

F7E100384_ENSR0510RD

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Analytical Data Package Prepared For
STL ST. LOUIS, ENSR Tronox

Radiochemical Analysis By

STL Richland

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

Assigned Laboratory Code: STL

Data Package Contains _____ Pages

Report No.: 35879

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
ENSR0510RD		EB050709-Z	F7E100384-15	JWP2P1AD	9JWP2P10	7134312
		EB050709-Z	F7E100384-15	JWP2P1AE	9JWP2P10	7134317
		EB050709-Z	F7E100384-15	JWP2P2AA	9JWP2P20	7159393
		EB050709-Z	F7E100384-15	JWP2P3AC	9JWP2P30	7172084
		M100-F	F7E100384-2	JWP182AA	9JWP1820	7159393
		M100-F	F7E100384-2	JWP183AC	9JWP1830	7172084
		M100-L	F7E100384-1	JWP172AA	9JWP1720	7159393
		M100-L	F7E100384-1	JWP173AC	9JWP1730	7172084
		M100-Z	F7E100384-3	JWP192AA	9JWP1920	7159393
		M100-Z	F7E100384-3	JWP193AC	9JWP1930	7172084
		M13-F	F7E100384-8	JWP2F2AA	9JWP2F20	7159393
		M13-F	F7E100384-8	JWP2F3AC	9JWP2F30	7172084
		M13-L	F7E100384-7	JWP2E2AA	9JWP2E20	7159393
		M13-L	F7E100384-7	JWP2E3AC	9JWP2E30	7172084
		M13-Z	F7E100384-9	JWP2G2AA	9JWP2G20	7159393
		M13-Z	F7E100384-9	JWP2G3AC	9JWP2G30	7172084
		M2A-F	F7E100384-5	JWP2C2AA	9JWP2C20	7159393
		M2A-F	F7E100384-5	JWP2C3AC	9JWP2C30	7172084
		M2A-L	F7E100384-4	JWP2A2AA	9JWP2A20	7159393
		M2A-L	F7E100384-4	JWP2A3AC	9JWP2A30	7172084
		M2A-Z	F7E100384-6	JWP2D2AA	9JWP2D20	7159393
		M2A-Z	F7E100384-6	JWP2D3AC	9JWP2D30	7172084
		M31A-F	F7E100384-13	JWP2L1AD	9JWP2L10	7134312
		M31A-F	F7E100384-13	JWP2L1AE	9JWP2L10	7134317
		M31A-F	F7E100384-13	JWP2L2AA	9JWP2L20	7159393
		M31A-F	F7E100384-13	JWP2L3AC	9JWP2L30	7172084

Report No.: 35879

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
ENSR0510RD		M31A-Z	F7E100384-14	JWP2N1AD	9JWP2N10	7134312
		M31A-Z	F7E100384-14	JWP2N1AE	9JWP2N10	7134317
		M31A-Z	F7E100384-14	JWP2N2AA	9JWP2N20	7159393
		M31A-Z	F7E100384-14	JWP2N3AC	9JWP2N30	7172084
		M76-F	F7E100384-11	JWP2J2AA	9JWP2J20	7159393
		M76-F	F7E100384-11	JWP2J3AC	9JWP2J30	7172084
		M76-L	F7E100384-10	JWP2H2AA	9JWP2H20	7159393
		M76-L	F7E100384-10	JWP2H3AC	9JWP2H30	7172084
		M76-Z	F7E100384-12	JWP2K2AA	9JWP2K20	7159393
		M76-Z	F7E100384-12	JWP2K3AC	9JWP2K30	7172084

Certificate of Analysis

July 12, 2007

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

Attention: Jerry Everett



STL Richland
2800 George Washington Way
Richland, WA 99354

Tel: 509 375 3131 Fax: 509 375 5590
www.stl-inc.com

Date Received at Lab	:	May 10, 2007
Sample Type	:	Fifteen (15) Water
Project Name	:	ENSR Tronox
SDG Number	:	ENSR0510RD
Chain-of-Custody	:	050907-3 / 050907-4

CASE NARRATIVE

I. Introduction

On May 10, 2007, fifteen water samples were received at the STL Richland (STLR) laboratory for radiochemical analysis. Upon receipt at STL St. Louis, the samples were assigned to Lot Number F7E100384 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. One sample container for sample EB05709-Z was labeled as EB05907-Z. All bottles were logged in as EB05709-Z.

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

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

Alpha Spectroscopy

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

There was insufficient sample volume provided to generate a sample duplicate. The achieved MDA for sample M31A-Z is right at CRDL. Data is accepted. Except as noted, the LCS, batch blank, matrix spike, matrix spike duplicate, sample and sample duplicate results are within analytical requirements.

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

There was insufficient sample volume provided to generate a sample duplicate. Except as noted, the LCS, batch blank, matrix spike, matrix spike duplicate, sample and sample duplicate results are within analytical requirements.

Gas Proportional Detectors

Radium-228 by method RICH-RC-5005:

This batch is failed with a low LCS recovery; 57%. The original batch had a low LCS recovery. It is suspected that an incorrect reagent was added to a secondary bottle. There is insufficient sample volume available for a re-analysis, so a re-milk was initiated. The Ba-133 was re-dissolved in acid and taken through the procedure again. The LCS recovery of the re-milk batch is also low. A third re-milk was initiated and did not improve. The batch is failed but reported for client review.

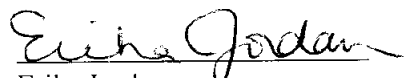
Alpha Scintillation

Radium-226 by method RICH-RC-5005:

There was insufficient sample volume provided to generate a sample duplicate. The original batch had a low LCS recovery. It is suspected that an incorrect reagent was added to a secondary bottle. There is insufficient sample volume available for a re-analysis, so a re-milk was initiated. The Ba-133 from the Ra228 procedure was re-dissolved in acid and taken through the procedure again. The re-milk is within acceptance limits. Data is accepted. Except as noted, the LCS, LCS duplicate, batch blank, matrix spike, matrix spike duplicate, sample and sample duplicate results are within acceptance limits.

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 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

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

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

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

Report Definitions

Action Lev	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.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	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.
Total Uncert (#s) <i>u_c - Combined Uncertainty.</i>	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_c the combined uncertainty</i> . The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	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)
Lc	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%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgrndCnt} / \text{BkgrndCntMin}) / \text{SCntMin})) * (\text{ConvFct} / (\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$. 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.
Lot-Sample No	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.
MDC MDA	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%. $MDC = (4.65 * \text{Sqrt}((\text{BkgrndCnt} / \text{BkgrndCntMin}) / \text{SCntMin}) + 2.71 / \text{SCntMin}) * (\text{ConvFct} / (\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$. For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	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.
Rst/MDC	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.
Rst/TotUcert	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.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
RER	The equation Replicate Error Ratio = $(S - D) / [\text{sqrt}(\text{TPUs}^2 + \text{TPuD}^2)]$ 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.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	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.
Work Order	The LIMS software assign test specific identifier.
Yield	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: 12-Jul-07

