1.835E+00	1.891E+00	6.40
	300.03	312	3.28	6.236E+00	1.425E+00	1.469E+00	19.87
BI-214	609.31	2099	46.09*	3.562E+00	1.195E+00	1.195E+00	7.28
	768.35	-----	4.94	2.899E+00	-----	Line Not Found	-----
	1120.27	323	15.10	2.043E+00	9.773E-01	9.774E-01	16.08
	1764.49	369	15.40	1.413E+00	1.583E+00	1.583E+00	9.75
PB-214	241.92	1393	7.43	7.259E+00	2.413E+00	2.413E+00	10.55
	295.09	1807	19.30	6.309E+00	1.387E+00	1.387E+00	7.53
	351.87	2959	37.60*	5.542E+00	1.327E+00	1.327E+00	6.76
RA-226DA	186.21	941	3.50	8.540E+00	2.941E+00	2.941E+00	13.85
	241.98	1393	7.49	7.259E+00	2.394E+00	2.394E+00	10.55
	295.22	1807	19.20	6.309E+00	1.394E+00	1.394E+00	7.53
	351.92	2959	37.20	5.542E+00	1.341E+00	1.341E+00	6.76
	609.32	2099	46.30*	3.562E+00	1.190E+00	1.190E+00	7.28
	1120.28	323	15.10	2.043E+00	9.773E-01	9.774E-01	16.08
	1238.11	-----	5.94	1.865E+00	-----	Line Not Found	-----
	1764.49	369	15.80	1.413E+00	1.543E+00	1.543E+00	9.75
AC-228	209.39	527	3.89	7.967E+00	1.589E+00	1.605E+00	17.29
	270.26	433	3.46	6.719E+00	1.742E+00	1.760E+00	17.37
	338.42	1431	11.27	5.709E+00	2.079E+00	2.100E+00	8.46
	911.16	1351	25.80*	2.477E+00	1.976E+00	1.996E+00	8.16
	968.97	562	15.80	2.338E+00	1.423E+00	1.437E+00	12.62
RA-228DA	209.28	527	4.40	7.967E+00	1.405E+00	1.419E+00	17.29
	338.32	1431	11.40	5.709E+00	2.055E+00	2.076E+00	8.46
	911.07	1351	27.70*	2.477E+00	1.840E+00	1.859E+00	8.16
	964.60	-----	5.20	2.349E+00	-----	Line Not Found	-----
	969.11	562	16.60	2.338E+00	1.354E+00	1.368E+00	12.62

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	74.81	2188	3389	1.63	243.21	230	37	3.65E-02	7.8	7.79E+00	
2	77.03	3415	2725	1.45	252.15	230	37	5.69E-02	4.2	8.08E+00	
2	87.17	1172	1847	1.43	293.16	287	23	1.95E-02	7.5	9.09E+00	
2	89.92	488	1605	1.10	304.30	287	23	8.13E-03	17.1	9.28E+00	
0	93.09	1176	2161	1.60	317.11	310	19	1.96E-02	10.0	9.47E+00	T
0	327.96	269	881	1.02	1266.95	1257	17	4.48E-03	22.5	5.84E+00	
0	462.78	410	617	2.28	1812.13	1802	21	6.83E-03	13.8	4.48E+00	
0	510.86	726	1014	2.63	2006.59	1991	35	1.21E-02	17.0	4.13E+00	
0	727.24	437	411	1.93	2881.59	2871	23	7.29E-03	11.3	3.05E+00	T
0	795.07	157	338	1.28	3155.86	3145	19	2.61E-03	25.3	2.81E+00	
0	1588.19	121	82	1.11	6362.86	6352	20	2.02E-03	16.7	1.52E+00	
0	1729.91	87	113	2.52	6935.86	6920	30	1.44E-03	28.8	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	2.100E+00	13.06	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	1.909E+00	11.65	Abun.
		% Abundances Found =		55.78			

Flag: "\*" = Keyline

```

Configuration      : $DISK1:[GER10.SAMPLE]KCMN51AE_191271005.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       : 19-NOV-2007 09:45:00 Acquisition date : 19-DEC-2007 10:05:43
Sample ID        : KCMN51AE Sample quantity : 48.200 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:12.74 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	2.757E+01	1.758E+00	3.129E-01	1.128E-02	88.114
TL-208	5.265E-01	3.942E-02	3.515E-02	1.267E-03	14.979
PB-212	1.891E+00	1.211E-01	5.152E-02	1.860E-03	36.709
BI-214	1.195E+00	8.700E-02	6.606E-02	2.488E-03	18.091
PB-214	1.327E+00	8.970E-02	6.149E-02	2.002E-03	21.582
RA-226DA	1.190E+00	8.661E-02	6.577E-02	2.477E-03	18.090
AC-228	1.996E+00	1.628E-01	1.277E-01	6.209E-03	15.627
RA-228DA	1.859E+00	1.516E-01	1.189E-01	5.783E-03	15.629

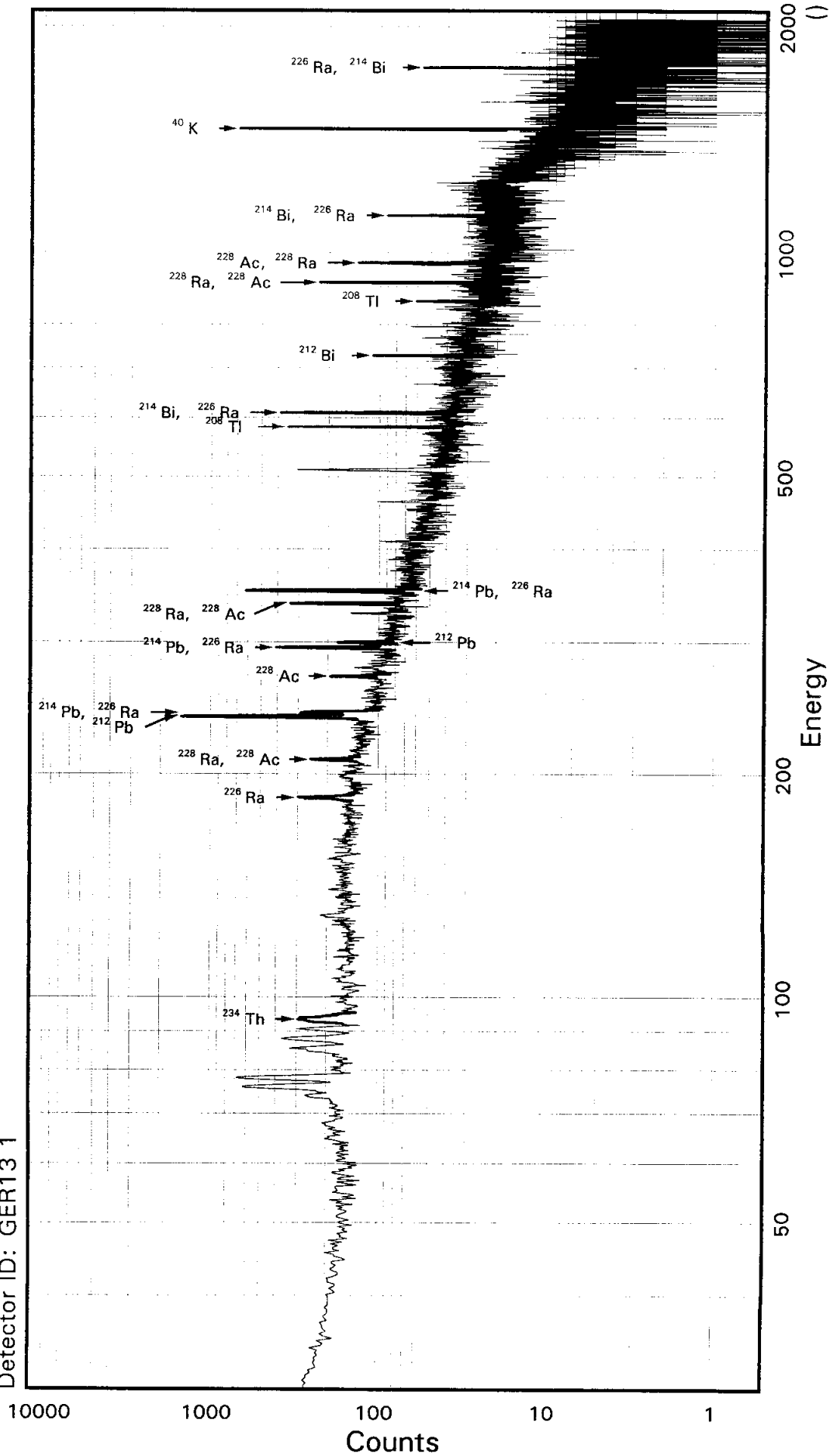
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-9.387E-02		5.571E-02	1.845E-01	6.126E-03	-0.509
CO-60	-2.288E-02		1.091E-02	3.517E-02	1.282E-03	-0.651
CS-137	-2.146E-02		1.080E-02	3.456E-02	1.416E-03	-0.621
PB-210	3.272E-01		6.127E-01	2.053E+00	1.498E-01	0.159
BI-212	2.100E+00	+	2.742E-01	6.520E-01	2.832E-02	3.221
TH-227	1.679E+00		1.289E-01	2.661E-01	9.614E-03	6.311
TH-234	8.106E-01		2.421E-01	8.066E-01	2.480E-02	1.005
AM-241	-2.084E-01		3.642E-02	1.087E-01	3.471E-03	-1.917

STL Richland WA.  
BRCO SOLID

Batch ID: 7330517

Sample ID: KCMN81AA  
Detector ID: GER13 1



Acquisition Start: 19-DEC-2007 10:06:40.57  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: -5.29765E-01  
Slope: 2.50856E-01  
Quadrature: -1.11011E-07

SAMPLE IDENTIFICATION: KCMN81AA

CONFIGURATION ID: GER13:KCMN81AA\_191271006  
TITLE : BRCO SOLID  
SAMPLE ID : KCMN81AA

REPORT DATE: 20-DEC-07  
ACQUIRE DATE: 19-DEC-07 10:06:40  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 19-NOV-2007 10:05:00.00  
CALIB DATE: 19-DEC-2007 05:45:00.54  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:17

SAMPLE QUANTITY: 4.8100E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: -.5298E+00 keV  
ENERGY SLOPE: 2.5086E-01 keV/C  
ENERGY Q COEFF: -.1110E-06 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.3335E-01 keV  
FWHM SLOPE: 4.3051E-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 20-DEC-2007 02:47:05

Configuration : \$DISK1:[GER13.SAMPLE]KCMN81AA\_191271006.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 10:05:00 Acquisition date : 19-DEC-2007 10:06:40  
 Sample ID : KCMN81AA Sample quantity : 48.100 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.42 0.0%  
 Start energy : 19.54 End energy : 2047.03  
 Sensitivity : 5.00 Gaussian : 10.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	73.88*	6	2182	1.07	296.67	288	31	1.01E-04*****		1.26E+00
2	3	75.87*	1324	1950	0.99	304.58	288	31	2.21E-02	8.9	
3	3	78.06	2267	1872	0.98	313.32	288	31	3.78E-02	4.4	
4	0	85.32*	197	1866	1.16	342.28	337	11	3.28E-03	56.7	
5	0	87.96*	789	1725	1.12	352.80	348	11	1.31E-02	12.6	
6	0	90.69	596	1448	0.89	363.69	359	10	9.94E-03	12.6	
7	0	93.60	1043	2128	1.57	375.30	369	15	1.74E-02	10.1	
8	0	185.93	816	2323	1.11	743.54	736	16	1.36E-02	13.7	
9	0	209.12	511	2036	1.00	836.05	829	15	8.52E-03	19.7	
10	5	238.51*	6141	1653	1.09	953.30	945	28	1.02E-01	2.2	1.51E+00
11	5	241.39	1474	1816	1.77	964.79	945	28	2.46E-02	7.7	
12	0	270.09	433	1369	0.84	1079.32	1072	14	7.22E-03	18.8	
13	0	294.97*	1432	1631	1.15	1178.57	1169	18	2.39E-02	7.9	
14	0	299.85	390	1043	1.06	1198.04	1192	12	6.50E-03	17.3	
15	0	327.84	383	878	1.31	1309.78	1304	12	6.39E-03	16.3	
16	0	338.12	1391	1119	1.24	1350.80	1344	15	2.32E-02	5.9	
17	0	351.69*	2539	1311	1.26	1404.93	1395	19	4.23E-02	4.6	
18	0	462.77	395	819	1.69	1848.38	1838	18	6.58E-03	17.7	
19	0	510.87*	798	1339	1.96	2040.46	2026	33	1.33E-02	19.1	
20	0	583.07*	1673	986	1.50	2328.83	2316	26	2.79E-02	6.6	
21	0	609.16*	1696	818	1.47	2433.05	2423	21	2.83E-02	5.8	
22	0	727.48	493	529	1.16	2905.85	2896	20	8.21E-03	10.7	
23	0	795.15	246	489	1.03	3176.34	3167	19	4.10E-03	19.4	
24	0	860.69	256	550	1.49	3438.34	3424	25	4.27E-03	21.7	
25	0	911.17*	1325	564	1.64	3640.22	3625	32	2.21E-02	6.1	
26	0	968.37*	902	778	1.60	3868.99	3851	34	1.50E-02	9.3	
27	0	1120.48*	373	512	1.63	4477.63	4463	28	6.22E-03	18.7	
28	0	1460.43*	4629	363	2.11	5839.01	5820	35	7.71E-02	2.3	
29	0	1587.98	96	157	1.72	6350.22	6341	21	1.60E-03	26.7	
30	0	1764.01*	160	178	1.92	7056.12	7043	28	2.66E-03	27.8	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER13.SAMPLE]KCMN81AA\_191271006.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 10:05:00 Acquisition date : 19-DEC-2007 10:06:40  
 Sample ID : KCMN81AA Sample quantity : 48.100 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.42 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	4629	10.67*	1.575E+00	2.580E+01	2.580E+01	10.42
TL-208	277.28	-----	6.31	6.635E+00	-----	Line Not Found	-----
	583.02	1673	84.50*	3.643E+00	5.090E-01	5.246E-01	9.02
	860.30	256	12.42	2.593E+00	7.450E-01	7.678E-01	23.33
PB-212	238.58	6141	43.30*	7.394E+00	1.796E+00	1.851E+00	6.61
	300.03	390	3.28	6.251E+00	1.781E+00	1.835E+00	18.35
BI-214	609.31	1696	46.09*	3.511E+00	9.816E-01	9.816E-01	8.48
	768.35	-----	4.94	2.871E+00	-----	Line Not Found	-----
	1120.27	373	15.10	2.027E+00	1.142E+00	1.142E+00	19.99
	1764.49	160	15.40	1.327E+00	7.318E-01	7.318E-01	28.67
PB-214	241.92	1474	7.43	7.334E+00	2.533E+00	2.534E+00	9.89
	295.09	1432	19.30	6.331E+00	1.097E+00	1.097E+00	10.00
	351.87	2539	37.60*	5.514E+00	1.147E+00	1.147E+00	7.58
RA-226DA	186.21	816	3.50	8.557E+00	2.552E+00	2.553E+00	15.03
	241.98	1474	7.49	7.334E+00	2.513E+00	2.513E+00	9.89
	295.22	1432	19.20	6.331E+00	1.103E+00	1.103E+00	10.00
	351.92	2539	37.20	5.514E+00	1.159E+00	1.159E+00	7.58
	609.32	1696	46.30*	3.511E+00	9.771E-01	9.772E-01	8.48
	1120.28	373	15.10	2.027E+00	1.142E+00	1.142E+00	19.99
	1238.11	-----	5.94	1.843E+00	-----	Line Not Found	-----
	1764.49	160	15.80	1.327E+00	7.132E-01	7.133E-01	28.67
AC-228	209.39	511	3.89	8.042E+00	1.531E+00	1.547E+00	20.69
	270.26	433	3.46	6.766E+00	1.732E+00	1.750E+00	19.79
	338.42	1391	11.27	5.690E+00	2.031E+00	2.052E+00	8.42
	911.16	1325	25.80*	2.461E+00	1.954E+00	1.973E+00	10.86
	968.97	902	15.80	2.326E+00	2.297E+00	2.320E+00	12.65
RA-228DA	209.28	511	4.40	8.042E+00	1.354E+00	1.367E+00	20.69
	338.32	1391	11.40	5.690E+00	2.008E+00	2.028E+00	8.42
	911.07	1325	27.70*	2.461E+00	1.820E+00	1.838E+00	10.86
	964.60	-----	5.20	2.335E+00	-----	Line Not Found	-----
	969.11	902	16.60	2.326E+00	2.186E+00	2.208E+00	12.65

Flag: "\*" = Keyline



It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	73.88	6	2182	1.07	296.67	288	31	1.01E-04	****	3.93E+00	
3	75.87	1324	1950	0.99	304.58	288	31	2.21E-02	8.9	4.26E+00	
3	78.06	2267	1872	0.98	313.32	288	31	3.78E-02	4.4	4.62E+00	
0	85.32	197	1866	1.16	342.28	337	11	3.28E-03	56.7	5.73E+00	
0	87.96	789	1725	1.12	352.80	348	11	1.31E-02	12.6	6.10E+00	
0	90.69	596	1448	0.89	363.69	359	10	9.94E-03	12.6	6.46E+00	
0	93.60	1043	2128	1.57	375.30	369	15	1.74E-02	10.1	6.81E+00	T
0	327.84	383	878	1.31	1309.78	1304	12	6.39E-03	16.3	5.83E+00	
0	462.77	395	819	1.69	1848.38	1838	18	6.58E-03	17.7	4.41E+00	
0	510.87	798	1339	1.96	2040.46	2026	33	1.33E-02	19.1	4.07E+00	
0	727.48	493	529	1.16	2905.85	2896	20	8.21E-03	10.7	3.01E+00	T
0	795.15	246	489	1.03	3176.34	3167	19	4.10E-03	19.4	2.78E+00	
0	1587.98	96	157	1.72	6350.22	6341	21	1.60E-03	26.7	1.46E+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	2.398E+00	12.78	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	2.358E+00	12.06	Abun.
		% Abundances	Found =	55.78			

Flag: "\*" = Keyline

```

Configuration      : $DISK1:[GER13.SAMPLE]KCMN81AA_191271006.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       : 19-NOV-2007 10:05:00 Acquisition date : 19-DEC-2007 10:06:40
Sample ID        : KCMN81AA           Sample quantity  : 48.100 GRAMS
Sample type      :                     Sample geometry   : S25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:17.42    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	2.580E+01	2.689E+00	3.882E-01	3.435E-02	66.455
TL-208	5.246E-01	4.732E-02	3.812E-02	1.348E-03	13.763
PB-212	1.851E+00	1.223E-01	5.576E-02	2.070E-03	33.201
BI-214	9.816E-01	8.321E-02	7.613E-02	2.781E-03	12.894
PB-214	1.147E+00	8.692E-02	6.956E-02	2.336E-03	16.486
RA-226DA	9.772E-01	8.283E-02	7.578E-02	2.769E-03	12.894
AC-228	1.973E+00	2.143E-01	1.518E-01	1.128E-02	13.002
RA-228DA	1.838E+00	1.996E-01	1.413E-01	1.051E-02	13.004

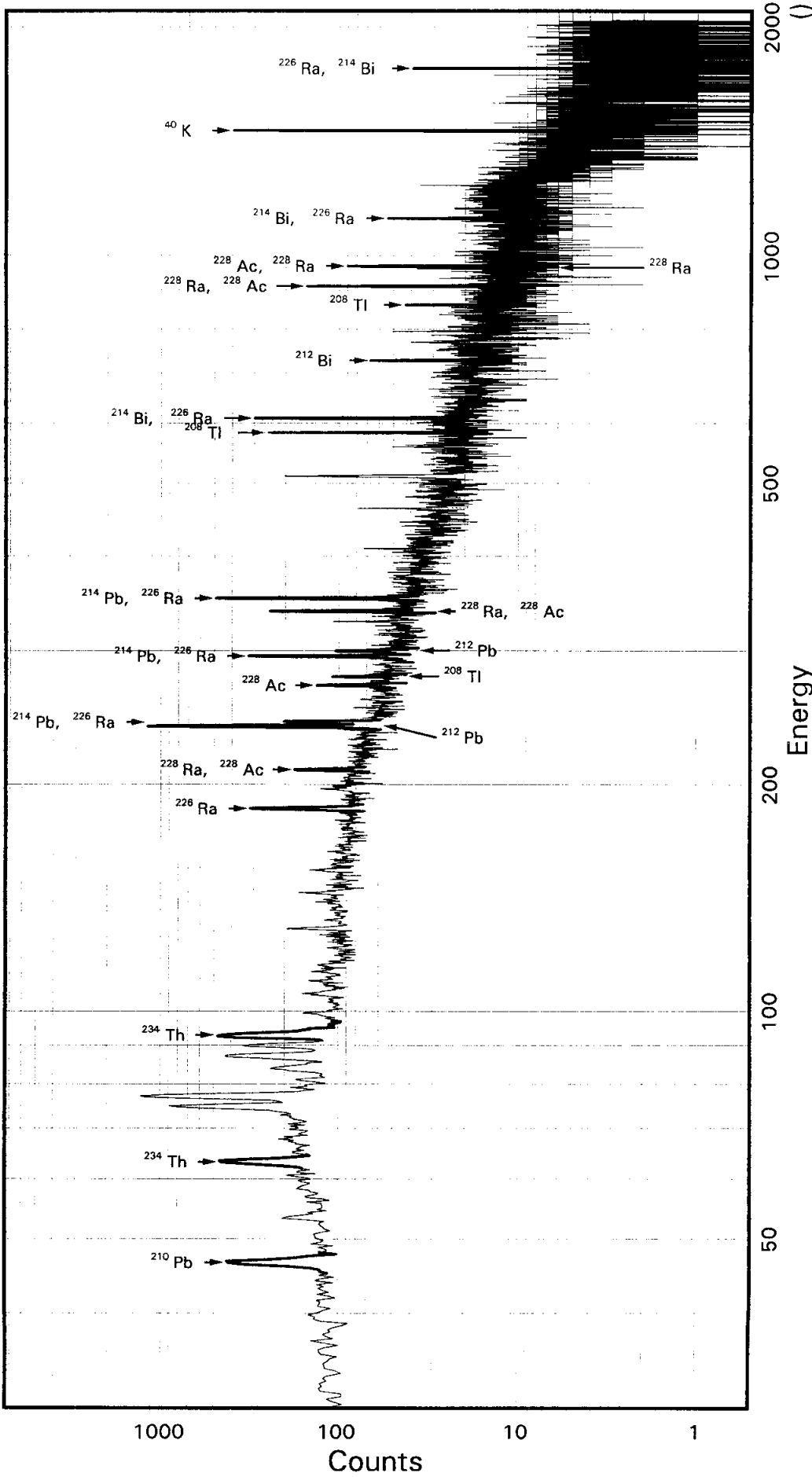
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	3.534E-02		6.027E-02	2.052E-01	7.086E-03	0.172
CO-60	-3.272E-03		1.354E-02	4.580E-02	4.556E-03	-0.071
CS-137	-2.363E-02		1.226E-02	3.957E-02	1.537E-03	-0.597
PB-210	7.770E+00		4.138E+00	1.273E+01	2.514E+00	0.610
BI-212	2.398E+00	+	3.064E-01	7.289E-01	3.482E-02	3.290
TH-227	2.125E-01		7.168E-02	2.116E-01	7.867E-03	1.004
TH-234	-1.014E+00		4.893E-01	1.618E+00	6.901E-02	-0.627
AM-241	-9.876E-02		8.409E-02	2.831E-01	1.107E-02	-0.349

STL Richland WA.  
BRCO SOLID

Batch ID: 7330517

Sample ID: KCMPK1AA  
Detector ID: GER5 1



Acquisition Start: 20-DEC-2007 10:15:48.29  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: -3.43173E-01  
Slope: 2.49388E-01  
Quadrature: -2.46047E-09

SAMPLE IDENTIFICATION: KCMPK1AA

CONFIGURATION ID: GER5:KCMPK1AA\_201271015  
TITLE : BRCO SOLID  
SAMPLE ID : KCMPK1AA

REPORT DATE: 21-DEC-07  
ACQUIRE DATE: 20-DEC-07 10:15:48  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 19-NOV-2007 06:40:00.00  
CALIB DATE: 20-DEC-2007 03:16:22.16  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:09

SAMPLE QUANTITY: 4.7000E+01  
SAMPLE GEOMETRY: ES25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: -.3432E+00 keV  
ENERGY SLOPE: 2.4939E-01 keV/C  
ENERGY Q COEFF: -.2460E-08 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.8655E-01 keV  
FWHM SLOPE: 3.0127E-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 21-DEC-2007 02:56:07

Configuration : RDND06\$DKA100:[GER5.SAMPLE]KCMPK1AA\_201271015.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 06:40:00 Acquisition date : 20-DEC-2007 10:15:48  
 Sample ID : KCMPK1AA Sample quantity : 47.000 GRAMS  
 Sample type : Sample geometry : ES25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.79 0.0%  
 Start energy : 19.61 End energy : 2042.48  
 Sensitivity : 5.00 Gaussian : 10.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.61*	420	1409	0.77	188.28	182	12	6.99E-03	23.4	
2	0	53.51	242	1241	0.66	215.93	211	10	4.03E-03	28.0	
3	0	63.31*	741	1635	0.94	255.24	250	11	1.24E-02	13.8	
4	2	74.86	2577	2028	0.88	301.54	295	23	4.30E-02	3.8	1.13E+00
5	2	77.13*	4318	1770	0.92	310.67	295	23	7.20E-02	2.7	
6	4	84.16	639	1736	1.33	338.85	332	36	1.07E-02	14.3	9.00E-01
7	4	87.19	1641	1722	1.19	351.00	332	36	2.73E-02	5.9	
8	4	89.93	939	1464	1.01	361.98	332	36	1.57E-02	8.8	
9	0	92.99*	1376	2426	1.49	374.27	368	22	2.29E-02	11.0	
10	0	129.04	353	1020	0.86	518.81	514	11	5.88E-03	18.3	
11	0	143.86	264	1229	0.62	578.23	572	13	4.39E-03	28.2	
12	0	185.85*	903	1652	1.14	746.62	736	21	1.51E-02	13.5	
13	0	209.26	469	985	1.04	840.47	835	13	7.82E-03	14.5	
14	5	238.62*	4567	874	1.05	958.20	949	29	7.61E-02	2.3	2.54E+00
15	5	241.52	1124	1028	1.73	969.83	949	29	1.87E-02	7.6	
16	0	270.22	384	922	1.02	1084.92	1076	17	6.39E-03	18.8	
17	0	277.75	178	668	0.55	1115.10	1109	13	2.97E-03	31.0	
18	0	295.12	1367	814	1.07	1184.77	1175	18	2.28E-02	5.6	
19	0	300.42	352	878	1.11	1206.01	1197	19	5.86E-03	21.0	
20	0	328.04	238	473	0.71	1316.79	1312	12	3.96E-03	19.4	
21	0	338.35	867	668	1.01	1358.11	1350	15	1.45E-02	7.3	
22	0	351.88	2257	924	1.11	1412.37	1401	22	3.76E-02	4.0	
23	0	409.38	124	381	0.80	1642.94	1637	11	2.07E-03	31.8	
24	0	463.05	236	341	1.13	1858.15	1851	13	3.94E-03	17.4	
25	0	510.84*	285	674	1.66	2049.78	2036	29	4.75E-03	39.1	
26	0	558.69*	44	274	1.00	2241.68	2235	14	7.29E-04	115.0	
27	0	583.16*	1033	631	1.30	2339.79	2330	24	1.72E-02	8.0	
28	0	609.33	1624	414	1.33	2444.72	2435	20	2.71E-02	3.9	
29	0	727.18	381	342	1.45	2917.30	2904	25	6.36E-03	12.1	
30	0	794.81	143	247	1.00	3188.51	3180	18	2.39E-03	23.5	
31	0	860.70	107	229	1.08	3452.73	3444	16	1.78E-03	28.8	
32	0	911.32*	809	244	1.49	3655.73	3643	26	1.35E-02	7.2	
33	0	964.75	168	218	1.57	3870.00	3860	19	2.79E-03	19.6	
34	0	969.11*	398	208	1.43	3887.50	3878	19	6.63E-03	10.4	
35	0	1120.46	310	314	1.64	4494.42	4482	26	5.16E-03	14.4	
36	0	1460.77*	2753	138	1.92	5859.13	5844	29	4.59E-02	2.5	
37	0	1764.53	242	61	0.93	7077.31	7064	26	4.04E-03	9.8	

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : RDND06$DKA100:[GER5.SAMPLE]KCMPK1AA_201271015.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 06:40:00 Acquisition date : 20-DEC-2007 10:15:48
Sample ID        : KCMPK1AA           Sample quantity  : 47.000 GRAMS
Sample type      :                    Sample geometry   : ES25
Elapsed live time: 0 16:40:00.00     Elapsed real time: 0 16:40:09.79   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	2753	10.67*	1.107E+00	2.233E+01	2.233E+01	6.51
TL-208	277.28	178	6.31	5.318E+00	5.096E-01	5.258E-01	31.55
	583.02	1033	84.50*	2.702E+00	4.335E-01	4.473E-01	10.06
	860.30	107	12.42	1.848E+00	4.465E-01	4.607E-01	29.48
PB-210	46.52	420	4.25*	8.598E+00	1.100E+00	1.103E+00	24.23
PB-212	238.58	4567	43.30*	6.038E+00	1.674E+00	1.727E+00	6.52
	300.03	352	3.28	4.971E+00	2.068E+00	2.134E+00	21.87
BI-214	609.31	1624	46.09*	2.590E+00	1.304E+00	1.304E+00	7.24
	768.35	-----	4.94	2.067E+00	-----	Line Not Found	-----
	1120.27	310	15.10	1.426E+00	1.377E+00	1.377E+00	15.64
PB-214	1764.49	242	15.40	9.357E-01	1.611E+00	1.612E+00	11.46
	241.92	1124	7.43	5.979E+00	2.424E+00	2.424E+00	9.75
	295.09	1367	19.30	5.048E+00	1.344E+00	1.345E+00	8.21
RA-226DA	351.87	2257	37.60*	4.323E+00	1.331E+00	1.331E+00	7.16
	186.21	903	3.50	7.341E+00	3.370E+00	3.370E+00	14.83
	241.98	1124	7.49	5.979E+00	2.405E+00	2.405E+00	9.75
AC-228	295.22	1367	19.20	5.048E+00	1.351E+00	1.352E+00	8.21
	351.92	2257	37.20	4.323E+00	1.345E+00	1.345E+00	7.16
	609.32	1624	46.30*	2.590E+00	1.298E+00	1.298E+00	7.24
RA-228DA	1120.28	310	15.10	1.426E+00	1.377E+00	1.377E+00	15.64
	1238.11	-----	5.94	1.295E+00	-----	Line Not Found	-----
	1764.49	242	15.80	9.357E-01	1.571E+00	1.571E+00	11.46
TH-234	209.39	469	3.89	6.707E+00	1.722E+00	1.740E+00	15.78
	270.26	384	3.46	5.444E+00	1.952E+00	1.972E+00	19.80
	338.42	867	11.27	4.477E+00	1.648E+00	1.665E+00	9.42
RA-228DA	911.16	809	25.80*	1.747E+00	1.719E+00	1.737E+00	9.57
	968.97	398	15.80	1.645E+00	1.467E+00	1.482E+00	12.18
	209.28	469	4.40	6.707E+00	1.523E+00	1.539E+00	15.78
TH-234	338.32	867	11.40	4.477E+00	1.629E+00	1.646E+00	9.42
	911.07	809	27.70*	1.747E+00	1.601E+00	1.618E+00	9.57
	964.60	168	5.20	1.652E+00	1.869E+00	1.889E+00	20.58
TH-234	969.11	398	16.60	1.645E+00	1.396E+00	1.411E+00	12.18
	63.29	741	4.82*	1.059E+01	1.391E+00	1.391E+00	14.95
	92.59	1376	6.08	1.067E+01	2.034E+00	2.034E+00	12.52

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	53.51	242	1241	0.66	215.93	211	10	4.03E-03	28.0	9.71E+00	
2	74.86	2577	2028	0.88	301.54	295	23	4.30E-02	3.8	1.09E+01	
2	77.13	4318	1770	0.92	310.67	295	23	7.20E-02	2.7	1.09E+01	
4	84.16	639	1736	1.33	338.85	332	36	1.07E-02	14.3	1.09E+01	
4	87.19	1641	1722	1.19	351.00	332	36	2.73E-02	5.9	1.08E+01	
4	89.93	939	1464	1.01	361.98	332	36	1.57E-02	8.8	1.07E+01	
0	129.04	353	1020	0.86	518.81	514	11	5.88E-03	18.3	9.32E+00	
0	143.86	264	1229	0.62	578.23	572	13	4.39E-03	28.2	8.74E+00	
0	328.04	238	473	0.71	1316.79	1312	12	3.96E-03	19.4	4.60E+00	
0	409.38	124	381	0.80	1642.94	1637	11	2.07E-03	31.8	3.77E+00	
0	463.05	236	341	1.13	1858.15	1851	13	3.94E-03	17.4	3.36E+00	
0	510.84	285	674	1.66	2049.78	2036	29	4.75E-03	39.1	3.07E+00	
0	558.69	44	274	1.00	2241.68	2235	14	7.29E-04	****	2.81E+00	
0	727.18	381	342	1.45	2917.30	2904	25	6.36E-03	12.1	2.18E+00	T
0	794.81	143	247	1.00	3188.51	3180	18	2.39E-03	23.5	2.00E+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	2.629E+00	13.65	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =			71.76				

Flag: "\*" = Keyline

```

Configuration      : RDND06$DKA100:[GER5.SAMPLE]KCMFK1AA_201271015.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       : 19-NOV-2007 06:40:00 Acquisition date : 20-DEC-2007 10:15:48
Sample ID        : KCMFK1AA Sample quantity : 47.000 GRAMS
Sample type      : Sample geometry : ES25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.79 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	2.233E+01	1.453E+00	3.826E-01	1.268E-02	58.363
TL-208	4.473E-01	4.498E-02	3.758E-02	1.268E-03	11.901
PB-210	1.103E+00	2.674E-01	4.456E-01	1.671E-02	2.476
PB-212	1.727E+00	1.127E-01	5.511E-02	1.933E-03	31.344
BI-214	1.304E+00	9.446E-02	7.323E-02	2.525E-03	17.806
PB-214	1.331E+00	9.525E-02	7.090E-02	2.243E-03	18.769
RA-226DA	1.298E+00	9.403E-02	7.290E-02	2.513E-03	17.805
AC-228	1.737E+00	1.663E-01	1.506E-01	5.913E-03	11.533
RA-228DA	1.618E+00	1.549E-01	1.403E-01	5.507E-03	11.534
TH-234	1.391E+00	2.081E-01	3.804E-01	1.166E-02	3.658

---- Non-Identified Nuclides ----

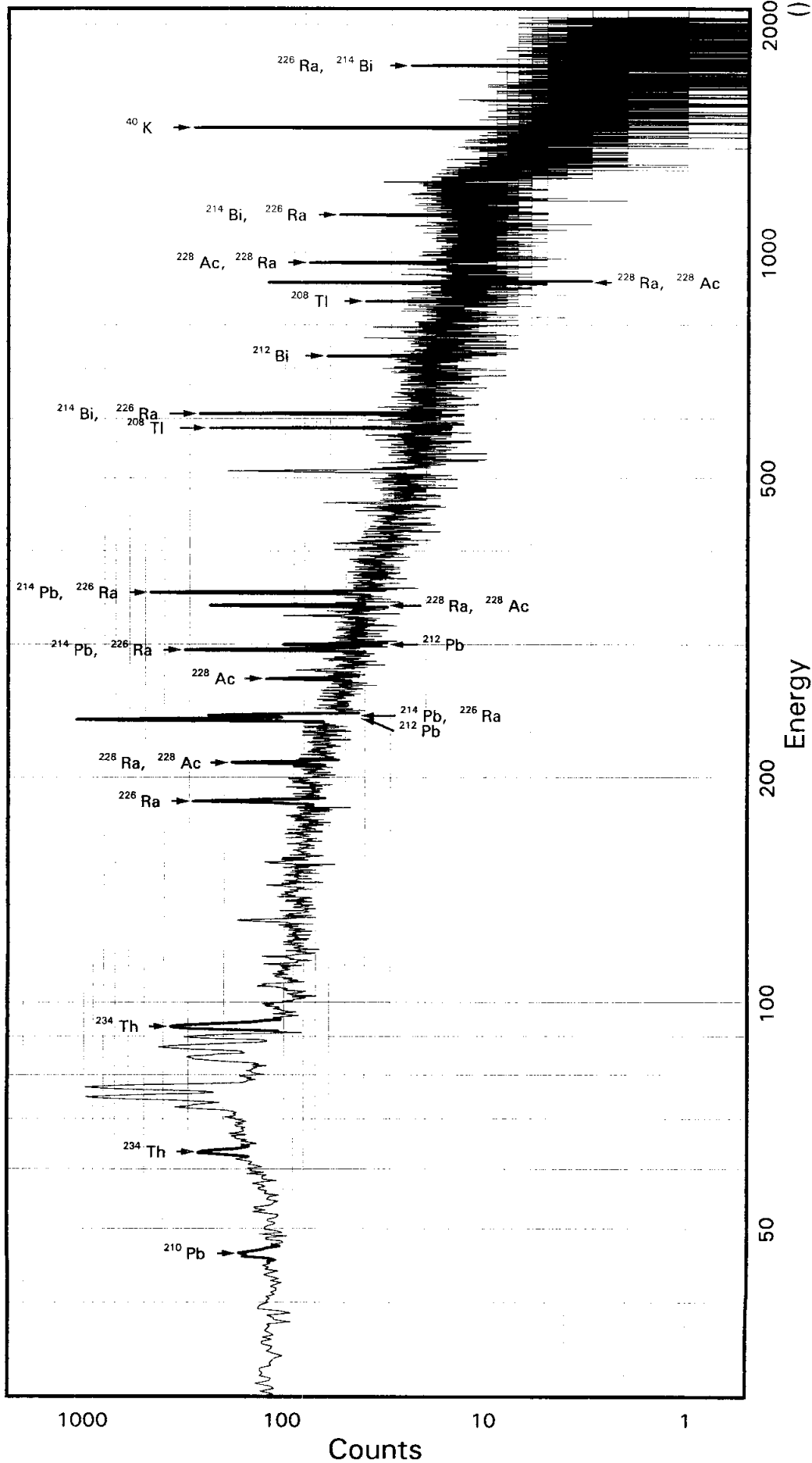
Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-3.571E-03		5.463E-02	1.806E-01	5.912E-03	-0.020
CO-60	-1.175E-02		1.329E-02	4.490E-02	1.481E-03	-0.262
CS-137	-2.042E-02		1.195E-02	3.925E-02	1.405E-03	-0.520
BI-212	2.629E+00	+	3.588E-01	8.134E-01	3.030E-02	3.232
TH-227	1.029E-01		6.786E-02	1.984E-01	6.962E-03	0.519
AM-241	3.756E-02		1.604E-02	5.135E-02	1.598E-03	0.731

STL Richland WA.  
BRCO SOLID

Batch ID: 7330517

Sample ID: KCMPR1AA  
Detector ID: GER6 1

Acquisition Start: 20-DEC-2007 10:17:08.76  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00



Energy Coefficients:  
Offset: 3.14432E-01  
Slope: 2.49379E-01  
Quadrature: 1.52163E-08

SAMPLE IDENTIFICATION: KCMPR1AA

CONFIGURATION ID: GER6:KCMPR1AA\_201271017  
TITLE : BRCO SOLID  
SAMPLE ID : KCMPR1AA

REPORT DATE: 21-DEC-07  
ACQUIRE DATE: 20-DEC-07 10:17:08  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 19-NOV-2007 06:40:00.00  
CALIB DATE: 20-DEC-2007 03:29:33.80  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:10

SAMPLE QUANTITY: 4.8600E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: 3.1443E-01 keV  
ENERGY SLOPE: 2.4938E-01 keV/C  
ENERGY Q COEFF: 1.5216E-08 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 2.4950E-01 keV  
FWHM SLOPE: 6.0804E-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 21-DEC-2007 02:57:23

```

Configuration      : $DISK1:[GER6.SAMPLE]KCMR1AA_201271017.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 06:40:00 Acquisition date : 20-DEC-2007 10:17:08
Sample ID        : KCMR1AA Sample quantity : 48.600 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.99 0.0%
Start energy     : 20.26 End energy : 2044.25
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.39*	46	1135	0.94	184.76	180	10	7.70E-04	160.5	
2	0	63.31*	167	1598	0.82	252.62	248	10	2.79E-03	51.0	
3	5	72.75*	30	2236	1.05	290.45	284	31	5.00E-04	378.5	1.49E+00
4	5	74.80*	2122	1960	1.00	298.68	284	31	3.54E-02	5.7	
5	5	77.07	3517	1818	1.03	307.77	284	31	5.86E-02	3.0	
6	7	84.50*	477	2191	1.58	337.57	329	26	7.95E-03	26.3	5.70E-01
7	7	87.17*	1295	1740	1.18	348.28	329	26	2.16E-02	8.2	
8	0	89.96	923	1057	1.15	359.47	355	10	1.54E-02	7.4	
9	0	92.89*	1340	1632	1.51	371.20	365	16	2.23E-02	8.0	
10	0	128.94	391	895	0.98	515.78	511	11	6.52E-03	15.7	
11	0	154.13	68	895	0.81	616.76	612	10	1.13E-03	83.8	
12	0	185.95*	760	1199	1.03	744.36	736	16	1.27E-02	12.7	
13	0	209.19	689	1390	1.05	837.54	827	22	1.15E-02	14.3	
14	6	238.68*	5202	937	1.21	955.76	947	29	8.67E-02	2.0	2.50E+00
15	6	241.60	1328	803	1.81	967.50	947	29	2.21E-02	5.9	
16	0	270.29	415	846	1.29	1082.52	1074	17	6.92E-03	16.8	
17	0	295.26	1483	853	1.25	1182.65	1174	19	2.47E-02	5.4	
18	0	300.18	383	538	1.32	1202.37	1196	14	6.38E-03	13.9	
19	0	327.97	280	749	1.05	1313.79	1304	19	4.67E-03	24.2	
20	0	338.38	1034	774	1.25	1355.50	1347	17	1.72E-02	6.9	
21	0	351.93*	2351	845	1.39	1409.86	1398	23	3.92E-02	4.3	
22	0	409.07	126	492	1.45	1638.92	1633	16	2.09E-03	40.3	
23	0	463.09	244	510	1.69	1855.50	1846	20	4.07E-03	20.3	
24	0	510.76*	349	751	1.85	2046.61	2032	28	5.81E-03	27.5	
25	0	583.17	1495	421	1.60	2336.90	2324	22	2.49E-02	3.9	
26	0	609.28	1711	415	1.61	2441.58	2431	23	2.85E-02	3.6	
27	0	727.41	387	419	1.80	2915.13	2900	29	6.45E-03	13.8	
28	0	794.76	125	317	1.44	3185.07	3178	21	2.08E-03	31.5	
29	0	860.77	187	245	1.50	3449.69	3440	22	3.12E-03	17.9	
30	0	911.21	1101	317	2.41	3651.85	3637	31	1.83E-02	4.7	
31	0	969.06	463	376	2.40	3883.71	3874	22	7.71E-03	9.5	
32	0	1120.70	353	320	1.70	4491.46	4477	29	5.88E-03	12.2	
33	0	1460.82*	3187	171	3.05	5854.49	5834	42	5.31E-02	2.3	
34	0	1764.39	297	61	4.13	7070.83	7048	37	4.94E-03	8.4	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER6.SAMPLE]KCMR1AA\_201271017.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 06:40:00 Acquisition date : 20-DEC-2007 10:17:08  
 Sample ID : KCMR1AA Sample quantity : 48.600 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:10.99 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	3187	10.67*	1.165E+00	2.377E+01	2.377E+01	8.23
TL-208	277.28	-----	6.31	5.503E+00	-----	Line Not Found	-----
	583.02	1495	84.50*	2.790E+00	5.879E-01	6.066E-01	7.16
	860.30	187	12.42	1.931E+00	7.224E-01	7.454E-01	19.21
PB-210	46.52	46	4.25*	2.748E+00	3.669E-01	3.679E-01	160.67
PB-212	238.58	5202	43.30*	6.246E+00	1.783E+00	1.839E+00	6.66
	300.03	383	3.28	5.134E+00	2.108E+00	2.175E+00	15.18
BI-214	609.31	1711	46.09*	2.678E+00	1.285E+00	1.285E+00	6.99
	768.35	-----	4.94	2.151E+00	-----	Line Not Found	-----
	1120.27	353	15.10	1.500E+00	1.443E+00	1.443E+00	13.82
	1764.49	297	15.40	9.778E-01	1.825E+00	1.825E+00	10.53
PB-214	241.92	1328	7.43	6.184E+00	2.680E+00	2.680E+00	8.66
	295.09	1483	19.30	5.210E+00	1.367E+00	1.367E+00	8.21
	351.87	2351	37.60*	4.452E+00	1.302E+00	1.302E+00	7.41
RA-226DA	186.21	760	3.50	7.547E+00	2.666E+00	2.666E+00	14.24
	241.98	1328	7.49	6.184E+00	2.658E+00	2.658E+00	8.66
	295.22	1483	19.20	5.210E+00	1.374E+00	1.374E+00	8.21
	351.92	2351	37.20	4.452E+00	1.316E+00	1.316E+00	7.41
	609.32	1711	46.30*	2.678E+00	1.279E+00	1.280E+00	6.99
	1120.28	353	15.10	1.500E+00	1.443E+00	1.443E+00	13.82
	1238.11	-----	5.94	1.363E+00	-----	Line Not Found	-----
	1764.49	297	15.80	9.778E-01	1.779E+00	1.779E+00	10.53
AC-228	209.39	689	3.89	6.932E+00	2.368E+00	2.393E+00	15.67
	270.26	415	3.46	5.626E+00	1.976E+00	1.997E+00	17.96
	338.42	1034	11.27	4.613E+00	1.842E+00	1.862E+00	9.18
	911.16	1101	25.80*	1.829E+00	2.162E+00	2.185E+00	8.54
	968.97	463	15.80	1.724E+00	1.574E+00	1.590E+00	11.76
RA-228DA	209.28	689	4.40	6.932E+00	2.093E+00	2.115E+00	15.67
	338.32	1034	11.40	4.613E+00	1.821E+00	1.840E+00	9.18
	911.07	1101	27.70*	1.829E+00	2.014E+00	2.035E+00	8.54
	964.60	-----	5.20	1.732E+00	-----	Line Not Found	-----
	969.11	463	16.60	1.724E+00	1.498E+00	1.514E+00	11.76
TH-234	63.29	167	4.82*	6.101E+00	5.274E-01	5.274E-01	51.38
	92.59	1340	6.08	9.007E+00	2.267E+00	2.267E+00	10.04

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
5	72.75	30	2236	1.05	290.45	284	31	5.00E-04	****	7.47E+00	
5	74.80	2122	1960	1.00	298.68	284	31	3.54E-02	5.7	7.71E+00	
5	77.07	3517	1818	1.03	307.77	284	31	5.86E-02	3.0	7.95E+00	
7	84.50	477	2191	1.58	337.57	329	26	7.95E-03	26.3	8.57E+00	
7	87.17	1295	1740	1.18	348.28	329	26	2.16E-02	8.2	8.73E+00	
0	89.96	923	1057	1.15	359.47	355	10	1.54E-02	7.4	8.88E+00	
0	128.94	391	895	0.98	515.78	511	11	6.52E-03	15.7	9.09E+00	
0	154.13	68	895	0.81	616.76	612	10	1.13E-03	83.8	8.45E+00	
0	327.97	280	749	1.05	1313.79	1304	19	4.67E-03	24.2	4.74E+00	
0	409.07	126	492	1.45	1638.92	1633	16	2.09E-03	40.3	3.88E+00	
0	463.09	244	510	1.69	1855.50	1846	20	4.07E-03	20.3	3.46E+00	
0	510.76	349	751	1.85	2046.61	2032	28	5.81E-03	27.5	3.16E+00	
0	727.41	387	419	1.80	2915.13	2900	29	6.45E-03	13.8	2.27E+00	T
0	794.76	125	317	1.44	3185.07	3178	21	2.08E-03	31.5	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	2.484E+00	15.14	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =				71.76			

Flag: "\*" = Keyline



```

Configuration      : $DISK1:[GER6.SAMPLE]KCMR1AA_201271017.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       : 19-NOV-2007 06:40:00 Acquisition date : 20-DEC-2007 10:17:08
Sample ID        : KCMR1AA           Sample quantity  : 48.600 GRAMS
Sample type      :                   Sample geometry   : S25
Elapsed live time: 0 16:40:00.00    Elapsed real time: 0 16:40:10.99    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	1.956E+00	4.458E-01	2.726E-02	53.308
TL-208	6.066E-01	4.343E-02	4.088E-02	1.346E-03	14.836
PB-210	3.679E-01	5.911E-01	1.134E+00	7.057E-02	0.324
PB-212	1.839E+00	1.224E-01	4.890E-02	1.912E-03	37.615
BI-214	1.285E+00	8.983E-02	7.712E-02	2.577E-03	16.667
PB-214	1.302E+00	9.651E-02	6.504E-02	2.173E-03	20.016
RA-226DA	1.280E+00	8.942E-02	7.677E-02	2.566E-03	16.666
AC-228	2.185E+00	1.867E-01	1.745E-01	8.901E-03	12.524
RA-228DA	2.035E+00	1.739E-01	1.625E-01	8.290E-03	12.525
TH-234	5.274E-01	2.710E-01	5.488E-01	1.729E-02	0.961

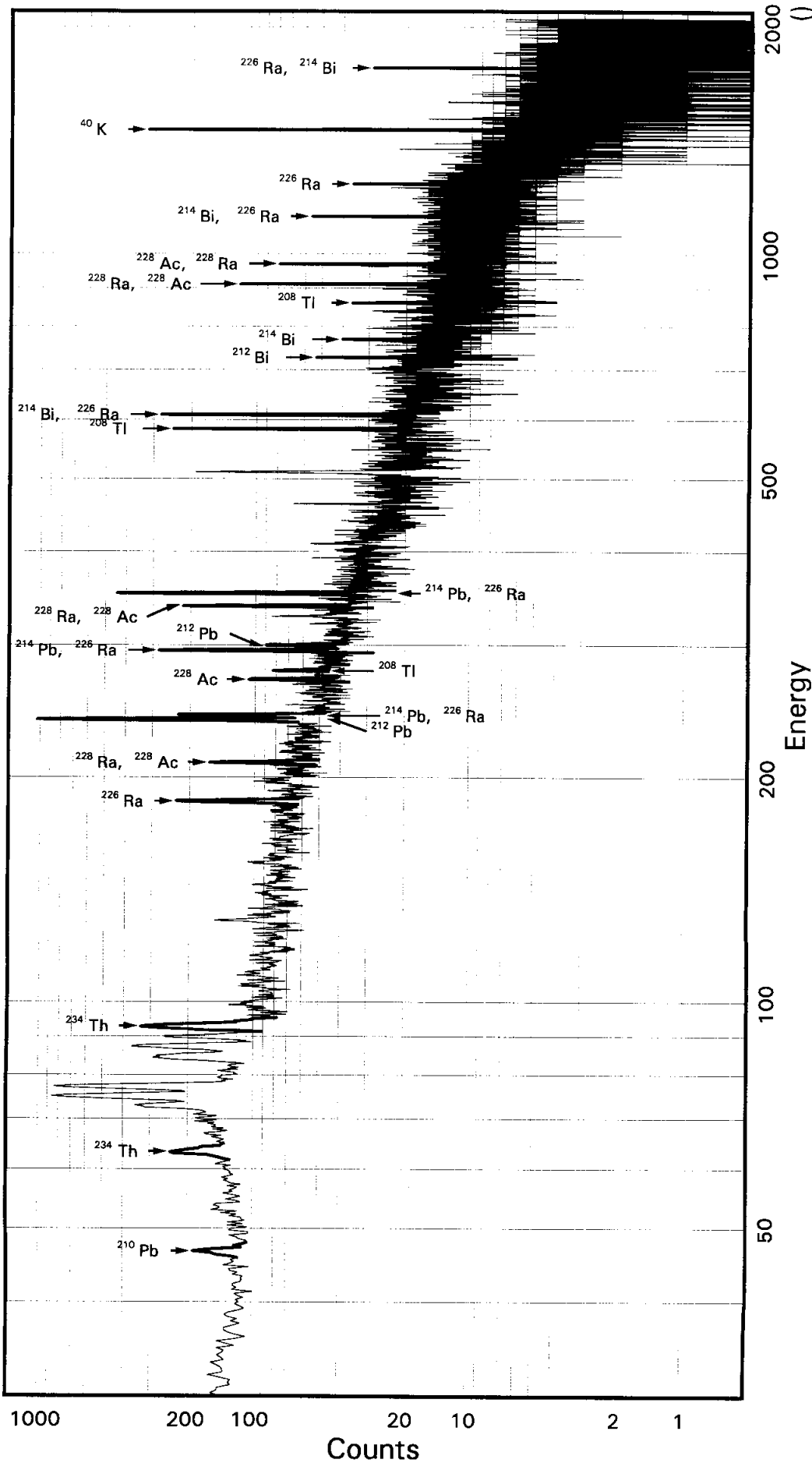
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-1.123E-02		4.618E-02	1.557E-01	5.201E-03	-0.072
CO-60	-2.384E-02		1.447E-02	4.720E-02	3.155E-03	-0.505
CS-137	-3.687E-02		1.314E-02	4.175E-02	1.427E-03	-0.883
BI-212	2.484E+00	+	3.761E-01	8.137E-01	3.146E-02	3.053
TH-227	2.143E-01		6.536E-02	1.913E-01	7.486E-03	1.120
AM-241	-6.866E-03		2.365E-02	7.728E-02	2.461E-03	-0.089

STL Richland WA.  
BRCO SOLID

Sample ID: KCMPT1AA  
Detector ID: GER7 1

Batch ID: 7330517



Acquisition Start: 20-DEC-2007 10:18:04.86  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: 6.14108E-01  
Slope: 2.49302E-01  
Quadrature: 1.52237E-07

SAMPLE IDENTIFICATION: KCMPT1AA

CONFIGURATION ID: GER7:KCMPT1AA\_201271018  
TITLE : BRCO SOLID  
SAMPLE ID : KCMPT1AA

REPORT DATE: 22-DEC-07	SAMPLE DATE: 19-NOV-2007 07:00:00.00
ACQUIRE DATE: 20-DEC-07 10:18:04	CALIB DATE: 20-DEC-2007 03:16:03.25
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: 4.5900E+01	UNITS: GRAMS
SAMPLE GEOMETRY: S25	SAMPLE TYPE:

ENERGY OFFSET: 6.1411E-01 keV	FWHM OFFSET: 5.5504E-01 keV
ENERGY SLOPE: 2.4930E-01 keV/C	FWHM SLOPE: 3.6629E-02 sqr keV
ENERGY Q COEFF: 1.5224E-07 keV/C <sup>2</sup>	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 22-DEC-2007 08:40:09

```

Configuration      : $DISK1:[GER7.SAMPLE]KCMPT1AA_201271018.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 07:00:00 Acquisition date : 20-DEC-2007 10:18:04
Sample ID        : KCMPT1AA Sample quantity : 45.900 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.20 0.0%
Start energy     : 20.56 End energy : 2053.12
Sensitivity      : 5.00 Gaussian : 40.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.73*	41	1019	0.62	184.96	181	9	6.77E-04	180.0	
2	0	63.32*	358	1728	1.04	251.48	245	13	5.97E-03	27.2	
3	4	72.88*	361	1808	1.08	289.83	284	30	6.02E-03	27.6	1.10E+00
4	4	74.92*	1826	1838	1.02	298.00	284	30	3.04E-02	6.5	
5	4	77.15	2986	1665	1.02	306.94	284	30	4.98E-02	3.4	
6	5	84.65*	441	1469	1.44	337.00	330	34	7.35E-03	22.7	1.28E+00
7	5	87.29*	1064	1359	1.09	347.58	330	34	1.77E-02	8.9	
8	5	89.94	746	1071	1.10	358.21	330	34	1.24E-02	9.5	
9	0	93.04*	1254	1439	1.44	370.66	364	17	2.09E-02	8.6	
10	0	129.05	330	934	0.92	515.04	510	12	5.49E-03	19.3	
11	0	185.95*	708	1173	1.20	743.08	735	18	1.18E-02	13.9	
12	0	209.28	519	869	0.97	836.57	829	16	8.65E-03	13.5	
13	4	238.62*	4158	800	1.08	954.12	946	28	6.93E-02	2.3	3.42E+00
14	4	241.63	1023	827	1.65	966.20	946	28	1.70E-02	7.4	
15	0	269.90	383	724	1.71	1079.45	1071	17	6.39E-03	16.9	
16	0	277.33	90	461	0.93	1109.21	1106	9	1.50E-03	44.1	
17	0	295.19	1165	820	1.22	1180.75	1172	17	1.94E-02	6.3	
18	0	300.15	229	540	1.19	1200.60	1195	13	3.82E-03	21.9	
19	0	338.26	833	632	1.09	1353.24	1345	16	1.39E-02	7.6	
20	0	351.87*	2212	607	1.24	1407.75	1397	23	3.69E-02	3.9	
21	0	462.92	247	308	1.16	1852.31	1845	15	4.11E-03	16.8	
22	0	510.79*	297	715	1.96	2043.88	2030	27	4.96E-03	35.3	
23	0	583.20	1191	519	1.23	2333.53	2321	22	1.99E-02	5.7	
24	0	609.32*	1451	474	1.35	2438.02	2424	28	2.42E-02	5.6	
25	0	727.35	357	326	1.97	2909.90	2899	28	5.95E-03	13.1	
26	0	768.49	140	267	1.67	3074.31	3063	18	2.34E-03	24.8	
27	0	794.85	134	192	1.69	3179.67	3170	17	2.23E-03	22.1	
28	0	861.00	164	244	1.68	3443.92	3430	24	2.73E-03	22.7	
29	0	911.21	837	269	1.68	3644.48	3633	26	1.39E-02	5.7	
30	0	970.08	298	510	1.41	3879.52	3861	27	4.97E-03	18.8	
31	0	1120.47	306	249	1.80	4479.71	4467	23	5.10E-03	12.7	
32	0	1237.91	166	257	2.17	4948.09	4936	23	2.77E-03	22.6	
33	0	1378.14	103	137	1.06	5507.00	5495	30	1.72E-03	29.3	
34	0	1460.80*	2679	125	2.15	5836.29	5818	34	4.46E-02	2.5	
35	0	1764.50	264	68	2.14	7044.97	7028	36	4.40E-03	9.5	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER7.SAMPLE]KCMPT1AA\_201271018.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 07:00:00 Acquisition date : 20-DEC-2007 10:18:04  
 Sample ID : KCMPT1AA Sample quantity : 45.900 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.20 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	2679	10.67*	1.071E+00	2.301E+01	2.301E+01	6.61
TL-208	277.28	90	6.31	4.813E+00	2.916E-01	3.008E-01	44.60
	583.02	1191	84.50*	2.571E+00	5.381E-01	5.552E-01	8.43
	860.30	164	12.42	1.787E+00	7.255E-01	7.486E-01	23.56
PB-210	46.52	41	4.25*	1.899E+00	4.936E-01	4.949E-01	180.26
PB-212	238.58	4158	43.30*	5.431E+00	1.735E+00	1.790E+00	7.02
	300.03	229	3.28	4.512E+00	1.521E+00	1.570E+00	22.89
BI-214	609.31	1451	46.09*	2.472E+00	1.249E+00	1.249E+00	8.37
	768.35	140	4.94	1.994E+00	1.398E+00	1.399E+00	25.55
	1120.27	306	15.10	1.378E+00	1.442E+00	1.442E+00	14.07
	1764.49	264	15.40	9.188E-01	1.833E+00	1.833E+00	11.25
PB-214	241.92	1023	7.43	5.377E+00	2.513E+00	2.513E+00	9.97
	295.09	1165	19.30	4.574E+00	1.295E+00	1.295E+00	9.14
	351.87	2212	37.60*	3.959E+00	1.458E+00	1.459E+00	7.39
RA-226DA	186.21	708	3.50	6.564E+00	3.025E+00	3.026E+00	15.33
	241.98	1023	7.49	5.377E+00	2.492E+00	2.493E+00	9.97
	295.22	1165	19.20	4.574E+00	1.302E+00	1.302E+00	9.14
	351.92	2212	37.20	3.959E+00	1.474E+00	1.474E+00	7.39
	609.32	1451	46.30*	2.472E+00	1.244E+00	1.244E+00	8.37
	1120.28	306	15.10	1.378E+00	1.442E+00	1.442E+00	14.07
AC-228	1238.11	166	5.94	1.250E+00	2.196E+00	2.197E+00	23.36
	1764.49	264	15.80	9.188E-01	1.786E+00	1.786E+00	11.25
	209.39	519	3.89	6.016E+00	2.176E+00	2.199E+00	14.99
	270.26	383	3.46	4.920E+00	2.210E+00	2.233E+00	18.12
	338.42	833	11.27	4.090E+00	1.774E+00	1.792E+00	9.90
RA-228DA	911.16	837	25.80*	1.691E+00	1.882E+00	1.902E+00	8.59
	968.97	298	15.80	1.590E+00	1.165E+00	1.177E+00	19.84
	209.28	519	4.40	6.016E+00	1.924E+00	1.944E+00	14.99
	338.32	833	11.40	4.090E+00	1.754E+00	1.772E+00	9.90
	911.07	837	27.70*	1.691E+00	1.753E+00	1.771E+00	8.59
	964.60	-----	5.20	1.599E+00	-----	Line Not Found	-----
TH-234	969.11	298	16.60	1.590E+00	1.108E+00	1.120E+00	19.84
	63.29	358	4.82*	5.162E+00	1.414E+00	1.414E+00	27.80
	92.59	1254	6.08	8.149E+00	2.485E+00	2.485E+00	10.52

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	72.88	361	1808	1.08	289.83	284	30	6.02E-03	27.6	6.62E+00	
4	74.92	1826	1838	1.02	298.00	284	30	3.04E-02	6.5	6.86E+00	
4	77.15	2986	1665	1.02	306.94	284	30	4.98E-02	3.4	7.10E+00	
5	84.65	441	1469	1.44	337.00	330	34	7.35E-03	22.7	7.73E+00	
5	87.29	1064	1359	1.09	347.58	330	34	1.77E-02	8.9	7.89E+00	
5	89.94	746	1071	1.10	358.21	330	34	1.24E-02	9.5	8.03E+00	
0	129.05	330	934	0.92	515.04	510	12	5.49E-03	19.3	8.08E+00	
0	462.92	247	308	1.16	1852.31	1845	15	4.11E-03	16.8	3.14E+00	
0	510.79	297	715	1.96	2043.88	2030	27	4.96E-03	35.3	2.89E+00	
0	727.35	357	326	1.97	2909.90	2899	28	5.95E-03	13.1	2.10E+00	T
0	794.85	134	192	1.69	3179.67	3170	17	2.23E-03	22.1	1.93E+00	
0	1378.14	103	137	1.06	5507.00	5495	30	1.72E-03	29.3	1.13E+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	2.617E+00	14.50	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =				71.76			

Flag: "\*" = Keyline

```

Configuration      : $DISK1:[GER7.SAMPLE]KCMPT1AA_201271018.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       : 19-NOV-2007 07:00:00 Acquisition date : 20-DEC-2007 10:18:04
Sample ID        : KCMPT1AA           Sample quantity  : 45.900 GRAMS
Sample type      :                     Sample geometry   : S25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:09.20   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	2.301E+01	1.522E+00	3.791E-01	1.348E-02	60.691
TL-208	5.552E-01	4.683E-02	4.219E-02	1.582E-03	13.158
PB-210	4.949E-01	8.921E-01	1.995E+00	1.548E-01	0.248
PB-212	1.790E+00	1.257E-01	5.695E-02	2.489E-03	31.435
BI-214	1.249E+00	1.045E-01	7.654E-02	2.841E-03	16.324
PB-214	1.459E+00	1.077E-01	6.891E-02	2.590E-03	21.165
RA-226DA	1.244E+00	1.040E-01	7.620E-02	2.828E-03	16.324
AC-228	1.902E+00	1.634E-01	1.674E-01	6.781E-03	11.358
RA-228DA	1.771E+00	1.522E-01	1.559E-01	6.316E-03	11.359
TH-234	1.414E+00	3.929E-01	6.995E-01	2.193E-02	2.021

---- Non-Identified Nuclides ----

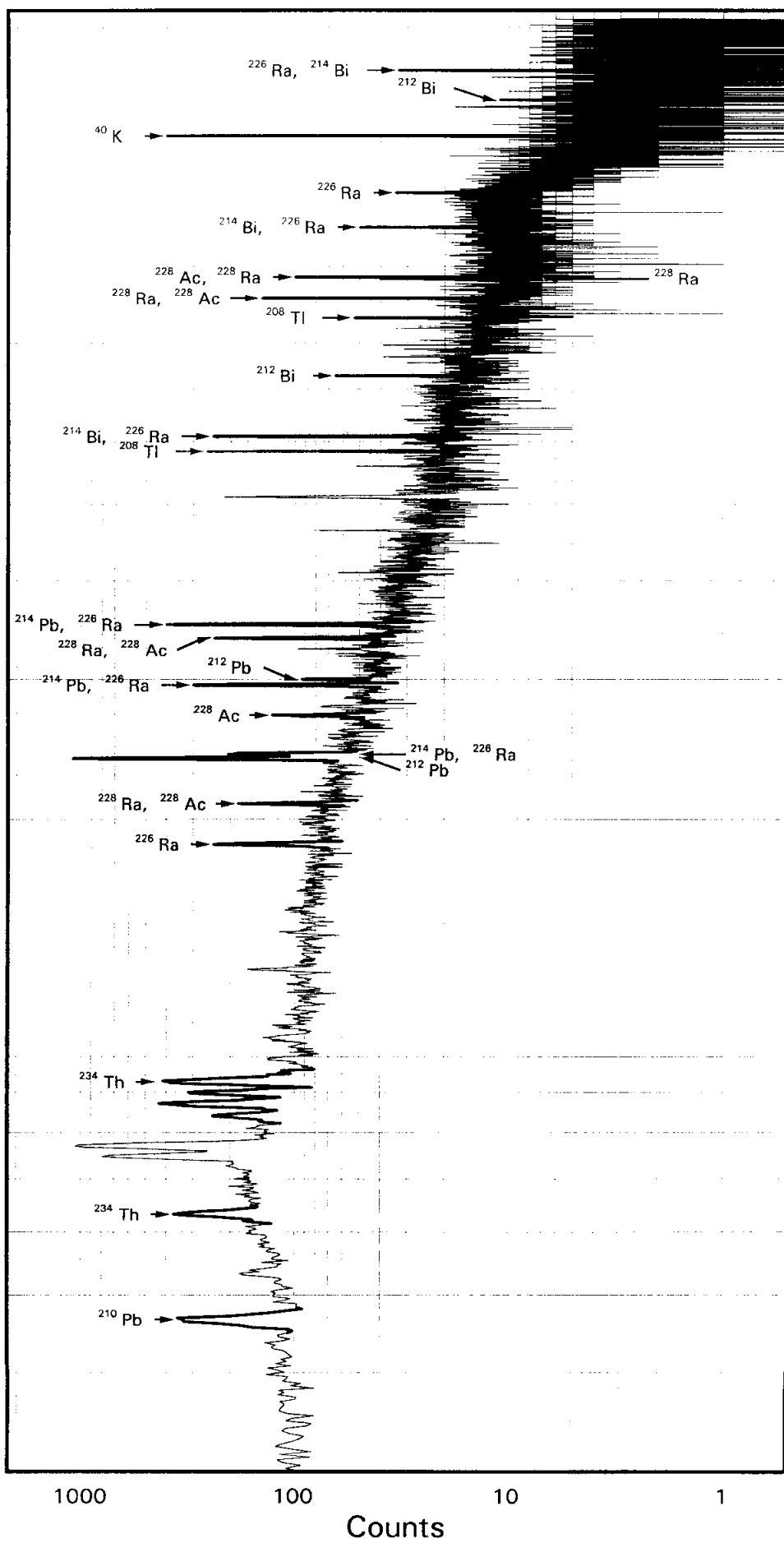
Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-9.799E-02		5.459E-02	1.787E-01	6.236E-03	-0.548
CO-60	-1.107E-02		1.394E-02	4.654E-02	1.662E-03	-0.238
CS-137	-3.486E-02		1.284E-02	4.064E-02	1.461E-03	-0.858
BI-212	2.617E+00	+	3.796E-01	8.230E-01	3.093E-02	3.180
TH-227	1.806E-01		7.139E-02	2.126E-01	9.286E-03	0.849
AM-241	-1.115E-02		3.349E-02	1.048E-01	3.396E-03	-0.106



STL Richland WA.  
BRCO SOLID

Batch ID: 7330517

Sample ID: KCMPV1AA  
Detector ID: GER8 1



Energy Coefficients:  
Offset: 2.49062E-02  
Slope: 2.50025E-01  
Quadrature: 1.63325E-08

Acquisition Start: 20-DEC-2007 10:19:06.68  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION: KCMPV1AA

CONFIGURATION ID: GER8:KCMPV1AA\_201271019  
TITLE : BRCO SOLID  
SAMPLE ID : KCMPV1AA

REPORT DATE: 21-DEC-07  
ACQUIRE DATE: 20-DEC-07 10:19:06  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 19-NOV-2007 07:15:00.00  
CALIB DATE: 20-DEC-2007 03:16:39.29  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:09

SAMPLE QUANTITY: 4.9500E+01  
SAMPLE GEOMETRY: ES25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: 2.4906E-02 keV  
ENERGY SLOPE: 2.5003E-01 keV/C  
ENERGY Q COEFF: 1.6333E-08 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.4332E-01 keV  
FWHM SLOPE: 2.2889E-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

```

Configuration      : $DISK1:[GER8.SAMPLE]KCMPV1AA_201271019.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 07:15:00 Acquisition date : 20-DEC-2007 10:19:06
Sample ID        : KCMPV1AA Sample quantity : 49.500 GRAMS
Sample type      : Sample geometry : ES25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.59 0.0%
Start energy     : 20.03 End energy : 2049.33
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.55*	498	1452	0.93	186.07	179	14	8.30E-03	20.6	
2	0	53.45	219	1317	1.05	213.69	208	11	3.64E-03	32.9	
3	0	63.24*	561	2028	0.98	252.85	246	14	9.34E-03	20.1	
4	2	74.86*	2345	2174	1.03	299.31	293	23	3.91E-02	5.0	1.10E+00
5	2	77.10*	4057	2016	1.11	308.28	293	23	6.76E-02	3.1	
6	2	84.13	672	1685	1.40	336.39	329	58	1.12E-02	13.4	3.94E+00
7	2	87.19	1790	1789	1.40	348.60	329	58	2.98E-02	5.8	
8	2	89.92	990	1276	1.05	359.55	329	58	1.65E-02	8.2	
9	2	92.81*	1151	1360	1.26	371.09	329	58	1.92E-02	9.9	
10	0	129.24	450	1084	0.87	516.78	511	14	7.49E-03	16.2	
11	0	185.90*	786	1024	1.35	743.39	735	16	1.31E-02	12.1	
12	0	209.20	540	941	0.84	836.59	830	16	9.00E-03	13.4	
13	4	238.67*	4897	944	1.17	954.44	946	29	8.16E-02	2.2	1.51E+00
14	4	241.57	1242	995	1.87	966.04	946	29	2.07E-02	7.3	
15	0	270.31	402	740	1.27	1080.97	1075	15	6.70E-03	15.6	
16	0	295.28*	1159	694	1.25	1180.80	1173	16	1.93E-02	6.8	
17	0	300.26	169	650	1.01	1200.71	1194	13	2.81E-03	32.2	
18	0	327.76	268	705	0.92	1310.69	1301	17	4.46E-03	23.5	
19	0	338.28	943	679	1.02	1352.75	1343	18	1.57E-02	7.3	
20	0	351.89*	1983	638	1.37	1407.20	1397	22	3.31E-02	4.5	
21	0	409.21	240	490	0.95	1636.38	1626	20	4.00E-03	23.5	
22	0	463.22	231	498	0.94	1852.38	1843	18	3.86E-03	23.7	
23	0	510.95*	500	718	1.99	2043.21	2030	33	8.34E-03	23.5	
24	0	558.61*	22	283	1.34	2233.78	2226	16	3.71E-04	225.8	
25	0	583.21	1375	372	1.28	2332.14	2322	21	2.29E-02	4.4	
26	0	609.38*	1132	479	1.54	2436.80	2426	22	1.89E-02	6.0	
27	0	727.24	266	333	1.17	2908.00	2897	20	4.43E-03	15.6	
28	0	770.09	326	454	4.87	3079.32	3061	44	5.43E-03	19.8	
29	0	794.94	158	229	1.48	3178.66	3170	19	2.63E-03	21.1	
30	0	860.99	212	280	0.64	3442.75	3430	25	3.53E-03	19.4	
31	0	911.26	1025	248	1.77	3643.71	3632	28	1.71E-02	4.8	
32	0	965.02	175	189	1.17	3858.62	3848	18	2.91E-03	17.5	
33	0	969.04	494	203	1.29	3874.70	3866	18	8.23E-03	7.3	
34	0	1120.46*	245	206	1.85	4479.96	4469	22	4.08E-03	16.2	
35	0	1238.85	83	256	1.16	4953.18	4943	22	1.38E-03	43.2	
36	0	1460.96*	3096	99	1.86	5840.94	5825	31	5.16E-02	2.1	
37	0	1588.27	78	63	1.15	6349.70	6339	19	1.29E-03	23.8	
38	0	1593.30	50	69	1.97	6369.79	6358	18	8.28E-04	36.3	
39	0	1621.28	47	34	1.13	6481.62	6474	18	7.91E-04	28.3	
40	0	1730.24	56	49	1.93	6917.02	6906	23	9.27E-04	30.9	
41	0	1764.94	231	62	1.82	7055.69	7043	28	3.85E-03	10.6	

Flag: "\*" = Peak area was modified by background subtraction



Configuration : \$DISK1:[GER8.SAMPLE]KCMPV1AA\_201271019.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 07:15:00 Acquisition date : 20-DEC-2007 10:19:06  
 Sample ID : KCMPV1AA Sample quantity : 49.500 GRAMS  
 Sample type : Sample geometry : ES25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.59 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	3096	10.67*	1.185E+00	2.229E+01	2.229E+01	6.40
TL-208	277.28	-----	6.31	5.759E+00	-----	Line Not Found	-----
	583.02	1375	84.50*	2.923E+00	5.065E-01	5.226E-01	7.54
	860.30	212	12.42	1.987E+00	7.811E-01	8.059E-01	20.42
PB-210	46.52	498	4.25*	9.038E+00	1.180E+00	1.183E+00	21.56
BI-212	727.25	266	6.58*	2.353E+00	1.561E+00	1.611E+00	16.80
	785.51	-----	1.10	2.179E+00	-----	Line Not Found	-----
	1620.66	47	1.49	1.080E+00	2.684E+00	2.769E+00	28.90
PB-212	238.58	4897	43.30*	6.522E+00	1.578E+00	1.628E+00	6.52
	300.03	169	3.28	5.380E+00	8.697E-01	8.974E-01	32.79
BI-214	609.31	1132	46.09*	2.801E+00	7.982E-01	7.982E-01	8.59
	768.35	-----	4.94	2.227E+00	-----	Line Not Found	-----
	1120.27	245	15.10	1.527E+00	9.661E-01	9.662E-01	17.24
	1764.49	231	15.40	1.006E+00	1.358E+00	1.358E+00	12.12
PB-214	241.92	1242	7.43	6.458E+00	2.356E+00	2.356E+00	9.53
	295.09	1159	19.30	5.458E+00	1.001E+00	1.001E+00	9.17
	351.87	1983	37.60*	4.681E+00	1.025E+00	1.025E+00	7.51
RA-226DA	186.21	786	3.50	7.923E+00	2.578E+00	2.578E+00	13.58
	241.98	1242	7.49	6.458E+00	2.337E+00	2.337E+00	9.53
	295.22	1159	19.20	5.458E+00	1.006E+00	1.006E+00	9.17
	351.92	1983	37.20	4.681E+00	1.036E+00	1.036E+00	7.51
	609.32	1132	46.30*	2.801E+00	7.946E-01	7.946E-01	8.59
	1120.28	245	15.10	1.527E+00	9.661E-01	9.662E-01	17.24
	1238.11	83	5.94	1.384E+00	9.163E-01	9.164E-01	43.63
	1764.49	231	15.80	1.006E+00	1.323E+00	1.323E+00	12.12
AC-228	209.39	540	3.89	7.244E+00	1.743E+00	1.761E+00	14.74
	270.26	402	3.46	5.884E+00	1.797E+00	1.816E+00	16.73
	338.42	943	11.27	4.848E+00	1.570E+00	1.586E+00	9.42
	911.16	1025	25.80*	1.877E+00	1.926E+00	1.946E+00	7.94
	968.97	494	15.80	1.765E+00	1.611E+00	1.628E+00	9.64
RA-228DA	209.28	540	4.40	7.244E+00	1.541E+00	1.557E+00	14.74
	338.32	943	11.40	4.848E+00	1.552E+00	1.568E+00	9.42
	911.07	1025	27.70*	1.877E+00	1.794E+00	1.813E+00	7.94
	964.60	175	5.20	1.772E+00	1.726E+00	1.745E+00	18.54
	969.11	494	16.60	1.765E+00	1.533E+00	1.549E+00	9.64
TH-234	63.29	561	4.82*	1.141E+01	9.276E-01	9.276E-01	20.92

Sample ID : KCMPV1AA

Acquisition date : 20-DEC-2007 10:19:06

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
	92.59	1151	6.08	1.156E+01	1.491E+00	1.491E+00	11.54

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	53.45	219	1317	1.05	213.69	208	11	3.64E-03	32.9	1.04E+01	
2	74.86	2345	2174	1.03	299.31	293	23	3.91E-02	5.0	1.18E+01	
2	77.10	4057	2016	1.11	308.28	293	23	6.76E-02	3.1	1.18E+01	
2	84.13	672	1685	1.40	336.39	329	58	1.12E-02	13.4	1.18E+01	
2	87.19	1790	1789	1.40	348.60	329	58	2.98E-02	5.8	1.17E+01	
2	89.92	990	1276	1.05	359.55	329	58	1.65E-02	8.2	1.16E+01	
0	129.24	450	1084	0.87	516.78	511	14	7.49E-03	16.2	1.01E+01	
0	327.76	268	705	0.92	1310.69	1301	17	4.46E-03	23.5	4.98E+00	
0	409.21	240	490	0.95	1636.38	1626	20	4.00E-03	23.5	4.08E+00	
0	463.22	231	498	0.94	1852.38	1843	18	3.86E-03	23.7	3.64E+00	
0	510.95	500	718	1.99	2043.21	2030	33	8.34E-03	23.5	3.32E+00	
0	558.61	22	283	1.34	2233.78	2226	16	3.71E-04	****	3.05E+00	
0	770.09	326	454	4.87	3079.32	3061	44	5.43E-03	19.8	2.22E+00	
0	794.94	158	229	1.48	3178.66	3170	19	2.63E-03	21.1	2.15E+00	
0	1588.27	78	63	1.15	6349.70	6339	19	1.29E-03	23.8	1.10E+00	
0	1593.30	50	69	1.97	6369.79	6358	18	8.28E-04	36.3	1.10E+00	
0	1730.24	56	49	1.93	6917.02	6906	23	9.27E-04	30.9	1.02E+00	

Flags: "T" = Tentatively associated

Rejected Report  
Sample ID : KCMPV1AA

Page : 4  
Acquisition date : 20-DEC-2007 10:19:06

Flag: "\*" = Keyline



VMS Nuclide Identification Report V3.0 Generated 21-DEC-2007 02:59:35

Configuration : \$DISK1:[GER8.SAMPLE]KCMPV1AA\_201271019.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 : 19-NOV-2007 07:15:00 Acquisition date : 20-DEC-2007 10:19:06  
 Sample ID : KCMPV1AA Sample quantity : 49.500 GRAMS  
 Sample type : Sample geometry : ES25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.59 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	2.229E+01	1.427E+00	3.392E-01	1.149E-02	65.709
TL-208	5.226E-01	3.940E-02	3.347E-02	1.171E-03	15.616
PB-210	1.183E+00	2.552E-01	4.388E-01	1.679E-02	2.697
BI-212	1.611E+00	2.705E-01	5.225E-01	2.001E-02	3.083
PB-212	1.628E+00	1.061E-01	4.841E-02	1.737E-03	33.629
BI-214	7.982E-01	6.859E-02	6.295E-02	2.253E-03	12.680
PB-214	1.025E+00	7.697E-02	5.902E-02	1.932E-03	17.376
RA-226DA	7.946E-01	6.828E-02	6.267E-02	2.243E-03	12.680
AC-228	1.946E+00	1.546E-01	1.318E-01	5.108E-03	14.766
RA-228DA	1.813E+00	1.440E-01	1.227E-01	4.757E-03	14.767
TH-234	9.276E-01	1.941E-01	3.594E-01	1.101E-02	2.581

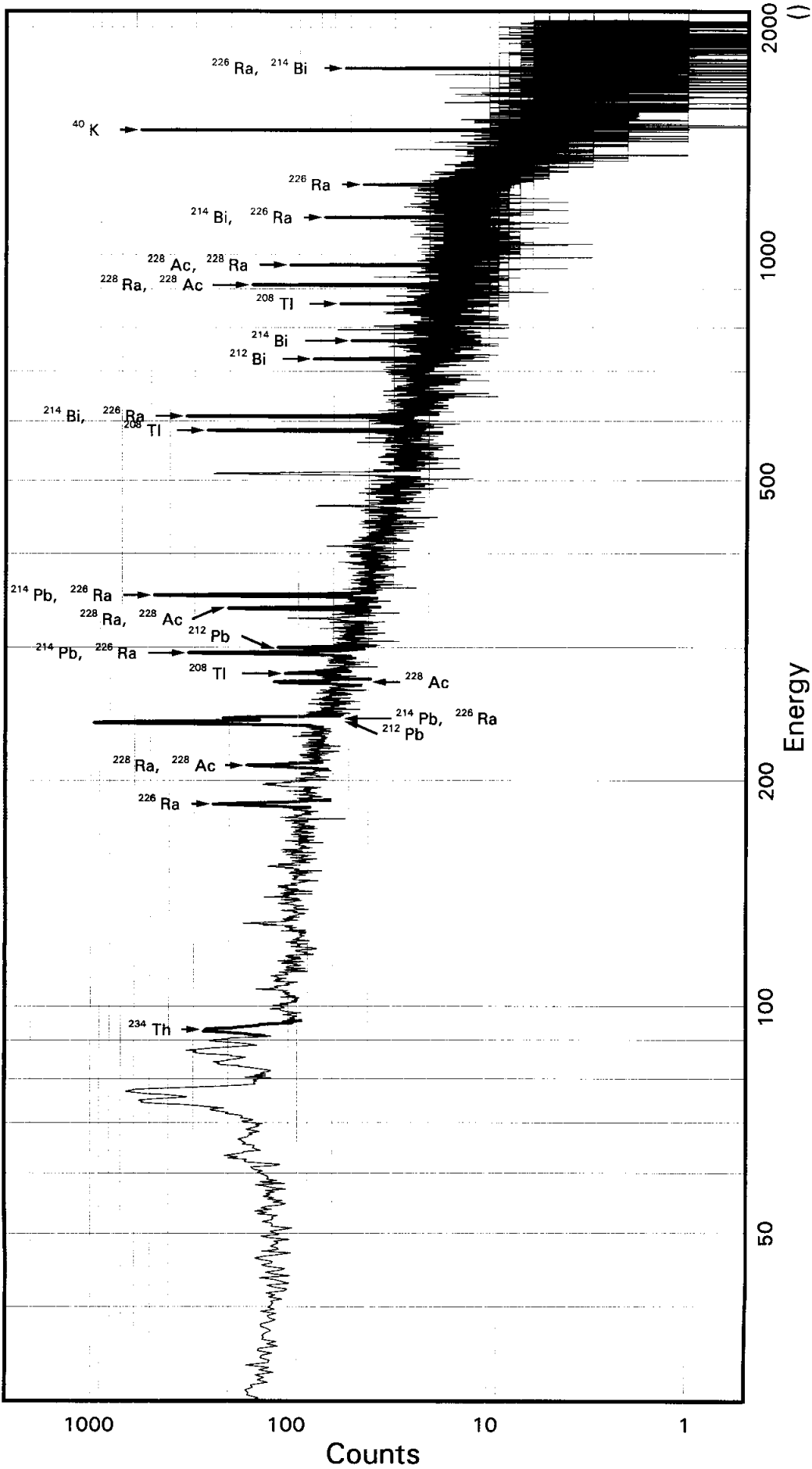
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-1.367E-02		4.777E-02	1.577E-01	5.066E-03	-0.087
CO-60	-2.212E-02		1.169E-02	3.817E-02	1.291E-03	-0.580
CS-137	-4.163E-02		1.101E-02	3.330E-02	1.241E-03	-1.250
TH-227	4.731E-01		6.872E-02	1.981E-01	7.102E-03	2.389
AM-241	6.435E-02		1.638E-02	4.803E-02	1.495E-03	1.340

**STL Richland WA.  
BRCO SOLID**

Batch ID: 7330517

Sample ID: KCMPX1AA  
Detector ID: GER10 1



Energy Coefficients:  
Offset: 1.47095E+01  
Slope: 2.47269E-01  
Quadrature: 3.47932E-09

Acquisition Start: 20-DEC-2007 10:19:58.06  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION: KCMPX1AA

CONFIGURATION ID: GER10:KCMPX1AA\_201271019  
TITLE : BRCO SOLID  
SAMPLE ID : KCMPX1AA

REPORT DATE: 22-DEC-07	SAMPLE DATE: 19-NOV-2007 07:25:00.00
ACQUIRE DATE: 20-DEC-07 10:19:58	CALIB DATE: 20-DEC-2007 03:31:13.20
ELAPSED LIVE TIME: 60000.0 Sec	ELAPSED LIVE TIME: 0 16:40:00
PRESET LIVE TIME: 0 16:40:00	ELAPSED REAL TIME: 0 16:40:12

SAMPLE QUANTITY: 4.8400E+01	UNITS: GRAMS
SAMPLE GEOMETRY: S25	SAMPLE TYPE:

ENERGY OFFSET: 1.4710E+01 keV	FWHM OFFSET: 1.0985E+00 keV
ENERGY SLOPE: 2.4727E-01 keV/C	FWHM SLOPE: 2.4535E-02 sqr keV
ENERGY Q COEFF: 3.4793E-09 keV/C <sup>2</sup>	ITERATIONS: 10
PEAK SENSITIVITY: 5.000	GAUSSIAN SENSITIVITY: 20.00 %