STL Richland STL

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

Report No. : 35879

SDG No: ENSR0510RD

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7134312 HASL-300 Th Mod									
EB050709-Z									
	JWP2P1AD	THORIUM-228	1.65E-02 +- 1.66E-02	U	pci/l	87%	6.61E-02		
		THORIUM-230	3.76E-02 +- 2.24E-02	U	pci/l	87%	6.45E-02	1.00E-01	
		THORIUM-232	-5.38E-03 +- 1.20E-02	U	pci/l	87%	6.45E-02	1.00E-01	
M31A-F									
	JWP2L1AD	THORIUM-228	5.62E-03 +- 1.26E-02	U	pci/l	72%	6.74E-02		
		THORIUM-230	7.68E-02 +- 3.03E-02	J	pci/l	72%	6.58E-02	1.00E-01	
		THORIUM-232	1.10E-02 +- 1.23E-02	U	pci/l	72%	6.58E-02	1.00E-01	
M31A-Z									
	JWP2N1AD	THORIUM-228	5.84E-02 +- 3.64E-02	U	pci/l	69%	1.26E-01		
		THORIUM-230	7.98E-02 +- 3.40E-02	U	pci/l	69%	8.39E-02	1.00E-01	
		THORIUM-232	2.85E-02 +- 3.18E-02	U	pci/l	69%	1.30E-01	1.00E-01	
7134317 HASL-300 U Mod									
EB050709-Z									
	JWP2P1AE	URANIUM-233/234	3.06E-03 +- 1.26E-02	U	pci/l	98%	6.16E-02	1.00E-01	
		URANIUM-235/236	9.18E-03 +- 9.21E-03	U	pci/l	98%	3.67E-02	1.00E-01	
		URANIUM-238	-1.53E-02 +- 1.02E-02	U	pci/l	98%	6.99E-02	1.00E-01	
M31A-F									
	JWP2L1AE	URANIUM-233/234	1.40E+01 +- 1.12E+00		pci/l	101%	3.73E-02	1.00E-01	
		URANIUM-235/236	2.74E-01 +- 4.64E-02		pci/l	101%	3.73E-02	1.00E-01	
		URANIUM-238	8.49E+00 +- 6.93E-01		pci/l	101%	6.26E-02	1.00E-01	
M31A-Z									
	JWP2N1AE	URANIUM-233/234	1.37E+01 +- 1.10E+00		pci/l	95%	7.60E-02	1.00E-01	
		URANIUM-235/236	4.08E-01 +- 6.00E-02		pci/l	95%	3.79E-02	1.00E-01	
		URANIUM-238	8.09E+00 +- 6.64E-01		pci/l	95%	7.22E-02	1.00E-01	
7159393 EPA 903.1									
EB050709-Z									
	JWP2P2AA	RADIUM-226	1.58E-01 +- 7.19E-02	U	pci/l	86%	2.26E-01	2.00E+00	
M100-F									
	JWP182AA	RADIUM-226	3.81E-01 +- 1.18E-01	J	pci/l	72%	3.10E-01	2.00E+00	
M100-L									
	JWP172AA	RADIUM-226	2.40E-01 +- 6.08E-02	J	pci/l	83%	1.07E-01	2.00E+00	
M100-Z									
	JWP192AA	RADIUM-226	1.51E-01 +- 8.40E-02	U	pci/l	74%	2.72E-01	2.00E+00	
M13-F									
	JWP2F2AA	RADIUM-226	1.75E-01 +- 7.66E-02	U	pci/l	83%	2.38E-01	2.00E+00	
M13-L									
	JWP2E2AA	RADIUM-226	6.42E-02 +- 7.40E-02	U	pci/l	74%	2.69E-01	2.00E+00	
M13-Z									

STL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
 rptSTLRchSaSum J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 mary2 V5.1.3 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: 12-Jul-07

STL Richland STL

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

Report No. : 35879

SDG No: ENSR0510RD

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7159393 EPA 903.1									
	M13-Z								
	JWP2G2AA	RADIUM-226	-7.28E-02 +- 1.07E-01	U	pci/l	65%	4.21E-01	2.00E+00	
	M2A-F								
	JWP2C2AA	RADIUM-226	3.66E-01 +- 8.27E-02	J	pci/l	79%	1.59E-01	2.00E+00	
	M2A-L								
	JWP2A2AA	RADIUM-226	1.92E-01 +- 6.79E-02	J	pci/l	81%	1.90E-01	2.00E+00	
	M2A-Z								
	JWP2D2AA	RADIUM-226	4.40E-02 +- 9.66E-02	U	pci/l	74%	3.54E-01	2.00E+00	
	M31A-F								
	JWP2L2AA	RADIUM-226	5.72E-01 +- 1.15E-01	J	pci/l	77%	2.36E-01	2.00E+00	
	M31A-Z								
	JWP2N2AA	RADIUM-226	3.12E-01 +- 9.43E-02	J	pci/l	72%	2.49E-01	2.00E+00	
	M76-F								
	JWP2J2AA	RADIUM-226	2.03E-01 +- 9.97E-02	U	pci/l	79%	3.19E-01	2.00E+00	
	M76-L								
	JWP2H2AA	RADIUM-226	2.56E-01 +- 1.00E-01	U	pci/l	76%	2.97E-01	2.00E+00	
	M76-Z								
	JWP2K2AA	RADIUM-226	1.84E-01 +- 7.82E-02	U	pci/l	79%	2.34E-01	2.00E+00	
7172084 EPA 904.0									
	EB050709-Z								
	JWP2P3AC	RADIUM-228	1.24E-01 +- 1.40E-01	U	pci/l	54%	6.69E-01	1.00E+00	
	M100-F								
	JWP183AC	RADIUM-228	9.82E-01 +- 3.64E-01	U	pci/l	34%	1.52E+00	1.00E+00	
	M100-L								
	JWP173AC	RADIUM-228	5.06E-01 +- 2.12E-01	U	pci/l	60%	9.04E-01	1.00E+00	
	M100-Z								
	JWP193AC	RADIUM-228	2.40E-01 +- 2.43E-01	U	pci/l	54%	1.10E+00	1.00E+00	
	M13-F								
	JWP2F3AC	RADIUM-228	4.86E-01 +- 1.95E-01	U	pci/l	44%	8.13E-01	1.00E+00	
	M13-L								
	JWP2E3AC	RADIUM-228	4.62E-01 +- 1.63E-01	U	pci/l	55%	6.52E-01	1.00E+00	
	M13-Z								
	JWP2G3AC	RADIUM-228	1.52E-01 +- 1.67E-01	U	pci/l	47%	7.95E-01	1.00E+00	
	M2A-F								
	JWP2C3AC	RADIUM-228	6.32E-01 +- 2.13E-01	U	pci/l	54%	8.73E-01	1.00E+00	
	M2A-L								
	JWP2A3AC	RADIUM-228	4.99E-01 +- 1.85E-01	U	pci/l	61%	7.74E-01	1.00E+00	
	M2A-Z								
	JWP2D3AC	RADIUM-228	4.02E-01 +- 1.76E-01	U	pci/l	67%	7.51E-01	1.00E+00	

STL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUD))] as defined by ICPT BOA.
 rptSTLRchSaSum J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 mary2 V5.1.3 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: 12-Jul-07

STL Richland STL

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

Report No. : 35879

SDG No: ENSR0510RD

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (1s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
7172084	EPA 904.0								
	M31A-F								
	JWP2L3AC	RADIUM-228	7.75E-01 +- 1.89E-01	J	pci/l	58%	6.59E-01	1.00E+00	
	M31A-Z								
	JWP2N3AC	RADIUM-228	8.62E-01 +- 2.40E-01	U	pci/l	42%	8.75E-01	1.00E+00	
	M76-F								
	JWP2J3AC	RADIUM-228	4.75E-01 +- 1.39E-01	U	pci/l	65%	5.12E-01	1.00E+00	
	M76-L								
	JWP2H3AC	RADIUM-228	4.09E-01 +- 1.76E-01	U	pci/l	50%	7.41E-01	1.00E+00	
	M76-Z								
	JWP2K3AC	RADIUM-228	5.43E-01 +- 1.52E-01	U	pci/l	62%	5.44E-01	1.00E+00	

No. of Results: 48

STL Richland RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUD))] as defined by ICPT BOA.
 rptSTLRchSaSum J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 mary2 V5.1.3 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.