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 22-DEC-2007 08:40:41

```

Configuration      : $DISK1:[GER10.SAMPLE]KCOMPX1AA_201271019.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 07:25:00 Acquisition date : 20-DEC-2007 10:19:58
Sample ID        : KCOMPX1AA Sample quantity : 48.400 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:12.28 0.0%
Start energy     : 17.18 End energy : 2040.57
Sensitivity      : 5.00 Gaussian : 20.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	74.87*	1410	2680	1.26	243.28	237	29	2.35E-02	9.5	1.07E+00
2	2	77.09	2946	2771	1.36	252.26	237	29	4.91E-02	4.6	
3	0	87.18	1000	2037	1.53	293.09	287	13	1.67E-02	9.8	
4	0	89.98	525	1355	1.23	304.39	300	10	8.74E-03	13.9	
5	0	93.14	1221	1881	1.66	317.20	310	18	2.04E-02	8.9	
6	0	128.94	201	1320	1.08	461.98	457	13	3.34E-03	38.0	
7	0	186.21	949	1540	1.42	693.58	684	19	1.58E-02	10.5	
8	0	209.27	706	1481	1.40	786.84	776	22	1.18E-02	14.4	
9	3	238.66	5786	1281	1.50	905.68	893	37	9.64E-02	2.0	1.14E+00
10	3	241.67	1282	1628	1.97	917.86	893	37	2.14E-02	9.9	
11	0	270.22	520	1053	2.03	1033.32	1023	21	8.67E-03	13.9	
12	0	277.22	212	838	1.02	1061.61	1055	15	3.53E-03	26.4	
13	0	295.19	1930	1269	1.48	1134.32	1120	27	3.22E-02	4.9	
14	0	300.29	369	665	1.04	1154.91	1147	15	6.15E-03	14.1	
15	0	328.02	349	1003	1.12	1267.08	1255	23	5.82E-03	20.7	
16	0	338.30	1069	1001	1.58	1308.64	1298	21	1.78E-02	7.0	
17	0	351.91	3129	979	1.64	1363.66	1351	24	5.21E-02	2.9	
18	0	462.77	401	719	1.80	1812.00	1798	26	6.68E-03	16.2	
19	0	510.88*	464	1102	2.34	2006.55	1990	36	7.74E-03	27.0	
20	0	583.05	1814	664	1.70	2298.38	2283	29	3.02E-02	4.2	
21	0	609.31	2244	698	1.65	2404.59	2392	28	3.74E-02	3.5	
22	0	727.10	440	428	1.62	2880.91	2868	24	7.34E-03	11.5	
23	0	768.62	207	259	1.07	3048.84	3040	17	3.45E-03	16.8	
24	0	794.55	167	342	0.96	3153.68	3142	20	2.79E-03	24.3	
25	0	860.32	213	379	1.27	3419.63	3406	24	3.55E-03	21.6	
26	0	911.14	1208	347	2.14	3625.15	3613	25	2.01E-02	4.5	
27	0	933.97	88	253	0.68	3717.48	3710	18	1.46E-03	38.0	
28	0	969.29	533	551	1.92	3860.29	3846	27	8.88E-03	11.5	
29	0	1120.33	494	317	2.13	4471.06	4458	25	8.24E-03	9.3	
30	0	1238.11	272	293	1.84	4947.33	4934	26	4.53E-03	15.8	
31	0	1377.62	156	144	1.25	5511.44	5499	24	2.60E-03	17.4	
32	0	1460.80*	4606	163	2.07	5847.76	5828	40	7.68E-02	1.7	
33	0	1729.37	105	73	1.81	6933.75	6921	23	1.75E-03	18.9	
34	0	1764.49	470	75	2.04	7075.73	7058	33	7.83E-03	6.2	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER10.SAMPLE]KCMPX1AA\_201271019.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 07:25:00 Acquisition date : 20-DEC-2007 10:19:58  
 Sample ID : KCMPX1AA Sample quantity : 48.400 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:12.28 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	4606	10.67*	1.619E+00	2.482E+01	2.482E+01	6.40
TL-208	277.28	212	6.31	6.599E+00	4.738E-01	4.889E-01	27.12
	583.02	1814	84.50*	3.699E+00	5.401E-01	5.572E-01	7.44
	860.30	213	12.42	2.613E+00	6.112E-01	6.306E-01	22.65
PB-212	238.58	5786	43.30*	7.318E+00	1.700E+00	1.754E+00	6.47
	300.03	369	3.28	6.232E+00	1.679E+00	1.732E+00	15.35
BI-214	609.31	2244	46.09*	3.561E+00	1.272E+00	1.272E+00	7.18
	768.35	207	4.94	2.898E+00	1.344E+00	1.344E+00	18.08
	1120.27	494	15.10	2.043E+00	1.491E+00	1.491E+00	11.19
	1764.49	470	15.40	1.413E+00	2.011E+00	2.011E+00	8.60
PB-214	241.92	1282	7.43	7.256E+00	2.213E+00	2.213E+00	11.65
	295.09	1930	19.30	6.309E+00	1.475E+00	1.475E+00	7.81
	351.87	3129	37.60*	5.542E+00	1.398E+00	1.398E+00	6.62
RA-226DA	186.21	949	3.50	8.535E+00	2.957E+00	2.958E+00	12.13
	241.98	1282	7.49	7.256E+00	2.195E+00	2.195E+00	11.65
	295.22	1930	19.20	6.309E+00	1.482E+00	1.482E+00	7.81
	351.92	3129	37.20	5.542E+00	1.413E+00	1.413E+00	6.62
	609.32	2244	46.30*	3.561E+00	1.267E+00	1.267E+00	7.18
	1120.28	494	15.10	2.043E+00	1.491E+00	1.491E+00	11.19
AC-228	1238.11	272	5.94	1.865E+00	2.281E+00	2.281E+00	16.91
	1764.49	470	15.80	1.413E+00	1.960E+00	1.960E+00	8.60
	209.39	706	3.89	7.966E+00	2.121E+00	2.143E+00	15.65
	270.26	520	3.46	6.719E+00	2.083E+00	2.104E+00	15.23
	338.42	1069	11.27	5.708E+00	1.546E+00	1.563E+00	9.20
RA-228DA	911.16	1208	25.80*	2.477E+00	1.760E+00	1.778E+00	8.32
	968.97	533	15.80	2.338E+00	1.342E+00	1.356E+00	13.36
	209.28	706	4.40	7.966E+00	1.875E+00	1.895E+00	15.65
	338.32	1069	11.40	5.708E+00	1.529E+00	1.545E+00	9.20
	911.07	1208	27.70*	2.477E+00	1.639E+00	1.656E+00	8.32
	964.60	-----	5.20	2.349E+00	-----	Line Not Found	-----
	969.11	533	16.60	2.338E+00	1.277E+00	1.291E+00	13.36

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	74.87	1410	2680	1.26	243.28	237	29	2.35E-02	9.5	7.80E+00	
2	77.09	2946	2771	1.36	252.26	237	29	4.91E-02	4.6	8.09E+00	
0	87.18	1000	2037	1.53	293.09	287	13	1.67E-02	9.8	9.09E+00	
0	89.98	525	1355	1.23	304.39	300	10	8.74E-03	13.9	9.29E+00	
0	93.14	1221	1881	1.66	317.20	310	18	2.04E-02	8.9	9.47E+00	T
0	128.94	201	1320	1.08	461.98	457	13	3.34E-03	38.0	9.89E+00	
0	328.02	349	1003	1.12	1267.08	1255	23	5.82E-03	20.7	5.84E+00	
0	462.77	401	719	1.80	1812.00	1798	26	6.68E-03	16.2	4.48E+00	
0	510.88	464	1102	2.34	2006.55	1990	36	7.74E-03	27.0	4.13E+00	
0	727.10	440	428	1.62	2880.91	2868	24	7.34E-03	11.5	3.05E+00	T
0	794.55	167	342	0.96	3153.68	3142	20	2.79E-03	24.3	2.81E+00	
0	933.97	88	253	0.68	3717.48	3710	18	1.46E-03	38.0	2.42E+00	
0	1377.62	156	144	1.25	5511.44	5499	24	2.60E-03	17.4	1.70E+00	
0	1729.37	105	73	1.81	6933.75	6921	23	1.75E-03	18.9	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	0.05	727.25*	6.58	2.108E+00	13.30	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	1.973E+00	10.68	Abun.
		% Abundances	Found =	55.78			

Flag: "\*" = Keyline

Configuration : \$DISK1:[GER10.SAMPLE]KCMPX1AA\_201271019.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 : 19-NOV-2007 07:25:00 Acquisition date : 20-DEC-2007 10:19:58  
 Sample ID : KCMPX1AA Sample quantity : 48.400 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:12.28 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	2.482E+01	1.588E+00	2.942E-01	1.061E-02	84.361
TL-208	5.572E-01	4.145E-02	3.299E-02	1.189E-03	16.891
PB-212	1.754E+00	1.135E-01	5.013E-02	1.810E-03	34.982
BI-214	1.272E+00	9.140E-02	6.411E-02	2.415E-03	19.845
PB-214	1.398E+00	9.250E-02	6.059E-02	1.973E-03	23.069
RA-226DA	1.267E+00	9.099E-02	6.382E-02	2.404E-03	19.845
AC-228	1.778E+00	1.479E-01	1.358E-01	6.602E-03	13.094
RA-228DA	1.656E+00	1.377E-01	1.265E-01	6.149E-03	13.095

---- Non-Identified Nuclides ----

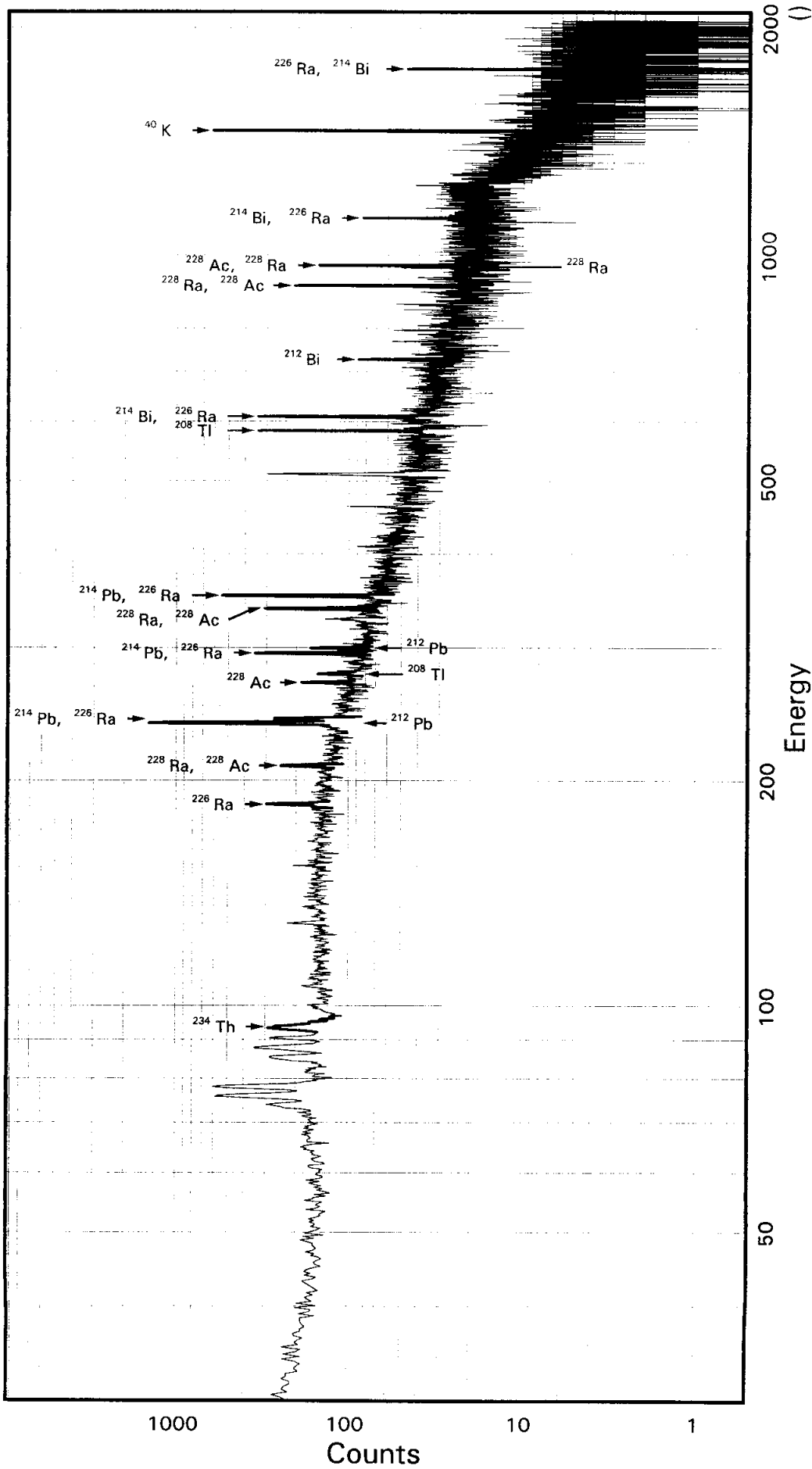
Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-2.721E-02		5.551E-02	1.820E-01	6.042E-03	-0.150
CO-60	4.847E-03		1.058E-02	3.656E-02	1.333E-03	0.133
CS-137	-9.620E-04		1.058E-02	3.522E-02	1.443E-03	-0.027
PB-210	6.570E-01		5.932E-01	2.005E+00	1.463E-01	0.328
BI-212	2.108E+00	+	2.805E-01	6.554E-01	2.847E-02	3.217
TH-227	1.389E+00		1.121E-01	2.483E-01	8.972E-03	5.594
TH-234	3.309E-01		2.303E-01	7.748E-01	2.382E-02	0.427
AM-241	-8.691E-02		3.369E-02	1.093E-01	3.492E-03	-0.795



STL Richland WA.  
BRCO SOLID

Sample ID: KCMP51AA  
Detector ID: GER13 1

Batch ID: 7330517



Acquisition Start: 20-DEC-2007 10:20:57.61  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: -5.60884E-01  
Slope: 2.50876E-01  
Quadrature: -1.11831E-07

SAMPLE IDENTIFICATION: KCMP51AA

CONFIGURATION ID: GER13:KCMP51AA\_201271020  
TITLE : BRCO SOLID  
SAMPLE ID : KCMP51AA

REPORT DATE: 21-DEC-07  
ACQUIRE DATE: 20-DEC-07 10:20:57  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 19-NOV-2007 07:45:00.00  
CALIB DATE: 20-DEC-2007 03:17:08.96  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:16

SAMPLE QUANTITY: 4.5800E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: -.5609E+00 keV  
ENERGY SLOPE: 2.5088E-01 keV/C  
ENERGY Q COEFF: -.1118E-06 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.8178E-01 keV  
FWHM SLOPE: 3.9486E-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 21-DEC-2007 03:01:24

```

Configuration      : $DISK1:[GER13.SAMPLE]KCMP51AA_201271020.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 07:45:00 Acquisition date : 20-DEC-2007 10:20:57
Sample ID        : KCMP51AA Sample quantity : 45.800 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:16.51 0.0%
Start energy     : 19.51 End energy : 2047.11
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	5	73.78*	48	1717	0.87	296.37	291	31	7.93E-04	203.1	2.06E+00
2	5	75.85*	1001	1739	0.95	304.60	291	31	1.67E-02	11.1	
3	5	78.02	2040	1826	1.05	313.26	291	31	3.40E-02	5.0	
4	4	85.30*	323	2185	1.24	342.32	335	24	5.39E-03	39.1	8.45E-01
5	4	87.89*	734	1917	1.11	352.64	335	24	1.22E-02	14.5	
6	0	90.52	419	1359	0.74	363.12	359	9	6.99E-03	16.6	
7	0	93.81	916	2606	1.32	376.24	369	19	1.53E-02	13.8	
8	0	129.20	284	1541	0.87	517.34	512	11	4.74E-03	27.4	
9	0	185.79	896	2086	1.20	743.04	735	16	1.49E-02	11.9	
10	0	209.19	610	1473	1.27	836.39	830	12	1.02E-02	13.2	
11	4	238.48*	5682	1599	1.09	953.22	945	28	9.47E-02	2.4	1.60E+00
12	4	241.35	1243	1832	1.60	964.68	945	28	2.07E-02	8.9	
13	0	269.94	487	1149	1.05	1078.74	1072	13	8.11E-03	15.0	
14	0	277.07	340	1445	1.24	1107.18	1100	16	5.66E-03	25.6	
15	0	295.11*	1185	1336	1.24	1179.16	1173	16	1.98E-02	8.6	
16	0	299.98	377	1068	1.01	1198.62	1192	13	6.28E-03	18.6	
17	0	327.88	394	1272	2.80	1309.92	1301	17	6.57E-03	21.4	
18	0	338.10	1191	1402	1.23	1350.72	1341	19	1.99E-02	8.1	
19	0	351.70*	2138	1213	1.19	1405.02	1396	18	3.56E-02	5.2	
20	0	409.08	144	613	1.33	1634.05	1630	11	2.40E-03	34.1	
21	0	462.93	266	659	1.11	1849.01	1844	14	4.43E-03	21.5	
22	0	510.84*	516	1412	2.00	2040.31	2027	31	8.60E-03	29.4	
23	0	583.11*	1439	950	1.45	2328.94	2317	21	2.40E-02	7.1	
24	0	609.34*	1510	1017	1.49	2433.72	2421	29	2.52E-02	7.5	
25	0	727.16	456	550	1.78	2904.48	2893	22	7.60E-03	12.1	
26	0	795.28	211	513	1.55	3176.74	3166	21	3.52E-03	23.8	
27	0	911.22*	1156	610	1.68	3640.31	3625	30	1.93E-02	7.0	
28	0	964.82	97	423	1.68	3854.65	3847	15	1.61E-03	41.0	
29	0	969.07*	659	534	1.36	3871.68	3862	25	1.10E-02	10.1	
30	0	1120.30*	346	457	1.78	4476.72	4463	28	5.77E-03	19.4	
31	0	1460.50*	4037	364	2.11	5839.04	5821	35	6.73E-02	2.6	
32	0	1763.89*	159	124	2.32	7055.37	7039	30	2.65E-03	26.1	

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER13.SAMPLE]KCMP51AA_201271020.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 07:45:00 Acquisition date : 20-DEC-2007 10:20:57
Sample ID         : KCMP51AA           Sample quantity  : 45.800 GRAMS
Sample type       :                    Sample geometry   : S25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:16.51   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
					PCI/GRAM	PCI/GRAM	%Error
K-40	1460.83	4037	10.67*	1.575E+00	2.363E+01	2.363E+01	10.50
TL-208	277.28	340	6.31	6.639E+00	7.974E-01	8.227E-01	26.30
	583.02	1439	84.50*	3.643E+00	4.598E-01	4.744E-01	9.41
	860.30	-----	12.42	2.594E+00	-----	Line Not Found	-----
PB-212	238.58	5682	43.30*	7.395E+00	1.745E+00	1.801E+00	6.66
	300.03	377	3.28	6.249E+00	1.809E+00	1.866E+00	19.59
BI-214	609.31	1510	46.09*	3.510E+00	9.179E-01	9.180E-01	9.75
	768.35	-----	4.94	2.871E+00	-----	Line Not Found	-----
	1120.27	346	15.10	2.028E+00	1.112E+00	1.112E+00	20.69
PB-214	1764.49	159	15.40	1.327E+00	7.662E-01	7.662E-01	27.05
	241.92	1243	7.43	7.335E+00	2.243E+00	2.243E+00	10.89
	295.09	1185	19.30	6.329E+00	9.545E-01	9.545E-01	10.55
	351.87	2138	37.60*	5.514E+00	1.014E+00	1.014E+00	7.96
RA-226DA	186.21	896	3.50	8.560E+00	2.940E+00	2.940E+00	13.44
	241.98	1243	7.49	7.335E+00	2.225E+00	2.225E+00	10.89
	295.22	1185	19.20	6.329E+00	9.594E-01	9.595E-01	10.55
	351.92	2138	37.20	5.514E+00	1.025E+00	1.025E+00	7.96
	609.32	1510	46.30*	3.510E+00	9.138E-01	9.138E-01	9.75
AC-228	1120.28	346	15.10	2.028E+00	1.112E+00	1.112E+00	20.69
	1238.11	-----	5.94	1.843E+00	-----	Line Not Found	-----
	1764.49	159	15.80	1.327E+00	7.468E-01	7.468E-01	27.05
	209.39	610	3.89	8.040E+00	1.917E+00	1.937E+00	14.64
	270.26	487	3.46	6.769E+00	2.044E+00	2.066E+00	16.26
RA-228DA	338.42	1191	11.27	5.690E+00	1.827E+00	1.846E+00	10.07
	911.16	1156	25.80*	2.461E+00	1.791E+00	1.810E+00	11.36
	968.97	659	15.80	2.325E+00	1.763E+00	1.782E+00	13.21
	209.28	610	4.40	8.040E+00	1.695E+00	1.713E+00	14.64
	338.32	1191	11.40	5.690E+00	1.806E+00	1.825E+00	10.07
	911.07	1156	27.70*	2.461E+00	1.668E+00	1.686E+00	11.36
	964.60	97	5.20	2.334E+00	7.837E-01	7.919E-01	41.93
	969.11	659	16.60	2.325E+00	1.678E+00	1.696E+00	13.21

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
5	73.78	48	1717	0.87	296.37	291	31	7.93E-04	****	3.91E+00	
5	75.85	1001	1739	0.95	304.60	291	31	1.67E-02	11.1	4.26E+00	
5	78.02	2040	1826	1.05	313.26	291	31	3.40E-02	5.0	4.61E+00	
4	85.30	323	2185	1.24	342.32	335	24	5.39E-03	39.1	5.73E+00	
4	87.89	734	1917	1.11	352.64	335	24	1.22E-02	14.5	6.09E+00	
0	90.52	419	1359	0.74	363.12	359	9	6.99E-03	16.6	6.44E+00	
0	93.81	916	2606	1.32	376.24	369	19	1.53E-02	13.8	6.84E+00	T
0	129.20	284	1541	0.87	517.34	512	11	4.74E-03	27.4	9.02E+00	
0	327.88	394	1272	2.80	1309.92	1301	17	6.57E-03	21.4	5.83E+00	
0	409.08	144	613	1.33	1634.05	1630	11	2.40E-03	34.1	4.88E+00	
0	462.93	266	659	1.11	1849.01	1844	14	4.43E-03	21.5	4.41E+00	
0	510.84	516	1412	2.00	2040.31	2027	31	8.60E-03	29.4	4.07E+00	
0	727.16	456	550	1.78	2904.48	2893	22	7.60E-03	12.1	3.01E+00	T
0	795.28	211	513	1.55	3176.74	3166	21	3.52E-03	23.8	2.78E+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	2.333E+00	13.90	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	2.168E+00	15.30	Abun.
		% Abundances Found =		55.78			

Flag: "\*" = Keyline

```

Configuration      : $DISK1:[GER13.SAMPLE]KCMP51AA_201271020.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       : 19-NOV-2007 07:45:00 Acquisition date : 20-DEC-2007 10:20:57
Sample ID        : KCMP51AA           Sample quantity  : 45.800 GRAMS
Sample type      :                     Sample geometry   : S25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:16.51   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	2.363E+01	2.481E+00	3.983E-01	3.525E-02	59.322
TL-208	4.744E-01	4.462E-02	3.940E-02	1.393E-03	12.043
PB-212	1.801E+00	1.198E-01	5.892E-02	2.187E-03	30.560
BI-214	9.180E-01	8.949E-02	7.410E-02	2.707E-03	12.388
PB-214	1.014E+00	8.077E-02	7.180E-02	2.411E-03	14.128
RA-226DA	9.138E-01	8.908E-02	7.377E-02	2.695E-03	12.388
AC-228	1.810E+00	2.056E-01	1.520E-01	1.130E-02	11.907
RA-228DA	1.686E+00	1.915E-01	1.416E-01	1.053E-02	11.908

---- Non-Identified Nuclides ----

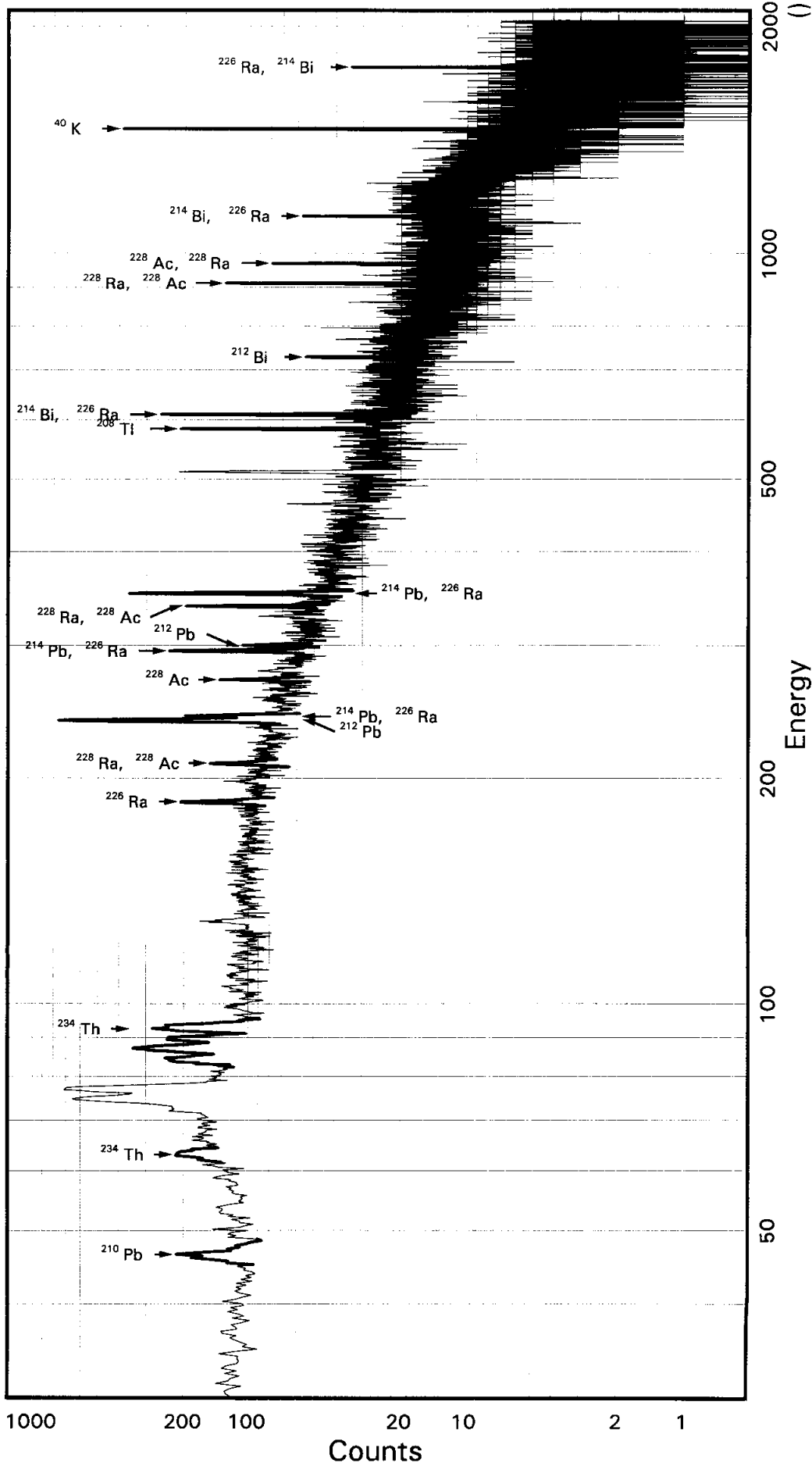
Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	7.333E-02		6.272E-02	2.138E-01	7.384E-03	0.343
CO-60	5.870E-03		1.305E-02	4.437E-02	4.414E-03	0.132
CS-137	-6.154E-03		1.200E-02	4.013E-02	1.559E-03	-0.153
PB-210	-4.167E+00		4.053E+00	1.271E+01	2.509E+00	-0.328
BI-212	2.333E+00	+	3.243E-01	7.335E-01	3.504E-02	3.181
TH-227	3.555E-01		7.518E-02	2.211E-01	8.219E-03	1.608
TH-234	-1.194E-01		5.057E-01	1.705E+00	7.269E-02	-0.070
AM-241	-7.678E-02		8.808E-02	2.958E-01	1.157E-02	-0.260

STL Richland WA.

BRCO SOLID

Sample ID: KCMQF1AA  
 Detector ID: GER14 1

Batch ID: 7330517



Energy Coefficients:  
 Offset: -6.56313E-01  
 Slope: 2.48260E-01  
 Quadrature: 2.43271E-09

Acquisition Start: 20-DEC-2007 10:21:56.51  
 Preset Live Time: 0 16:40:00.00  
 Elapsed Live Time: 0 16:40:00.00



SAMPLE IDENTIFICATION: KCMQF1AA

CONFIGURATION ID: GER14:KCMQF1AA\_201271021  
TITLE : BRCO SOLID  
SAMPLE ID : KCMQF1AA

REPORT DATE: 22-DEC-07  
ACQUIRE DATE: 20-DEC-07 10:21:56  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 19-NOV-2007 07:55:00.00  
CALIB DATE: 20-DEC-2007 03:17:22.74  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:16

SAMPLE QUANTITY: 5.0000E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: -.6563E+00 keV  
ENERGY SLOPE: 2.4826E-01 keV/C  
ENERGY Q COEFF: 2.4327E-09 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.0287E+00 keV  
FWHM SLOPE: 3.1012E-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 22-DEC-2007 08:41:19

Configuration : \$DISK1:[GER14.SAMPLE]KCMQF1AA\_201271021.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 07:55:00 Acquisition date : 20-DEC-2007 10:21:56  
 Sample ID : KCMQF1AA Sample quantity : 50.000 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:16.81 0.0%  
 Start energy : 19.20 End energy : 2033.25  
 Sensitivity : 5.00 Gaussian : 20.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.50	556	1416	1.00	189.95	184	15	9.26E-03	15.4	
2	0	63.11	527	1624	1.57	256.85	251	12	8.78E-03	15.9	
3	2	74.79*	2161	3329	1.41	303.92	295	40	3.60E-02	7.1	8.56E-01
4	2	77.05	3488	2657	1.40	313.01	295	40	5.81E-02	4.0	
5	2	84.28*	229	2023	1.59	342.11	334	54	3.81E-03	52.5	4.97E+00
6	2	87.27*	1178	2024	1.52	354.18	334	54	1.96E-02	10.3	
7	2	89.77	916	2023	1.60	364.25	334	54	1.53E-02	12.7	
8	2	92.57	984	1617	1.35	375.53	334	54	1.64E-02	10.2	
9	0	186.18	748	1887	1.44	752.56	742	21	1.25E-02	15.0	
10	0	209.50	328	1789	1.34	846.50	836	21	5.47E-03	32.7	
11	4	238.64	4335	1345	1.51	963.89	952	34	7.22E-02	2.3	1.18E+00
12	4	241.59	1039	1395	2.00	975.78	952	34	1.73E-02	8.8	
13	0	270.18	409	1013	0.95	1090.94	1083	17	6.82E-03	16.0	
14	0	295.21	1236	1305	1.57	1191.73	1181	23	2.06E-02	7.0	
15	0	300.25	217	886	1.01	1212.03	1205	15	3.61E-03	26.6	
16	0	338.35	877	1090	1.38	1365.50	1354	23	1.46E-02	8.9	
17	0	351.93*	1954	1083	1.43	1420.22	1407	26	3.26E-02	5.0	
18	0	463.07	252	740	1.60	1867.86	1856	24	4.19E-03	25.0	
19	0	510.94*	489	962	2.45	2060.68	2044	36	8.15E-03	24.1	
20	0	583.26	1230	608	1.50	2351.98	2341	24	2.05E-02	5.3	
21	0	609.34*	1372	575	1.60	2457.01	2445	25	2.29E-02	5.8	
22	0	727.24	289	385	2.18	2931.90	2920	22	4.82E-03	15.8	
23	0	794.51	52	389	0.92	3202.87	3193	21	8.65E-04	81.8	
24	0	911.22	949	306	1.89	3672.92	3659	27	1.58E-02	5.4	
25	0	969.51	331	526	1.70	3907.72	3890	27	5.52E-03	15.5	
26	0	1120.55	287	270	1.58	4516.08	4506	22	4.78E-03	12.6	
27	0	1460.86*	2704	202	2.25	5886.69	5867	37	4.51E-02	2.9	
28	0	1589.24	37	98	1.12	6403.76	6386	22	6.16E-04	54.6	
29	0	1764.92*	218	100	2.30	7111.31	7094	40	3.63E-03	16.2	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER14.SAMPLE]KCMQF1AA\_201271021.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 07:55:00 Acquisition date : 20-DEC-2007 10:21:56  
 Sample ID : KCMQF1AA Sample quantity : 50.000 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:16.81 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	2704	10.67*	1.072E+00	2.130E+01	2.130E+01	7.03
TL-208	277.28	-----	6.31	4.893E+00	-----	Line Not Found	-----
	583.02	1230	84.50*	2.508E+00	5.229E-01	5.395E-01	8.10
	860.30	-----	12.42	1.743E+00	-----	Line Not Found	-----
PB-210	46.52	556	4.25*	8.487E+00	1.388E+00	1.392E+00	16.56
PB-212	238.58	4335	43.30*	5.529E+00	1.631E+00	1.683E+00	6.77
	300.03	217	3.28	4.575E+00	1.302E+00	1.343E+00	27.25
BI-214	609.31	1372	46.09*	2.407E+00	1.114E+00	1.114E+00	8.44
	768.35	-----	4.94	1.937E+00	-----	Line Not Found	-----
	1120.27	287	15.10	1.364E+00	1.255E+00	1.255E+00	13.98
	1764.49	218	15.40	9.067E-01	1.407E+00	1.407E+00	17.30
PB-214	241.92	1039	7.43	5.476E+00	2.301E+00	2.301E+00	10.89
	295.09	1236	19.30	4.642E+00	1.244E+00	1.244E+00	9.31
	351.87	1954	37.60*	3.984E+00	1.175E+00	1.175E+00	7.74
RA-226DA	186.21	748	3.50	6.657E+00	2.892E+00	2.892E+00	16.32
	241.98	1039	7.49	5.476E+00	2.282E+00	2.282E+00	10.89
	295.22	1236	19.20	4.642E+00	1.250E+00	1.250E+00	9.31
	351.92	1954	37.20	3.984E+00	1.188E+00	1.188E+00	7.74
	609.32	1372	46.30*	2.407E+00	1.109E+00	1.109E+00	8.44
	1120.28	287	15.10	1.364E+00	1.255E+00	1.255E+00	13.98
	1238.11	-----	5.94	1.245E+00	-----	Line Not Found	-----
	1764.49	218	15.80	9.067E-01	1.371E+00	1.371E+00	17.30
AC-228	209.39	328	3.89	6.112E+00	1.242E+00	1.255E+00	33.35
	270.26	409	3.46	5.000E+00	2.130E+00	2.153E+00	17.18
	338.42	877	11.27	4.125E+00	1.700E+00	1.718E+00	10.74
	911.16	949	25.80*	1.652E+00	2.006E+00	2.027E+00	8.59
	968.97	331	15.80	1.559E+00	1.212E+00	1.224E+00	16.79
RA-228DA	209.28	328	4.40	6.112E+00	1.098E+00	1.110E+00	33.35
	338.32	877	11.40	4.125E+00	1.681E+00	1.698E+00	10.74
	911.07	949	27.70*	1.652E+00	1.869E+00	1.888E+00	8.59
	964.60	-----	5.20	1.566E+00	-----	Line Not Found	-----
	969.11	331	16.60	1.559E+00	1.153E+00	1.165E+00	16.79
TH-234	63.29	527	4.82*	9.551E+00	1.031E+00	1.031E+00	16.95
	92.59	984	6.08	9.403E+00	1.550E+00	1.550E+00	11.83

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	74.79	2161	3329	1.41	303.92	295	40	3.60E-02	7.1	9.67E+00	
2	77.05	3488	2657	1.40	313.01	295	40	5.81E-02	4.0	9.66E+00	
2	84.28	229	2023	1.59	342.11	334	54	3.81E-03	52.5	9.58E+00	
2	87.27	1178	2024	1.52	354.18	334	54	1.96E-02	10.3	9.52E+00	
2	89.77	916	2023	1.60	364.25	334	54	1.53E-02	12.7	9.47E+00	
0	463.07	252	740	1.60	1867.86	1856	24	4.19E-03	25.0	3.11E+00	
0	510.94	489	962	2.45	2060.68	2044	36	8.15E-03	24.1	2.84E+00	
0	727.24	289	385	2.18	2931.90	2920	22	4.82E-03	15.8	2.04E+00	T
0	794.51	52	389	0.92	3202.87	3193	21	8.65E-04	81.8	1.88E+00	
0	1589.24	37	98	1.12	6403.76	6386	22	6.16E-04	54.6	9.94E-01	

Flags: "T" = Tentatively associated

Rejected Report  
Sample ID : KCMQF1AA

Page : 3  
Acquisition date : 20-DEC-2007 10:21:56

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	2.002E+00	17.05	Abun.
			785.51	1.10	---	Not Found	---
			1620.66	1.49	---	Not Found	---
% Abundances Found =				71.76			

Flag: "\*" = Keyline

Configuration : \$DISK1:[GER14.SAMPLE]KCMQF1AA\_201271021.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 : 19-NOV-2007 07:55:00 Acquisition date : 20-DEC-2007 10:21:56  
 Sample ID : KCMQF1AA Sample quantity : 50.000 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:16.81 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	2.130E+01	1.498E+00	4.640E-01	1.869E-02	45.903
TL-208	5.395E-01	4.370E-02	5.081E-02	1.772E-03	10.618
PB-210	1.392E+00	2.306E-01	4.752E-01	1.655E-02	2.930
PB-212	1.683E+00	1.139E-01	6.890E-02	2.715E-03	24.425
BI-214	1.114E+00	9.408E-02	9.018E-02	3.244E-03	12.356
PB-214	1.175E+00	9.096E-02	8.565E-02	2.759E-03	13.724
RA-226DA	1.109E+00	9.366E-02	8.977E-02	3.229E-03	12.355
AC-228	2.027E+00	1.741E-01	1.839E-01	8.125E-03	11.023
RA-228DA	1.888E+00	1.621E-01	1.713E-01	7.567E-03	11.024
TH-234	1.031E+00	1.747E-01	4.373E-01	1.357E-02	2.358

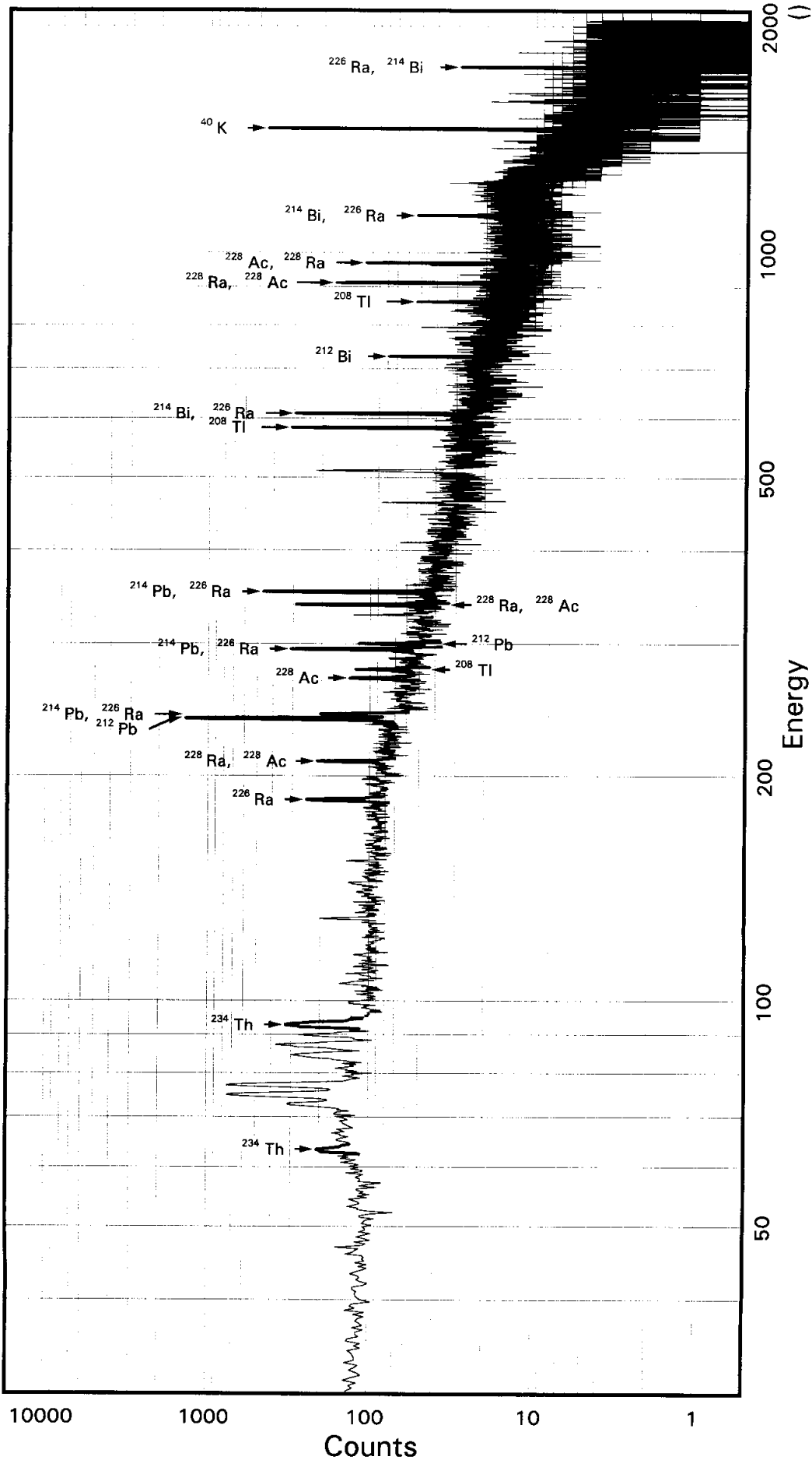
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-4.436E-02		6.772E-02	2.215E-01	8.529E-03	-0.200
CO-60	-4.346E-03		1.587E-02	5.388E-02	2.250E-03	-0.081
CS-137	-2.800E-02		1.481E-02	4.807E-02	1.830E-03	-0.582
BI-212	2.002E+00	+	3.414E-01	8.626E-01	3.468E-02	2.321
TH-227	1.453E+00		1.330E-01	3.145E-01	1.243E-02	4.619
AM-241	4.080E-02		1.902E-02	5.547E-02	1.738E-03	0.736

STL Richland WA.  
BRCO SOLID

Batch ID: 7330517

Sample ID: KCMQH1AA  
Detector ID: GER4 1



Acquisition Start: 20-DEC-2007 10:31:12.02  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: -7.53455E-02  
Slope: 2.48809E-01  
Quadrature: 8.97667E-09

SAMPLE IDENTIFICATION: KCMQH1AA

CONFIGURATION ID: GER4:KCMQH1AA\_201271031  
TITLE : BRCO SOLID  
SAMPLE ID : KCMQH1AA

REPORT DATE: 22-DEC-07	SAMPLE DATE: 19-NOV-2007 08:15:00.00
ACQUIRE DATE: 20-DEC-07 10:31:12	CALIB DATE: 20-DEC-2007 03:35:53.78
ELAPSED LIVE TIME: 60000.0 Sec	ELAPSED LIVE TIME: 0 16:40:00
PRESET LIVE TIME: 0 16:40:00	ELAPSED REAL TIME: 0 16:40:17

SAMPLE QUANTITY: 5.1900E+01	UNITS: GRAMS
SAMPLE GEOMETRY: S25	SAMPLE TYPE:

ENERGY OFFSET: -.7535E-01 keV	FWHM OFFSET: 2.6760E-01 keV
ENERGY SLOPE: 2.4881E-01 keV/C	FWHM SLOPE: 4.8200E-02 sqr keV
ENERGY Q COEFF: 8.9767E-09 keV/C <sup>2</sup>	ITERATIONS: 10
PEAK SENSITIVITY: 5.000	GAUSSIAN SENSITIVITY: 60.00 %

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 22-DEC-2007 08:41:54

Configuration : \$DISK1:[GER4.SAMPLE]KCMQH1AA\_201271031.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 08:15:00 Acquisition date : 20-DEC-2007 10:31:12  
 Sample ID : KCMQH1AA Sample quantity : 51.900 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.74 0.0%  
 Start energy : 19.83 End energy : 2038.77  
 Sensitivity : 5.00 Gaussian : 60.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.41*	119	1184	0.86	255.17	251	9	1.99E-03	63.6	
2	5	72.85*	258	1802	1.09	293.07	287	30	4.30E-03	40.0	2.17E+00
3	5	74.92*	1390	1453	0.94	301.42	287	30	2.32E-02	7.6	
4	5	77.16	2472	1358	0.91	310.42	287	30	4.12E-02	3.6	
5	6	84.62*	264	1817	1.26	340.42	333	24	4.39E-03	41.4	2.18E+00
6	6	87.23*	974	1471	1.08	350.88	333	24	1.62E-02	9.8	
7	0	89.91	595	1093	0.84	361.67	357	10	9.91E-03	11.2	
8	0	92.88*	897	1715	1.55	373.60	367	15	1.49E-02	11.9	
9	0	129.11	276	890	0.73	519.22	515	9	4.60E-03	20.4	
10	0	153.97	106	824	0.64	619.13	616	9	1.77E-03	49.8	
11	0	185.90*	572	1242	1.35	747.45	741	15	9.54E-03	15.8	
12	0	209.25	614	1135	0.98	841.27	834	15	1.02E-02	12.6	
13	5	238.60*	5400	856	1.00	959.22	950	29	9.00E-02	1.9	2.91E+00
14	5	241.44	1061	1000	1.64	970.64	950	29	1.77E-02	7.7	
15	0	270.22	415	866	1.23	1086.29	1079	15	6.91E-03	16.3	
16	0	277.28	344	760	0.94	1114.68	1108	15	5.73E-03	18.3	
17	0	295.21	1340	717	1.15	1186.73	1180	15	2.23E-02	5.2	
18	0	300.17	316	624	1.00	1206.68	1200	14	5.27E-03	17.7	
19	0	327.95	283	527	0.79	1318.32	1313	11	4.71E-03	16.8	
20	0	338.27*	1157	733	1.14	1359.80	1350	18	1.93E-02	6.9	
21	0	351.88*	1971	816	1.17	1414.50	1404	21	3.28E-02	4.7	
22	0	409.52	110	439	0.88	1646.13	1641	12	1.84E-03	39.2	
23	0	463.17	370	464	1.42	1861.73	1852	18	6.16E-03	14.7	
24	0	510.79*	467	815	1.97	2053.08	2040	30	7.78E-03	25.1	
25	0	583.18*	1510	473	1.42	2343.97	2335	21	2.52E-02	4.8	
26	0	609.30*	1203	637	1.14	2448.95	2437	23	2.01E-02	6.8	
27	0	727.25	401	380	1.47	2922.93	2911	24	6.69E-03	12.0	
28	0	794.59	255	303	1.53	3193.49	3180	24	4.25E-03	16.5	
29	0	860.52	240	356	1.57	3458.43	3446	27	4.00E-03	19.6	
30	0	911.11*	945	369	1.69	3661.69	3650	27	1.58E-02	6.5	
31	0	968.78	757	574	1.75	3893.40	3874	35	1.26E-02	9.1	
32	0	1120.10	265	374	1.90	4501.43	4490	26	4.41E-03	17.9	
33	0	1460.69*	3620	184	2.24	5869.79	5852	34	6.03E-02	2.2	
34	0	1764.29*	234	66	2.59	7089.43	7071	31	3.90E-03	12.2	

Flag: "\*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER4.SAMPLE]KCMQH1AA\_201271031.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 08:15:00 Acquisition date : 20-DEC-2007 10:31:12  
 Sample ID : KCMQH1AA Sample quantity : 51.900 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:17.74 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	3620	10.67*	1.116E+00	2.640E+01	2.640E+01	6.44
TL-208	277.28	344	6.31	5.099E+00	9.270E-01	9.564E-01	19.31
	583.02	1510	84.50*	2.699E+00	5.746E-01	5.929E-01	7.79
	860.30	240	12.42	1.867E+00	8.975E-01	9.260E-01	20.82
	238.58	5400	43.30*	5.714E+00	1.894E+00	1.954E+00	6.38
PB-212	300.03	316	3.28	4.788E+00	1.749E+00	1.805E+00	18.72
	609.31	1203	46.09*	2.593E+00	8.739E-01	8.740E-01	9.17
BI-214	768.35	-----	4.94	2.084E+00	-----	Line Not Found	-----
	1120.27	265	15.10	1.439E+00	1.057E+00	1.057E+00	19.04
	1764.49	234	15.40	9.528E-01	1.383E+00	1.383E+00	13.53
	241.92	1061	7.43	5.665E+00	2.188E+00	2.188E+00	9.82
	295.09	1340	19.30	4.852E+00	1.242E+00	1.242E+00	8.03
RA-226DA	351.87	1971	37.60*	4.201E+00	1.083E+00	1.083E+00	7.69
	186.21	572	3.50	6.714E+00	2.113E+00	2.113E+00	16.93
	241.98	1061	7.49	5.665E+00	2.171E+00	2.171E+00	9.82
	295.22	1340	19.20	4.852E+00	1.249E+00	1.249E+00	8.03
	351.92	1971	37.20	4.201E+00	1.095E+00	1.095E+00	7.69
	609.32	1203	46.30*	2.593E+00	8.700E-01	8.700E-01	9.17
AC-228	1120.28	265	15.10	1.439E+00	1.057E+00	1.057E+00	19.04
	1238.11	-----	5.94	1.304E+00	-----	Line Not Found	-----
	1764.49	234	15.80	9.528E-01	1.348E+00	1.348E+00	13.53
	209.39	614	3.89	6.254E+00	2.189E+00	2.212E+00	14.01
	270.26	415	3.46	5.203E+00	1.999E+00	2.020E+00	17.37
	338.42	1157	11.27	4.341E+00	2.053E+00	2.074E+00	9.21
RA-228DA	911.16	945	25.80*	1.765E+00	1.802E+00	1.821E+00	9.58
	968.97	757	15.80	1.661E+00	2.503E+00	2.529E+00	11.41
	209.28	614	4.40	6.254E+00	1.935E+00	1.956E+00	14.01
	338.32	1157	11.40	4.341E+00	2.030E+00	2.051E+00	9.21
	911.07	945	27.70*	1.765E+00	1.678E+00	1.696E+00	9.58
TH-234	964.60	-----	5.20	1.668E+00	-----	Line Not Found	-----
	969.11	757	16.60	1.661E+00	2.382E+00	2.407E+00	11.41
	63.29	119	4.82*	2.767E+00	7.764E-01	7.764E-01	63.91
	92.59	897	6.08	6.295E+00	2.034E+00	2.034E+00	13.49

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
5	72.85	258	1802	1.09	293.07	287	30	4.30E-03	40.0	4.14E+00	
5	74.92	1390	1453	0.94	301.42	287	30	2.32E-02	7.6	4.42E+00	
5	77.16	2472	1358	0.91	310.42	287	30	4.12E-02	3.6	4.71E+00	
6	84.62	264	1817	1.26	340.42	333	24	4.39E-03	41.4	5.56E+00	
6	87.23	974	1471	1.08	350.88	333	24	1.62E-02	9.8	5.82E+00	
0	89.91	595	1093	0.84	361.67	357	10	9.91E-03	11.2	6.06E+00	
0	129.11	276	890	0.73	519.22	515	9	4.60E-03	20.4	7.48E+00	
0	153.97	106	824	0.64	619.13	616	9	1.77E-03	49.8	7.29E+00	
0	327.95	283	527	0.79	1318.32	1313	11	4.71E-03	16.8	4.45E+00	
0	409.52	110	439	0.88	1646.13	1641	12	1.84E-03	39.2	3.69E+00	
0	463.17	370	464	1.42	1861.73	1852	18	6.16E-03	14.7	3.32E+00	
0	510.79	467	815	1.97	2053.08	2040	30	7.78E-03	25.1	3.04E+00	
0	727.25	401	380	1.47	2922.93	2911	24	6.69E-03	12.0	2.20E+00	T
0	794.59	255	303	1.53	3193.49	3180	24	4.25E-03	16.5	2.02E+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	0.05	727.25*	6.58	2.487E+00	13.59	Abun.
			785.51	1.10	---	---	Not Found
			1620.66	1.49	---	---	Not Found
% Abundances Found =			71.76				

Flag: "\*" = Keyline

```

Configuration      : $DISK1:[GER4.SAMPLE]KCMQH1AA_201271031.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       : 19-NOV-2007 08:15:00 Acquisition date : 20-DEC-2007 10:31:12
Sample ID         : KCMQH1AA           Sample quantity  : 51.900 GRAMS
Sample type       :                   Sample geometry   : S25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:17.74   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	2.640E+01	1.699E+00	4.108E-01	1.402E-02	64.248
TL-208	5.929E-01	4.617E-02	3.812E-02	1.333E-03	15.552
PB-212	1.954E+00	1.246E-01	5.127E-02	1.768E-03	38.122
BI-214	8.740E-01	8.015E-02	7.377E-02	2.651E-03	11.847
PB-214	1.083E+00	8.329E-02	6.441E-02	2.196E-03	16.813
RA-226DA	8.700E-01	7.978E-02	7.344E-02	2.639E-03	11.847
AC-228	1.821E+00	1.744E-01	1.579E-01	7.831E-03	11.528
RA-228DA	1.696E+00	1.625E-01	1.471E-01	7.293E-03	11.529
TH-234	7.764E-01	4.963E-01	1.031E+00	3.621E-02	0.753

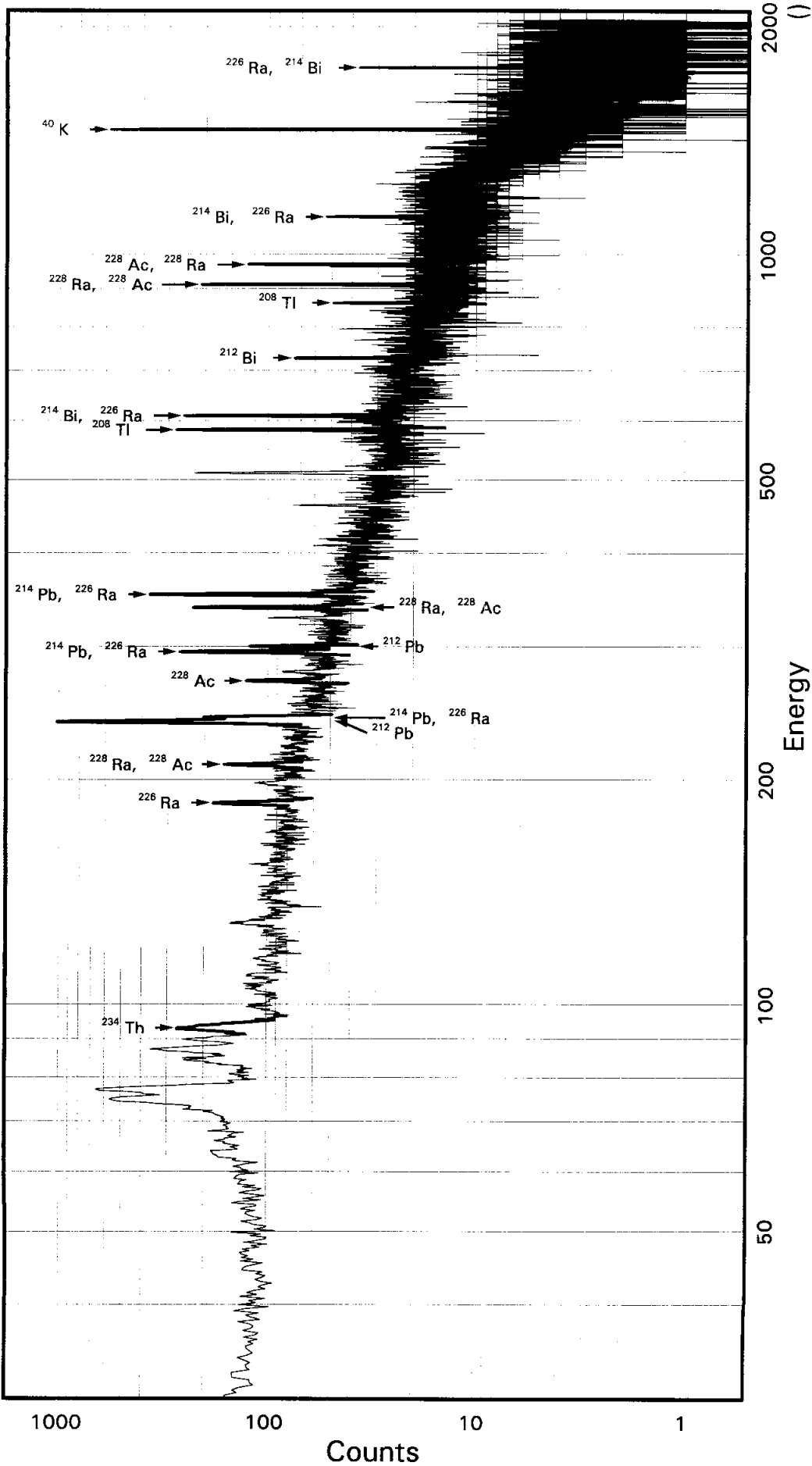
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-3.154E-02		5.213E-02	1.732E-01	5.923E-03	-0.182
CO-60	-2.964E-03		1.343E-02	4.564E-02	1.550E-03	-0.065
CS-137	-4.859E-03		1.227E-02	4.110E-02	1.551E-03	-0.118
PB-210	3.255E+00		1.381E+00	4.646E+00	5.606E-01	0.701
BI-212	2.487E+00	+	3.380E-01	7.758E-01	3.190E-02	3.206
TH-227	1.324E-01		6.436E-02	1.889E-01	6.500E-03	0.701
AM-241	-2.431E-02		4.680E-02	1.573E-01	5.375E-03	-0.155

STL Richland WA.  
BRCO SOLID

Batch ID: 7330517

Sample ID: KCMQJ1AA  
Detector ID: GER10 1



Acquisition Start: 21-DEC-2007 09:37:18.17  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: 1.47164E+01  
Slope: 2.47269E-01  
Quadrature: 2.14166E-09

SAMPLE IDENTIFICATION: KCMQJ1AA

CONFIGURATION ID: GER10:KCMQJ1AA\_211270937  
TITLE : BRCO SOLID  
SAMPLE ID : KCMQJ1AA

REPORT DATE: 22-DEC-07  
ACQUIRE DATE: 21-DEC-07 09:37:18  
ELAPSED LIVE TIME: 60000.0 Sec  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 19-NOV-2007 08:30:00.00  
CALIB DATE: 21-DEC-2007 04:45:45.27  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:12

SAMPLE QUANTITY: 5.0100E+01  
SAMPLE GEOMETRY: S25

UNITS: GRAMS  
SAMPLE TYPE:

ENERGY OFFSET: 1.4716E+01 keV  
ENERGY SLOPE: 2.4727E-01 keV/C  
ENERGY Q COEFF: 2.1417E-09 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.1236E+00 keV  
FWHM SLOPE: 2.5430E-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 22-DEC-2007 08:42:31

```

Configuration      : $DISK1:[GER10.SAMPLE]KCMQJ1AA_211270937.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 08:30:00 Acquisition date : 21-DEC-2007 09:37:18
Sample ID        : KCMQJ1AA           Sample quantity  : 50.100 GRAMS
Sample type      :                     Sample geometry   : S25
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:12.17   0.0%
Start energy     : 17.19               End energy       : 2040.48
Sensitivity      : 5.00                Gaussian        : 50.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	74.87*	1901	2707	1.48	243.27	229	34	3.17E-02	8.1	6.45E+00
2	1	77.01	3319	2409	1.48	251.93	229	34	5.53E-02	4.2	
3	1	87.04	1357	2250	1.50	292.48	274	36	2.26E-02	8.7	1.00E+01
4	1	89.85	652	1625	1.23	303.85	274	36	1.09E-02	13.4	
5	0	93.18	1066	1912	1.55	317.31	310	17	1.78E-02	9.9	
6	0	186.28	780	1611	1.66	693.84	683	22	1.30E-02	13.7	
7	0	209.55	524	1495	1.26	787.95	777	20	8.73E-03	16.0	
8	3	238.65	6140	1173	1.51	905.61	893	35	1.02E-01	1.7	1.86E+00
9	3	241.51	1335	1267	1.96	917.19	893	35	2.22E-02	7.8	
10	0	270.08	620	1264	1.72	1032.74	1022	25	1.03E-02	13.6	
11	0	295.35	1315	1242	1.54	1134.93	1123	23	2.19E-02	6.5	
12	0	300.19	360	764	1.37	1154.51	1147	15	6.00E-03	15.3	
13	0	327.75	299	747	1.06	1265.97	1257	16	4.99E-03	18.4	
14	0	338.49	1362	1064	1.55	1309.39	1298	27	2.27E-02	6.2	
15	0	351.93	2482	1020	1.66	1363.75	1351	28	4.14E-02	3.7	
16	0	463.13	341	713	1.74	1813.46	1802	24	5.68E-03	18.4	
17	0	510.91*	514	1025	2.56	2006.66	1990	38	8.57E-03	24.3	
18	0	583.18	1918	607	1.91	2298.92	2285	28	3.20E-02	3.8	
19	0	609.25	1633	618	1.69	2404.36	2392	23	2.72E-02	4.2	
20	0	727.29	423	410	2.15	2881.73	2872	20	7.06E-03	11.1	
21	0	794.92	308	367	1.57	3155.21	3140	29	5.13E-03	16.1	
22	0	861.08	205	412	1.54	3422.74	3407	26	3.41E-03	23.9	
23	0	911.17	1464	396	1.82	3625.29	3611	29	2.44E-02	4.2	
24	0	968.17	986	616	1.83	3855.83	3836	35	1.64E-02	7.3	
25	0	1120.20	518	333	2.35	4470.59	4451	37	8.64E-03	10.4	
26	0	1460.80*	5068	225	2.15	5847.92	5830	37	8.45E-02	1.7	
27	0	1764.47	323	80	2.64	7075.90	7060	32	5.38E-03	8.3	

Flag: "\*" = Peak area was modified by background subtraction



Configuration : \$DISK1:[GER10.SAMPLE]KCMQJ1AA\_211270937.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 08:30:00 Acquisition date : 21-DEC-2007 09:37:18  
 Sample ID : KCMQJ1AA Sample quantity : 50.100 GRAMS  
 Sample type : Sample geometry : S25  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:12.17 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
					PCI/GRAM	PCI/GRAM	
K-40	1460.83	5068	10.67*	1.619E+00	2.638E+01	2.638E+01	6.38
TL-208	277.28	-----	6.31	6.598E+00	-----	Line Not Found	-----
	583.02	1918	84.50*	3.698E+00	5.520E-01	5.700E-01	7.25
	860.30	205	12.42	2.611E+00	5.673E-01	5.859E-01	24.93
PB-212	238.58	6140	43.30*	7.318E+00	1.742E+00	1.799E+00	6.40
	300.03	360	3.28	6.233E+00	1.582E+00	1.634E+00	16.48
BI-214	609.31	1633	46.09*	3.562E+00	8.943E-01	8.943E-01	7.52
	768.35	-----	4.94	2.899E+00	-----	Line Not Found	-----
	1120.27	518	15.10	2.044E+00	1.510E+00	1.510E+00	12.09
PB-214	1764.49	323	15.40	1.413E+00	1.334E+00	1.335E+00	10.23
	241.92	1335	7.43	7.260E+00	2.225E+00	2.225E+00	9.98
	295.09	1315	19.30	6.307E+00	9.717E-01	9.717E-01	8.91
RA-226DA	351.87	2482	37.60*	5.541E+00	1.071E+00	1.071E+00	7.00
	186.21	780	3.50	8.533E+00	2.347E+00	2.347E+00	15.00
	241.98	1335	7.49	7.260E+00	2.207E+00	2.207E+00	9.98
	295.22	1315	19.20	6.307E+00	9.767E-01	9.768E-01	8.91
	351.92	2482	37.20	5.541E+00	1.083E+00	1.083E+00	7.00
	609.32	1633	46.30*	3.562E+00	8.902E-01	8.903E-01	7.52
AC-228	1120.28	518	15.10	2.044E+00	1.510E+00	1.510E+00	12.09
	1238.11	-----	5.94	1.865E+00	-----	Line Not Found	-----
	1764.49	323	15.80	1.413E+00	1.301E+00	1.301E+00	10.23
	209.39	524	3.89	7.959E+00	1.521E+00	1.538E+00	17.14
RA-228DA	270.26	620	3.46	6.722E+00	2.395E+00	2.421E+00	14.94
	338.42	1362	11.27	5.706E+00	1.904E+00	1.925E+00	8.65
	911.16	1464	25.80*	2.477E+00	2.059E+00	2.081E+00	8.14
	968.97	986	15.80	2.341E+00	2.398E+00	2.424E+00	9.97
	209.28	524	4.40	7.959E+00	1.345E+00	1.359E+00	17.14
RA-228DA	338.32	1362	11.40	5.706E+00	1.883E+00	1.903E+00	8.65
	911.07	1464	27.70*	2.477E+00	1.918E+00	1.938E+00	8.14
	964.60	-----	5.20	2.349E+00	-----	Line Not Found	-----
	969.11	986	16.60	2.341E+00	2.282E+00	2.307E+00	9.97

Flag: "\*" = Keyline

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	74.87	1901	2707	1.48	243.27	229	34	3.17E-02	8.1	7.80E+00	
1	77.01	3319	2409	1.48	251.93	229	34	5.53E-02	4.2	8.08E+00	
1	87.04	1357	2250	1.50	292.48	274	36	2.26E-02	8.7	9.08E+00	
1	89.85	652	1625	1.23	303.85	274	36	1.09E-02	13.4	9.28E+00	
0	93.18	1066	1912	1.55	317.31	310	17	1.78E-02	9.9	9.48E+00	T
0	327.75	299	747	1.06	1265.97	1257	16	4.99E-03	18.4	5.84E+00	
0	463.13	341	713	1.74	1813.46	1802	24	5.68E-03	18.4	4.48E+00	
0	510.91	514	1025	2.56	2006.66	1990	38	8.57E-03	24.3	4.13E+00	
0	727.29	423	410	2.15	2881.73	2872	20	7.06E-03	11.1	3.05E+00	T
0	794.92	308	367	1.57	3155.21	3140	29	5.13E-03	16.1	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	0.05	727.25*	6.58	1.961E+00	12.91	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	1.663E+00	11.56	Abun.
			% Abundances Found =				55.78

Flag: "\*" = Keyline

```

Configuration      : $DISK1:[GER10.SAMPLE]KCMQJ1AA_211270937.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       : 19-NOV-2007 08:30:00 Acquisition date : 21-DEC-2007 09:37:18
Sample ID        : KCMQJ1AA Sample quantity : 50.100 GRAMS
Sample type      : Sample geometry : S25
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:12.17 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	2.638E+01	1.684E+00	3.063E-01	1.104E-02	86.150
TL-208	5.700E-01	4.132E-02	3.229E-02	1.163E-03	17.655
PB-212	1.799E+00	1.152E-01	4.836E-02	1.746E-03	37.204
BI-214	8.943E-01	6.726E-02	6.135E-02	2.311E-03	14.578
PB-214	1.071E+00	7.497E-02	5.978E-02	1.947E-03	17.917
RA-226DA	8.903E-01	6.695E-02	6.107E-02	2.300E-03	14.578
AC-228	2.081E+00	1.694E-01	1.265E-01	6.150E-03	16.450
RA-228DA	1.938E+00	1.578E-01	1.178E-01	5.728E-03	16.451

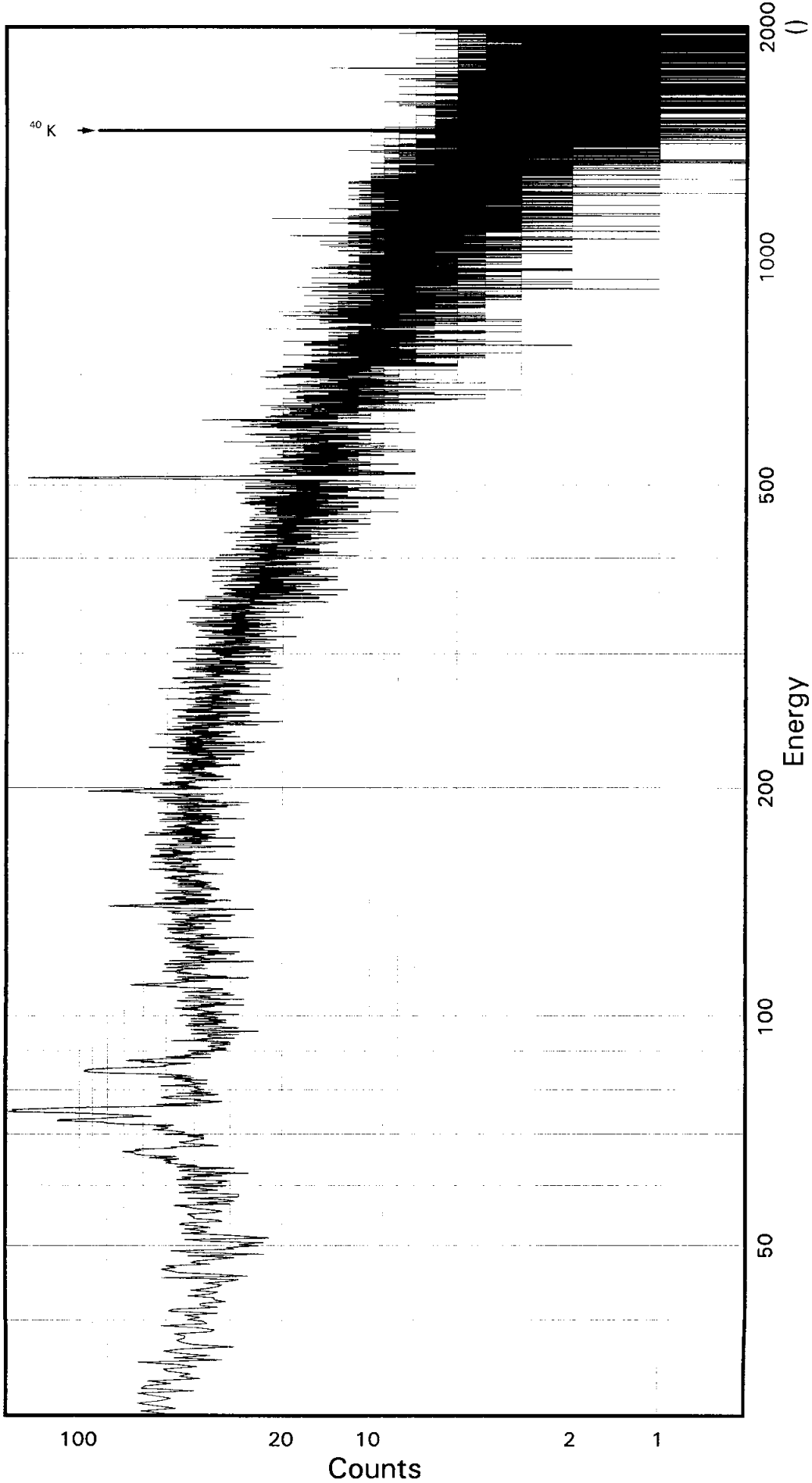
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	-1.251E-01		5.226E-02	1.708E-01	5.670E-03	-0.732
CO-60	-4.096E-03		1.055E-02	3.541E-02	1.291E-03	-0.116
CS-137	-2.098E-02		1.010E-02	3.285E-02	1.346E-03	-0.639
PB-210	1.690E+00		5.903E-01	1.957E+00	1.428E-01	0.864
BI-212	1.961E+00	+	2.531E-01	6.478E-01	2.814E-02	3.027
TH-227	1.577E+00		1.219E-01	2.538E-01	9.170E-03	6.212
TH-234	3.753E-01		2.207E-01	7.387E-01	2.271E-02	0.508
AM-241	-2.017E-02		3.224E-02	1.068E-01	3.410E-03	-0.189

STL Richland WA.  
BRCO SOLID

Batch ID: 7330517

Sample ID: KCV2M1AA  
Detector ID: GER15 1



Acquisition Start: 19-DEC-2007 10:08:15.41  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: 1.18384E+01  
Slope: 2.41266E-01  
Quadrature: 1.51302E-08

SAMPLE IDENTIFICATION: KCV2M1AA

CONFIGURATION ID: GER15:KCV2M1AA\_191271008  
TITLE : BRCO SOLID /  
SAMPLE ID : KCV2M1AA

REPORT DATE: 20-DEC-07  
ACQUIRE DATE: 19-DEC-07 10:08:15  
ELAPSED LIVE TIME: 60000.0 Sec ✓  
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 19-NOV-2007 08:40:00.00  
CALIB DATE: 19-DEC-2007 05:45:02.88  
ELAPSED LIVE TIME: 0 16:40:00  
ELAPSED REAL TIME: 0 16:40:22

SAMPLE QUANTITY: 2.5200E+01 /  
SAMPLE GEOMETRY: 25ML

UNITS: GRAMS ✓  
SAMPLE TYPE:

ENERGY OFFSET: 1.1838E+01 keV  
ENERGY SLOPE: 2.4127E-01 keV/C  
ENERGY Q COEFF: 1.5130E-08 keV/C<sup>2</sup>  
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.8911E-01 keV  
FWHM SLOPE: 2.9939E-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 20-DEC-2007 02:48:54

Configuration : RDND06\$DKA100:[GER15.SAMPLE]KCV2M1AA\_191271008.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6  
 Sample title : BRCO SOLID  
 Sample date : 19-NOV-2007 08:40:00 Acquisition date : 19-DEC-2007 10:08:15  
 Sample ID : KCV2M1AA Sample quantity : 25.200 GRAMS  
 Sample type : Sample geometry : 25ML  
 Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:22.50 0.0%  
 Start energy : 12.08 End energy : 1989.30  
 Sensitivity : 5.00 Gaussian : 10.00  
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	139.94	192	494	0.96	530.93	525	14	3.20E-03	25.5	0.00E+00
2	0	198.04	277	782	1.32	771.75	765	19	4.62E-03	24.9	
3	0	1460.76*	25	78	1.86	6003.26	5988	31	4.17E-04	185.6	

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : RDND06$DKA100:[GER15.SAMPLE]KCV2M1AA_191271008.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BRCO SOLID
Sample date       : 19-NOV-2007 08:40:00 Acquisition date : 19-DEC-2007 10:08:15
Sample ID         : KCV2M1AA           Sample quantity  : 25.200 GRAMS
Sample type      :                     Sample geometry   : 25ML
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:22.50    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: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/GRAM	Decay Corr PCI/GRAM	1-Sigma %Error
K-40	1460.83	25	10.67*	1.145E+00	3.655E-01	3.655E-01	185.76

Flag: "\*" = Keyline



Unidentified Energy Lines  
Sample ID : KCV2M1AA

Page : 2  
Acquisition date : 19-DEC-2007 10:08:15

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	139.94	192	494	0.96	530.93	525	14	3.20E-03	25.5	7.98E+00	
0	198.04	277	782	1.32	771.75	765	19	4.62E-03	24.9	6.32E+00	

Flags: "T" = Tentatively associated

Rejected Report  
Sample ID : KCV2M1AA

Page : 3  
Acquisition date : 19-DEC-2007 10:08:15

Flag: "\*" = Keyline

```

Configuration      : RDND06$DKA100:[GER15.SAMPLE]KCV2M1AA_191271008.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       : 19-NOV-2007 08:40:00 Acquisition date : 19-DEC-2007 10:08:15
Sample ID        : KCV2M1AA Sample quantity : 25.200 GRAMS
Sample type      : Sample geometry : 25ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:22.50 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
K-40	3.655E-01	6.790E-01	6.588E-01	2.837E-02	0.555

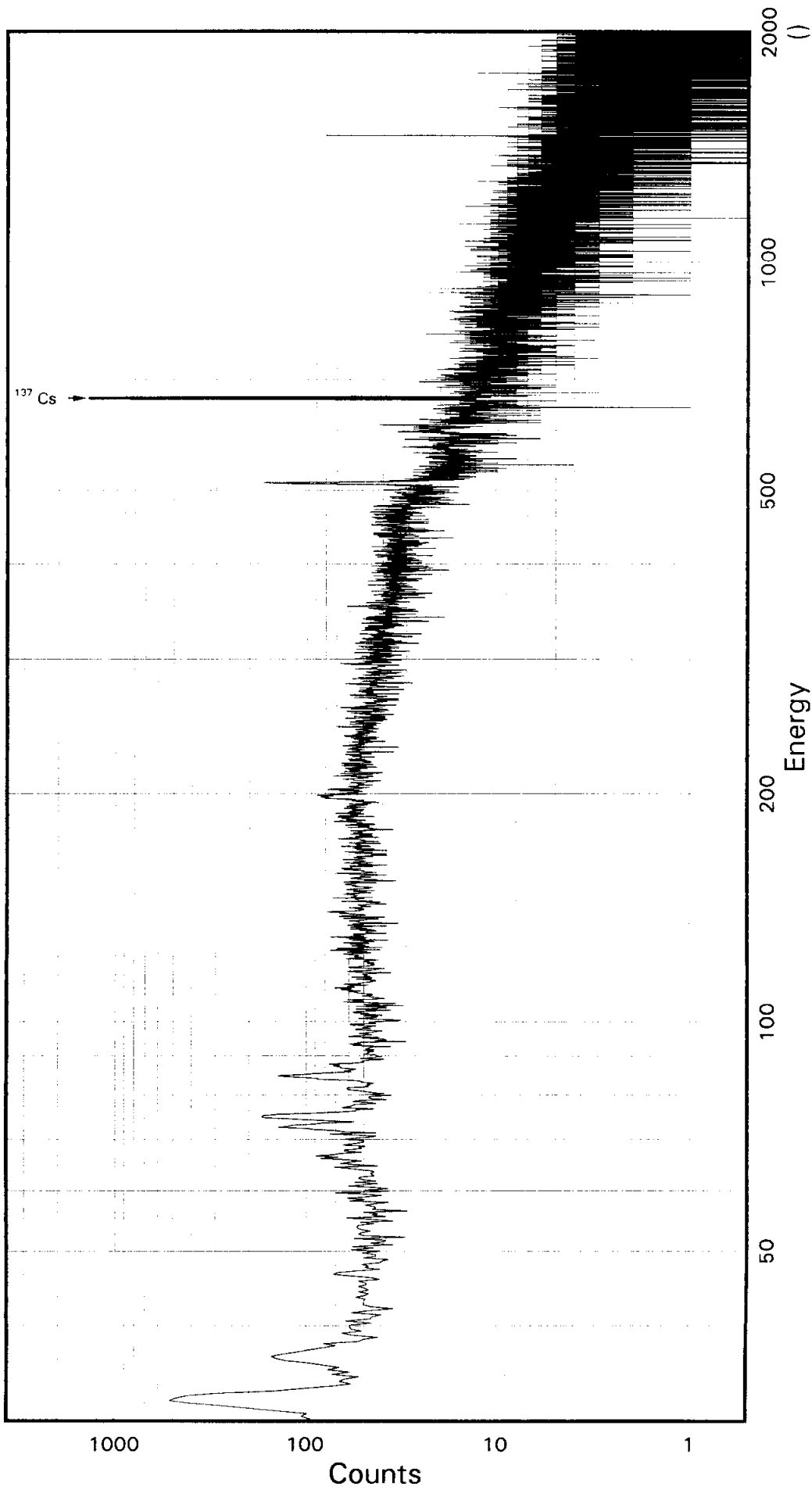
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
CO-57	3.515E-02		8.582E-02	2.448E-01	9.376E-03	0.144
CO-60	-1.571E-02		2.046E-02	6.912E-02	3.086E-03	-0.227
CS-137	5.327E-03		1.829E-02	6.282E-02	2.825E-03	0.085
TL-208	7.601E-02		2.030E-02	7.203E-02	3.467E-03	1.055
PB-210	3.826E-01		1.484E-01	5.244E-01	2.027E-02	0.730
BI-212	1.863E-02		2.617E-01	8.893E-01	4.200E-02	0.021
PB-212	2.612E-02		2.614E-02	8.866E-02	3.987E-03	0.295
BI-214	-4.370E-02		6.695E-02	1.511E-01	7.144E-03	-0.289
PB-214	3.894E-02		6.025E-02	1.196E-01	4.728E-03	0.326
RA-226DA	-4.444E-02		6.664E-02	1.503E-01	7.107E-03	-0.296
TH-227	-1.117E-01		8.828E-02	2.892E-01	1.306E-02	-0.386
AC-228	1.818E-01		7.639E-02	2.737E-01	1.405E-02	0.664
RA-228DA	1.880E-01		7.075E-02	2.544E-01	1.306E-02	0.739
TH-234	-2.440E-01		1.188E-01	3.889E-01	1.280E-02	-0.627
AM-241	1.237E-04		1.449E-02	4.958E-02	1.636E-03	0.002

STL Richland WA.  
BRCO SOLID

Batch ID: 7330517

Sample ID: KCV2M1AC  
Detector ID: GER15 1



Acquisition Start: 20-DEC-2007 10:23:31.48  
Preset Live Time: 0 16:40:00.00  
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:  
Offset: 1.18500E+01  
Slope: 2.41263E-01  
Quadrature: 1.56416E-08

SAMPLE IDENTIFICATION: KCV2M1AC

CONFIGURATION ID: GER15:KCV2M1AC\_201271023  
TITLE : BRCO SOLID  
SAMPLE ID : KCV2M1AC

REPORT DATE: 21-DEC-07 SAMPLE DATE: 20-DEC-2007 12:00:00.00  
ACQUIRE DATE: 20-DEC-07 10:23:31 CALIB DATE: 20-DEC-2007 03:16:35.68  
ELAPSED LIVE TIME: 60000.0 Sec ELAPSED LIVE TIME: 0 16:40:00  
PRESET LIVE TIME: 0 16:40:00 ELAPSED REAL TIME: 0 16:40:23

SAMPLE QUANTITY: 2.5340E+01 UNITS: GRAMS  
SAMPLE GEOMETRY: 25ML SAMPLE TYPE:

ENERGY OFFSET: 1.1850E+01 keV FWHM OFFSET: 7.0130E-01 keV  
ENERGY SLOPE: 2.4126E-01 keV/C FWHM SLOPE: 2.7103E-02 sqr keV  
ENERGY Q COEFF: 1.5642E-08 keV/C<sup>2</sup> ITERATIONS: 10  
PEAK SENSITIVITY: 5.000 GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 % HALF-LIFE RATIO: 8.00  
ENERGY TOLERANCE: 2.000 keV ACTIVITY MULTIPLIER: 1.0000E+06  
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC\_LIBR]BRC.NLB

VMS Peak Search Report V1.9 Generated 21-DEC-2007 03:04:11

```

Configuration      : RDND06$DKA100:[GER15.SAMPLE]KCV2M1AC_201271023.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRCO SOLID
Sample date       : 20-DEC-2007 12:00:00 Acquisition date : 20-DEC-2007 10:23:31
Sample ID         : KCV2M1AC           Sample quantity  : 25.340 GRAMS
Sample type       :                   Sample geometry   : 25ML
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:23.57  0.0%
Start energy      : 12.09              End energy        : 1989.33
Sensitivity       : 5.00               Gaussian          : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	32.01	2175	1323	1.14	83.56	76	16	3.63E-02	4.3	
2	0	36.50	682	931	1.35	102.19	93	18	1.14E-02	11.2	
3	0	84.79*	72	767	1.00	302.34	295	15	1.21E-03	127.4	0.00E+00
4	0	661.75	9013	308	1.47	2693.28	2682	22	1.50E-01	1.2	

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : RDND06$DKA100:[GER15.SAMPLE]KCV2M1AC_201271023.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BRCO SOLID
Sample date       : 20-DEC-2007 12:00:00 Acquisition date : 20-DEC-2007 10:23:31
Sample ID        : KCV2M1AC           Sample quantity  : 25.340 GRAMS
Sample type      :                   Sample geometry   : 25ML
Elapsed live time: 0 16:40:00.00     Elapsed real time: 0 16:40:23.57   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	9013	85.10*	2.378E+00	7.917E+00	7.917E+00	6.82

Flag: "\*" = Keyline

Unidentified Energy Lines  
Sample ID : KCV2M1AC

Page : 2  
Acquisition date : 20-DEC-2007 10:23:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	32.01	2175	1323	1.14	83.56	76	16	3.63E-02	4.3	4.62E+00	
0	36.50	682	931	1.35	102.19	93	18	1.14E-02	11.2	6.01E+00	
0	84.79	72	767	1.00	302.34	295	15	1.21E-03	****	9.92E+00	

Flags: "T" = Tentatively associated



Rejected Report  
Sample ID : KCV2M1AC

Page : 3  
Acquisition date : 20-DEC-2007 10:23:31

Flag: "\*" = Keyline

```

Configuration      : RDND06$DKA100:[GER15.SAMPLE]KCV2M1AC_201271023.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       : 20-DEC-2007 12:00:00 Acquisition date : 20-DEC-2007 10:23:31
Sample ID        : KCV2M1AC           Sample quantity  : 25.340 GRAMS
Sample type      :                     Sample geometry   : 25ML
Elapsed live time: 0 16:40:00.00      Elapsed real time: 0 16:40:23.57   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	7.917E+00	5.403E-01	6.610E-02	2.972E-03	119.781

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/GRAM)	K.L. Ided	Act error	MDA (PCI/GRAM)	MDA error	Act/MDA
K-40	-6.974E-01		6.091E-01	1.847E+00	7.952E-02	-0.378
CO-57	-1.077E-01		7.713E-02	2.498E-01	9.566E-03	-0.431
CO-60	1.277E-02		1.907E-02	6.869E-02	3.066E-03	0.186
TL-208	4.456E-02		1.929E-02	6.702E-02	3.226E-03	0.665
PB-210	3.273E-01		1.646E-01	5.773E-01	2.231E-02	0.567
BI-212	2.295E-01		2.508E-01	8.768E-01	4.140E-02	0.262
PB-212	3.787E-02		2.820E-02	9.611E-02	4.322E-03	0.394
BI-214	-8.532E-02		6.702E-02	1.502E-01	7.099E-03	-0.568
PB-214	2.971E-02		6.379E-02	1.404E-01	5.551E-03	0.211
RA-226DA	-7.793E-02		6.660E-02	1.495E-01	7.066E-03	-0.521
TH-227	-6.849E-02		9.825E-02	3.273E-01	1.478E-02	-0.209
AC-228	2.576E-01		7.807E-02	2.783E-01	1.429E-02	0.926
RA-228DA	2.479E-01		7.304E-02	2.604E-01	1.337E-02	0.952
TH-234	-2.184E-01		1.289E-01	4.268E-01	1.404E-02	-0.512
AM-241	1.945E-02		1.659E-02	5.751E-02	1.897E-03	0.338

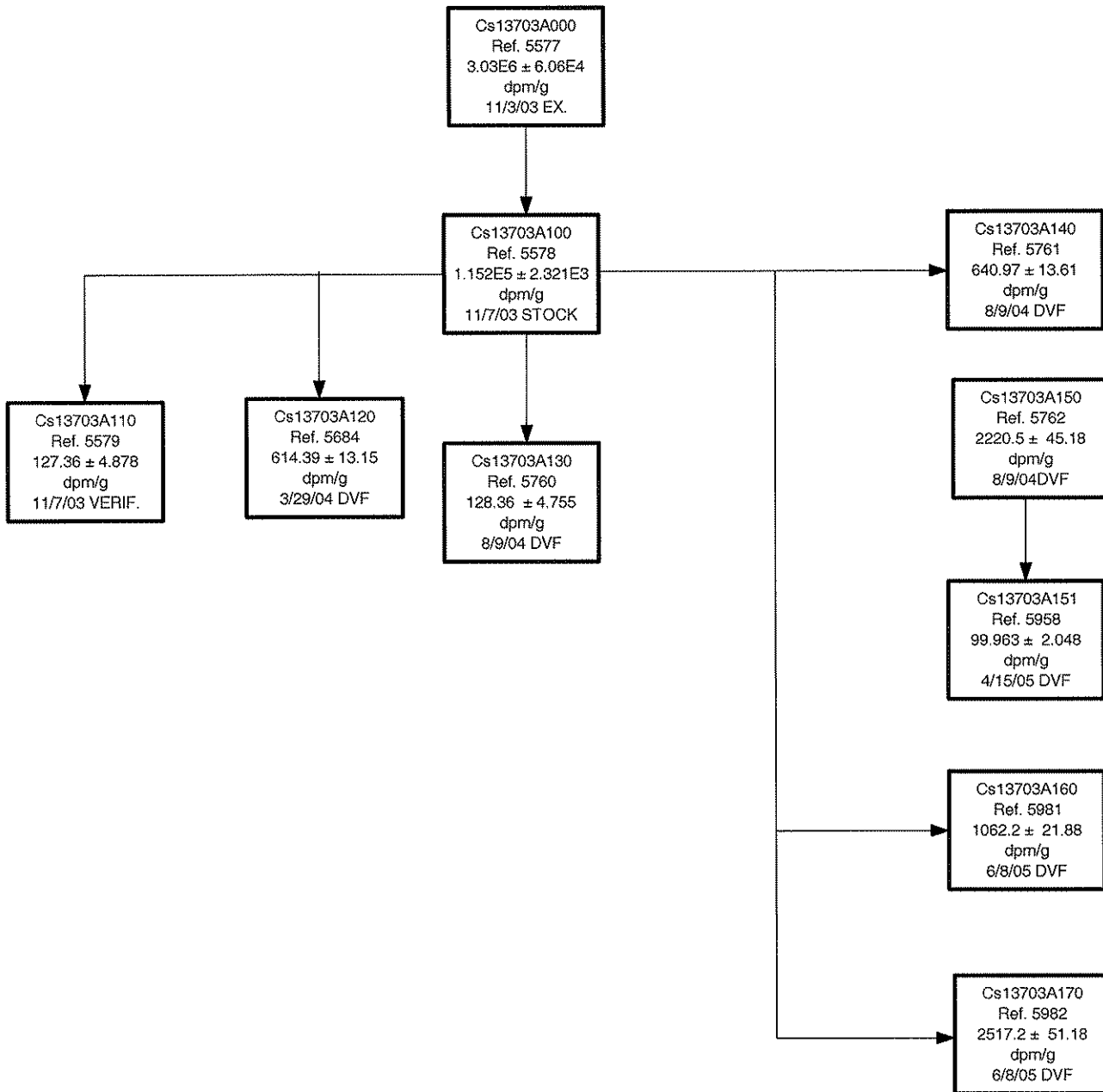
GAMMA  
STANDARDS AND TRACEABILITY

# Standard Material Fractions (Vials)

Vial Prep:12/25/06 to 12/27/07,SMFractionIdentifier Like: GSE1220%, 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>GSE1220</b>	CS-137	<b>4.4922E+02 ± 1.068E+03</b> DPM	0.1887 g	11/12/2007 11/12/2007	Armstron	2.3806E+03 ± 5.657E+03 DPM/G
		4.4922E+002 ± 4.492E+002 ( 1)		4.4922E+002 , 4.4922E+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><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		

\*\*\*\*\*

**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		

\*\*\*\*\*

**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		

\*\*\*\*\*  
**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>

\*\*\*\*\*  
**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>

\*\*\*\*\*  
**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 Cs-137 2) Reference Number 5577

3) Half Life 30.17 yrs. 4) Storage Location Std. Lab (D-9)

5) Source Identification Number Cs13703A000

\*\*\*\*\*

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

\*\*\*\*\*

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

\*\*\*\*\*

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  $\mu\text{g/g}$  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)

Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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25-DEC-2007 09:30	chk		0.0062	
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-- 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
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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)

Page : 9

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
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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
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
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	
11-NOV-2007 05:32	bkg		0.0769	
18-NOV-2007 08:51	bkg		0.0752	
19-NOV-2007 07:46	bkg		0.0745	
25-NOV-2007 05:41	bkg		0.0749	
2-DEC-2007 07:12	bkg		0.0811	
9-DEC-2007 06:00	bkg		0.0724	
16-DEC-2007 07:52	bkg		0.0768	
17-DEC-2007 05:15	bkg		0.0795	
19-DEC-2007 05:52	bkg		0.0783	

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
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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
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
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	

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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
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	

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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
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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
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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
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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

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
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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			

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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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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 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 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  | | |

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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-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

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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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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 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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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 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	

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	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	

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	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
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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
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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  
23-DEC-2007 08:54 bkg

0.6846 | | |  
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
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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) Page : 3

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
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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

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 05:22	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

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	

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 05:25	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
-----				
1-NOV-2007 07:06	chk		5644.9785	

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		5647.5029	
2-NOV-2007 05:02	chk		5647.0400	
2-NOV-2007 05:14	chk		5645.4170	
5-NOV-2007 06:02	chk		5645.4204	
6-NOV-2007 05:33	chk		5645.9106	
6-NOV-2007 05:50	chk		5646.0503	
7-NOV-2007 04:56	chk		5645.0000	
8-NOV-2007 06:29	chk		5645.3164	
9-NOV-2007 04:40	chk		5644.6299	
10-NOV-2007 05:34	chk		5645.0801	
10-NOV-2007 05:45	chk		5644.8994	
10-NOV-2007 05:56	chk		5644.9502	

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
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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	

Quality Assurance Multi-Test Full Report (continued) Page : 14

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

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
-----				
Quality Assurance Multi-Test Full Report (continued)				Page : 4
-----				
Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
-----				
4-NOV-2007 09:28 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
------------------	-----------	----------------	-------	-------------	-----

```

-----
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
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)

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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)

Page : 7

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
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
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			

## Quality Assurance Multi-Test Full Report (continued)

Page : 9

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  | | |

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-- 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
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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 09:20	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
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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	
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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)

Page : 10

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
4-NOV-2007 09:28	BKG		0.0649	Ab	
11-NOV-2007 05:32	BKG		0.0624		
12-NOV-2007 06:30	BKG		0.0674	Ab	

Quality Assurance Multi-Test Full Report (continued) Page : 3

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
18-NOV-2007 08:50	BKG		0.0646	Ab	
25-NOV-2007 05:40	BKG		0.0675	Ab	
2-DEC-2007 07:11	BKG		0.0654	Ab	
9-DEC-2007 06:00	BKG		0.0621		
16-DEC-2007 07:50	BKG		0.0667	Ab	
23-DEC-2007 08:54	BKG		0.0659	Ab	

-- 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
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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)

Page : 10

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	

-- 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
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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
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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		

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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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		

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 *[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:

PM, Quote: JAE, 77571

pCi/L

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

1134



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 #:

AnalyDueDate: 12/10/2007

Sep1 DT/Tm Tech:

Batch: 7327118

Sep2 DT/Tm Tech:

pcil/L

SE0 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:

Comments: *OK 62.0 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 Subt.:	N	Sci.Not.:	N	ODRs:	B
KCR641AA-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
KCR641AC-LCS:		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: '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-RC-5087 REV1
				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 | Qtimes => .