QC Results Summary

Date: 12-Jul-07

STL Richland STL

Ordered by Method, Batch No, QC Type,.

Report No. : 35879

SDG No.: ENSR0510RD

Batch	Work Order	Parameter	Result +- Uncertainty (1s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDC MDA
HASL-300 Th Mod									
7134312 BLANK QC,									
	JWW901AA	THORIUM-228	5.15E-03 +- 1.71E-02	U	pci/l	91%			8.66E-02
		THORIUM-230	5.53E-02 +- 2.84E-02	U	pci/l	91%			8.45E-02
		THORIUM-232	5.03E-02 +- 2.88E-02	U	pci/l	91%			9.33E-02
7134312 LCS,									
	JWW901AC	THORIUM-230	4.37E+00 +- 4.17E-01		pci/l	97%	96%	0.0	6.09E-02
HASL-300 U Mod									
7134317 BLANK QC,									
	JWW921AA	URANIUM-233/234	-1.49E-02 +- 1.61E-02	U	pci/l	99%			8.69E-02
		URANIUM-235/236	-8.95E-03 +- 7.92E-03	U	pci/l	99%			5.01E-02
		URANIUM-238	8.95E-03 +- 1.55E-02	U	pci/l	99%			6.81E-02
7134317 LCS,									
	JWW921AC	URANIUM-233/234	2.29E+00 +- 2.14E-01		pci/l	95%	96%	0.0	3.81E-02
		URANIUM-235/236	1.11E-01 +- 2.85E-02	J	pci/l	95%	103%	0.0	3.81E-02
		URANIUM-238	2.22E+00 +- 2.09E-01		pci/l	95%	89%	-0.1	3.81E-02
EPA 903.1									
7159393 BLANK QC,									
	JWW952AA	RADIUM-226	-2.32E-02 +- 4.11E-02	U	pci/l	78%			1.80E-01
7159393 LCS,									
	JWW952AC	RADIUM-226	1.31E+00 +- 1.97E-01		pci/l	71%	93%	-0.1	2.24E-01
EPA 904.0									
7172084 BLANK QC,									
	JWW983AA	RADIUM-228	4.01E-01 +- 1.37E-01	U	pci/l	67%			5.48E-01
7172084 LCS,									
	JWW983AC	RADIUM-228	2.86E+00 +- 3.29E-01	J	pci/l	51%	57%	-0.4	7.48E-01
No. of Results: 14									

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 rptSTLrchQcSummary V5.1.3 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.

FORM I

Date: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-15
 Client Sample ID: EB050709-Z
 SDG: ENSR0510RD
 Report No.: 35879
 COC No.:
 Collection Date: 5/9/2007 3:30:00 PM
 Received Date: 5/10/2007 9:10:00 AM
 Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/ToUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7134312 HASL-300 Th Mod Work Order: JWP2P1AD Report DB ID: 9JWP2P10												
THORIUM-228	1.65E-02	U	1.7E-02	1.7E-02	6.61E-02	pci/l	87%	0.25	6/3/07 01:44 p	0.3972	L	ALP173
THORIUM-230	3.76E-02	U	2.2E-02	2.2E-02	6.45E-02	pci/l	87%	0.58	6/3/07 01:44 p	0.3972	L	ALP173
THORIUM-232	-5.38E-03	U	1.2E-02	1.2E-02	6.45E-02	pci/l	87%	-0.08	6/3/07 01:44 p	0.3972	L	ALP173
Batch: 7134317 HASL-300 U Mod Work Order: JWP2P1AE Report DB ID: 9JWP2P10												
URANIUM-233/234	3.06E-03	U	1.3E-02	1.3E-02	6.16E-02	pci/l	98%	0.05	6/1/07 01:24 a	0.4012	L	ALP4
URANIUM-235/236	9.18E-03	U	9.2E-03	9.2E-03	3.67E-02	pci/l	98%	0.25	6/1/07 01:24 a	0.4012	L	ALP4
URANIUM-238	-1.53E-02	U	1.0E-02	1.0E-02	6.99E-02	pci/l	98%	-0.22	6/1/07 01:24 a	0.4012	L	ALP4
Ratio U-234/238 = -0.2 Work Order: JWP2P2AA Report DB ID: 9JWP2P20												
RADIUM-226	1.58E-01	U	7.0E-02	7.2E-02	2.26E-01	pci/l	86%	0.7	6/18/07 03:43 p	1.0011	L	ASCPMC
Work Order: JWP2P3AC Report DB ID: 9JWP2P30												
RADIUM-228	1.24E-01	U	1.3E-01	1.4E-01	6.69E-01	pci/l	54%	0.19	6/26/07 06:36 a	1.0011	L	GPC4A
FAILED BATCH Work Order: JWP2P3AC Report DB ID: 9JWP2P30												

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No UJ < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-15
 Client Sample ID: EB050709-Z

SDG: ENSR0510RD
 Report No.: 35879
 COC No.:

Collection Date: 5/9/2007 3:30:00 PM
 Received Date: 5/10/2007 9:10:00 AM
 Matrix: WATER W

Ordered by Client Sample ID, Batch No.

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

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No UJ< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-2
 Client Sample ID: M100-F
 SDG: ENSR0510RD
 Report No.: 35879
 COC No.:
 Matrix: WATER W
 Collection Date: 5/9/2007 7:15:00 AM
 Received Date: 5/10/2007 9:10:00 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: 7159393	EPA 903.1				Work Order: JWP182AA		Report DB ID: 9JWP1820					
RADIUM-226	3.81E-01	J	1.1E-01	1.2E-01	3.10E-01	pci/l	72% (1.2)		6/18/07 02:14 p		1.002	ASC5UC
							2.00E+00 (3.2)				L	
Batch: 7172084	EPA 904.0				Work Order: JWP183AC		Report DB ID: 9JWP1830					
RADIUM-228	9.82E-01	U	3.6E-01	3.6E-01	1.52E+00	pci/l	34% 0.65		6/26/07 06:33 a		1.002	GPC7B
							1.00E+00 (2.7)				L	

No. of Results: 2 Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-1
 Client Sample ID: M100-L

SDG: ENSR0510RD
 Report No.: 35879
 COC No.:

Collection Date: 5/9/2007 6:45:00 AM
 Received Date: 5/10/2007 9:10:00 AM

Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7159393	EPA 903.1											
RADIUM-226	2.40E-01	J	5.5E-02	6.1E-02	1.07E-01	pci/l	83%	(2.2)	6/18/07 02:10 p		1.0008	ASCJMB
							2.00E+00	(3.9)			L	
Batch: 7172084	EPA 904.0											
RADIUM-228	5.06E-01	U	2.0E-01	2.1E-01	9.04E-01	pci/l	60%	0.56	6/26/07 06:33 a		1.0008	GPC7A
							1.00E+00	(2.4)			L	

No. of Results: 2

Comments:

FAILED BATCH

STL 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.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-3
 Client Sample ID: M100-Z

SDG: ENSR0510RD
 Report No.: 35879
 COC No.:

Collection Date: 5/9/2007 7:30:00 AM
 Received Date: 5/10/2007 9:10:00 AM
 Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7159393	EPA 903.1											
RADIUM-226	1.51E-01	U	8.2E-02	8.4E-02	2.72E-01	pci/l	74%	0.56	6/18/07 02:15 p		1.0014	ASCHSB
						1.16E-01	2.00E+00	(1.8)			L	
Batch: 7172084	EPA 904.0											
RADIUM-228	2.40E-01	U	2.4E-01	2.4E-01	1.10E+00	pci/l	54%	0.22	6/26/07 06:33 a		1.0014	GPC7C
						5.07E-01	1.00E+00	0.99			L	

No. of Results: 2 Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-8
 Client Sample ID: M13-F

SDG: ENSR0510RD
 Report No.: 35879
 COC No.:

Collection Date: 5/9/2007 10:35:00 AM
 Received Date: 5/10/2007 9:10:00 AM
 Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7159393	EPA 903.1				Work Order: JWP2F2AA		Report DB ID: 9JWP2F20					
RADIUM-226	1.75E-01	U	7.5E-02	7.7E-02	2.38E-01	pci/l	83%	0.74	6/18/07 03:01 p		1.0015	ASC6RA
							2.00E+00	(2.3)			L	
Batch: 7172084	EPA 904.0				Work Order: JWP2F3AC		Report DB ID: 9JWP2F30					
RADIUM-228	4.86E-01	U	1.9E-01	2.0E-01	8.13E-01	pci/l	44%	0.6	6/26/07 06:34 a		1.0015	GPC2B
							1.00E+00	(2.5)			L	

FAILED BATCH

No. of Results: 2 Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTL.RchSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-7
 Client Sample ID: M13-L
 SDG: ENSR0510RD
 Report No.: 35879
 COC No.:
 Collection Date: 5/9/2007 10:35:00 AM
 Received Date: 5/10/2007 9:10:00 AM
 Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7159393	EPA 903.1											
RADIUM-226	6.42E-02	U	7.4E-02	7.4E-02	2.69E-01	pci/l	74%	0.24	6/18/07 02:54 p	1.0007	1.0007	ASC4UA
							2.00E+00	0.87			L	
Batch: 7172084	EPA 904.0											
RADIUM-228	4.62E-01	U	1.6E-01	1.6E-01	6.52E-01	pci/l	55%	0.71	6/26/07 06:34 a	1.0007	1.0007	GPC2A
							1.00E+00	(2.8)			L	

No. of Results: 2 Comments:

FAILED BATCH

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTL.RchSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-9
 Client Sample ID: M13-Z
 SDG: ENSR0510RD
 Report No.: 35879
 COC No.:
 Collection Date: 5/9/2007 11:15:00 AM
 Received Date: 5/10/2007 9:10:00 AM
 Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7159393	EPA 903.1											
RADIUM-226	-7.28E-02	U	1.1E-01	1.1E-01	4.21E-01	pci/l	65%	-0.17	6/18/07 02:57 p	1.0028	L	ASC7HA
Batch: 7172084	EPA 904.0											
RADIUM-228	1.52E-01	U	1.7E-01	1.7E-01	7.95E-01	pci/l	47%	0.19	6/26/07 06:34 a	1.0028	L	GPC2C

No. of Results: 2
 Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTL.RchSample J Qual - No Uj< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-5
 Client Sample ID: M2A-F
 SDG: ENSR0510RD
 Report No.: 35879
 COC No.:
 Collection Date: 5/9/2007 9:30:00 AM
 Received Date: 5/10/2007 9:10:00 AM
 Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Work Order: JWP2C2AA Report DB ID: 9JWP2C20												
Batch: 7159393	EPA 903.1											
RADIUM-226	3.66E-01	J	7.5E-02	8.3E-02	1.59E-01	pci/l	79%	(2.3)	6/18/07 02:56 p	1.0008	1.0008	ASC3MA
						6.40E-02	2.00E+00	(4.4)			L	
Work Order: JWP2C3AC Report DB ID: 9JWP2C30												
Batch: 7172084	EPA 904.0											
RADIUM-228	6.32E-01	U	2.1E-01	2.1E-01	8.73E-01	pci/l	54%	0.72	6/26/07 06:34 a	1.0008	1.0008	GPC1C
						3.93E-01	1.00E+00	(3.)			L	

No. of Results: 2 Comments:

FAILED BATCH

STL 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.
 V5.1.3 A2002

FORM I

Date: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-4
 Client Sample ID: M2A-L

SDG: ENSR0510RD
 Report No.: 35879
 COC No.:

Collection Date: 5/9/2007 8:35:00 AM
 Received Date: 5/10/2007 9:10:00 AM

Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7159393	EPA 903.1											
RADIUM-226	1.92E-01	J	6.5E-02	6.8E-02	1.90E-01	pci/l	81%	(1.)	6/18/07 02:10 p		1.0005	ASCKMD
							2.00E+00	(2.8)			L	
Batch: 7172084	EPA 904.0											
RADIUM-228	4.99E-01	U	1.8E-01	1.9E-01	7.74E-01	pci/l	61%	0.64	6/26/07 06:34 a		1.0005	GPC1B
							1.00E+00	(2.7)			L	

No. of Results: 2

Comments:

FAILED BATCH

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTL.RchSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-6
 Client Sample ID: M2A-Z

SDG: ENSR0510RD
 Report No.: 35879
 COC No. :
 Matrix: WATER W

Collection Date: 5/9/2007 9:10:00 AM
 Received Date: 5/10/2007 9:10:00 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: 7159393	EPA 903.1											
RADIUM-226	4.40E-02	U	9.7E-02	9.7E-02	3.54E-01	pci/l	74%	0.12	6/18/07 02:49 p		1.0017	ASC1RH
						1.61E-01	2.00E+00	0.46			L	
Batch: 7172084	EPA 904.0											
RADIUM-228	4.02E-01	U	1.6E-01	1.8E-01	7.51E-01	pci/l	67%	0.54	6/26/07 06:34 a		1.0017	GPC1D
						3.41E-01	1.00E+00	(2.3)			L	

No. of Results: 2 Comments:

STL 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.
 V5.1.3 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I
SAMPLE RESULTS

Date: 12-Jul-07

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-13
 Client Sample ID: M31A-F
 SDG: ENSR0510RD
 Report No.: 35879
 COC No.:
 Collection Date: 5/9/2007 2:35:00 PM
 Received Date: 5/10/2007 9:10:00 AM
 Matrix: WATER W
 Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rs TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7134312 HASL-300 Th Mod Report DB ID: 9JWHP2L10												
THORIUM-228	5.62E-03	U	1.3E-02	1.3E-02	6.74E-02	pci/l	72%	0.08	6/3/07 01:44 p		0.3987	ALP171
						1.85E-02	0.45				L	
THORIUM-230	7.68E-02	J	3.0E-02	3.0E-02	6.58E-02	pci/l	72%	(1.2)	6/3/07 01:44 p		0.3987	ALP171
						1.80E-02	1.00E-01	(2.5)			L	
THORIUM-232	1.10E-02	U	1.2E-02	1.2E-02	6.58E-02	pci/l	72%	0.17	6/3/07 01:44 p		0.3987	ALP171
						1.80E-02	1.00E-01	0.89			L	
Batch: 7134317 HASL-300 U Mod Report DB ID: 9JWHP2L10												
URANIUM-233/234	1.40E+01		3.0E-01	1.1E+00	3.73E-02	pci/l	101%	(375.5)	6/1/07 01:24 a		0.397	ALP1
						1.02E-02	1.00E-01	(12.5)			L	
URANIUM-235/236	2.74E-01		4.1E-02	4.6E-02	3.73E-02	pci/l	101%	(7.3)	6/1/07 01:24 a		0.397	ALP1
						1.02E-02	1.00E-01	(5.9)			L	
URANIUM-238	8.49E+00		2.3E-01	6.9E-01	6.26E-02	pci/l	101%	(135.7)	6/1/07 01:24 a		0.397	ALP1
						2.29E-02	1.00E-01	(12.3)			L	
Ratio U-234/238 = 1.6												
Batch: 7159393 EPA 903.1 Report DB ID: 9JWHP2L20												
RADIUM-226	5.72E-01	J	1.0E-01	1.2E-01	2.36E-01	pci/l	77%	(2.4)	6/18/07 03:38 p		1.0	ASCLMB
						1.02E-01	2.00E+00	(5.)			L	
Batch: 7172084 EPA 904.0 Report DB ID: 9JWHP2L30												
RADIUM-228	7.75E-01	J	1.8E-01	1.9E-01	6.59E-01	pci/l	58%	(1.2)	6/26/07 06:35 a		1.0	GPC3C
						2.84E-01	1.00E+00	(4.1)			L	
						FAILED BATCH						