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%	

( ) - (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

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																	

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	4	ALP176	COP	N	N	2.6518E-01		N	94%	N	1.0000E+00 (0.0000E+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 (0.0000E+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 (0.0000E+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 (0.0000E+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	KCKE91AD	pCi/L	WATER		11/19/07 12:40	12/10/07 06:45		879.79	Alq	1	200.10 g	g
445691																	

( ) - (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:4 RADCALC v4:8.29  
 TA Richland

Alpha Spec, Thlso by ALP , Calculated Results

12/10/2007 1:48:13 PM

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	ALP177 COP	N	N	2.1204E-01 (6.361E-03)	N	93%	N	93%	4.5045E+02 (0.000E+00)	1.0000E+00 (0.000E+00)
			199.7833333	998.95		Y				5%			0.004998	
2	12/10/07 05:05	TH-232	0	0	ALP177 COP	N	N	2.1204E-01 (6.361E-03)	N	93%	N	93%	4.5045E+02 (0.000E+00)	1.0000E+00 (0.000E+00)
			199.7833333	998.95		Y				5%			0.004998	
3	12/10/07 11:50	Th-234	7386	691	GPC30A COP	Y	N	4.5050E-01 (1.802E-02)	N	100%	N	100%	4.5045E+02 (0.000E+00)	1.0000E+00 (0.000E+00)
			20	500		Y							0.004998	

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	TH-228	R	0.046749	0.059703	U4	4.00437E-03 (5.1045E-03)	0.020344 (0.025961)	0.020344 (0.025961)	0.2001 L (0.173205)	93%	0.2001 L (0.173205)	0.279878	0.060795	0.274175
12/10/07	TH-230	R	0.00E00	0.058379	U4	0.00000E+00 (5.1045E-03)	0.00E00 (0.025933)	0.00E00 (0.025933)	0.2001 L (0.173205)	93%	0.2001 L (0.173205)	0.059556	0.274175	0.059556
12/10/07	TH-232	R	0.00E00	0.058379	U4	0.00000E+00 (5.1045E-03)	0.00E00 (0.025933)	0.00E00 (0.025933)	0.2001 L (0.173205)	93%	0.2001 L (0.173205)	0.274175	0.059556	0.059556
12/10/07	Th-234	R	1838.466595	119.672455		3.67918E+02 (4.2974E+00)	816.688124 (34.031804)	816.688124 (34.031804)	0.2001 L (0.173205)	93%	0.2001 L (0.173205)			

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	TH-228	R	-0.018969	0.049306	U4	-2.00210E-03 (5.2018E-03)	-0.008229 (0.021386)	-0.008229 (0.021386)	0.2003 L (0.173205)	95%	0.2003 L (0.173205)	0.267986	0.069775	0.221599
12/10/07	TH-230	R	0.037014	0.047271	U4	4.00437E-03 (5.1045E-03)	0.016459 (0.021004)	0.016459 (0.021004)	0.2003 L (0.173205)	95%	0.2003 L (0.173205)	0.48135	0.221599	0.048135
12/10/07	TH-232	R	-0.009253	0.047189	U4	-1.00105E-03 (5.1045E-03)	-0.004115 (0.020982)	-0.004115 (0.020982)	0.2003 L (0.173205)	95%	0.2003 L (0.173205)	0.221599	0.048135	0.048135
12/10/07	Th-234	R	1870.326592	121.710864		3.74668E+02 (4.3365E+00)	831.671476 (34.631537)	831.671476 (34.631537)	0.2003 L (0.173205)	95%	0.2003 L (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

5 Calc S1 WATER \*STLE AlplsoWoBS KCR641AA pCi/L B 11/15/07 13:15 12/10/07 10:33 874.94ALq 1 200.30 g

0,INTRA-LAB BLANK .J7K230000-118 WATER

0 12/10/07 08:53 TH-228 0 2 ALP171 COP N N 2.5595E-01 (7.679E-03) N 95% N 1.0000E+00 4.5045E+02 1.0250E+00

199.7833333 998.95

1 12/10/07 08:53 TH-230 1 1 ALP171 COP N N 2.5595E-01 (7.679E-03) N 95% N 1.0000E+00 4.5045E+02 1.0000E+00

199.7833333 998.95

2 12/10/07 08:53 TH-232 0 1 ALP171 COP N N 2.5595E-01 (7.679E-03) N 95% N 1.0000E+00 4.5045E+02 1.0000E+00

199.7833333 998.95

3 12/10/07 07:59 Th-234 7521 691 GPC30A COP Y N 4.5050E-01 (1.802E-02) N 100% N 1.0000E+00 4.5045E+02 1.0000E+00

20 500

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 TH-228 R -0.018969 (0.049306) U4 -2.00210E-03 (5.2018E-03) -0.008229 (0.021386) -0.008229 (0.021386) 0.2003 L (0.173205) 95% 0.267986 0.069775

12/10/07 TH-230 R 0.037014 (0.047271) U4 4.00437E-03 (5.1045E-03) 0.016459 (0.021004) 0.016459 (0.021004) 0.2003 L (0.173205) 95% 0.48135 0.221599

12/10/07 TH-232 R -0.009253 (0.047189) U4 -1.00105E-03 (5.1045E-03) -0.004115 (0.020982) -0.004115 (0.020982) 0.2003 L (0.173205) 95% 0.221599 0.048135

12/10/07 Th-234 R 1870.326592 (121.710864) 3.74668E+02 (4.3365E+00) 831.671476 (34.631537) 831.671476 (34.631537) 0.2003 L (0.173205) 95%

RecCnt:6 RADCALC v4.8.29  
TA Richland

Sq	Calc	Matrix	Protocol	Equation	Set	Wtrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/Ent	Yld	Total/Analy	Vol	Final/Count	Vol
6	Calc	S1 WATER	*STLE	AlpIsoWoBS	KCR641AC	pC/L	S	11/15/07	13:15	12/10/07	10:33	5.0837	763.67	Alq	1	200.30	g			
		0.INTRA-LAB CHECK				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 08:53	TH-228	0	0	ALP172	COP	N	N	2.5961E-01	N	N	94%	N	1.0000E+00	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	N	94%	N	1.0000E+00	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	N	94%	N	1.0000E+00	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	N	100%	N	1.0000E+00	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/EntFct	LCSYld,EFctU	IDC/ILcC	BIKlCc/MDC	StdDvMdc/LcC						
	12/10/07	TH-228	R	0.00E00	U4	0.00000E+00	0.00E00	0.00E00	0.2003 L	94%	0.227246	0.227246								
	1.717E+03		(0.048386)			(5.1045E-03)	(0.020991)	(0.020991)	(0.173205)			0.049362								
	12/10/07	TH-230	R	12.118623		1.31042E+00	5.388742	5.388742	0.2003 L	94%	106%	0.221705								
	1.717E+03		(1.204839)			(8.1026E-02)	(0.463046)	(0.463046)	(0.173205)			0.048158								
	12/10/07	TH-232	R	-0.009258	U4	-1.00105E-03	-0.004117	-0.004117	0.2003 L	94%	0.221704	0.221704								
	1.717E+03		(0.047212)			(5.1045E-03)	(0.020992)	(0.020992)	(0.173205)			0.048158								
	12/10/07	Th-234	R	1608.720764		3.13114E+02	715.344143	715.344143	0.2003 L	94%	0.221704	0.221704								
	1.717E+03		(105.014134)			(3.9665E+00)	(30.014415)	(30.014415)	(0.173205)			0.048158								



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

<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

Sample ID	Isotope	Geometry
CAL6538	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	70740	20.00	743	500.00	30B

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
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 0805  
 Operating: RICHRD008  
 Review: 1/15  
730718

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				

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

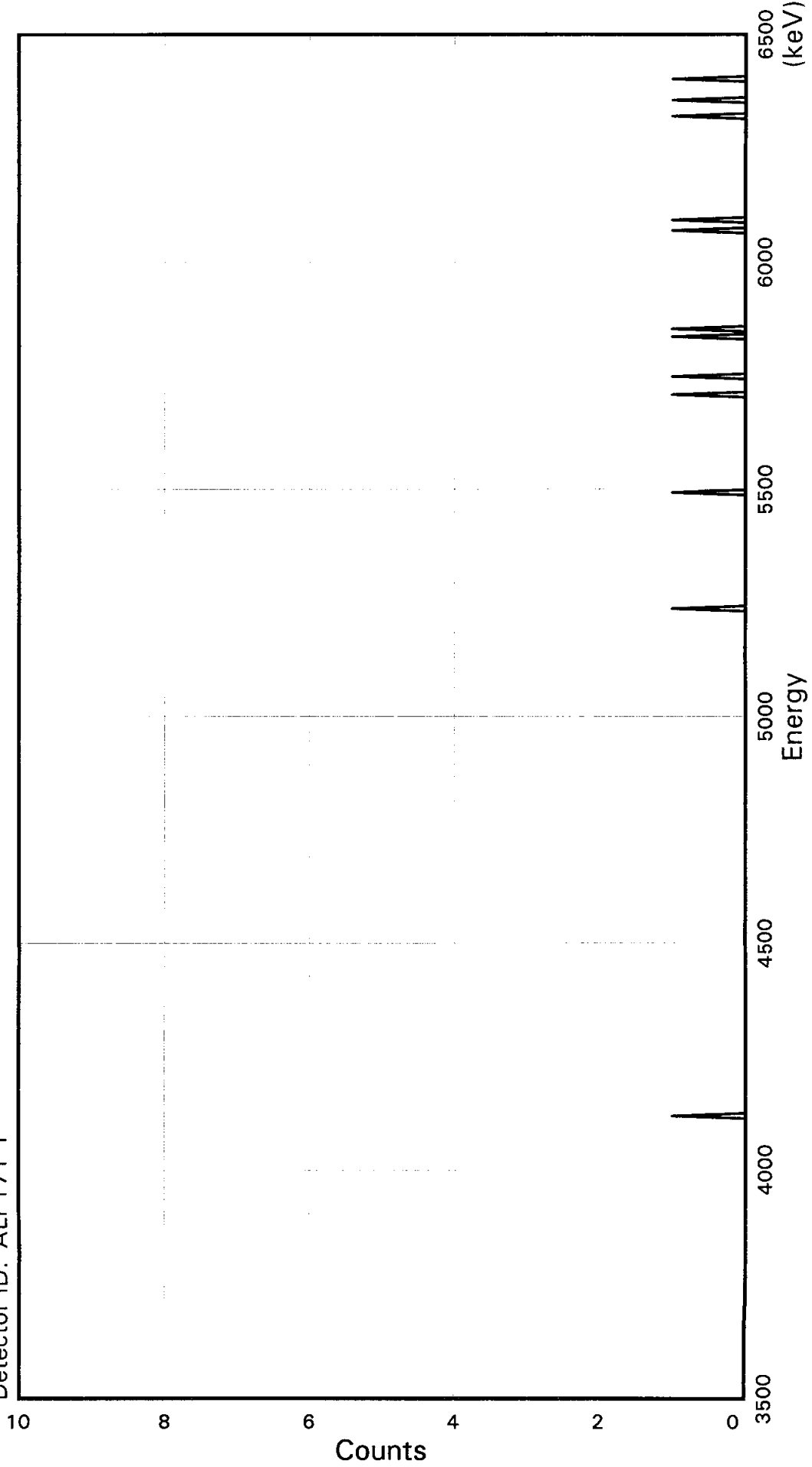
End of Alpha Region Report  
(Produced by ANAL Report)



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												
		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

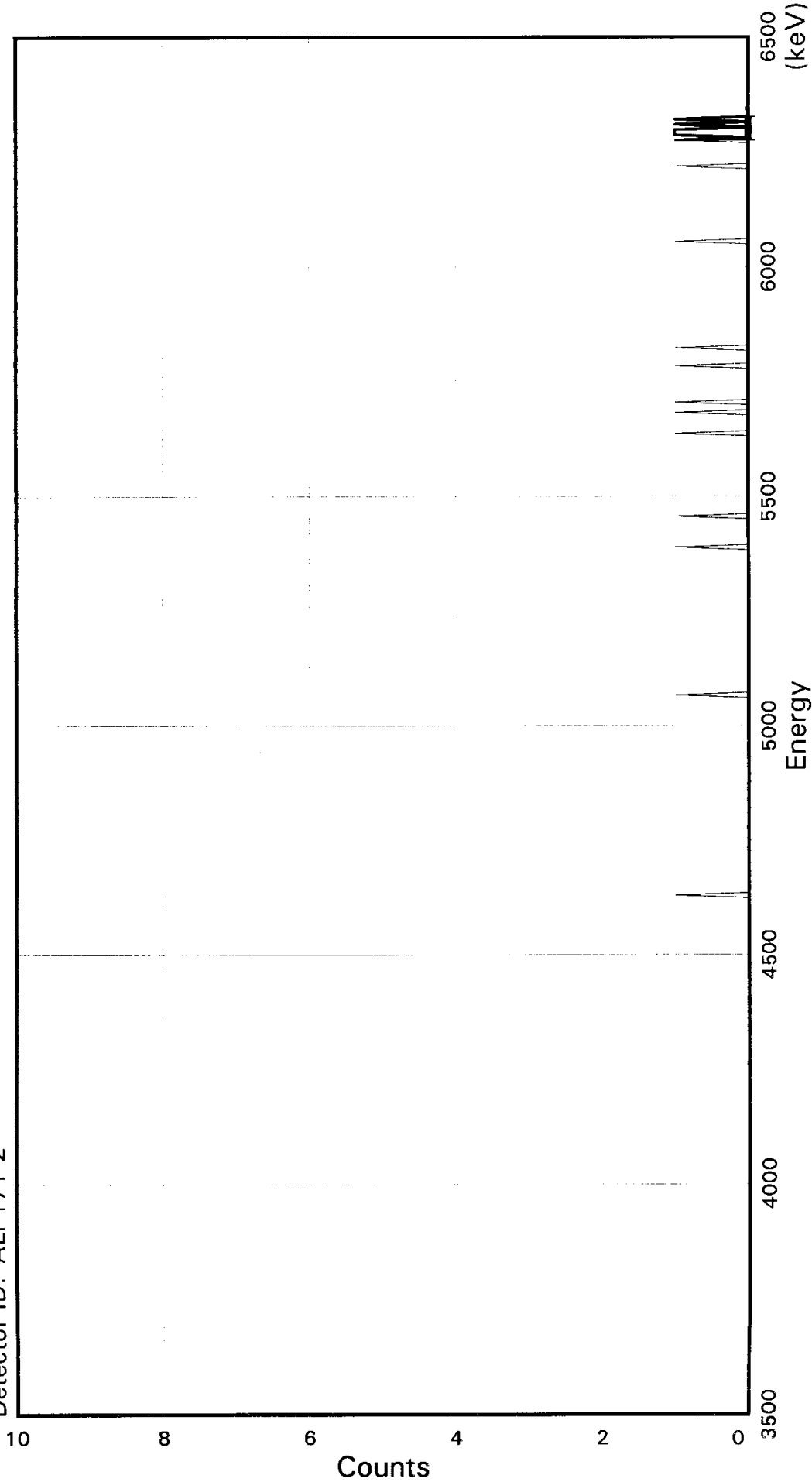
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	1	0	0.005	5423.2	113.0	320	340
TH-230	1	1	0.004	4687.7	113.0	190	210
TH-232	0	1	-0.001	4013.0	113.1	71	91

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCFM81AF  
Detector ID: ALP171 2

Batch ID: 7327118



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



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												
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	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: KCCKE91AD

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

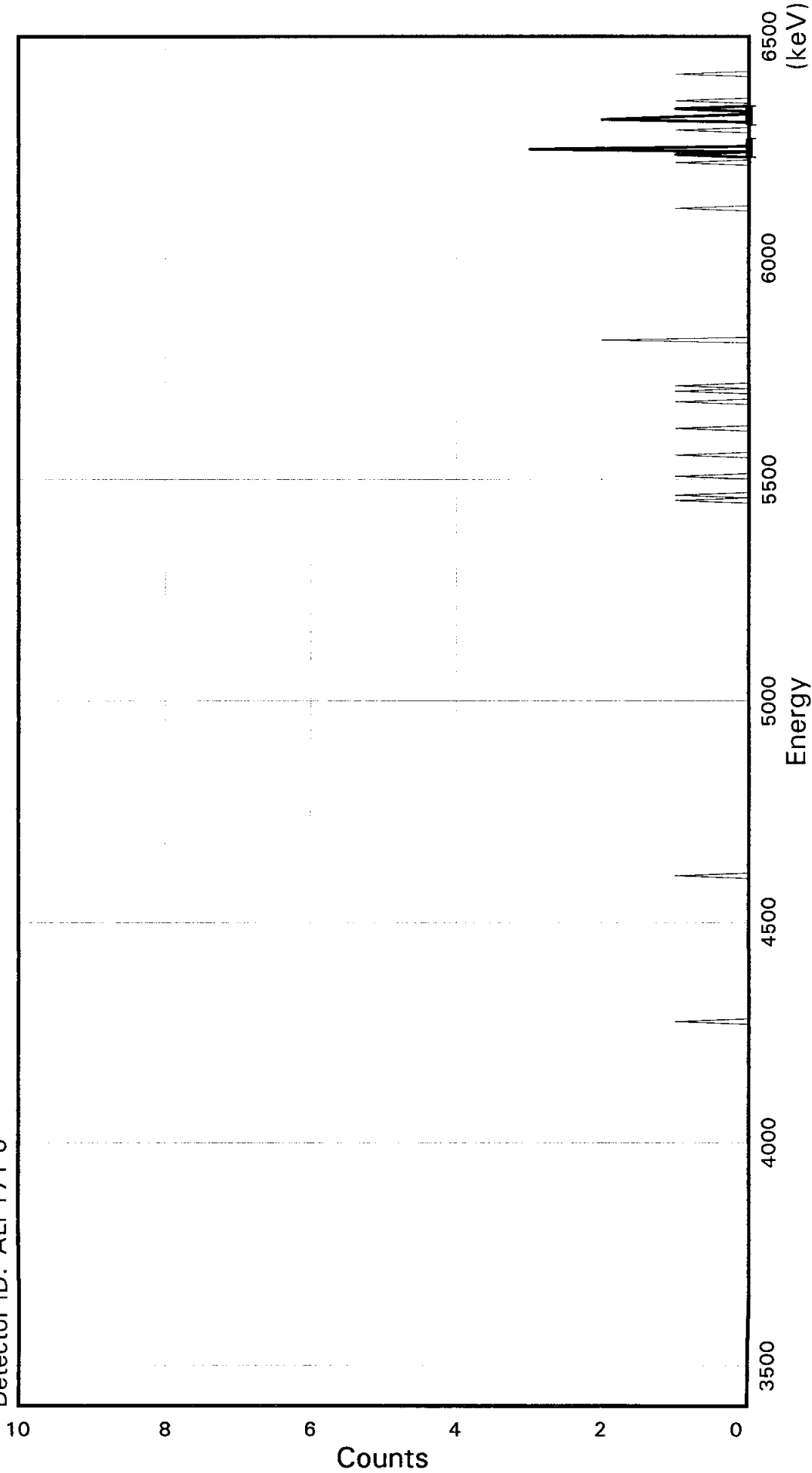
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	1	4	0.001	5423.2	121.0	321	341
TH-230	1	1	0.004	4687.7	120.9	200	220
TH-232	0	1	-0.001	4013.0	120.8	88	108

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

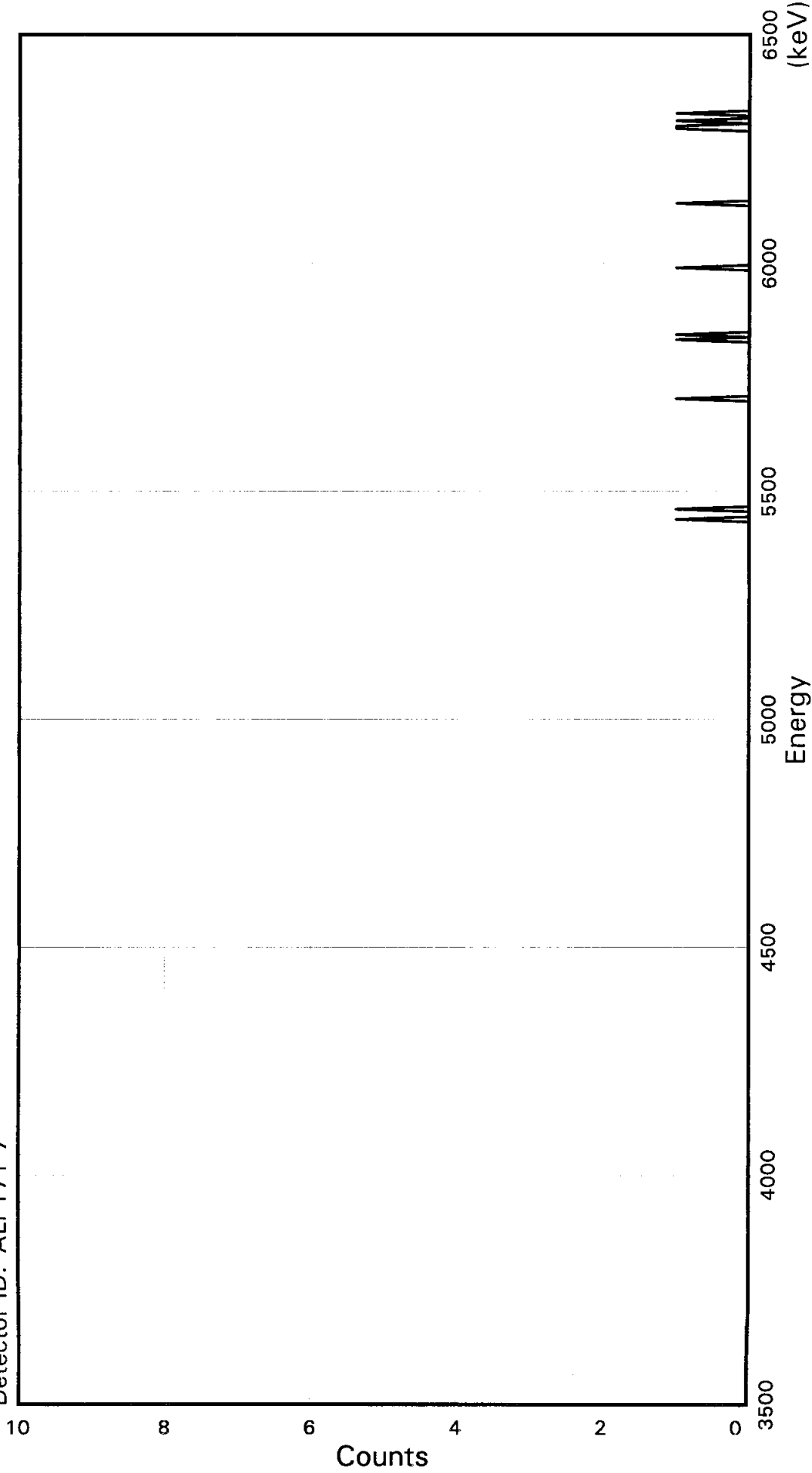
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	1	1	0.004	5423.2	112.6	310	330
TH-230	0	0	0.000	4687.7	112.7	180	200
TH-232	0	0	0.000	4013.0	112.7	60	80

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 SOP's  
Sample 200 Minutes  
Operating: RICHRD008  
Background See Alpha Analysis Report Review: RICHRD0016

7327118

WorkOrder #	Th-229 (4845 KeV) Tracer		TOTAL COUNTS			Det #	Comment
	ID	Activity	from Th-234 Beta Count (7)				
			ROI Cts	BKG	Th-228 (5423 KeV) (6)		
<u>KCR641AA</u>		10		0			
<u>KCR641AC</u>		10		0		<u>171</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

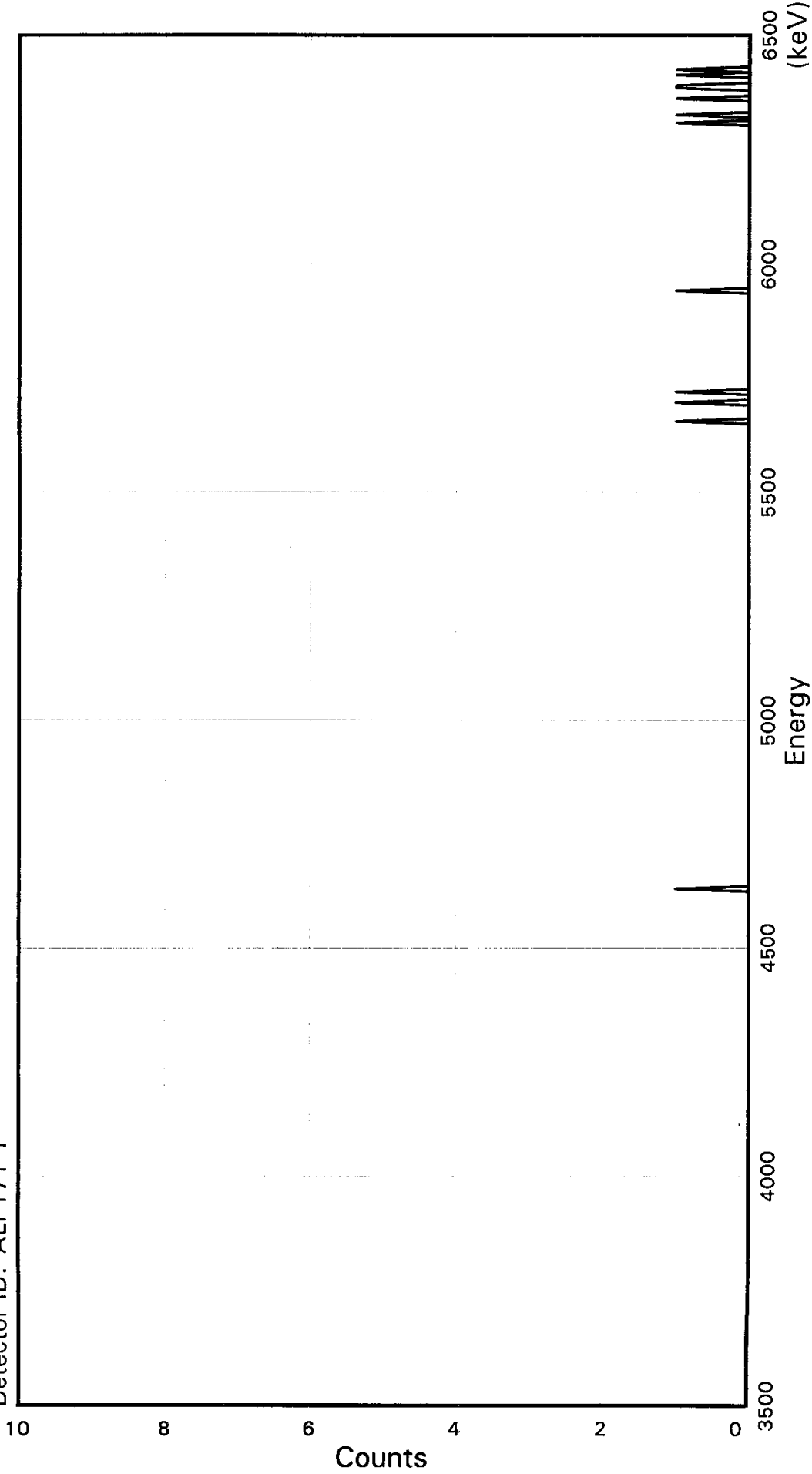
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	0	2	-0.002	5423.2	116.5	316	336
TH-230	1	1	0.004	4687.7	116.4	190	210
TH-232	0	1	-0.001	4013.0	116.4	74	94

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH BRCO

Sample ID: KCR641AA  
Detector ID: ALP171 1

Batch ID: 7327118



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

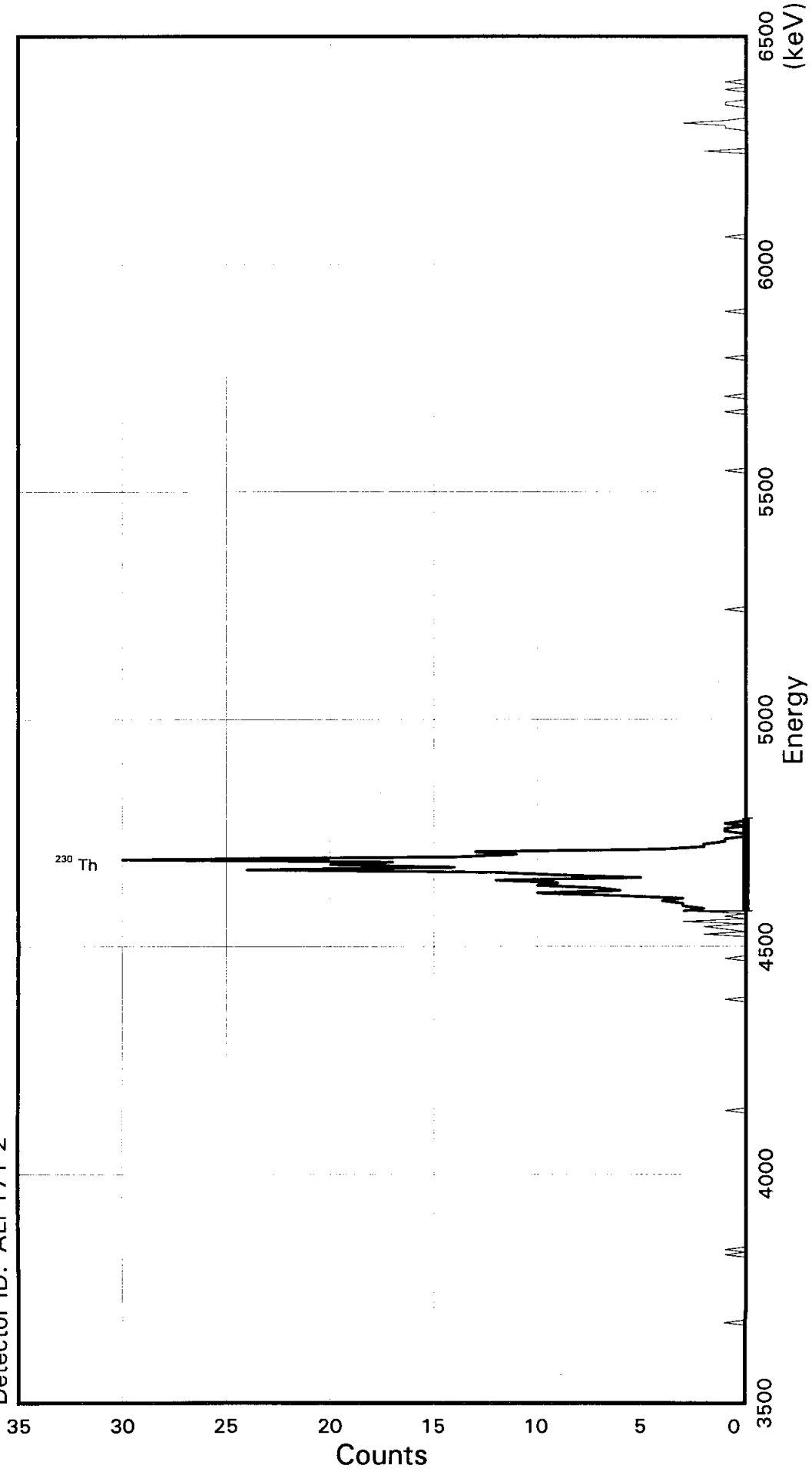
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Right
			C/Min	keV	keV	Chnl	Chnl
TH-228	0	0	0.000	5423.2	113.0	320	340
TH-230	262	1	1.310	4687.7	203.5	181	217
TH-232	0	1	-0.001	4013.0	113.1	71	91

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

Flags Key

Detector: ALP171 2

Report Date: 10-Dec-07 12:23 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						
		1	0		51	0		101	1		151	12		201	0		251	0		301	0		351	1		401	0		451	0		501
		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</b> ± <b>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



Type of count: Alpha: \_\_\_\_\_  
Beta: \_\_\_\_\_  
Gamma: \_\_\_\_\_  
Alpha Spec: 30

count time: \_\_\_\_\_  
count time: \_\_\_\_\_  
count time: \_\_\_\_\_  
count time: 1000

Geom.: \_\_\_\_\_

units: \_\_\_\_\_  
units: \_\_\_\_\_  
units: \_\_\_\_\_  
units: dpm/Sa

Requested by: TDA

Date submitted: 5/24/06

	Sample ID	Isotopes of interest	Sample Date
175	DUF 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

<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

<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

<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.



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

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

<b>Sample ID</b>	<b>Isotope</b>	<b>Geometry</b>
CAL5800	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	137549	20.00	795	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>
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

<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>
24-MAY-2006 10:23:54.00	137829	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>
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 ISOTOPICT 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	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: 5/28/06

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

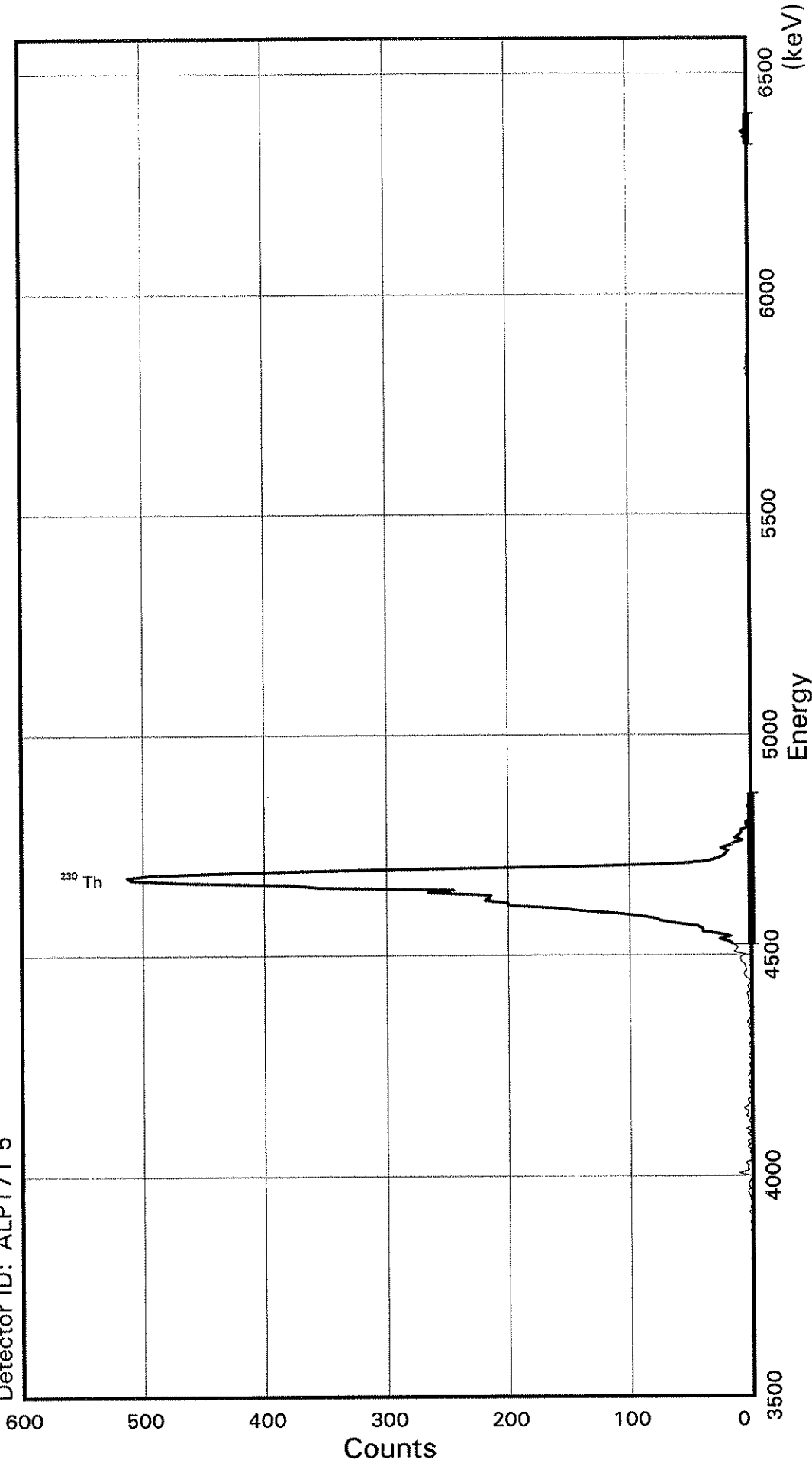
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	2	1	0.001	5423.2	118.1	301	321
TH-230	6479	1	6.485	4687.7	436.6	146	220
TH-232	55	1	0.054	4013.0	117.9	62	82

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

Flags Key

Detector: ALP171 5

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						
		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	



```

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  
 "E" = Manually edited

"M" = Manually accepted  
 "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

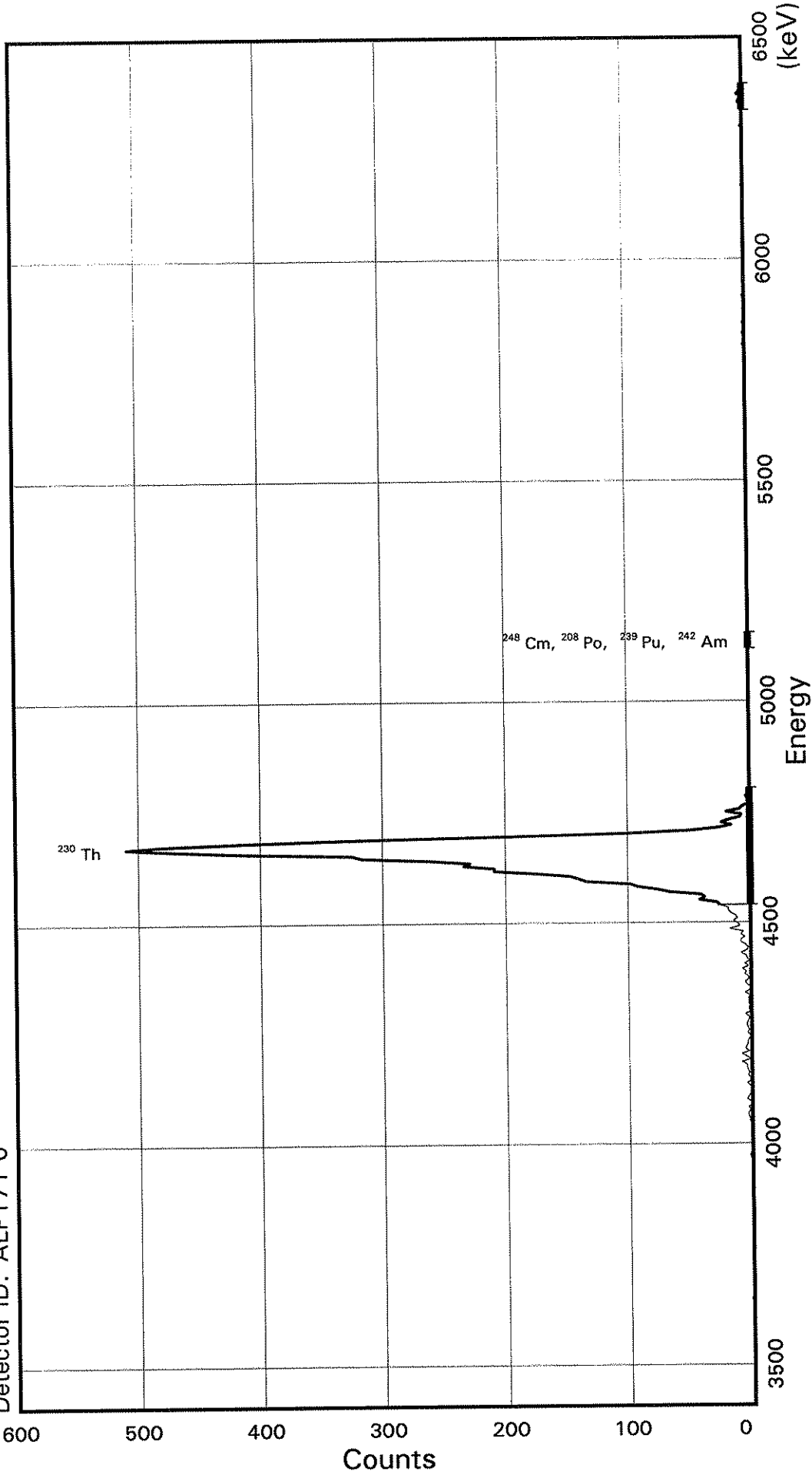
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Rght
			C/Min	keV	keV	Chnl	Chnl
TH-228	1	2	-0.001	5423.2	120.9	322	342
TH-230	6112	2	6.116	4687.7	325.6	179	233
TH-232	12	0	0.012	4013.0	120.3	89	109

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

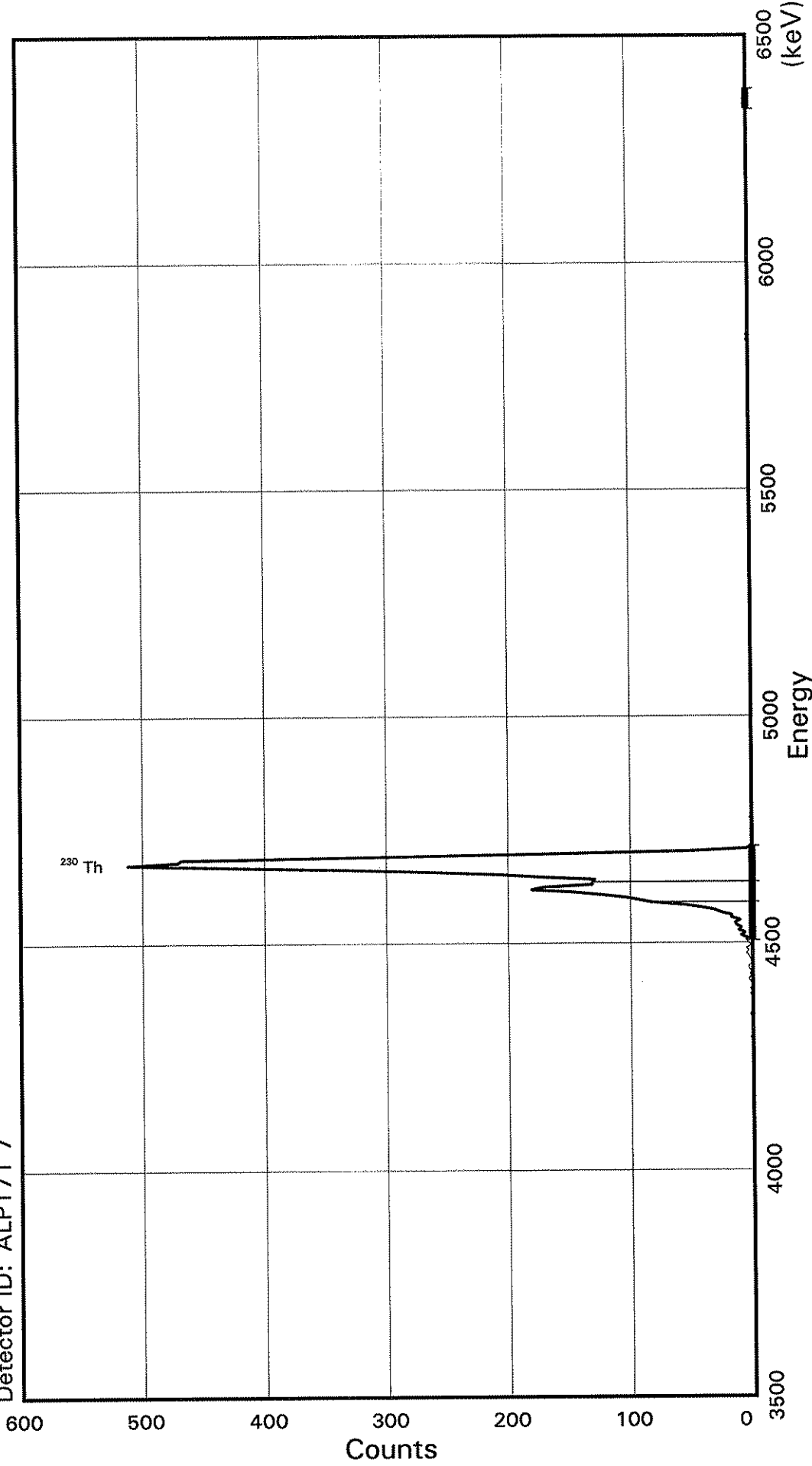
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Rght
			C/Min	keV	keV	Chnl	Chnl
TH-228	0	0	0.000	5423.2	112.7	311	331
TH-230	4956	3	4.958	4687.7	220.0	161	200
TH-232	2	0	0.002	4013.0	112.9	61	81

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 STLR

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

Flags Key

Detector: ALP171 7

Report Date: 25-May-06 10:47 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	Cnt	F	Chn			
		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

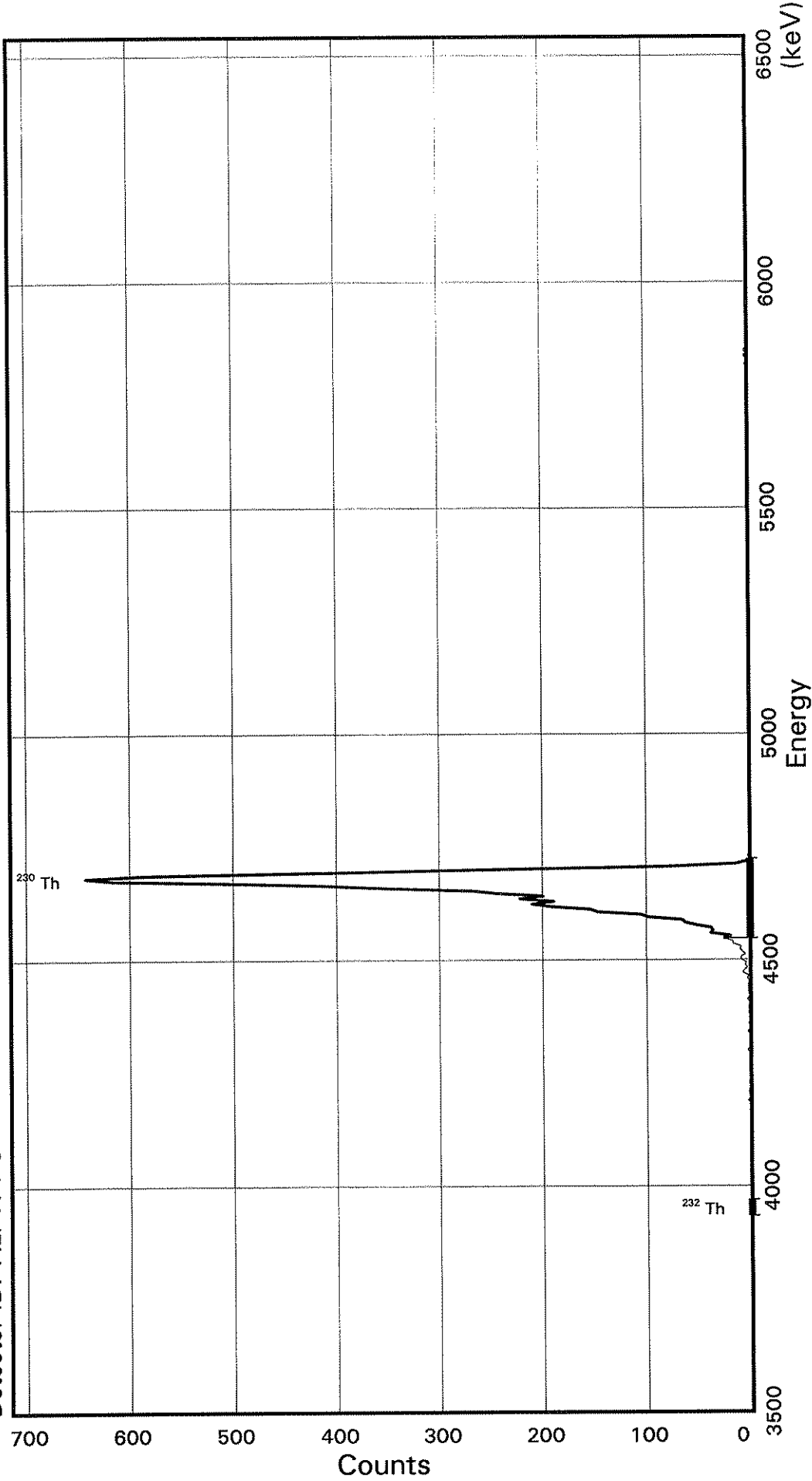
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	0	2	-0.002	5423.2	117.7	307	327
TH-230	6331	0	6.338	4687.7	282.7	157	205
TH-232	4	0	0.004	4013.0	117.9	67	87

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									
0		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	



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</b> ± <b>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

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			Decay	Th234 wt. grams	Th230 Yield	Th234	
			Cts	Min	Max					cpm/g
27-Sep-07	16:06	93821	20	630	500	4689.79	2.4276	0.9492	2233.46	CAL6452
27-Sep-07	16:06	89844	20	839	500	4490.52	2.4330	0.9126	2219.43	CAL6453
27-Sep-07	16:06	92844	20	718	500	4640.76	2.4295	0.9758	2148.24	CAL6454
27-Sep-07	16:06	91175	20	577	500	4557.60	2.4355	0.8501	2415.72	CAL6455

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: \_\_\_\_\_    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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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
		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

# 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

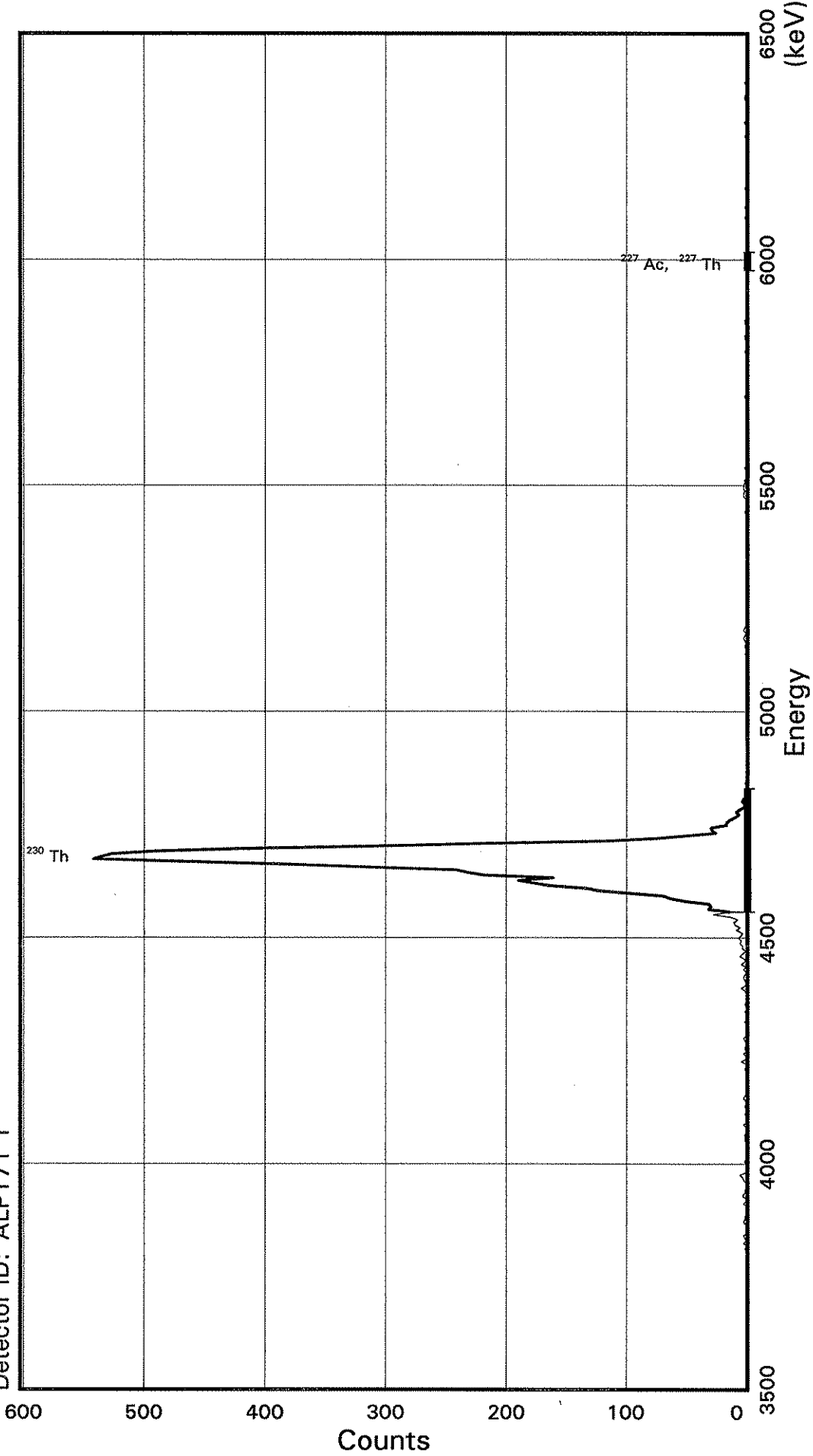
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	4	5	-0.001	5423.2	116.4	316	336
TH-230	6768	3	6.772	4687.7	366.3	167	230
TH-232	31	0	0.031	4013.0	116.2	73	93

End of Alpha Region Report  
(Produced by ANAL Report)

STL Richland WA.  
TH TA-RLD

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
0		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

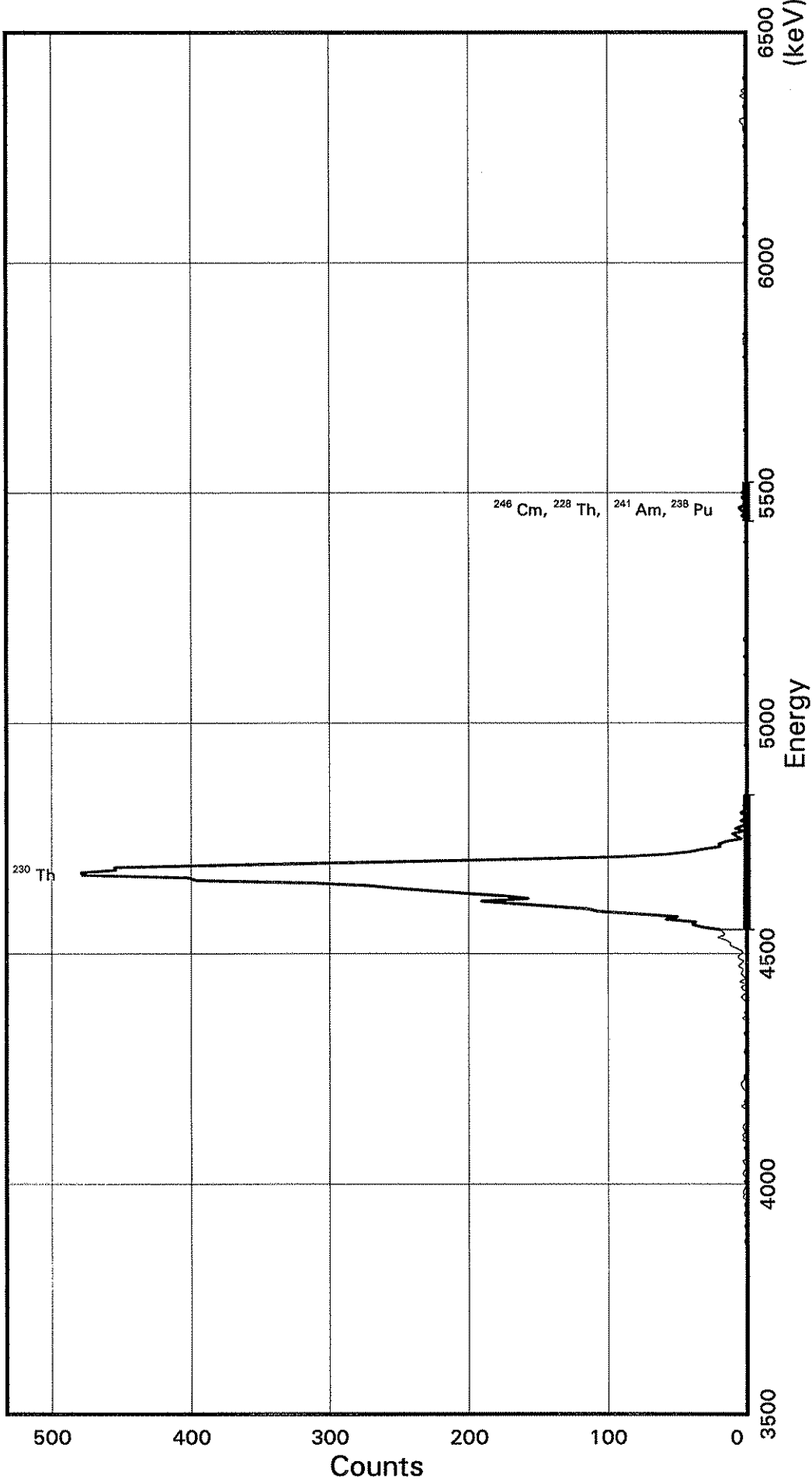
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	7	3	0.004	5423.2	113.1	320	340
TH-230	6547	6	6.548	4687.7	299.0	169	222
TH-232	32	2	0.030	4013.0	112.6	70	90

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

VMS Peak Search Report V1.9 Generated 28-SEP-2007 10:36:46

```

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

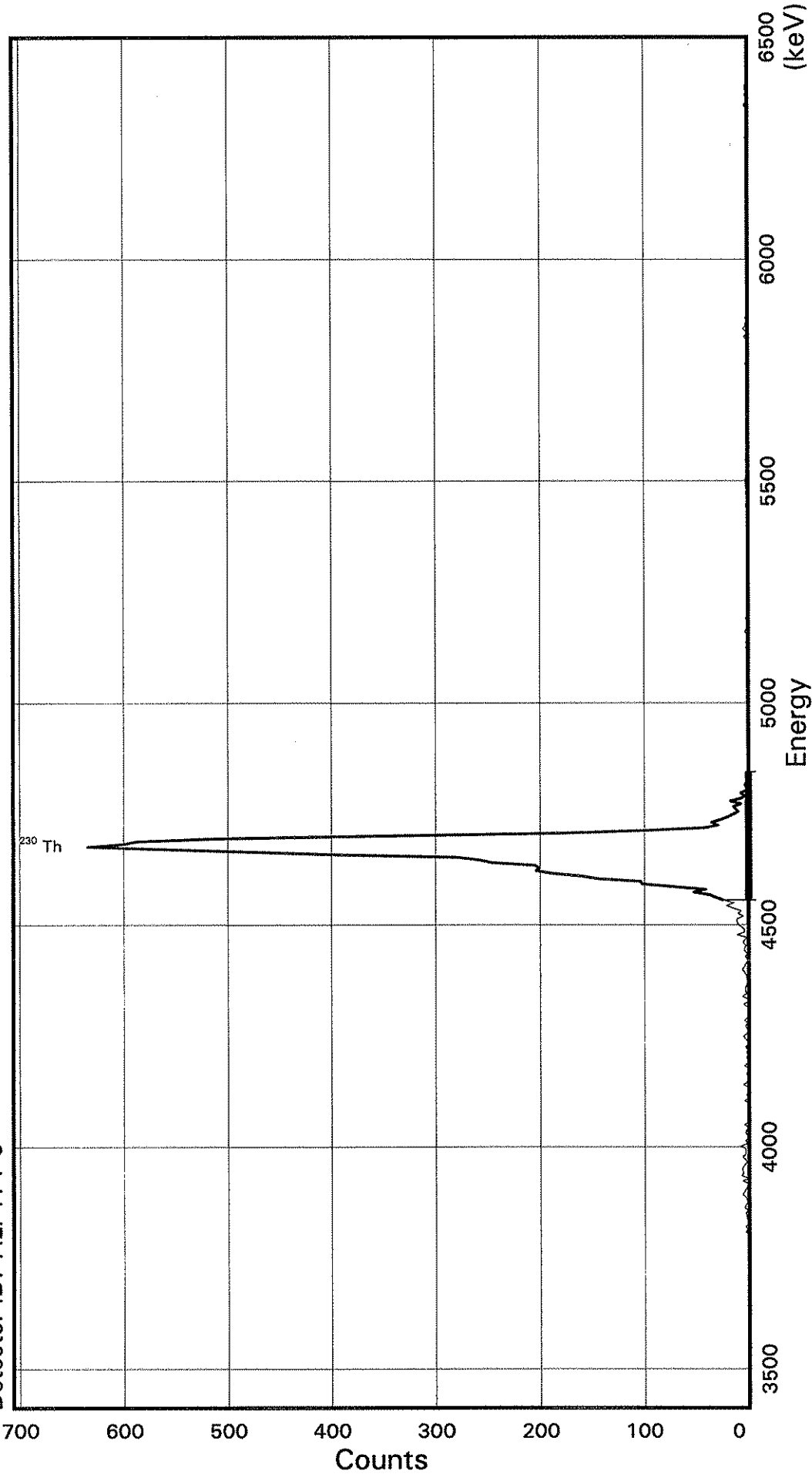
Nuclide	Smpl	Bkg	Count	Centrd	Region	Left	Rght
Name	Count	Count	C/Min	Energy	Width	Chnl	Chnl
TH-228	6	2	0.004	5423.2	120.9	322	342
TH-230	7115	2	7.120	4687.7	343.9	181	238
TH-232	73	0	0.073	4013.0	120.4	88	108

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

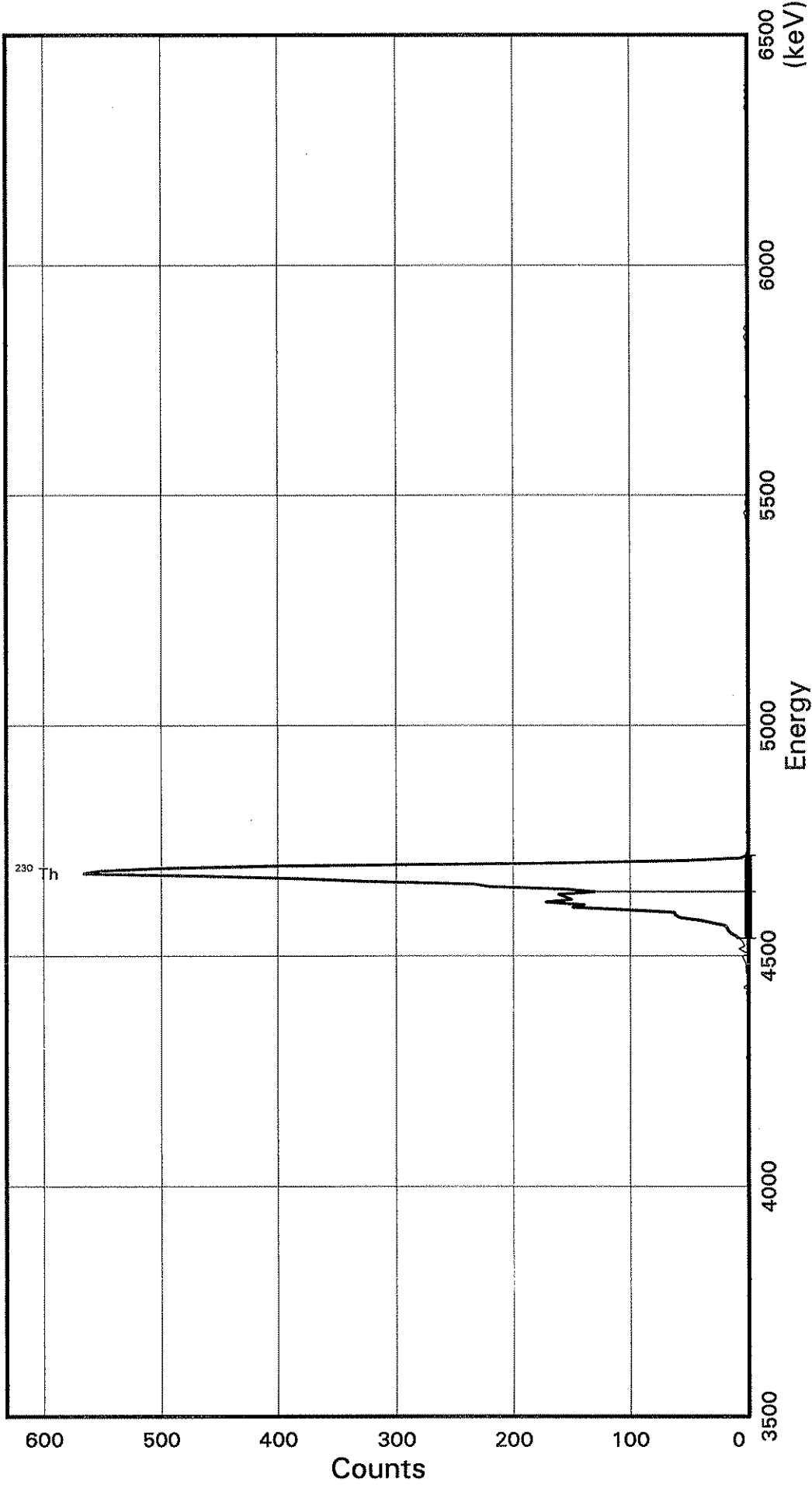
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	6	0	0.006	5423.2	112.6	310	330
TH-230	5543	1	5.548	4687.7	225.5	165	205
TH-232	2	0	0.002	4013.0	112.8	60	80

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						
0		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

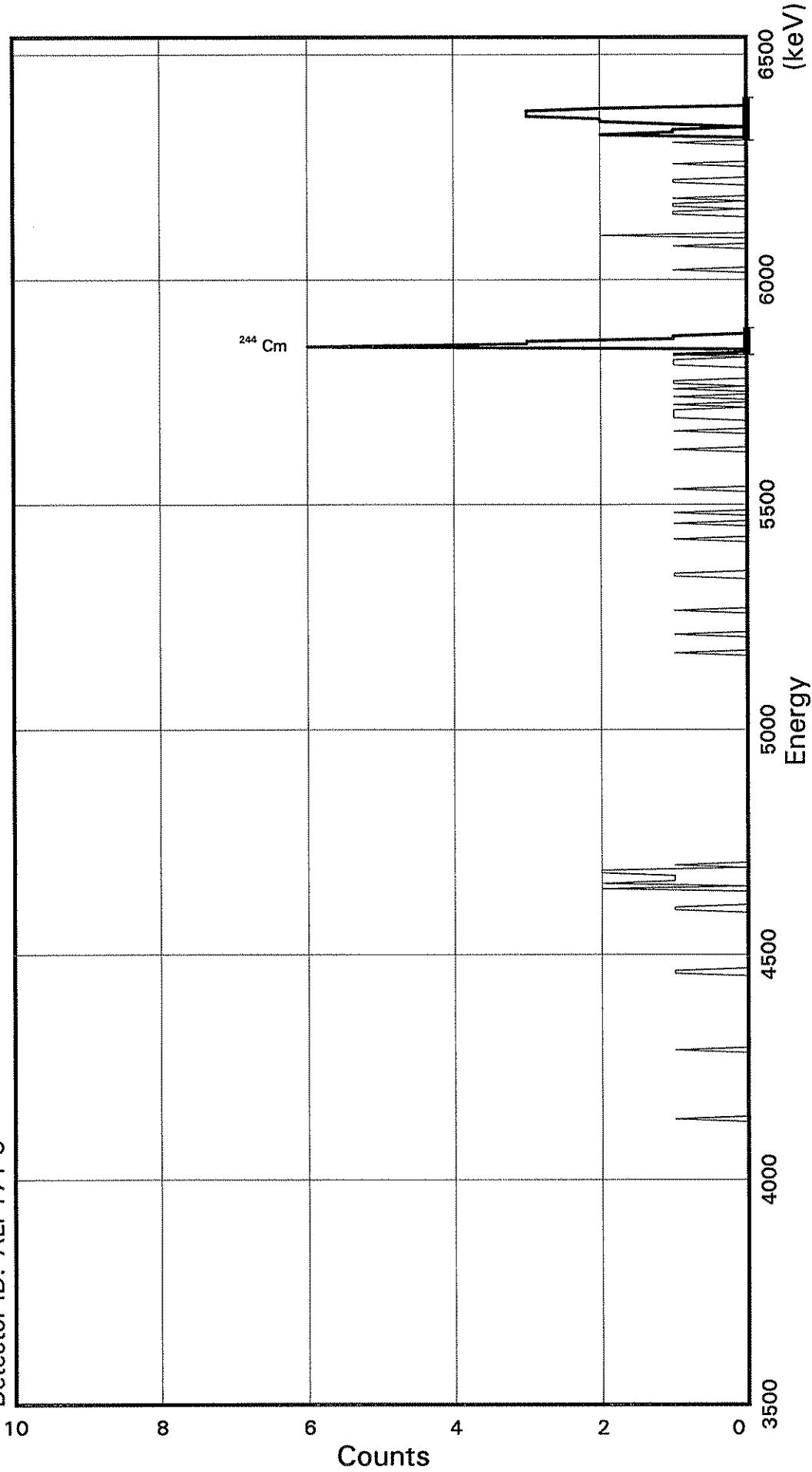
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Rght
			C/Min	keV	keV	Chnl	Chnl
TH-228	3	1	0.002	5423.2	117.6	307	327
TH-230	14	0	0.014	4687.7	117.6	182	202
TH-232	0	1	-0.001	4013.0	117.7	67	87

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						
		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

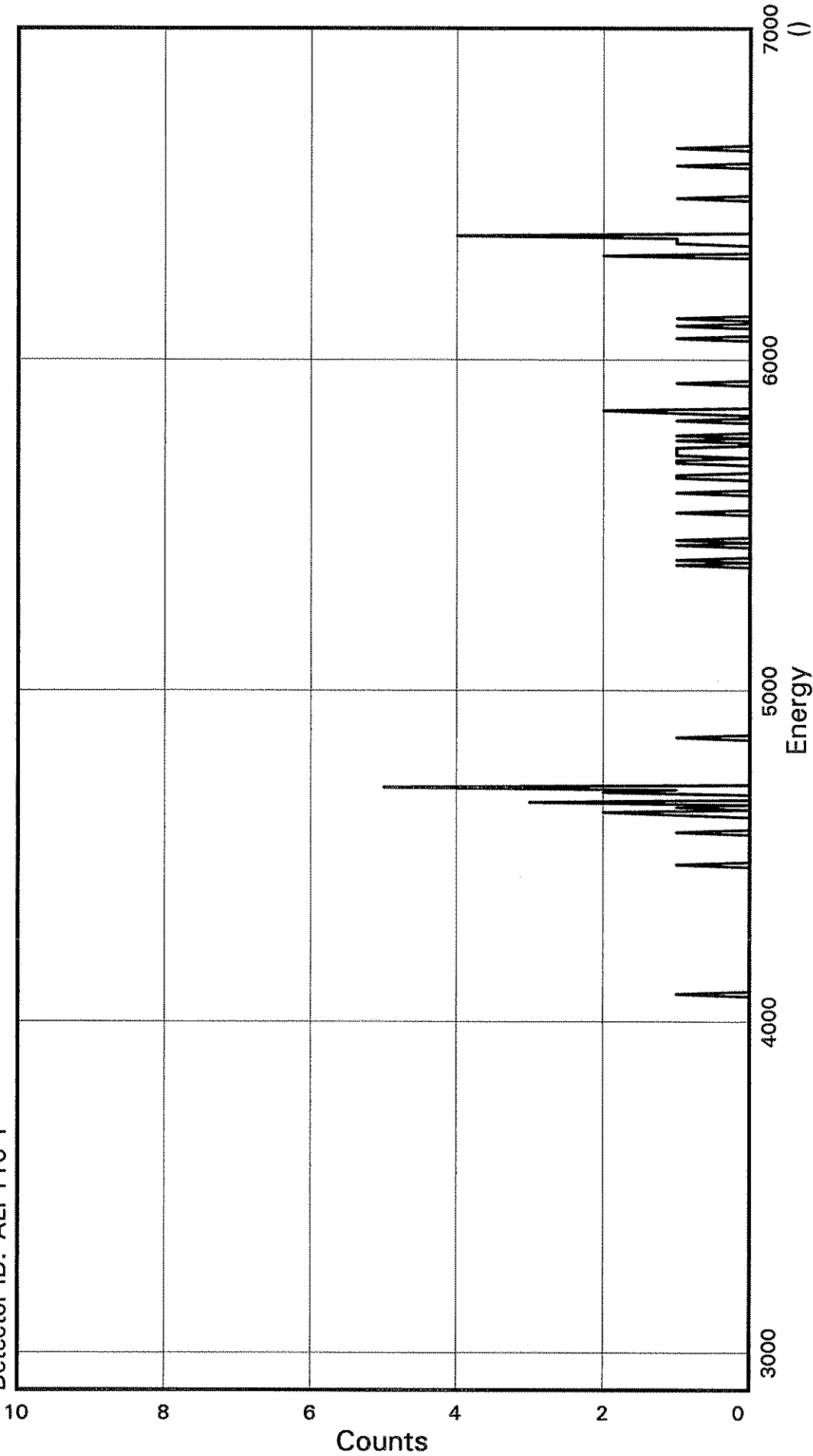
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	4	3	0.001	5423.2	150.8	325	345
TH-230	16	0	0.016	4687.7	150.6	227	247
TH-232	0	1	-0.001	4013.0	150.5	138	158

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												
		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	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
- $A * B / C = D$        $D - B = E$   
 $B / (B + F) * A = G$

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

TD 70163

THORIUM BETA DATA FORM

SEVERN  
TRENTHAM  
SERVICES

M23107A200 # 6254

Requested by: TDA

BETA

Analysis: M234

Sample ID	Vial Code	TH-234 WT(g)	Date-time Counted	Lab Tech:	Sel ID	Gross Counts	Counting Time	Bkg. Counts	Count Room Tech
RAC 897B		0.1056	9/24/79 1030		20A		20MIN		0
RAC 897A		0.0993			20B				
RAC 898D		0.1030			20C				
RAC 898I		0.1059			20D				

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

Sample ID	Isotope	Geometry
RDQC8979	111	15

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
24-SEP-2007 10:33:59.00	4408	20.00	611	500.00	26B

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
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	Aliq (g)	Ppt. Wt.	Date	Time	Counts	Count time	Bkgd.	Bkgd. Time	Set	Initials
20ac8916	0.1056	0	9/24/07	0952		50MIN			10A	←
20ac8919	0.0993	↓		↓					10B	↓
20ac8980	0.1030	↓		↓					10C	↓
20ac8981	0.1059	↓		↓					10F	↓

Client: TAR

Date: 9/24/07

Analyst: TPA

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: \$DISK1:[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  
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: RD0C8981 Isotope: 112 (QREPORt 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 (QREPORt 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	

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	

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
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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
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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
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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
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	

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
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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
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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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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	

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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 : 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	

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-- 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
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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		

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
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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
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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 : 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
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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 : 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
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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 : 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
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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
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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
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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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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	

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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 : 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	

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-- 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
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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
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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 : 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
------------------	-----------	----------------	-------	-----------------

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		0.0020	

-- 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: 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  
✓
- 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

*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

### Sample Preparation/Analysis

Balance Id:1120482733

445691, Basic Remediation Company  
Basic Remediation Company

7Y Uiso PpRC5016/5086, SepRC5067(5039)  
SR Uranium-234,235,238 by Alpha Spec  
01 STANDARD TEST SET

# PRIORITY

Pipet #:

AnalyDueDate: 12/10/2007

Sep1 DT/Tm Tech:

Batch: 7327123

PM, Quote: JAE, 77571

Sep2 DT/Tm Tech:

pCi/L

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-AE			200.00g,in	200.00g	UITC19008	200				
F7K160242-17-SAMP					11/27/07,pd					
11/15/2007 13:15					05/05/87,r					
2 KCFM8-1-AG-X			200.10g,in	200.10g	UITC19009					
F7K160242-17-DUP					11/27/07,pd					
11/15/2007 13:15					05/05/87,r					
3 KCKE9-1-AE			200.20g,in	200.20g	UITC19010					
F7K190152-16-SAMP					11/27/07,pd					
11/16/2007 14:00					05/05/87,r					
4 KCMQL-1-AE			200.10g,in	200.10g	UITC19011					
F7K200219-15-SAMP					11/27/07,pd					
11/19/2007 12:40					05/05/87,r					
5 KCR7M-1-AA-B			200.00g,in	200.00g	UITC19012					
J7K230000-123-BLK					11/27/07,pd					
11/15/2007 13:15					05/05/87,r					
6 KCR7M-1-AC-C			200.10g,in	200.10g	UISG1543					
J7K230000-123-LCS					11/20/07,pd					
11/15/2007 13:15					05/05/87,r					

TAL RICHLAND

1385

12/5/2007 10:16:21 AM Balance Id: 1120482733  
**Sample Preparation/Analysis**  
 7Y Uiso PrpRC5016/5086, SepRC5067(5039)  
 SR Uranium-234,235,238 by Alpha Spec  
 01 STANDARD TEST SET

Analyte Due Date: 12/10/2007 Pipet #: \_\_\_\_\_  
 Batch: 7327123 Sep1 DT/Tm Tech: \_\_\_\_\_  
 SEQ Batch, Test: None Sep2 DT/Tm Tech: \_\_\_\_\_  
 pCi/L 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:
										

**Comments:** pH 2.0 out ~~10/5/07~~ 10/5/07

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

KCFM81AE-SAMP Constituent List:

Constituent	RDL	pCi/L	LCL	UCL	RPD	UCL	RPD	UCL	RPD	pCi/L	LCL	UCL	RPD	pCi/L	LCL	UCL	RPD
KCR7M1AA-BLK																	
U-232	RDL: 0.1	pCi/L	LCL: 20	UCL: 115	RPD: 20	UCL: 115	RPD: 20	UCL: 115	RPD: 20	pCi/L	LCL: 70	UCL: 130	RPD: 20	pCi/L	LCL: 70	UCL: 130	RPD: 20
U-235	RDL: 0.1	pCi/L	LCL: 20	UCL: 115	RPD: 20	UCL: 115	RPD: 20	UCL: 115	RPD: 20	pCi/L	LCL: 70	UCL: 130	RPD: 20	pCi/L	LCL: 70	UCL: 130	RPD: 20
KCR7M1AC-LCS																	
U-232	RDL: 0.1	pCi/L	LCL: 20	UCL: 115	RPD: 20	UCL: 115	RPD: 20	UCL: 115	RPD: 20	pCi/L	LCL: 70	UCL: 130	RPD: 20	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:  
 Uncert Level (#s): 4    Decay to SaDt: N    Blk Subt.: N    Sci.Not.: N    ODRs: B  
 KCR7M1AC-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: 12/12/2006, 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	9		
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 <th>Protocol</th> <th>Equation</th> <th>Set</th> <th>Wrk Ord</th> <th>Units/Matrix</th> <th>QC/BB</th> <th>Sa/On Date</th> <th>AnalysisDate/PptWt</th> <th>Sep1/Sep2 Date</th> <th>QC/Tracer</th> <th>Vial</th> <th>Multi/EntYld</th> <th>Total/Analy Vol</th> <th>Final/Count Vol</th>	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	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	9		
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





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	0	1000.0833	ED	N	N	3.7821E-01 (1.135E-02)	N	83%	5%	1.0000E+00 (0.000E+00)	4.5045E+02 1.0000E+00
2	12/10/07 13:07	U-235	200.05	1	1000.0833	ED	N	N	3.7821E-01 (1.135E-02)	N	83%	5%	1.0000E+00 (0.000E+00)	4.5045E+02 1.0000E+00
3	12/10/07 13:07	U-238	200.05	0	1000.0833	ED	N	N	3.7821E-01 (1.135E-02)	N	83%	5%	1.0000E+00 (0.000E+00)	4.5045E+02 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	U-232	R	18.839233	3.16521E+00 (1.2588E-01)	0	ED	N	N	8.36881 (0.416904)	0.2001 L (0.173205)	83%			
12/10/07	U-234	R	0.00E00	0.00000E+00 (5.0978E-03)	U4	ED	N	N	0.00E00 (0.016202)	0.2001 L (0.173205)	83%		0.171298 0.037211	
12/10/07	U-235	R	-0.007154 (0.036472)	-9.99917E-04 (5.0978E-03)	U4	ED	N	N	-0.003178 (0.016203)	0.2001 L (0.173205)	83%		0.171297 0.037211	
12/10/07	U-238	R	0.00E00	0.00000E+00 (5.0978E-03)	U4	ED	N	N	0.00E00 (0.016202)	0.2001 L (0.173205)	83%		0.171297 0.037211	

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		UITC:19012 Alg		200.00 g		
0	INTRA-LAB	BLANK						WATER									

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 (1.080E-02)		N	100%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.005	1.0000E+00	1.0000E+00	
1	12/10/07 13:08	U-234	0	4	ALP10	ED	N	N	3.5997E-01 (1.080E-02)		N	88%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.005	1.0000E+00	1.0000E+00	
2	12/10/07 13:08	U-235	0	0	ALP10	ED	N	N	3.5997E-01 (1.080E-02)		N	88%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.005	1.0000E+00	1.0000E+00	
3	12/10/07 13:08	U-238	0	1	ALP10	ED	N	N	3.5997E-01 (1.080E-02)		N	88%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.005	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	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BIKLCc/MDC	StdDvMdc/LcC
12/10/07	U-232	R	20.04242	3.20333E+00 (1.2660E-01)	0	ED	N	N	8.898843 (0.44154)	0.20 L (0.173205)	88%			
12/10/07	U-234	R	-0.028319 (0.03817)	-3.99993E-03 (5.3813E-03)	U4	ED	N	N	-0.012574 (0.016936)	0.20 L (0.173205)	88%		0.24302 0.073627	
12/10/07	U-235	R	0.00E00	0.00000E+00 (5.0949E-03)	U4	ED	N	N	0.00E00 (0.016016)	0.20 L (0.173205)	88%		0.169437 0.036814	
12/10/07	U-238	R	-0.00708 (0.036076)	-9.99983E-04 (5.0949E-03)	U4	ED	N	N	-0.003143 (0.016017)	0.20 L (0.173205)	88%		0.169437 0.036814	

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  
 Date Counted 12/1/02

Counting Time 200 Minutes  
 Sample 200

SOP's Operating: RICHRD008  
 Review: RICHRD0016  
11/15 730103

Background See Alpha Regions Report

BRCU

WorkOrder #	U-232 (5320 KeV) Tracer	TOTAL COUNTS			Det #	Comments/Edits
		U-238 (4196 KeV)	U-235 (4396 KeV)	U-234 (4776 KeV)		
<u>KCFM8IAE</u>	See Counting Room Printout for ROI information				<u>6</u>	
<u>KCFM8IAG</u>	See Counting Room Printout for ROI information				<u>7</u>	
<u>KCKE9IAE</u>	See Counting Room Printout for ROI information				<u>8</u>	
<u>KCMQLIAE</u>	See Counting Room Printout for ROI information				<u>9</u>	
<u>KCR7MIAA</u>	See Counting Room Printout for ROI information				<u>10</u>	
<u>KCK7MIAA</u>	See Counting Room Printout for ROI information				<u>11</u>	
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					

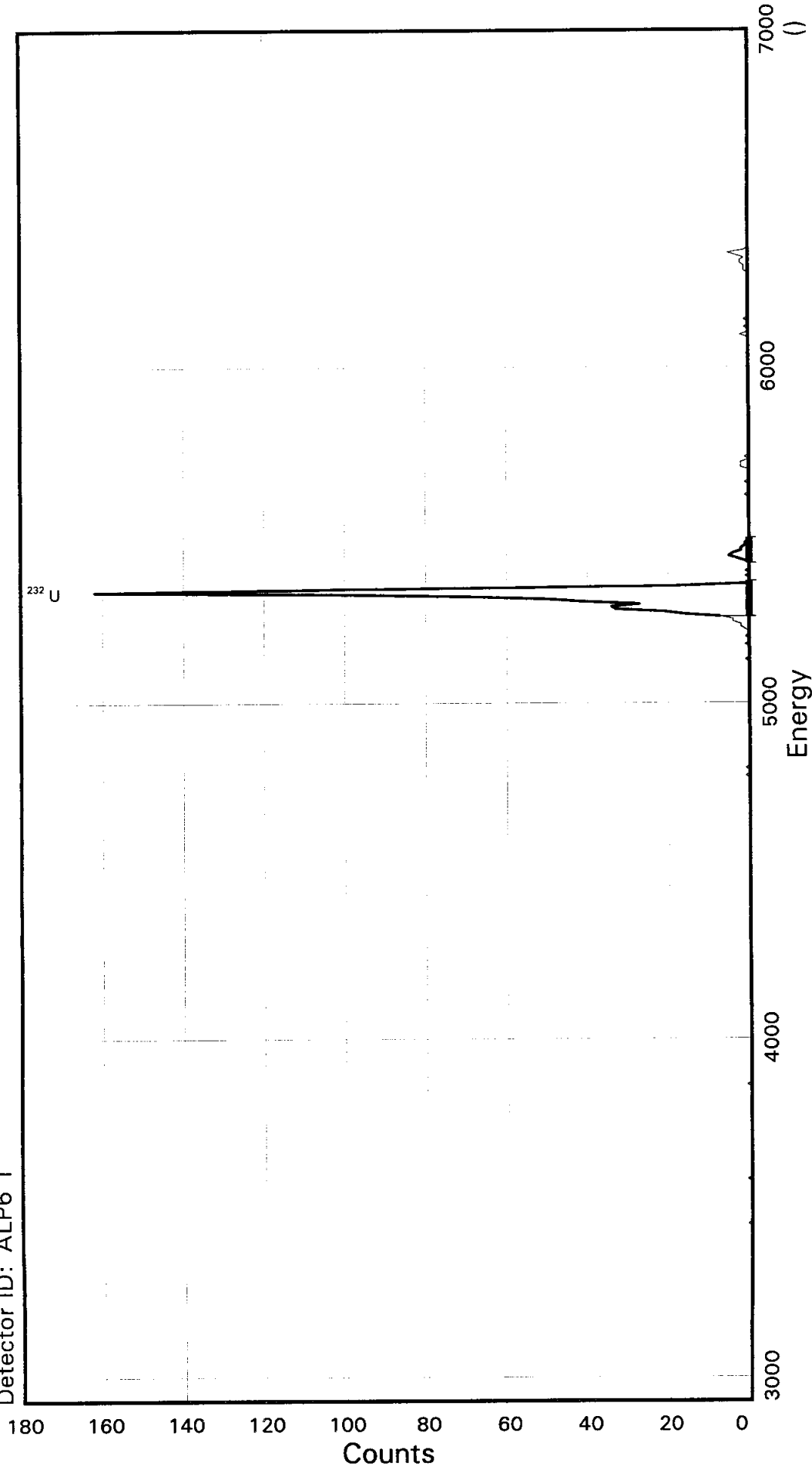
Comments:

Form No: RC-011\_7/02\_Rev 9 Approved by: [Signature] Date: 12/1/02

STL Richland WA.  
U BRCO

Sample ID: KCFM81AE  
Detector ID: ALP6 1

Batch ID: 7327123



Energy Coefficients:  
Offset: 2.90724E + 03  
Slope: 7.29933E + 00  
Quadrature: 3.48723E-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	Intrsrct 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