STL 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.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-13
 Client Sample ID: M31A-F

SDG: ENSR0510RD
 Report No.: 35879
 COC No.:

Collection Date: 5/9/2007 2:35:00 PM
 Received Date: 5/10/2007 9:10:00 AM
 Matrix: WATER W

Ordered by Client Sample ID, Batch No.

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

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTL RchSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit; RL (CRDL) or Report Value is Estimated.
 V5.1.3 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I
SAMPLE RESULTS

Date: 12-Jul-07

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-14
 Client Sample ID: M31A-Z
 SDG: ENSR0510RD
 Report No.: 35879
 COC No.:
 Matrix: WATER W
 Collection Date: 5/9/2007 2:15:00 PM
 Received Date: 5/10/2007 9:10:00 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: 7134312 HASL-300 Th Mod												
THORIUM-228	5.84E-02	U	3.6E-02	3.6E-02	1.26E-01	pci/l	69%	0.46 (1.6)	6/3/07 01:44 p	0.3987	L	ALP172
THORIUM-230	7.98E-02	U	3.3E-02	3.4E-02	8.39E-02	pci/l	69%	0.95 (2.3)	6/3/07 01:44 p	0.3987	L	ALP172
THORIUM-232	2.85E-02	U	3.2E-02	3.2E-02	1.30E-01	pci/l	69%	0.22 (0.9)	6/3/07 01:44 p	0.3987	L	ALP172
Batch: 7134317 HASL-300 U Mod												
URANIUM-233/234	1.37E+01		2.9E-01	1.1E+00	7.60E-02	pci/l	95%	(180.4) (12.5)	6/1/07 01:24 a	0.398	L	ALP3
URANIUM-235/236	4.08E-01		5.1E-02	6.0E-02	3.79E-02	pci/l	95%	(10.8) (6.8)	6/1/07 01:24 a	0.398	L	ALP3
URANIUM-238	8.09E+00		2.3E-01	6.6E-01	7.22E-02	pci/l	95%	(112.1) (12.2)	6/1/07 01:24 a	0.398	L	ALP3
Batch: 7159393 EPA 903.1												
RADIUM-226	3.12E-01	J	8.9E-02	9.4E-02	2.49E-01	pci/l	72%	(1.3) (3.3)	6/18/07 03:43 p	1.0009	L	ASCMRA
Batch: 7172084 EPA 904.0												
RADIUM-228	8.62E-01	U	2.3E-01	2.4E-01	8.75E-01	pci/l	42%	0.99 (3.6)	6/26/07 06:35 a	1.0009	L	GPC3D

STL Richland MDC|MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTL.RchSample J Qual - No Uj < qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-14
 Client Sample ID: M31A-Z

SDG: ENSR0510RD
 Report No.: 35879
 COC No.:

Collection Date: 5/9/2007 2:15:00 PM
 Received Date: 5/10/2007 9:10:00 AM
 Matrix: WATER W

Ordered by Client Sample ID, Batch No.

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

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No UJ< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-11
 Client Sample ID: M76-F
 SDG: ENSR0510RD
 Report No.: 35879
 COC No.:
 Collection Date: 5/9/2007 1:05:00 PM
 Received Date: 5/10/2007 9:10:00 AM
 Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7159393	EPA 903.1											
RADIUM-226	2.03E-01	U	9.7E-02	1.0E-01	3.19E-01	pci/l	79%	0.64	6/18/07 03:02 p		1.0017	ASC9RA
							2.00E+00	(2.)			L	
Batch: 7172084	EPA 904.0											
RADIUM-228	4.75E-01	U	1.3E-01	1.4E-01	5.12E-01	pci/l	65%	0.93	6/26/07 06:35 a		1.0017	GPC3A
							1.00E+00	(3.4)			L	

No. of Results: 2 Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland **SDG:** ENSR0510RD **Collection Date:** 5/9/2007 12:45:00 PM **Primary Detector**
Lot-Sample No.: F7E100384-10 **Report No.:** 35879 **Received Date:** 5/10/2007 9:10:00 AM
Client Sample ID: M76-L **Matrix:** WATER **W** **Ordered by Client Sample ID, Batch No.**

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7159393 EPA 903.1 Work Order: JWP2H2AA Report DB ID: 9JWP2H20												
RADIUM-226	2.56E-01	U	9.7E-02	1.0E-01	2.97E-01	pci/l	76%	0.86	6/18/07 03:08 p		1.0001	ASC8RD
							2.00E+00	(2.5)			L	
Batch: 7172084 EPA 904.0 Work Order: JWP2H3AC Report DB ID: 9JWP2H30												
RADIUM-228	4.09E-01	U	1.7E-01	1.8E-01	7.41E-01	pci/l	50%	0.55	6/26/07 06:34 a		1.0001	GPC2D
							1.00E+00	(2.3)			L	

No. of Results: 2 Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichSample J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
 V5.1.3 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: 12-Jul-07

SAMPLE RESULTS

Lab Name: STL Richland
 Lot-Sample No.: F7E100384-12
 Client Sample ID: M76-Z
 SDG: ENSR0510RD
 Report No.: 35879
 COC No. :
 Collection Date: 5/9/2007 1:35:00 PM
 Received Date: 5/10/2007 9:10:00 AM
 Matrix: WATER W

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL) Rst/TotUcert	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7159393	EPA 903.1											
RADIUM-226	1.84E-01	U	7.6E-02	7.8E-02	2.34E-01	pci/l	79%	0.79	6/18/07 03:01 p	1.0014	L	ASCASB
							2.00E+00	(2.4)				
Batch: 7172084	EPA 904.0											
RADIUM-228	5.43E-01	U	1.4E-01	1.5E-01	5.44E-01	pci/l	62%	1.	6/26/07 06:35 a	1.0014	L	GPC3B
							1.00E+00	(3.6)				

No. of Results: 2 Comments:

FAILED BATCH

STL 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.
 V5.1.3 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
BLANK RESULTS