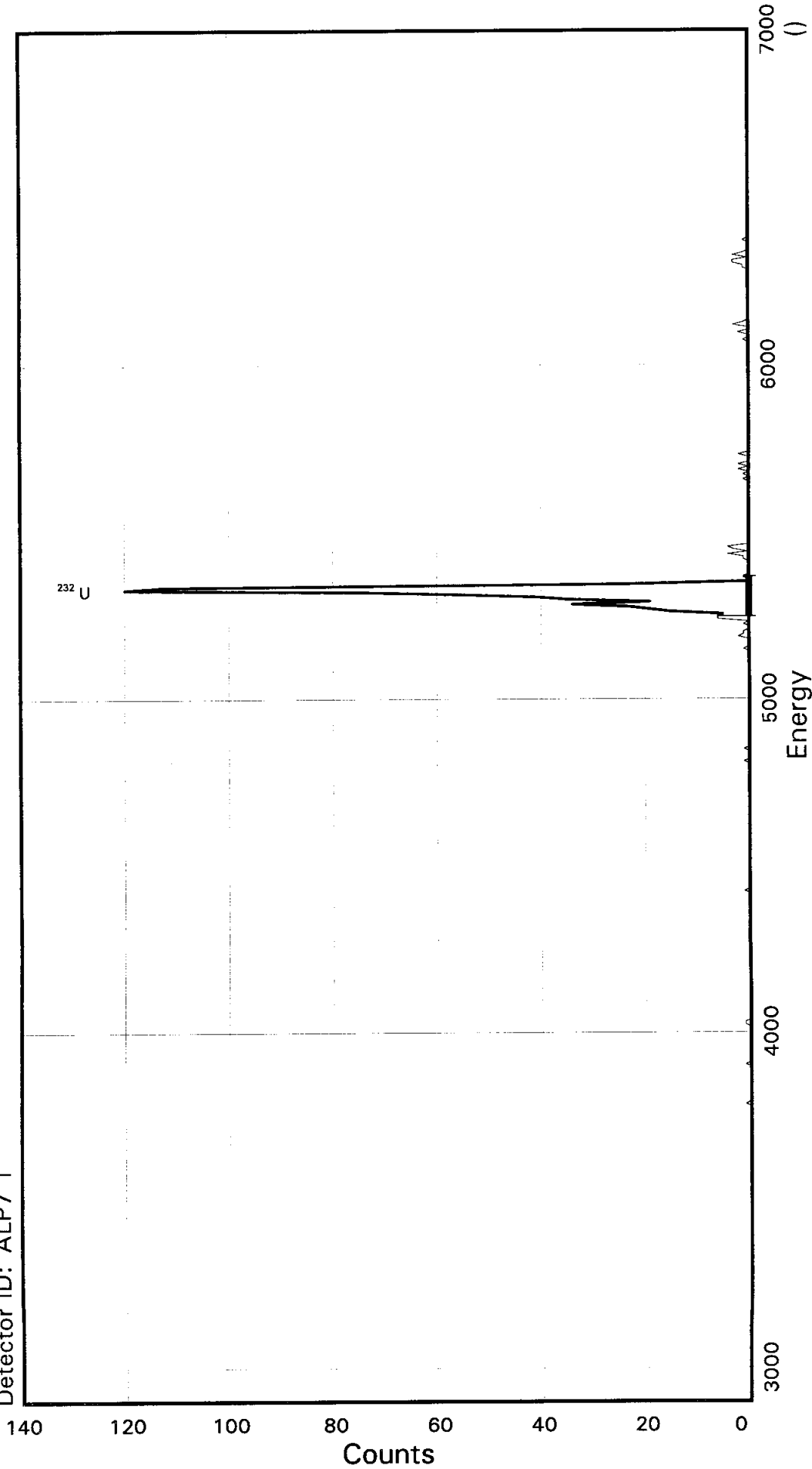
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5327.92	317	331	689	680	0.34		
5438.27	338	348	20	19	0.22		

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 Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
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
0		8	0		58	0		108	0		158	1+		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	0		309	0		359	0		409	1		459	0		509
0		10	0		60	0		110	0		160	0+		210	1+		260	2		310	0		360	0		410	3		460	0		510
0		11	0		61	0		111	0		161	0		211	0+		261	1		311	0		361	0		411	3		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	0		313	0		363	0		413	3		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	1		265	1		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	6		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	1		469			
0		20	0		70	0		120	0+		170	0		220	0		270	15+		320	0		370	0		420	0		470			
0		21	0		71	0		121	0+		171	0		221	0		271	19+		321	0		371	0		421	0		471			
0		22	0		72	1		122	0+		172	0		222	0		272	23+		322	0		372	0		422	0		472			
0		23	0		73	0		123	0+		173	0		223	0		273	34+		323	1		373	0		423	0		473			
0		24	0		74	0		124	0+		174	0		224	0		274	19+		324	0		374	0		424	0		474			
0		25	0		75	0		125	0+		175	0		225	0		275	35+		325	1		375	0		425	0		475			
0		26	0		76	0		126	0+		176	0		226	0		276	41+		326	0		376	0		426	0		476			
0		27	0		77	0		127	0+		177	0		227	0		277	56+		327	2		377	0		427	0		477			
0		28	0		78	0		128	0+		178	0		228	0		278	75+		328	0		378	0		428	0		478			
0		29	0		79	0		129	0+		179	0		229	0		279	120+		329	2		379	1		429	0		479			
0		30	0		80	0		130	0+		180	0		230	0		280	113+		330	0		380	0		430	0		480			
0		31	0		81	0		131	0+		181	0		231	0		281	23+		331	0		381	0		431	0		481			
0		32	0		82	0		132	0+		182	0		232	0		282	0+		332	0		382	2		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	1		334	0		384	0		434	0		484			
0		35	0		85	0		135	0		185	0		235	0		285	0		335	0		385	3		435	0		485			
0		36	0		86	0		136	0		186	0		236	0		286	0		336	0		386	1		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	1		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	1		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	0		243	0		293	4		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	3		345	0		395	0		445	0		495			
0		46	0		96	0		146	0+		196	0+		246	0		296	4		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			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP7.SAMPLE]KCFM81AG\_101271307.CNF;1

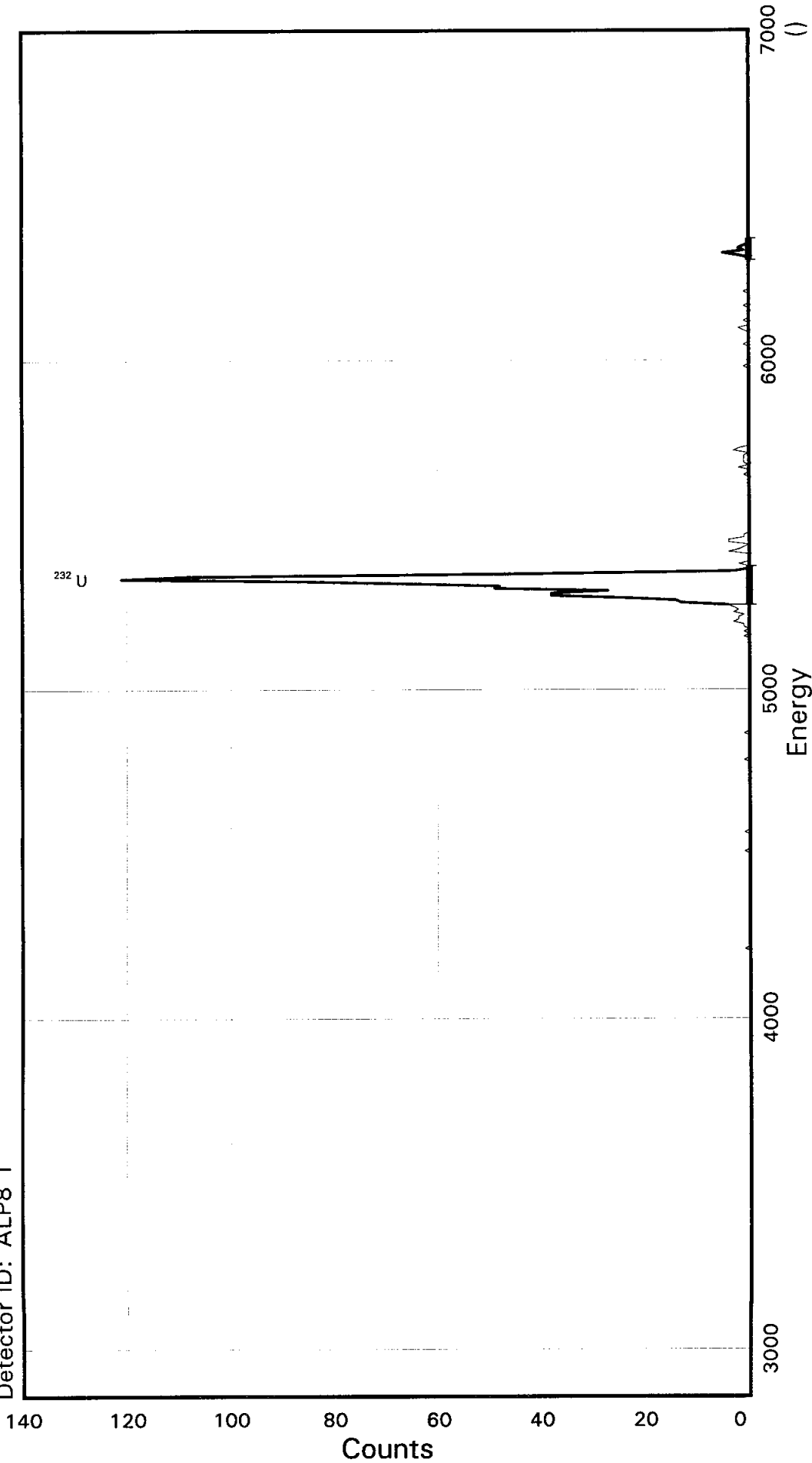
Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5325.62	318	334	593	585	0.33		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCKE91AE  
Detector ID: ALP8 1

Batch ID: 7327123



Energy Coefficients:  
Offset: 2.83606E + 03  
Slope: 7.30051E + 00  
Quadrature: 3.06587E - 05

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

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	Smpl	Bkg	Intrsect	Count	Centrd	Region	Left	Right	Left	Right	Flags
Name	Count	Count	Count	Rate	Energy	Width	Chnl	Chnl	Wdth	Wdth	
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	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

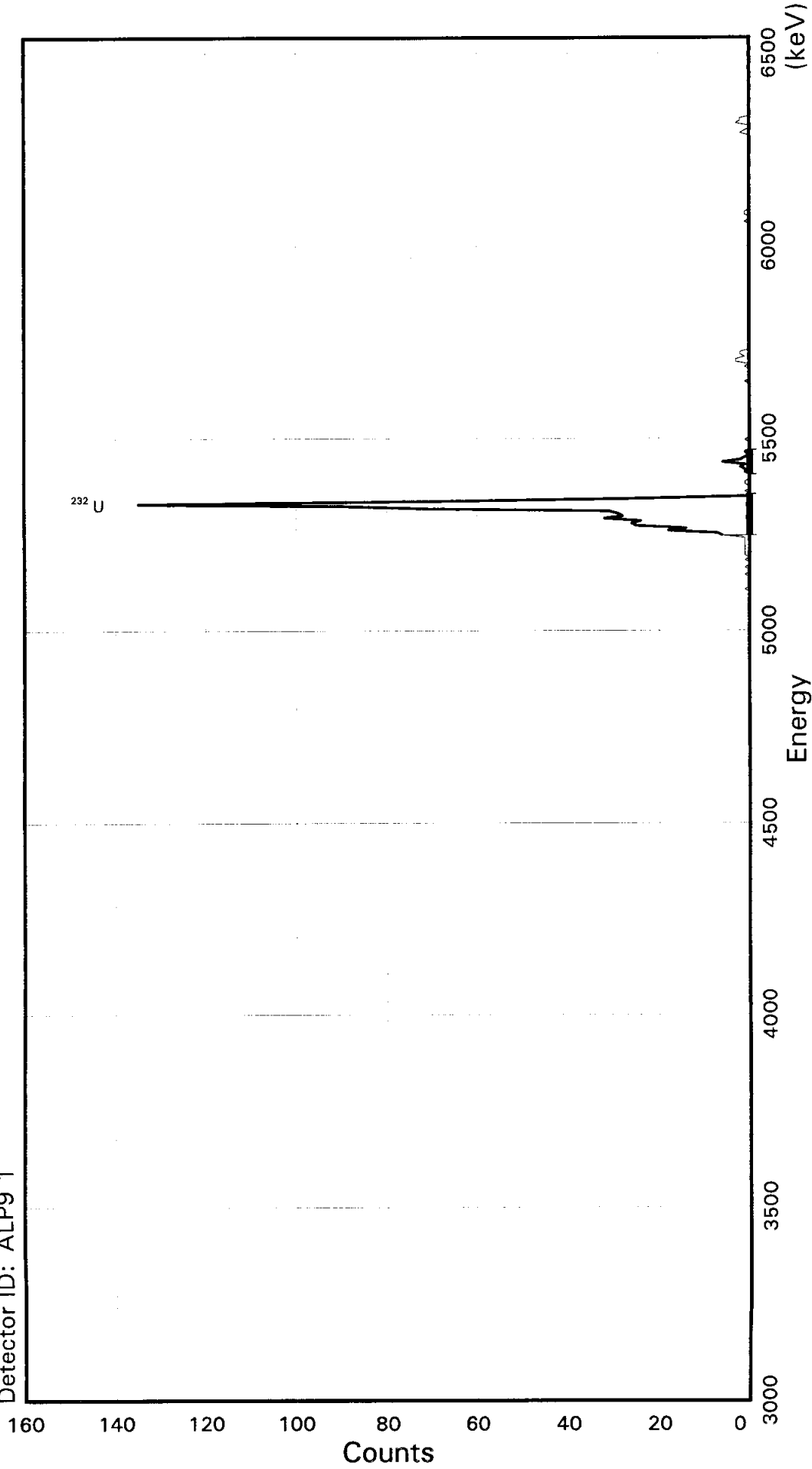
Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5335.70	331	347	691	683	0.30		
6329.04	474	483	12	11	0.29		

End of Report

STL Richland WA.  
U BRCO

Sample ID: KCMQL1AE  
Detector ID: ALP9 1

Batch ID: 7327123



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 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	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						
		1	0		51	0		101	0		151	0		201	0		251	1		301	0		351	0		401	0		451	0		501
		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		

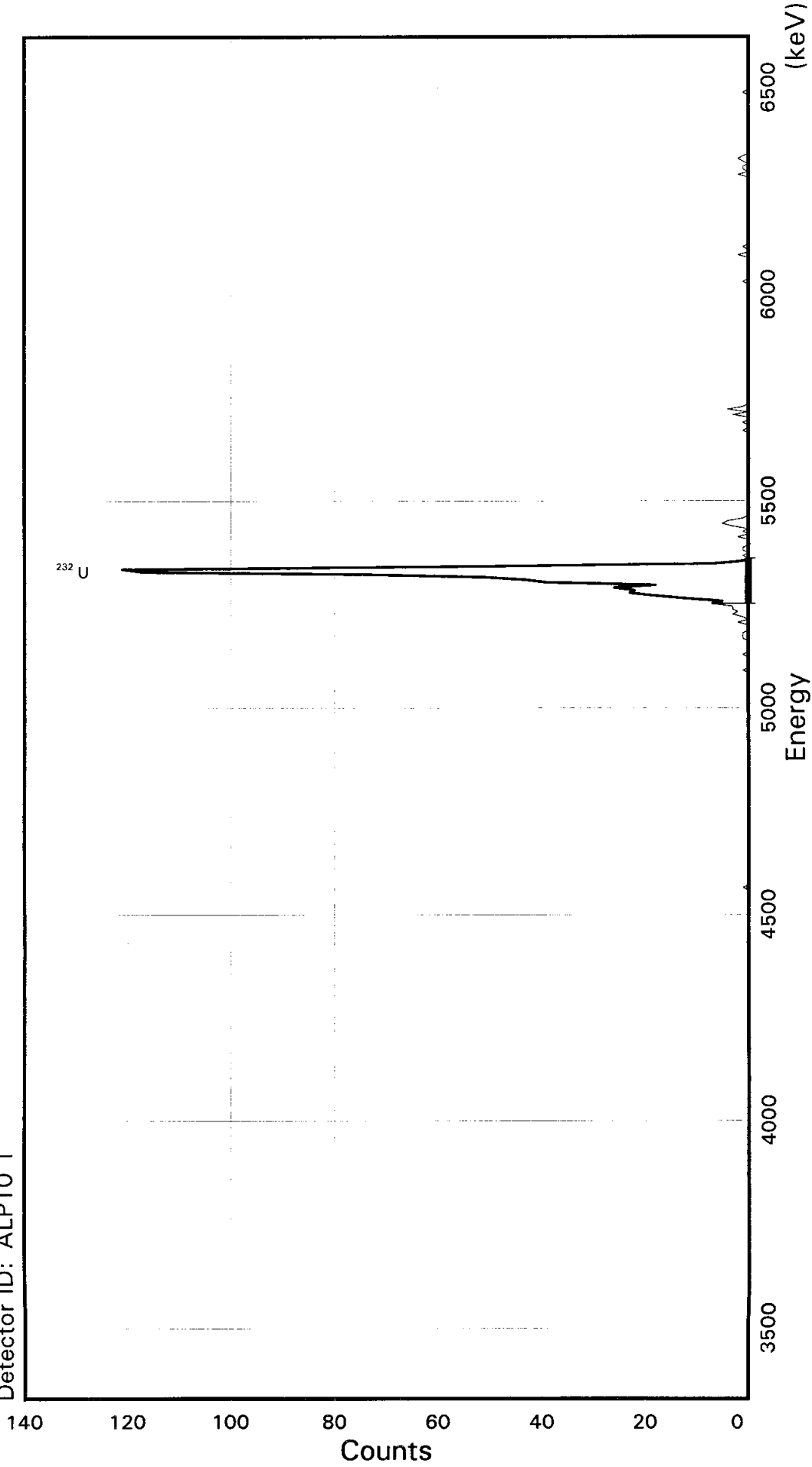
End of Report



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 Energy keV	Region Width keV	Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
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	Cnt	F	Chn						
		1	0		51	0		101	0		151	0		201	0		251	12+		301	0		351	0		401	0		451	0		501
		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

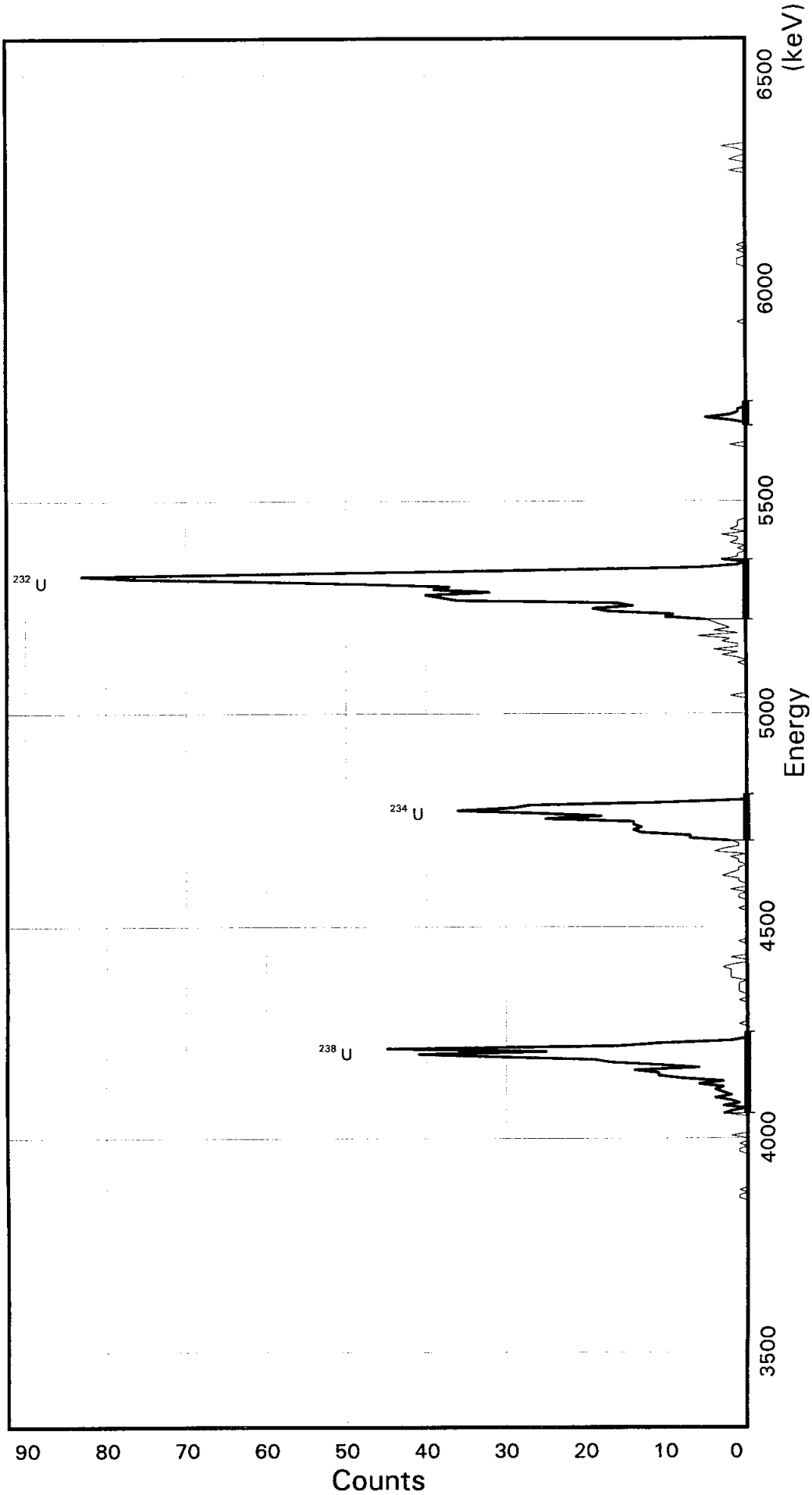
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5329.09	299	316	642	637	0.20		

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 Acquire Date: 10-DEC-2007 13:08:08.79 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	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	



Alpha Spectrum Listing

(Version: 1-Apr-07)

Sample Identity: KCR7MIAC

Flags Key

Detector: ALP11 1

Report Date: 10-Dec-07 04:28 PM

Intersect Region: 3

Acquire Date: 10-DEC-2007 13:08:08.79

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

# 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.

\*\*\*\*\*  
**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 W.G 2) Date Prepared 4/23/2001

**3) Source Identification Number / Ref. Number** U23283D170 4886

4) Source Activity (dpm ± dpm/g) 2.9709E+02 ± 1.366E+01

5) Percent error of Source Activity 4.596 %

6) Weight of Source Material used (g) 3.5636

7) (% Error) of Weight of Source Material used 0.1347 %

8) Diluent 2M HNO3-P0100141

9) Total Weight of the Dilution (g) 105.12

10) (% Error) of Total Weight of the Dilution 0.2854 %

**11) Specific Activity of Diluted Solution dpm/g** 1.0071E+01 ± 4.640E-01

12) Total Uncertainty 4.607 %

**13) Dilution Identification Number / Ref. Number** U23283D171 4887

14) Calibration Reference Date 4/23/2001

15) Isotope Inventory File update by/date W.G 4/23/2001

16) Reviewed by/date \_\_\_\_\_

17) Location QCLAB/STWT0388 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>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

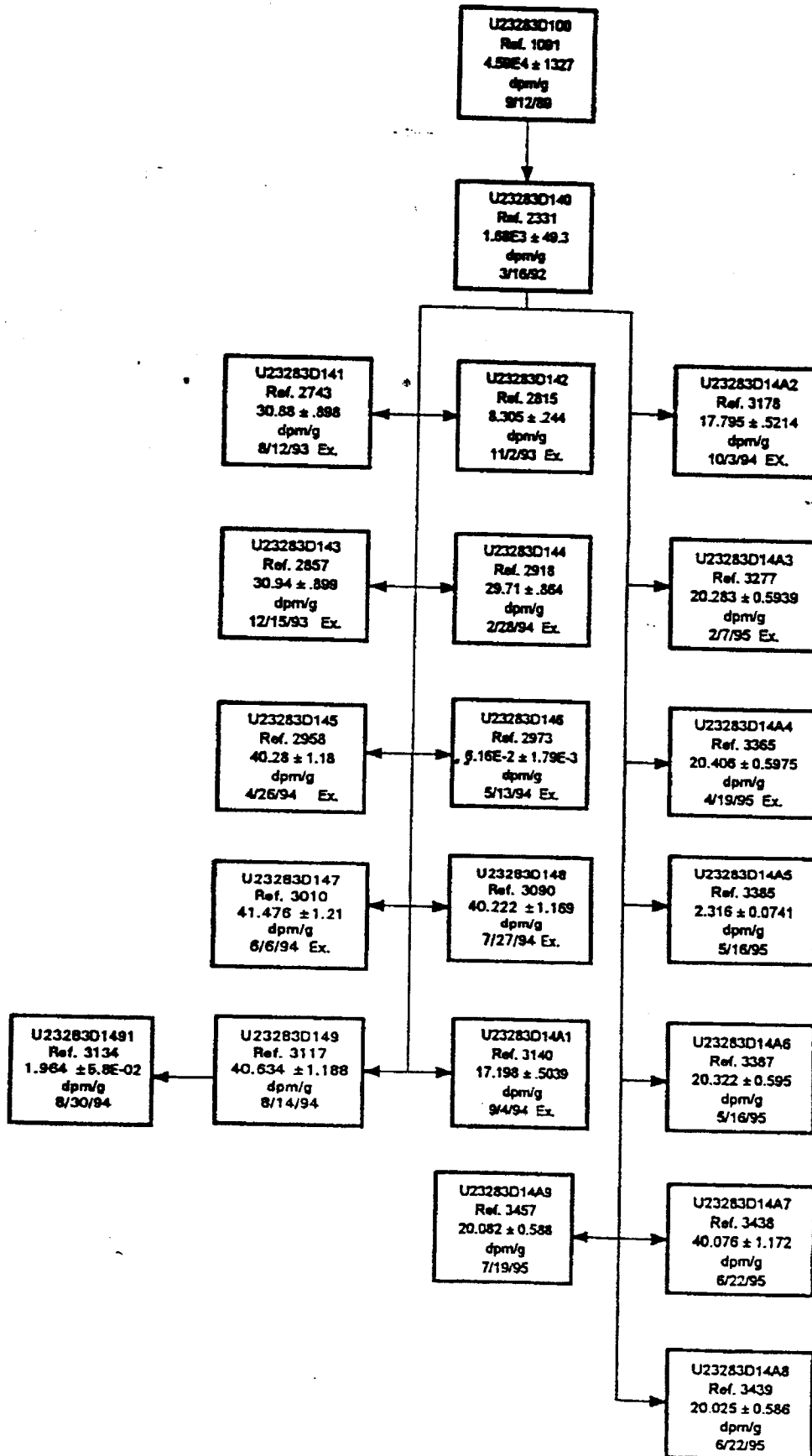
SPIKE PREPARATION RECORD  
-----

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) % 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 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>	<b><u>U23283D100</u></b>		<b><u>1091</u></b>
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>	<b><u>1.6892E+03</u></b>	±	<b><u>4.929E+01</u></b>
12) Total Uncertainty	<u>2.918</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>U23283D140</u></b>		<b><u>2331</u></b>
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**

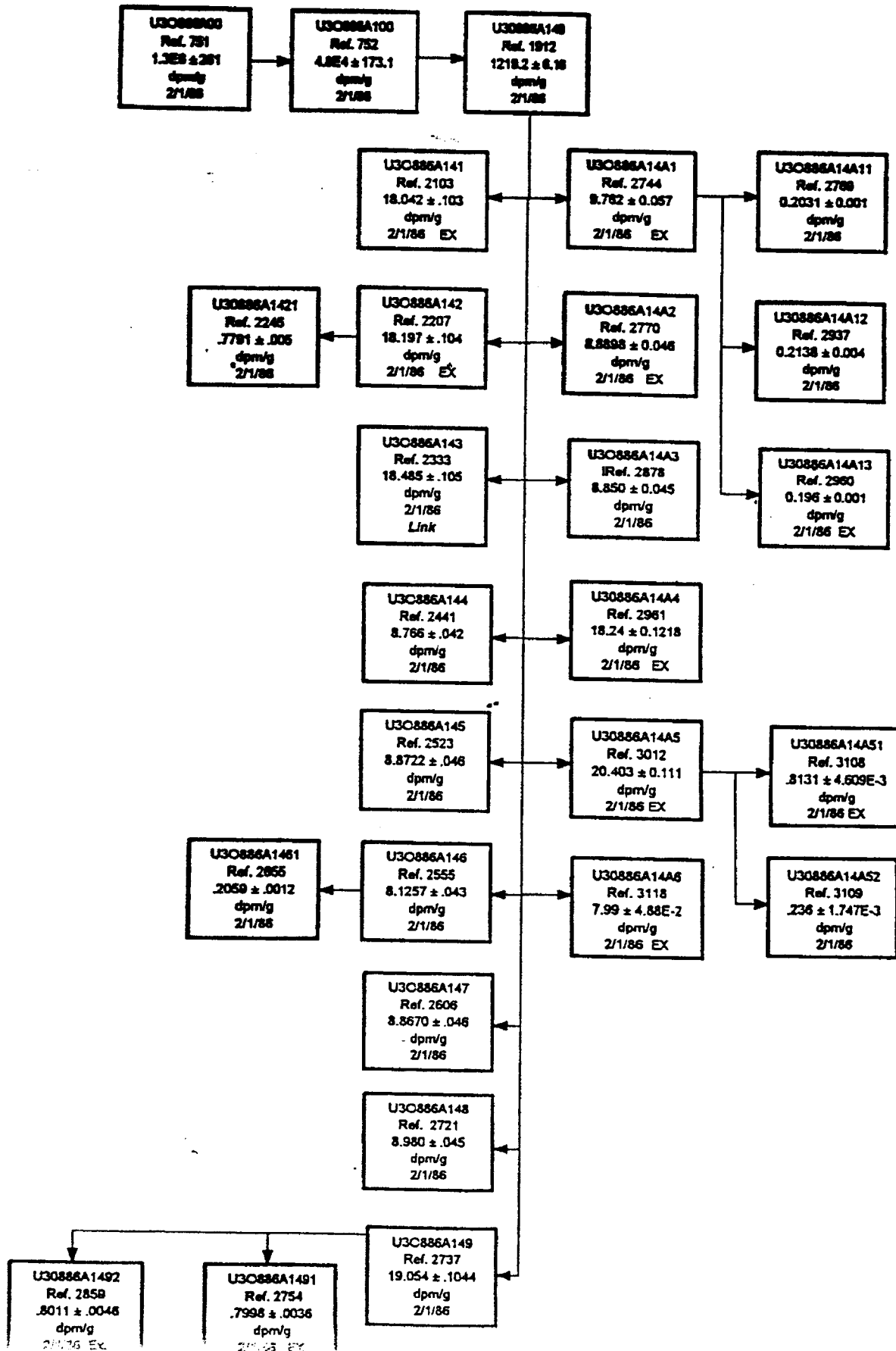
7) % Error of Wt. used =  $(0.0048 / \text{Weight of Source Material used} * 100) ^2$

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>
3) <i>Source Identification Number / Ref. Number</i>	<u>U30886A100</u>		<u>752</u>
4) Source Activity (dpm $\pm$ dpm/g)	<u>4.7985E+04</u>	$\pm$	<u>1.731E+02</u>
5) Source Activity (ug $\pm$ 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>	%	
12) <i>Specific Activity of Diluted Solution dpm/g</i>	<u>1.2192E+03</u>	$\pm$	<u>6.156E+00</u>
13) <i>Specific Activity of Diluted Solution ug/g</i>	<u>7.9273E+02</u>	$\pm$	<u>4.003E+00</u>
14) Total Uncertainty	<u>0.505</u>	%	
15) <i>Dilution Identification Number / Ref. Number</i>	<u>U30886A140</u>		<u>1912</u>
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**

$$7) \% \text{ Error of Wt. used} = (0.0048 / \text{Weight of Source Material used} * 100) ^2$$

$$10) \% \text{ error of Dilution Wt.} = (0.3 / \text{Total Weight of Dilution} * 100) ^2$$

$$11) \text{ Specific Activity} = \text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$$

$$12) \% \text{ Total Uncertainty} = \sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$$

**ISOTOPE DILUTION RECORD**

1) Prepared by	<u>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 <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 TIME <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
				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
				14 44 64 83 108 208
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		

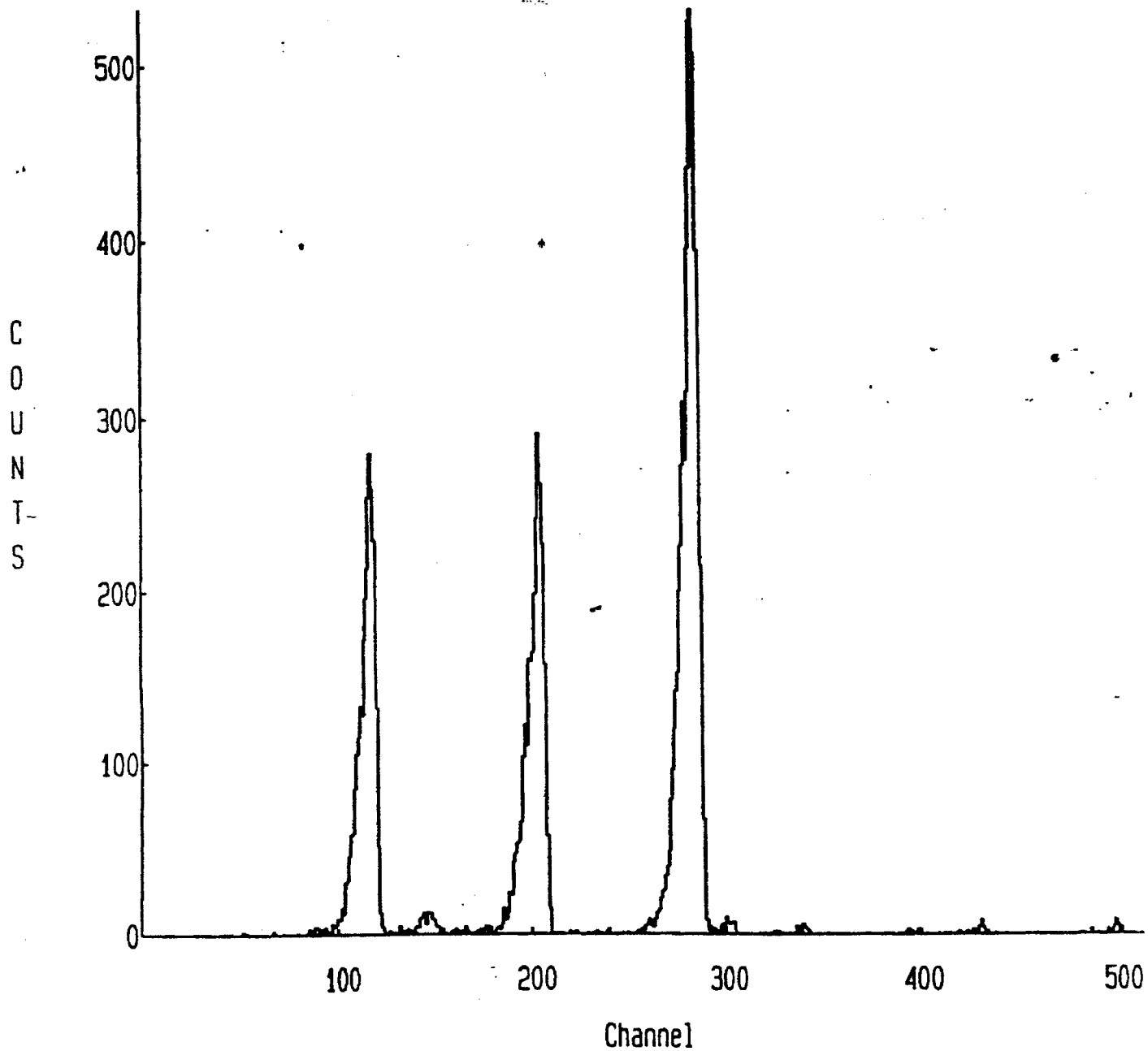
*U-232*



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	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	%Err	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

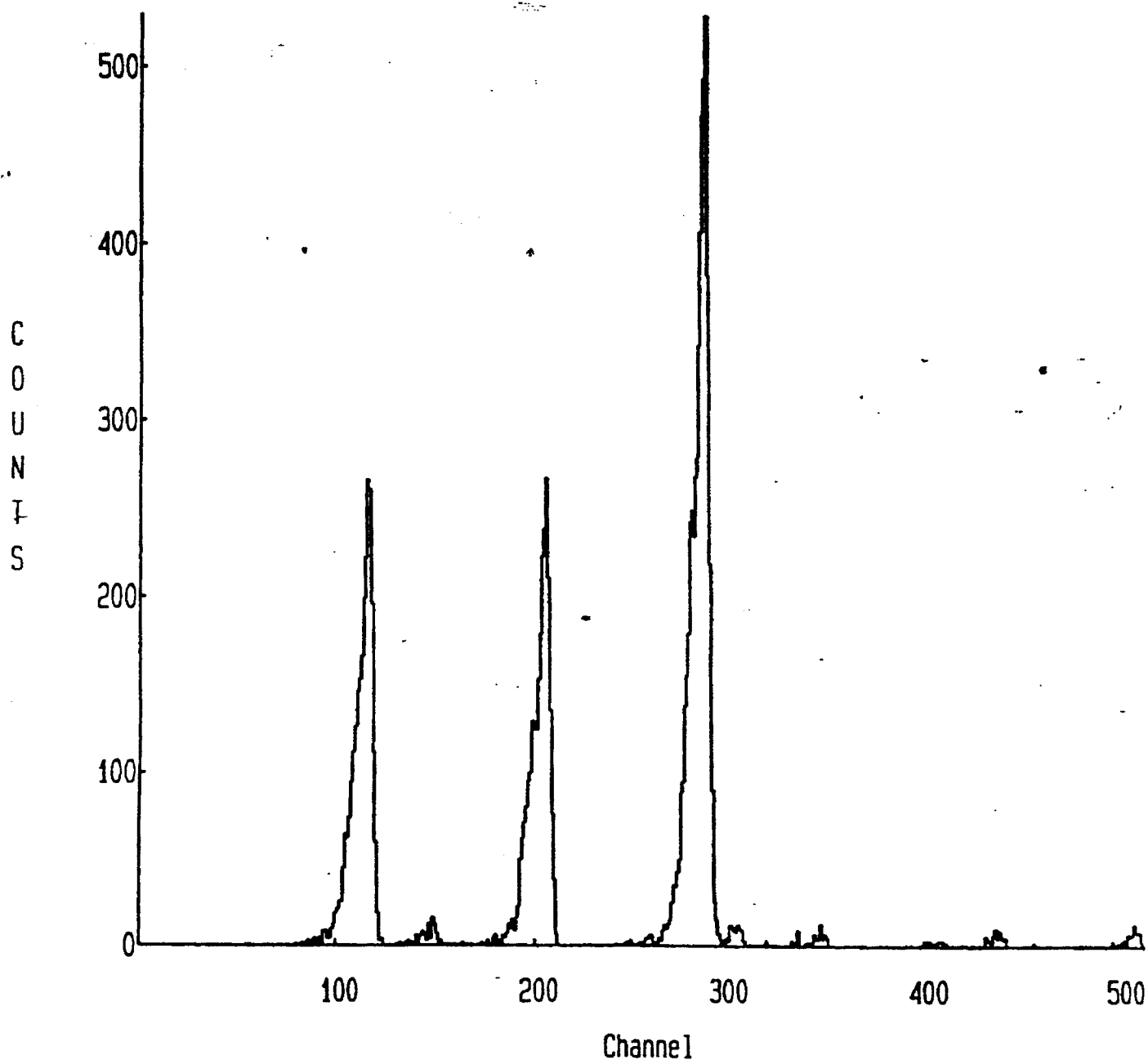
"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

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 <i>U-232</i>
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
				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 ASC BGC
SPIKE #		TECH COMMENTS		
BLANK #		<i>CCG-Data Cal CK 2326</i>		

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	Cnt	F	Chn	
		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

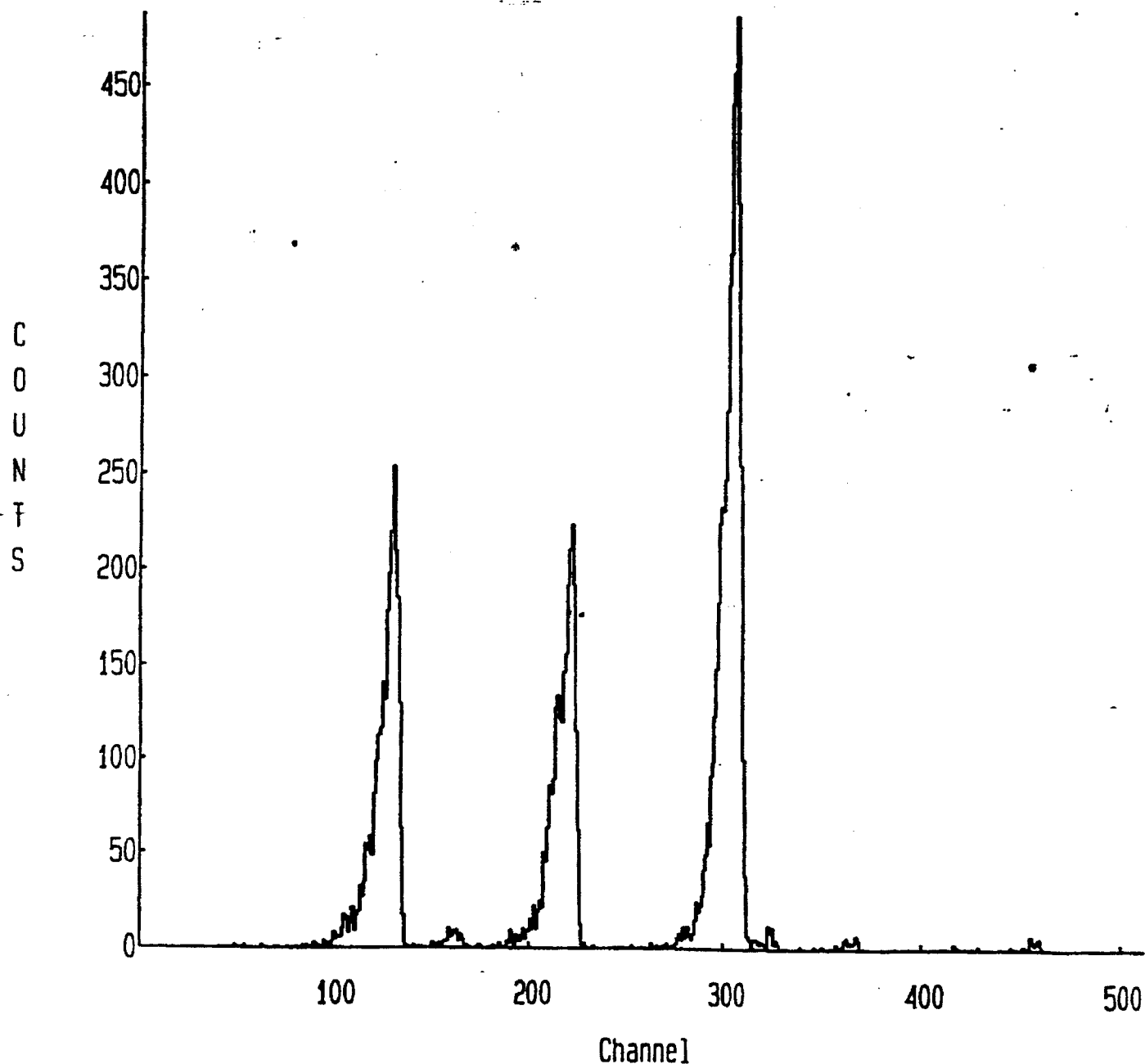
"M" = Manually accepted  
 "A" = Nuclide specific abn. limit

LT-RD # <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 HEIGHT 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"/> ASPEC <input type="checkbox"/> LEPO <input type="checkbox"/> ASC <input type="checkbox"/> BGC
Spike #		TECH COMMENTS		
BLANK #		<i>U-232</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

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	

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

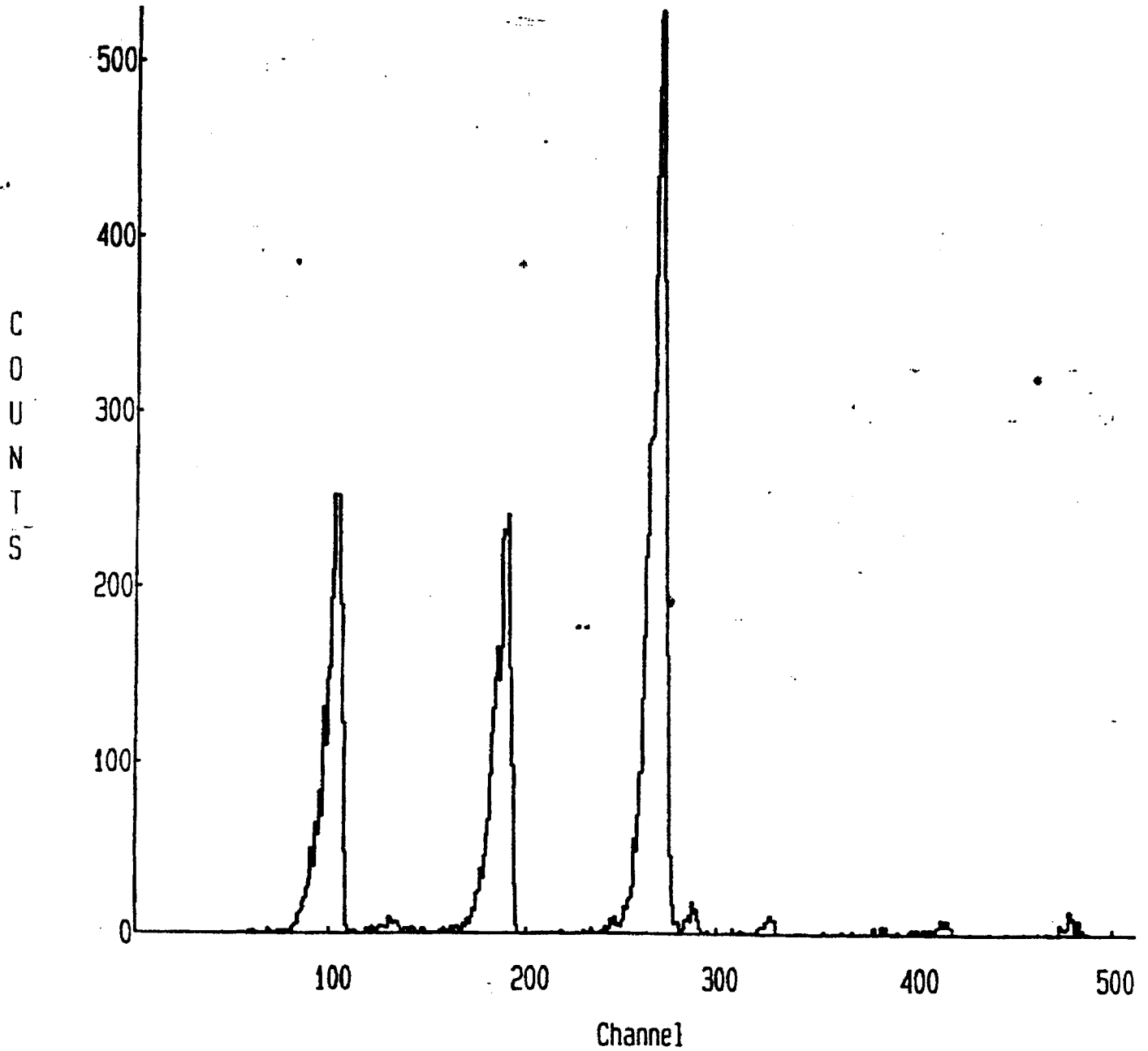
Nuclide	Hlife	Decay	Uncorrected DPM/SAMPLE	Decay Corr DPM/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
U-234	2.45E+05Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
U-238	4.47E+09Y	1.000	0.000E+00	0.000E+00	0.000E+00	0.00	
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found "M" = Manually accepted  
 "E" = Manually edited "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	
					<input type="checkbox"/> SA 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 CIDS CIRCLE ONE	
					<input type="checkbox"/> 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>NA</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

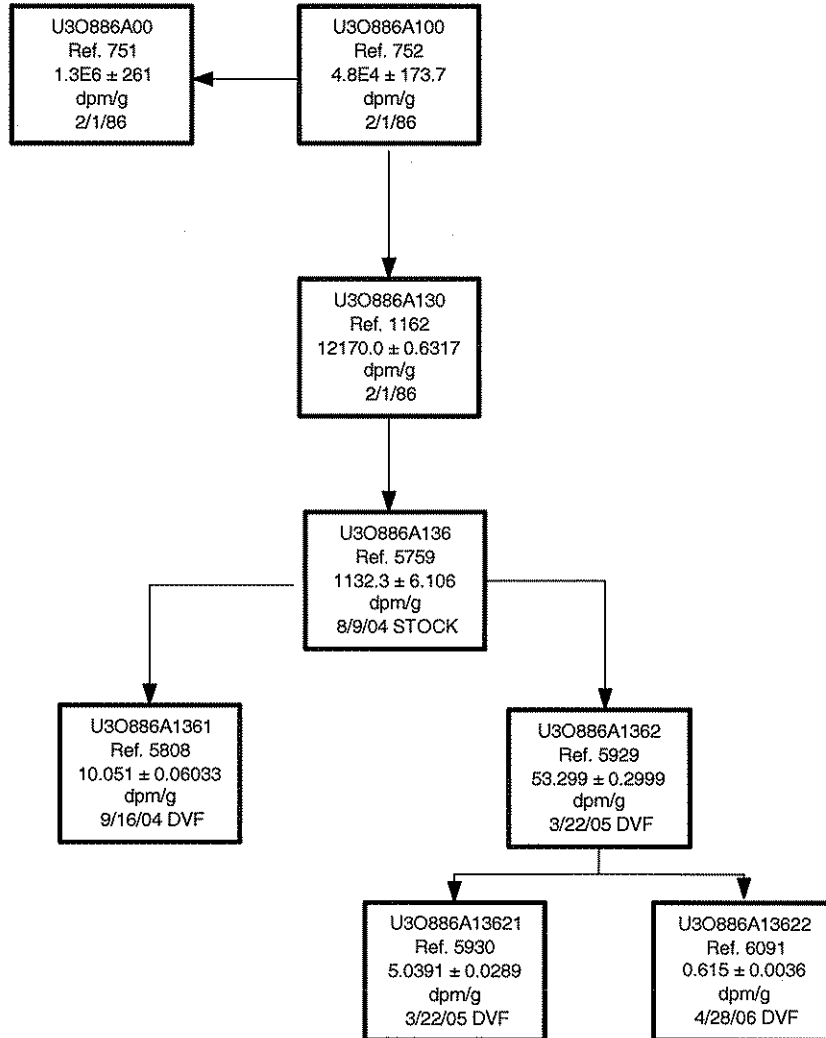
Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "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>	UI SO	<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			
<p>STL Richland, SMFractions v4.8.29</p> <p>* - Isotope is an Impurity</p>						

**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 =  $\sqrt{(\% \text{ error of Source Activity}^2 + \% \text{ error of Wt. Used}^2 + \% \text{ error of Dilution Wt.}^2)}$



**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 =  $\sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$

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**

$$7) \% \text{ Error of Wt. used} = (0.0048 / \text{Weight of Source Material used} * 100) ^2$$

$$10) \% \text{ error of Dilution Wt.} = (0.3 / \text{Total Weight of Dilution} * 100) ^2$$

$$11) \text{ Specific Activity} = \text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$$

$$12) \% \text{ Total Uncertainty} = \sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$$

**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 0.312 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 18:28:41.60

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		
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2-DEC-2007 09:51	bkg		0.0010		
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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 : 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		
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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 : 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
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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 : 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
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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 : 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
------------------	-----------	----------------	-------	-------------	-----

```
-----
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	

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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```
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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
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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		
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2-DEC-2007 09:51	bkg		0.0110	In	
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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 : 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		
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2-DEC-2007 09:51	bkg		0.0730		
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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 : 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
------------------	-----------	----------------	-------	-----------------

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

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

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

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

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

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

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

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: Erika Ford 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

Sample Preparation/Analysis  
 BU Ra-226/228 Pp/SepRC5005  
 TF Radium-228 by GPC  
 01 STANDARD TEST SET

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

PM, Quote: JAE, 77571  
 pCi/L

Batch: 7327122  
 SEQ Batch, Test: 7327119, BUTE

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 F7K160242-17-SAMP	990.10g.in	RATA29454 11/15/07	1.0000	1.5"	3x50	30.3	SK GD	1/1/802 12/1/05			
11/15/2007 13:15		AmtRec: 2XLP	#Containers: 2					Scr:	Alpha:	Beta:	
2 KCKE9-1-AC F7K190152-16-SAMP	994.20g.in	RATA29455 11/15/07	1.0000			30.9	SB GA	1/1/802 12/1/05			
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 F7K200219-15-SAMP	1000.90g.in	RATA29456 11/15/07	1.0000			30.9	SC GD	1/1/802 12/1/05			
11/19/2007 12:40		AmtRec: 2XLP	#Containers: 2					Scr:	Alpha:	Beta:	

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

AnalyDueDate: 12/10/2007 pCi/L

Batch: 7327122

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	RATA29457	11/15/07	1.0000	1.5"	31.4	3x50	SD	1622	10/18/05	
J7K230000-122-BLK								GC	0632	12/19/05	
11/16/2007 14:00	Amt/Rec:	#Containers: 1							Alpha:	Beta:	
6 KCR7G-1-AC-C	1000.40g.in	RASC4640	11/05/07	1.0000							
J7K230000-122-LCS											
11/16/2007 14:00	Amt/Rec:	#Containers: 1							Alpha:	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: 3	UCL: 115	LCL: 20	RA-228	RPD: 20	PCi/L	RDL: 3	UCL: 115	LCL: 20	RPD: 20
RA-228DA	RDL: 3	UCL: 130	LCL: 70	RA-226	RPD: 20	PCi/L	RDL: 3	UCL: 130	LCL: 70	RPD: 20
Ba-133	RDL: 3	UCL: 130	LCL: 70	RA-228DA	RPD: 20	PCi/L	RDL: 3	UCL: 130	LCL: 70	RPD: 20
RA-228	RDL: 3	UCL: 130	LCL: 70							

KCFM81AC-SAMP Calc Info:

Uncert Level (#s): 4    Decay to SaDt: N    Blk Subst.: N    Sci. Not.: N    ODRs: B

KCR7G1AA-BLK:

TA Report: Kev. In. Total Amt.    ii - Final Amt. di - Diluted Amt. s1 - Sep1, s2 - Sep2    Page 2    Page 2    Page 2

ISV - Insufficient Volume for Analysis

W/O Ont: 6

Prep Sample: 12/5/07

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 #:

AnalyseDueDate: 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
<b>7327122</b>				
AC	<b>CalcC</b>	<b>LucasD</b>	11/30/2007 4:58:09	
SC		antonsonl	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		<b>LucasD</b>	12/7/2007 11:14:05	
AC		<b>McGinnisT</b>	12/18/2007 12:10:31	
AC		<b>BlackCL</b>	12/18/2007 1:53:56	
AC		<b>ClarkR</b>	12/19/2007 8:01:32	

AC: Accepting Entry, SC: Status Change

12/19/2007 11:10:35 AM

## 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	
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	TrcYld,EntFct	LCSYld,EFctU	IDC/LcC	BkLcC/MDC	StdvMdc/LcC		
12/19/07	RA-228	R	0.284645	(0.179579)	U4	2.20000E-01	0.621152	(0.390644)	0.9901 L	88%	0.750801					
12/19/07	RA-228	R	-0.256025	(0.149927)	U4	-1.80000E-01	-0.558696	(0.325975)	0.9901 L	88%	0.825377					
12/19/07	RA-228	R	0.03157	(0.192057)	U4	2.00000E-02	0.068892	(0.419091)	0.9901 L	88%	0.91598					
12/19/07	RA-228	A	0.020064	(0.100892)	U4	2.00000E-02	0.043783	(0.219722)	0.9901 L	88%	0.479616					
12/19/07	RA-228	R	0.788645	(1.016183)	U4	1.10000E-01	1.720978	(2.21584)	0.9901 L	88%	4.579133					
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	
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		

Batch Nbr: 7327122

Alpha Beta, Ra-228 by GPC, Calculated Results

12/19/2007 7:38:17 AM

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	(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					
445691	RINSATE	5					Unk			30.9		12/18/07 10:50	RATA29456	Alq	100%	1000.90	g

Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Trc Yld Fct	Ent	Bik Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/18/07 14:42	RA-228	58	295	GPC5C	1.5	N	N	5.9913E-01	1.0000E+00	N	90%	N	1.4776E+00	4.5045E+02	1.0059E+00		
			50	400			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%	N	1.6244E+00	4.5045E+02	1.0059E+00		
			50	400			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%	N	1.8027E+00	4.5045E+02	1.0059E+00		
			50	400			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%	N	8.9420E+00	4.5045E+02	1.0059E+00		
			50	400			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		

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

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 RecCnt: 4  
 RADCALC v4.8.29  
 TA Richland

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	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol				
4	Calc	TF	Unk	*STLE	Ra228WoBS	KCR7G1A	pCi/L	B	11/16/07 14:00	12/19/07 06:37	12/07/07 10:50	RATA29457	Alq	100%	1001.00 g				
0	INTRA-LAB	BLANK					Unk			31.4	12/18/07 10:50								
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	12/18/07 14:42	RA-228	37	276	GPC5D	1.5	N	N	5.7822E-01	1.0000E+00	N	91%	N	1.4776E+00	4.5045E+02	1.0069E+00			
			50	400			Y		(1.332E-02)	(0.000E+00)		7%		(0.000E+00)	0.000999				
1	12/18/07 15:32	RA-228	46	276	GPC5D	1.5	N	N	5.7822E-01	1.0000E+00	N	91%	N	1.6244E+00	4.5045E+02	1.0069E+00			
			50	400			Y		(1.332E-02)	(0.000E+00)		7%		(0.000E+00)	0.000999				
2	12/18/07 16:27	RA-228	40	276	GPC5D	1.5	N	N	5.7822E-01	1.0000E+00	N	91%	N	1.8027E+00	4.5045E+02	1.0069E+00			
			50	400			Y		(1.332E-02)	(0.000E+00)		7%		(0.000E+00)	0.000999				
3	12/19/07 06:37	RA-228	48	263	GPC6C	1.5	N	N	5.7703E-01	1.0000E+00	N	91%	N	8.9420E+00	4.5045E+02	1.0069E+00			
			50	400			N		(1.578E-02)	(0.000E+00)		7%		(0.000E+00)	0.000999				
Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rtt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BIKlC/MDC	StdDvMdc/LcC					
	12/19/07	RA-228	R	0.063426	U4	5.00000E-02	0.13998	0.13998	1.001 L	91%		0.76169							
				(0.163185)		(1.2855E-01)	(0.360077)	(0.360077)	(0.173205)			0.346674							
	12/19/07	RA-228	R	0.320742	U4	2.30000E-01	0.707868	0.707868	1.001 L	91%		0.837348							
				(0.200269)		(1.4186E-01)	(0.440568)	(0.440568)	(0.173205)			0.381108							
	12/19/07	RA-228	R	0.170237	U4	1.10000E-01	0.375708	0.375708	1.001 L	91%		0.929265							
				(0.206704)		(1.3314E-01)	(0.455802)	(0.455802)	(0.173205)			0.422943							
	12/19/07	RA-228	A	0.184802		1.30000E-01	0.407852	0.407852	1.001 L	91%		0.486572							
				(0.110284)		(7.7728E-02)	(0.243016)	(0.243016)	(0.10)			0.221457							
	12/19/07	RA-228	R	2.32698		3.02500E-01	5.135573	5.135573	1.001 L	91%		4.518814							
				(1.13387)		(1.4437E-01)	(2.489207)	(2.489207)	(0.173205)			2.052159							
Sq	Calc TF	Unk	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	TF	Unk	*STLE	Ra228WoBS	KCR7G1AC	pCi/L	S	11/16/07 14:00	12/19/07 06:37	12/07/07 10:50	RASC4640	Alq	100%	1000.40 g				
0	INTRA-LAB	CHECK					Unk			30.8	12/18/07 10:50								
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	12/18/07 14:42	RA-228	183	306	GPC6A	1.5	N	N	5.7043E-01	1.0000E+00	N	90%	N	1.4779E+00	4.5045E+02	1.0069E+00			
			50	400			Y		(1.253E-02)	(0.000E+00)		7%		(0.000E+00)	0.001				
1	12/18/07 15:32	RA-228	194	306	GPC6A	1.5	N	N	5.7043E-01	1.0000E+00	N	90%	N	1.6247E+00	4.5045E+02	1.0069E+00			
			50	400			Y		(1.253E-02)	(0.000E+00)		7%		(0.000E+00)	0.001				
2	12/18/07 16:27	RA-228	186	306	GPC6A	1.5	N	N	5.7043E-01	1.0000E+00	N	90%	N	1.8030E+00	4.5045E+02	1.0069E+00			
			50	400			Y		(1.253E-02)	(0.000E+00)		7%		(0.000E+00)	0.001				
3	12/19/07 06:37	RA-228	72	316	GPC6D	1.5	N	N	5.7539E-01	1.0000E+00	N	90%	N	8.9420E+00	4.5045E+02	1.0069E+00			
			50	400			N		(1.350E-02)	(0.000E+00)		7%		(0.000E+00)	0.001				

( ) - (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

Batch Nbr: 7327122

Alpha Beta, Ra-228 by GPC , Calculated Results

12/19/2007 7:38:18 AM

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		
												2.301201		

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

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: KCKE91AC      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	<u>tda</u>	2) Date Prepared	<u>10/14/2005</u>
<b>3) Source Identification Number / Ref. Number</b>	<b><u>RA22606A000</u></b>	<b><u>6068</u></b>	
4) Source Activity (dpm ± dpm/g)	<u>4.2223E+02</u>	±	<u>1.393E+01</u>
5) Percent error of Source Activity	<u>3.3</u>	%	
6) Weight of Source Material used (g)	<u>50</u>		
7) (% Error) of Weight of Source Material used	<u>0.0096</u>	%	
8) Diluent	<u>1 M HNO3</u>		
9) Total Weight of the Dilution (g)	<u>approx. 750 g</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.0400</u>	%	
<b>11) Specific Activity of Diluted Solution dpm/g</b>	<b><u>2.1120E+01</u></b>	<b>±</b>	<b><u>6.970E-01</u></b>
12) Total Uncertainty	<u>3.300</u>	%	
<b>13) Dilution Identification Number / Ref. Number</b>	<b><u>RA22606A100</u></b>	<b><u>6069</u></b>	
14) Calibration Reference Date	<u>11/1/2001</u>		
15) Isotope Inventory File update by/date	<u>tda</u>		<u>3/21/2006</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



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

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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 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
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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)

Page : 7

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

**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:  
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>
----------------------	--------------------	-----------------

E

12/5/2007 9:05:50 AM Balance Id:1120403183  
 445691, Basic Remediation Company Pipet #:  
 Basic Remediation Company  
**Sample Preparation/Analysis** **PRIORITY**  
 BU Ra-226/228 Prp/SepRC5005  
 TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow  
 01 STANDARD TEST SET  
 AnalyDueDate: 12/10/2007  
 Sep1 DT/Tm Tech: 12/7/07 10:50 DL  
 Sep2 DT/Tm Tech:

PM, Quote: JAE, 77571  
 All Tests: 7327095 7USR, 7327102 D2S1, 7327113 AXT9, 7327118 9NS1, 7327119 BUTE, 7327122 BUTF,  
 7327123 7YSR,  
 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-AA	990.10g.in	RATA29454	11/15/07				911	1925	12-10-07 14:44 SB		
F7K160242-17-SAMP	7.5519	1.0000							EHØ (131) Alpha:		
11/15/2007 13:15		AmtRec: 2XLP	#Containers: 2						Scr: 911	1958	12/7/07000
2 KCKE9-1-AA	994.20g.in	RATA29455	11/15/07								
F7K190152-16-SAMP	7.5429	1.0000							GSA (009) Alpha:		
11/16/2007 14:00		AmtRec: 2XLP	#Containers: 2						Scr: 911	1958	12/7/07000
3 KCKE9-1-AF-X											
F7K190152-16-DUP											
11/16/2007 14:00		AmtRec: 2XLP	#Containers: 2						Scr: 911	2038	12/7/07000
4 KCMQL-1-AA	1000.90g.in	RATA29456	11/15/07								
F7K200219-15-SAMP	7.5519	1.0000							HAC (075) Alpha:		
11/19/2007 12:40		AmtRec: 2XLP	#Containers: 2						Scr: 911	1958	12/7/07000

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 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:
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5 KCR7F-1-AA-B	1001.00g.in	RATA29457	11/15/07				9" 2110	12-10-07 14:44 SB			
J7K230000-119-BLK					7.5519 - 1.0000						
					7.82						

11/15/2007 13:15	AmtRec: 1	#Containers: 1	Scr: Q"	Beta: 2150	12/7/0700
6 KCR7F-1-AC-C	1000.40g.in	RASC4640	11/05/07		

J7K230000-119-LCS					7.4845 - 1.0000						
					7.72						


11/15/2007 13:15	AmtRec: 1	#Containers: 1	Scr: KME	Beta: 11:07	12-10-07 14:44 SB
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Comments: ISV for Dup - DL 12/5/07

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

Client	Constituent	Unit	LCL	UCL	RPD	RDL	Sci. Not.	Blk Subst.	Decay to SaDt	Uncert Level
KCFM81AA-SAMP	Ba-133	pCi/L	20	115	20	115	N	N	N	4
	Ba-133	pCi/L	20	115	20	115	N	N	N	4

12/5/2007 9:05:52 AM **Sample Preparation/Analysis** Balance Id:1120403183  
 BU Ra-226/228 Prp/SepRC:5005 Pipet #:  
 TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow  
 01 STANDARD TEST SET DT/Tm Tech:  
**ANALYTICAL**  
 AnalyzeDate: 12/10/2007  
 Batch: 7327119 Sep2 DT/Tm Tech:  
 SEQ Batch Test: None pCi/L 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

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-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	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	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 => .

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	ASCEHA	ASC	N	N	2.3774E+00	1.0000E+00	1.0000E+00	1.4515E+00	4.5045E+02	1.0000E+00		
							Y	Y	(1.182E-01)	(0.000E+00)	8%	(0.000E+00)	0.00101			
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	BIKlC/MDC	StdDvMdc/LcC
	12/17/07	RA-226	R	0.016667	U4	6.00000E-02	0.036633	0.036633	0.036633	0.036633	0.9901 L	100%	0.11511	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	ASGSA	ASC	N	N	1.6903E+00	1.0000E+00	1.0000E+00	1.4523E+00	4.5045E+02	1.0000E+00		
							Y	Y	(8.671E-02)	(0.000E+00)	8%	(0.000E+00)	0.001006			
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	BIKlC/MDC	StdDvMdc/LcC
	12/17/07	RA-226	R	0.012977	U4	3.33333E-02	0.028641	0.028641	0.028641	0.028641	0.9942 L	100%	0.125617	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	ASCHAC	ASC	N	N	2.6843E+00	1.0000E+00	1.0000E+00	1.4518E+00	4.5045E+02	1.0000E+00		
							Y	Y	(4.483E-02)	(0.000E+00)	8%	(0.000E+00)	0.000999			
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	BIKlC/MDC	StdDvMdc/LcC
	12/17/07	RA-226	R	0.016227	U4	6.66667E-02	0.036056	0.036056	0.036056	0.036056	1.0009 L	100%	0.090512	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	ASCJUA	ASC	N	N	2.5427E+00	1.0000E+00	1.0000E+00	1.4518E+00	4.5045E+02	1.0000E+00		
							Y	Y	(3.636E-02)	(0.000E+00)	8%	(0.000E+00)	0.000999			
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	BIKlC/MDC	StdDvMdc/LcC
	12/17/07	RA-226	R	0.024255	U4	9.9443E-02	0.053863	0.053863	0.053863	0.053863	(0.010009)	100%	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



# Alpha Beta, Ra-226 by ASC-7 , Calculated Results

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%	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	100%	1000.40 G	g				
0, INTRA-LAB CHECK ,J7K230000-119 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 Fc/VolAdj	Decay	Abn
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)	(0.000E+00)		8%		(0.000E+00)	0.001			
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	1.293768 (0.155046)	4.79667E+00 (3.2040E-01)	2.873232 (0.311606)	2.873232 (0.311606)	1.0004 L (0.010004)	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: KCMQL1AA                      Isotope: RA-226  
Client: STL                                Matrix Code: 103  
Batch Nbr: 7327119                      Activity Unit: PCI/L                      Multiplier: 1.0  
Technician: SB

Analysis Size: 1000.9                      Analysis Unit: G

    Report Date: 17-DEC-2007 15:56:01.12  
    First Separation Date: 10-DEC-2007 14:44:00.00  
    Second Separation Date: 17-DEC-2007 11:06:00.00

Detector ID: 17                              Cell ID: HAC

Bkg Date: 11-DEC-2007 09:21:06.93  
    Bkg Counts: 000014                              Bkg Duration: 000060.0

Count Date: 17-DEC-2007 15:06:00.51  
    Counts: 000015                                      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)

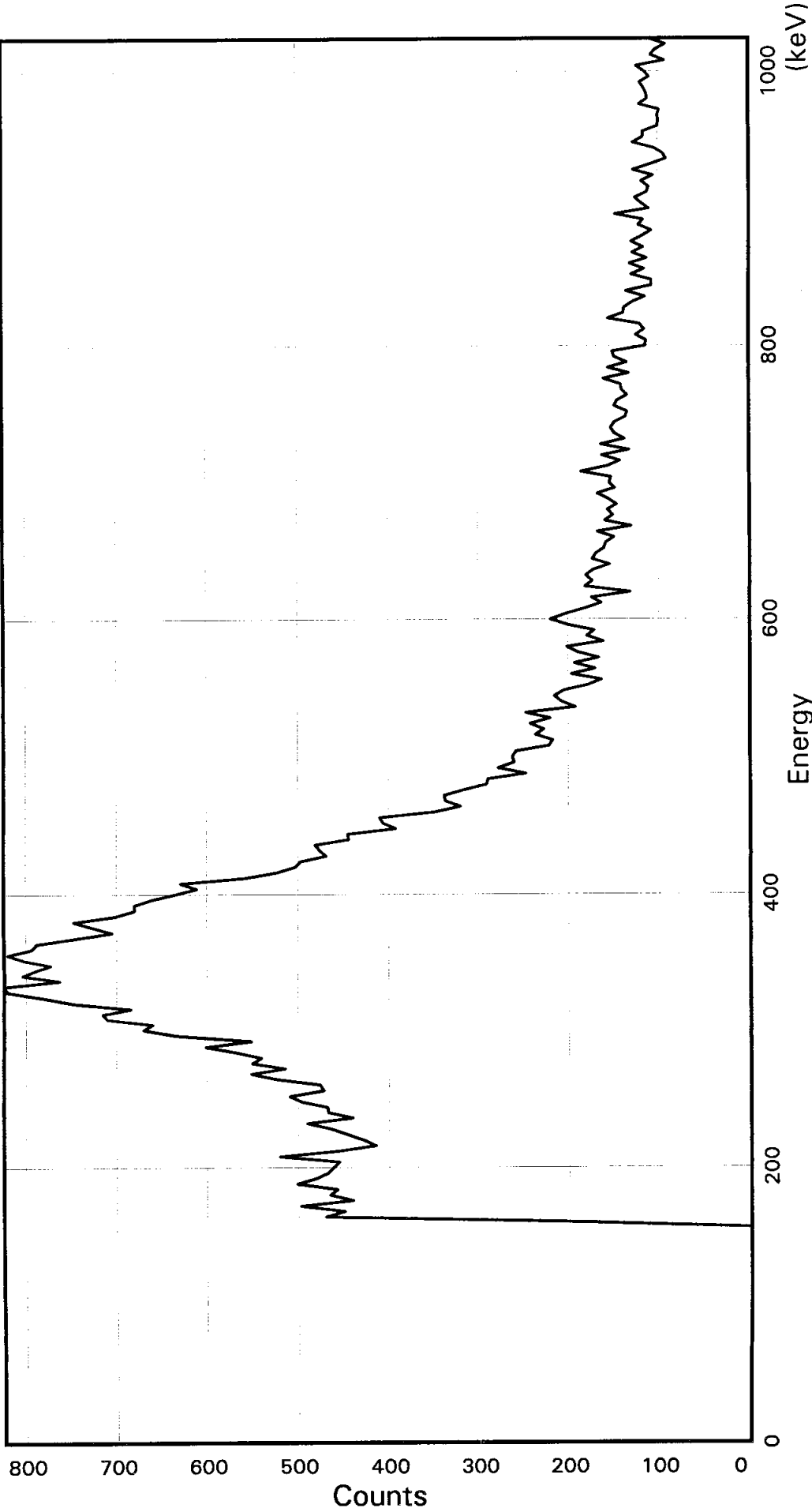
Sample ID: KCR7F1AC                      Isotope: RA-226  
Client: STL                      Matrix Code: 103  
Batch Nbr: 7327119              Activity Unit: PCI/L              Multiplier: 1.0  
Technician: SB  
Analysis Size: 1000.4              Analysis Unit: G  
                    Report Date: 17-DEC-2007 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

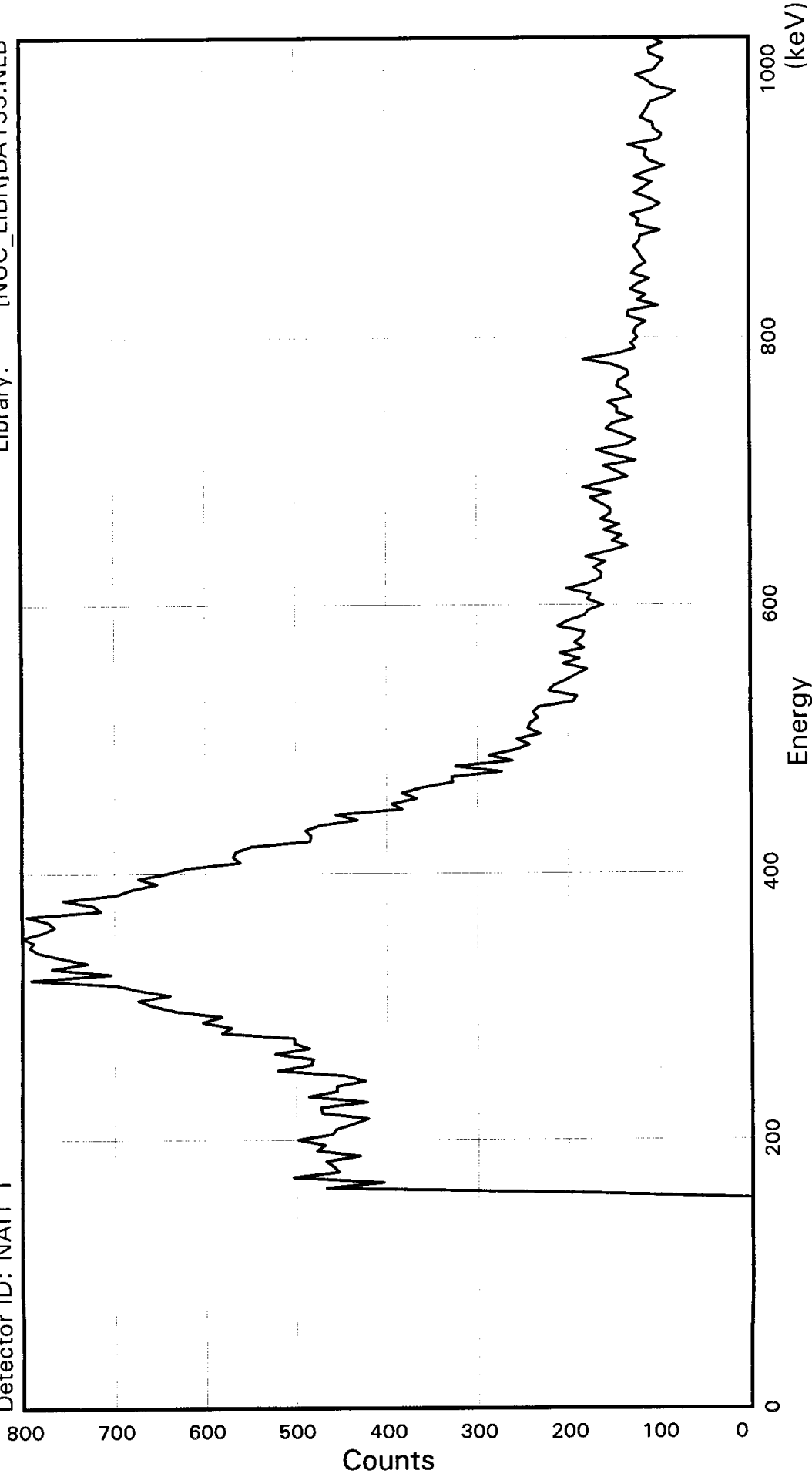
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	805.	7.58
-----		
Total Activity :	805.	

STL Richland WA.

BA133

BatchID: 7327119  
Library: [NUC\_LIBR]BA133.NLB

Sample ID: KCKE91AA  
Detector ID: NAI1 1



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

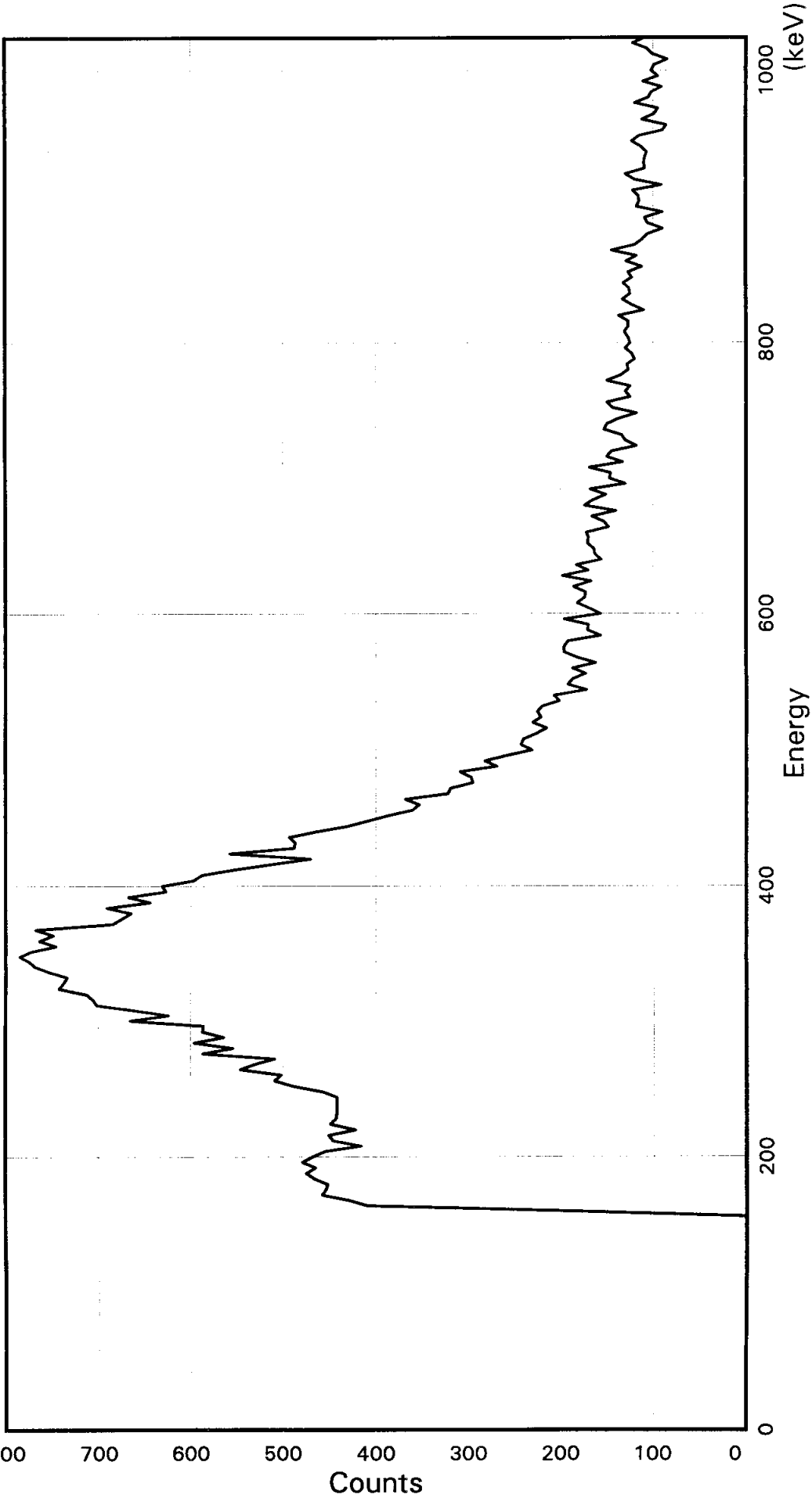
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	785.	9.34
-----		
Total Activity :	785.	



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

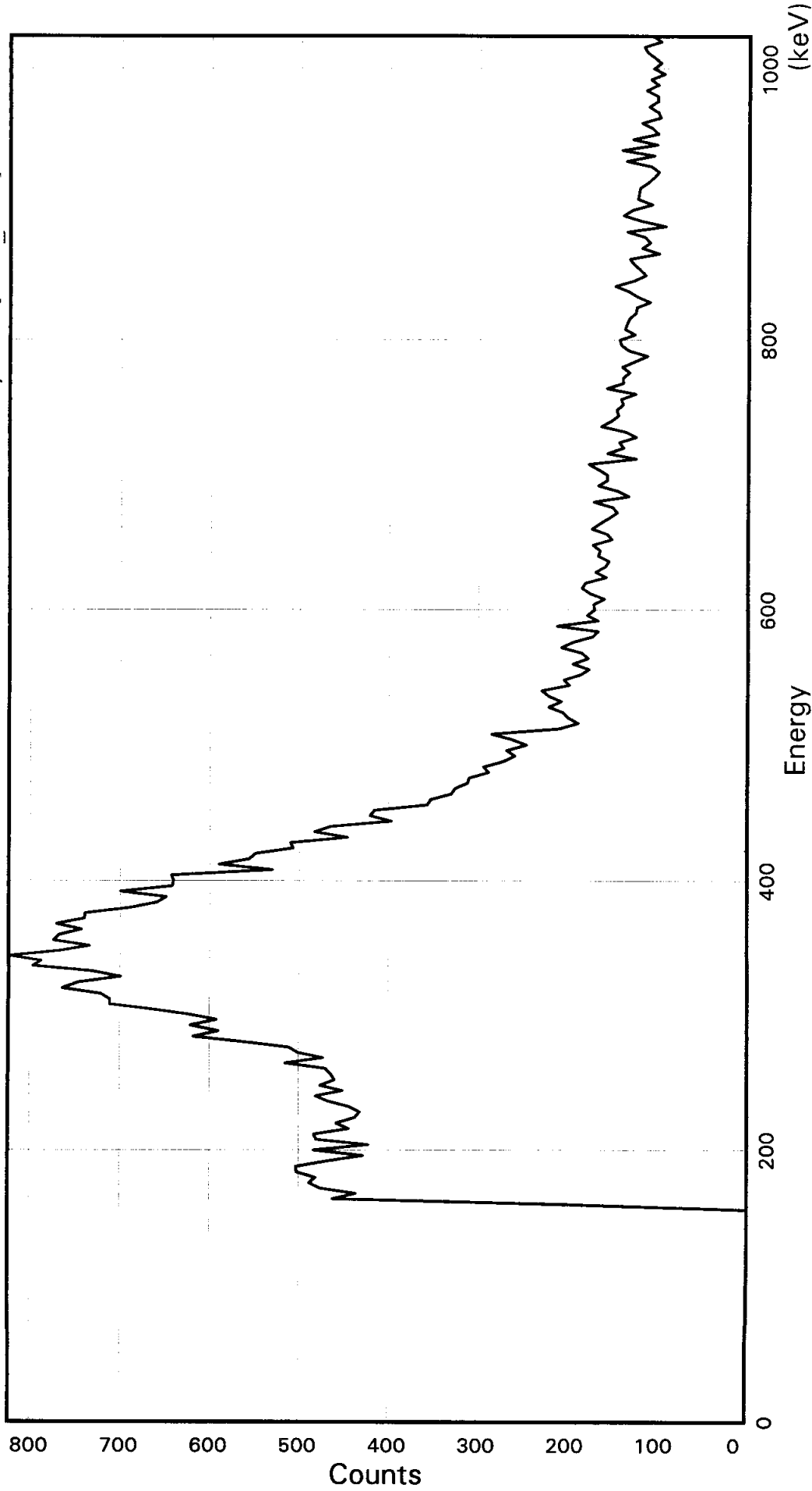
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	756.	8.32
-----		
Total Activity :	756.	

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

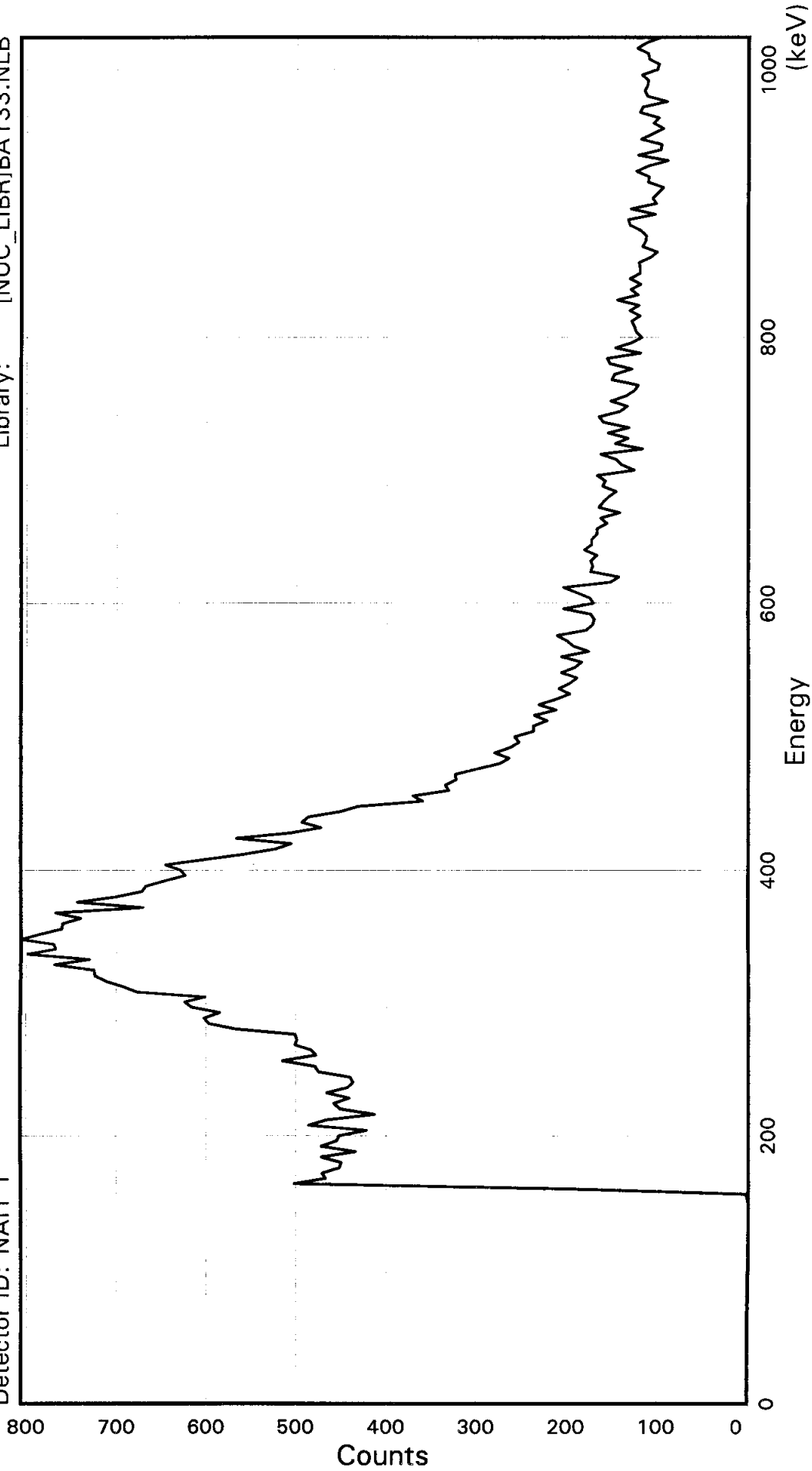
Brief Report

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

# ISOTOPE RECORD FORM

1) Isotope       Ra-226       2) Reference Number       6068        
3) Half Life       1600 yrs.       4) Storage Location       qclab        
5) Source Identification Number       Ra22606A000      

\*\*\*\*\*

## CALIBRATION DATA

6) Activity as Received Units       195.9 pCi/mL        
7) Overall Uncertainty Percent       3.30%        
8) Reference Date / Time       11/1/2001        
9) Activity dpm/g       422.23 dpm/g        
10) Volume or Mass (ml/g)       100 mL        
11) Calibrated by       IPL        
12) Certificate Solution Number       763-63-7      

\*\*\*\*\*

## SURVEY DATA

13) Date Received       3/21/2006 from Denver Lab        
14) Surveyed by       tda        
15) Survey Reading (Beta/Gamma) cpm       <300 cpm        
16) Survey Reading (Alpha) cpm       0      

\*\*\*\*\*

17) Activity Conversion       195.9 pCi/mL x 2.22 dpm/pCi / 1.025 g/mL =        
      422.23 dpm/g      

18) Remarks \_\_\_\_\_  
\_\_\_\_\_

19) Isotope File Updated by       tda 3/21/2006      

20) QC Approved \_\_\_\_\_

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 / 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 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
------------------	-----------	----------------	-------	-------------	-----

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

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

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

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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