Date: 12-Jul-07

Lab Name: STL Richland
Matrix: WATER

SDG: ENSR0510RD
Report No.: 35879

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7134317 HASL-300 U Mod Report DB ID: JWW921AA												
URANIUM-233/234	-1.49E-02	U	1.6E-02	1.6E-02	8.69E-02	pci/l	99%	-0.17	6/1/07 01:24 a	0.3975	0.3975	ALP5
					3.54E-02	1.00E+00		-0.93		L	L	
URANIUM-235/236	-8.95E-03	U	7.9E-03	7.9E-03	5.01E-02	pci/l	99%	-0.18	6/1/07 01:24 a	0.3975	0.3975	ALP5
					1.70E-02	1.00E+00		-(1.1)		L	L	
URANIUM-238	8.95E-03	U	1.5E-02	1.6E-02	6.81E-02	pci/l	99%	0.13	6/1/07 01:24 a	0.3975	0.3975	ALP5
					2.60E-02	1.00E+00		0.58		L	L	
Ratio U-234/238 = -1.7												
Batch: 7134312 HASL-300 Th Mod Report DB ID: JWW901AB												
THORIUM-228	5.15E-03	U	1.7E-02	1.7E-02	8.66E-02	pci/l	91%	0.06	6/3/07 01:44 p	0.399	0.399	ALP174
					2.94E-02			0.3		L	L	
THORIUM-230	5.53E-02	U	2.8E-02	2.8E-02	8.45E-02	pci/l	91%	0.65	6/3/07 01:44 p	0.399	0.399	ALP174
					2.86E-02	1.00E-01		(1.9)		L	L	
THORIUM-232	5.03E-02	U	2.8E-02	2.9E-02	9.33E-02	pci/l	91%	0.54	6/3/07 01:44 p	0.399	0.399	ALP174
					3.31E-02	1.00E-01		(1.7)		L	L	
Batch: 7159393 EPA 903.1 Report DB ID: JWW952AA												
RADIUM-226	-2.32E-02	U	4.1E-02	4.1E-02	1.80E-01	pci/l	78%	-0.13	6/18/07 03:37 p	1.0036	1.0036	ASCQMB
					7.55E-02	1.00E+00		-0.57		L	L	
Batch: 7172084 EPA 904.0 Report DB ID: JWW983AB												
RADIUM-228	4.01E-01	U	1.3E-01	1.4E-01	5.48E-01	pci/l	67%	0.73	6/26/07 06:36 a	1.0035	1.0035	GPC4B
FAILED BATCH					2.36E-01	3.00E+00		(2.9)		L	L	
No. of Results: 8 Comments:												

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRichBlank 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.
 V5.1.3 A2002

FORM II
LCS RESULTS

Date: 12-Jul-07

Lab Name: STL Richland
Matrix: WATER

SDG: ENSR0510RD
Report No.: 35879

Parameter	Result	Qual	Count Error (1 s)	Total Uncert(1 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 7134317 HASL-300 U Mod													
Work Order: JWW921AC Report DB ID: JWW921CS													
URANIUM-233/234	2.29E+00		1.2E-01	2.1E-01	3.81E-02	pci/l	95%	2.37E+00	1.38E-02	96%	6/1/07 01:24 a	0.4037	ALP6
							Rec Limits:	75	125	0.0		L	
URANIUM-235/236	1.11E-01		2.7E-02	2.8E-02	3.81E-02	pci/l	95%	1.08E-01	6.30E-04	103%	6/1/07 01:24 a	0.4037	ALP6
							Rec Limits:	75	125	0.0		L	
URANIUM-238	2.22E+00		1.2E-01	2.1E-01	3.81E-02	pci/l	95%	2.49E+00	1.45E-02	89%	6/1/07 01:24 a	0.4037	ALP6
							Rec Limits:	75	125	-0.1		L	
Batch: 7134312 HASL-300 Th Mod													
Work Order: JWW901AC Report DB ID: JWW901CS													
THORIUM-230	4.37E+00		1.9E-01	4.2E-01	6.09E-02	pci/l	97%	4.58E+00	1.51E-01	96%	6/3/07 01:44 p	0.3985	ALP175
							Rec Limits:	70	130	0.0		L	
Batch: 7159393 EPA 903.1													
Work Order: JWW952AC Report DB ID: JWW952CS													
RADIUM-226	1.31E+00		1.4E-01	2.0E-01	2.24E-01	pci/l	71%	1.40E+00	2.16E-02	93%	6/18/07 03:42 p	1.0006	ASCNMA
							Rec Limits:	70	130	-0.1		L	
Batch: 7172084 EPA 904.0													
Work Order: JWW983AC Report DB ID: JWW983CS													
RADIUM-228	2.86E+00		2.8E-01	3.3E-01	7.48E-01	pci/l	51%	4.98E+00	1.52E-01	57%	6/26/07 06:36 a	1.0006	GPC4C
			FAILED BATCH				Rec Limits:	70	130	-0.4		L	

No. of Results: 6 Comments:

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

CHAIN OF CUSTODY



Chain of Custody Record

STL Richland
2800 George Washington Way

Richland, WA 99354
phone 509-375-3131 fax 509-375-5590

Severn Trent Laboratories, Inc.

Client Contact		Project Manager: Robert Kennedy Tel/Fax: (978) 589-3324		Site Contact: Brian Ho Date: 5-9-07 Carrier: FEDEX		COC No: 050907-3 Job No: 1 of 2 COCs	
2 Technology Park Dr. Westford/MA/01886-3140 (978) 589-3324 Phone (978) 589-3282 FAX Project Name: Source Area Investigation Site: Henderson, NV P O #		Analysis Turnaround Time Calendar: (C) or Work Days (W) TAT if different from below: 2 days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Lab Contact: Jerry Everett		SDG No. 04020-023-401	
Sample Identification		Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Sample Specific Notes
M100-L	5/9/07	0645	W	1	X		
M100-F	1	0715	W	1	X		
M100-Z		0730	W	1	X		
M2A-L		0835	W	1	X		
M2A-F		0930	W	1	X		
M2A-Z		0910	W	1	X		
M13-L		1035	W	1	X		
M13-F		1130	W	1	X		
M13-Z		1115	W	1	X		
M76-L		1245	W	1	X		
M76-F		1305	W	1	X		
M76-Z	↓	1445-20 1335	W	1	X		

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

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

Special Instructions/QC Requirements & Comments:
 Coordinate sample reception with Melana Harris (STL - St. Louis)
 Jerry Everett

Relinquished by: ZOE DIERMIER
 Relinquished by: Company: ENSR 1645 Date/Time: 5/9/07
 Relinquished by: Company: STL Richland Received by: Date/Time: 5/10/07 1000
 Relinquished by: Company: Received by: Date/Time:

Sample Check-in List

Date/Time Received: _____

Client: St. James (EHS) SDG #: _____ NA SAF #: _____ NA

Work Order Number: _____ Chain of Custody # 050901-3

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? Yes No
4. Cooler temperature: _____ NA 5. Vermiculite/packing materials is NA Wet Dry
6. Number of samples in shipping container: 12
7. Sample holding times exceeded? NA Yes No
8. Samples have:
 - _____ tape _____ hazard labels
 - _____ custody seals _____ appropriate samples labels
9. Samples are:
 - in good condition _____ leaking
 - _____ broken _____ have air bubbles
 (Only for samples requiring head space)
10. Sample pH taken? NA pH<2 pH>2 pH>9
11. Sample Location, Sample Collector Listed? * Yes No
*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: EJ L. Smith Date: 5.10.07 1000

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

No action necessary; process as is.

Project Manager _____ Date _____

Chain of Custody Record

STL Richland
2800 George Washington Way

Richland, WA 99354
phone 509-375-3131 fax 509-375-5590

Severn Trent Laboratories, Inc.

Client Contact ENSR 2 Technology Park Dr. Westford/MA/01886-3140 (978) 589-3324 Phone (978) 589-3282 FAX Project Name: Source Area Investigation Site: Henderson, NV P O #		Project Manager: Robert Kennedy Tel/Fax: (978) 589-3324 Analysis Turnaround Time Calendar (C) or Work Days (W) TAT if different from Below 21 days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: Brian Ho Date: 5-9-07 Lab Contact: Melanie Horne Carrier: Fedex Job No. 04020-023-401 SDG No.		COC No: 050907-4 2 of 2 COCs									
Sample Identification M31AF M31A-2 EP050709-2		Sample Date 5/9/07 5/9/07 5/14/07		Sample Time 1435 1415 1530		Sample Type W W W		Matrix W W W		# of Cont. 2 2 2		Filtered Sample Ra-226/Ra-228 Iso-1/150-TH		Sample Specific Notes:	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown															
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months															
Special Instructions/QC Requirements & Comments: Coordinate sample reception with Melanie Horne (STL - St. Louis) Jerry Everett															
Relinquished by: ZOE DERMIER		Company: ENSR		Date/Time: 1645 5/9/07		Received by: Fedex		Company: STL Richland		Date/Time: 5/10/07 10:00		Relinquished by:		Date/Time:	
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:		Relinquished by:		Date/Time:	

Sample Check-in List

Date/Time Received: _____

Client: St. Louis (1042) SDG #: _____ NA SAF #: _____ NA

Work Order Number: _____ Chain of Custody # 0709014

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? Yes No
4. Cooler temperature: _____ NA 5. Vermiculite/packing materials is NA Wet Dry
6. Number of samples in shipping container: +5 - 3 = 2
7. Sample holding times exceeded? 9/11/07 NA Yes No
8. Samples have: _____ tape _____ hazard labels
 _____ custody seals _____ appropriate samples labels
9. Samples are: _____ in good condition _____ leaking
 _____ broken _____ have air bubbles
 (Only for samples requiring head space)
10. Sample pH taken? NA pH<2 pH>2 pH>9
11. Sample Location, Sample Collector Listed? * Yes No
 *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? 9/11/07 Yes No

13. Description of anomalies (include sample numbers): EBOS 709-7 returned 3 bottles, COC
EBOS 709-7 1 bottle is labeled EBOS 907-7, will be logged
in as EBOS 709-7
 Sample Custodian: EJ - S. Smith Date: 5.10.07 1000

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: F7E100384; 06/07/2007
Client, Site: 456833; PHASE A WELLS Henderson, NV Source Area Inv.
QC Batch No., Method Test: 7134312; RTHISO Thlso by ALP
SDG, Matrix: ENSR0510RD; ,,

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 

Date 6/4/07



STL

Data Review Checklist RADIOCHEMISTRY Second Level Review

QC Batch Number: 7134312

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
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. QC Samples			
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 with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?			✓
C. Other			
1. Are all Nonconformances 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:

sample JWP217 is right @ CRDL

Second Level Review:

Zeke Jorda

Date:

4/4/17

Balance Id: 1120482733
 Pipet #: _____
 Sep1 DT/Tm Tech: _____
 Sep2 DT/Tm Tech: _____

Sample Preparation/Analysis **PRIORITY**

9N Thiso PrpRc5016, SepRC5004(5003) *JC*
 S1 Thorium-228,230,232 by Alpha Spec *5/24/07*
 01 STANDARD TEST SET

PM, Quote: JAE, 75203
 pCi/L
 Batch: 7134312
 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 JWP2L-1-AD F7E100384-13-SAMP 05/09/2007 14:35	398.70g.in	398.70g	398.70g.in	398.70g	THTF1061 05/24/07.pd 10/04/04.I	500		Alpha: 2.74E-04 uCi/Sa		Beta: 3.67E-04 uCi/Sa
2 JWP2L-1-AF-X F7E100384-13-DJUP 05/09/2007 14:35				#Containers: 2				Alpha: 2.74E-04 uCi/Sa		Beta: 3.67E-04 uCi/Sa
3 JWP2N-1-AD F7E100384-14-SAMP 05/09/2007 14:15	398.70g.in	398.70g	398.70g.in	398.70g	THTF1062 05/24/07.pd 10/04/04.I			Alpha: 2.74E-04 uCi/Sa		Beta: 3.67E-04 uCi/Sa
4 JWP2P-1-AD F7E100384-15-SAMP 05/09/2007 15:30	397.20g.in	397.20g	397.20g.in	397.20g	THTF1063 05/24/07.pd 10/04/04.I			Alpha: 4.84E-04 uCi/Sa		Beta: 2.57E-04 uCi/Sa
5 JWW90-1-AA-B J7E140000-312-BLK 05/09/2007 14:35	399.00g.in	399.00g	399.00g.in	399.00g	THTF1064 05/24/07.pd 10/04/04.I			Alpha: 2.68E-04 uCi/Sa		Beta: 1.47E-04 uCi/Sa
6 JWW90-1-AC-C J7E140000-312-LCS 05/09/2007 14:35	398.50g.in	398.50g	398.50g.in	398.50g	THSO0142 05/24/07.pd 10/04/04.I			Alpha: _____		Beta: _____

ICOC Fraction Transfer/Status Report

ByDate: 6/4/2006, 6/9/2007, Batch: '7134312', User: *ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting	Comments
	7134312				
AC		CalcC	BockJ	5/24/2007 12:18:24	
SC			wagarr	IsBatched 5/14/2007 11:13:19 AM	ICOC_RADCALC v4.8.26
SC			BockJ	InPrep 5/24/2007 12:18:24 PM	rich-rc-5014 rEVISION 6
SC			HarveyK	InSep1 5/29/2007 8:46:39 AM	RICH-RC-5087 REV0
SC			HarveyK	Sep1C 5/30/2007 7:48:59 PM	RICH-RC-5087 REV0
SC			HarveyK	InSep2 5/30/2007 7:52:03 PM	RICH-RC-5039 REV5
SC			HarveyK	Sep2C 6/1/2007 8:06:29 PM	RICH-RC-5039 REV5
SC			DAWKINSO	InCnt1 6/1/2007 9:38:31 PM	RICH-RD-0008 REVISION 4
SC			BlackCL	CalcC 6/4/2007 7:52:00 AM	RICH-RD-0008 REVISION 4
AC			HarveyK	5/29/2007 8:46:39	
AC			HarveyK	5/30/2007 7:48:59 PM	
AC			HarveyK	5/30/2007 7:52:03 PM	
AC			HarveyK	6/1/2007 8:06:29 PM	
AC			DAWKINSO	6/1/2007 9:38:31 PM	
AC			BlackCL	6/4/2007 7:52:00 AM	

AC: Accepting Entry; SC: Status Change

STL Richland
Richland Wa.

Rpt DB Transfer log (Batch Results)

SDG or Batch	Rpt Db Id	LotSample	Client Id	Matrix	Received Date	Sample Date			Volumes		
Isotope	Method	RTst Qc	Analysis Date	Result	Cnt Uncert	Tot uncert	µg/g	Units	Expected Yield		
ENSR0510RD 9JWP2L10		F7E10038413	M31A-F	WATER	5/10/2007 9:10:00	5/9/2007 2:35:00 PM					
TH-228	9NS1	0	6/3/2007 1:44:02 PM	5.6219E-03	1.257E-02	1.258E-02	6.744E-02	pCi/L	0.724	3.987E-1	
TH-230	9NS1	0	6/3/2007 1:44:02 PM	7.678E-02	2.953E-02	3.03E-02	6.579E-02	pCi/L	0.724	3.987E-1	
TH-232	9NS1	0	6/3/2007 1:44:02 PM	1.0969E-02	1.226E-02	1.23E-02	6.579E-02	pCi/L	0.724	3.987E-1	
U-234	7YSR	0	6/1/2007 1:24:12 AM	1.4001E+01	2.951E-01	1.118E+00	3.729E-02	pCi/L	1.007	3.97E-1	
U-235	7YSR	0	6/1/2007 1:24:12 AM	2.7356E-01	4.136E-02	4.641E-02	3.729E-02	pCi/L	1.007	3.97E-1	
U-238	7YSR	0	6/1/2007 1:24:12 AM	8.4896E+00	2.301E-01	6.93E-01	6.256E-02	pCi/L	1.007	3.97E-1	
ENSR0510RD 9JWP2N10		F7E10038414	M31A-Z	WATER	5/10/2007 9:10:00	5/9/2007 2:15:00 PM					
TH-228	9NS1	0	6/3/2007 1:44:02 PM	5.8396E-02	3.6E-02	3.637E-02	1.257E-01	pCi/L	0.69	3.987E-1	
TH-230	9NS1	0	6/3/2007 1:44:02 PM	7.9753E-02	3.322E-02	3.396E-02	8.385E-02	pCi/L	0.69	3.987E-1	
TH-232	9NS1	0	6/3/2007 1:44:02 PM	2.8484E-02	3.172E-02	3.182E-02	1.3E-01	pCi/L	0.69	3.987E-1	
U-234	7YSR	0	6/1/2007 1:24:24 AM	1.3707E+01	2.949E-01	1.097E+00	7.597E-02	pCi/L	0.947	3.98E-1	
U-235	7YSR	0	6/1/2007 1:24:24 AM	4.0799E-01	5.11E-02	6.001E-02	3.794E-02	pCi/L	0.947	3.98E-1	
U-238	7YSR	0	6/1/2007 1:24:24 AM	8.0871E+00	2.266E-01	6.635E-01	7.217E-02	pCi/L	0.947	3.98E-1	
ENSR0510RD 9JWP2P10		F7E10038415	EB050709-Z	WATER	5/10/2007 9:10:00	5/9/2007 3:30:00 PM					
TH-228	9NS1	0	6/3/2007 1:44:02 PM	1.6529E-02	1.653E-02	1.659E-02	6.61E-02	pCi/L	0.871	3.972E-1	
TH-230	9NS1	0	6/3/2007 1:44:02 PM	3.7626E-02	2.216E-02	2.241E-02	6.448E-02	pCi/L	0.871	3.972E-1	
TH-232	9NS1	0	6/3/2007 1:44:02 PM	-5.3751E-03	1.202E-02	1.203E-02	6.448E-02	pCi/L	0.871	3.972E-1	
U-234	7YSR	0	6/1/2007 1:24:32 AM	3.062E-03	1.262E-02	1.262E-02	6.161E-02	pCi/L	0.984	4.012E-1	
U-235	7YSR	0	6/1/2007 1:24:32 AM	9.1845E-03	9.184E-03	9.212E-03	3.673E-02	pCi/L	0.984	4.012E-1	
U-238	7YSR	0	6/1/2007 1:24:32 AM	-1.5307E-02	1.015E-02	1.022E-02	6.986E-02	pCi/L	0.984	4.012E-1	
ENSR0510RD JWW901AB		J7E140000312	INTRA-LAB BLANK	Unk	5/10/2007 9:10:00	5/9/2007 2:35:00 PM					
TH-228	9NS1	0	B 6/3/2007 1:44:02 PM	5.1516E-03	1.708E-02	1.709E-02	8.659E-02	pCi/L	0.915	3.99E-1	
TH-230	9NS1	0	B 6/3/2007 1:44:02 PM	5.5279E-02	2.798E-02	2.839E-02	8.448E-02	pCi/L	0.915	3.99E-1	
TH-232	9NS1	0	B 6/3/2007 1:44:02 PM	5.0254E-02	2.843E-02	2.876E-02	9.333E-02	pCi/L	0.915	3.99E-1	
ENSR0510RD JWW901CS		J7E140000312	INTRA-LAB CHECK	Unk	5/10/2007 9:10:00	5/9/2007 2:35:00 PM					
TH-230	9NS1	0	S 6/3/2007 1:44:02 PM	4.371E+00	1.905E-01	4.167E-01	6.093E-02	pCi/L	4.5765E+00	0.969	3.985E-1

7134312, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 3,

**Results Inserted | ReTestInserted | Updated | NotInserted => 13 | 0 | 0 | 0.

**Diff RptDb | Qtimes => *wo:JWW901AA=> , mat:Unk | Water *wo:JWW901AA=> , mat:Unk | Water.

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Thlso by ALP			Richland Standard Alplso Wo Blk Subt.											
Calc	S1	Unk	JWP2L1AD	TH-228	5.62E-03	(1.26E-02)	U4	pCi/L	R	1.85E-02	6.74E-02		72%	
Calc	S1	Unk	JWP2L1AD	TH-230	7.68E-02	(3.03E-02)		pCi/L	R	1.80E-02	6.58E-02		72%	
Calc	S1	Unk	JWP2L1AD	TH-232	1.10E-02	(1.23E-02)	U4	pCi/L	R	1.80E-02	6.58E-02		72%	
Calc	S1	Unk	JWP2N1AD	TH-228	5.84E-02	(3.64E-02)	U4	pCi/L	R	4.71E-02	1.26E-01		69%	
Calc	S1	Unk	JWP2N1AD	TH-230	7.98E-02	(3.40E-02)		pCi/L	R	2.65E-02	8.39E-02		69%	
Calc	S1	Unk	JWP2N1AD	TH-232	2.85E-02	(3.18E-02)	U4	pCi/L	R	4.96E-02	1.30E-01		69%	
Calc	S1	Unk	JWP2P1AD	TH-228	1.65E-02	(1.66E-02)	U4	pCi/L	R	1.81E-02	6.61E-02		87%	
Calc	S1	Unk	JWP2P1AD	TH-230	3.76E-02	(2.24E-02)		pCi/L	R	1.77E-02	6.45E-02		87%	
Calc	S1	Unk	JWP2P1AD	TH-232	-5.38E-03	(1.20E-02)	U4	pCi/L	R	1.77E-02	6.45E-02		87%	
Calc	S1	Unk	JWW901AA	TH-228	5.15E-03	(1.71E-02)	U4	pCi/L	R	2.94E-02	8.66E-02	B	91%	
Calc	S1	Unk	JWW901AA	TH-230	5.53E-02	(2.84E-02)		pCi/L	R	2.86E-02	8.45E-02	B	91%	
Calc	S1	Unk	JWW901AA	TH-232	5.03E-02	(2.88E-02)		pCi/L	R	3.31E-02	9.33E-02	B	91%	
Calc	S1	Unk	JWW901AC	TH-230	4.37E+00	(4.17E-01)		pCi/L	R	1.93E-02	6.09E-02	S	97%	96%

*OK
6/4/07*

() - (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 Significants
 Date/Time - mm/dd/yy hh:mm, 24hr Time

Batch Nbr: 7134312

Alpha Spec, Thlso by ALP , Calculated Results Detailed Report

6/4/2007 7:51:43 AM

Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn			
1	06/03/07 09:34	TH-228	1	1	ALP171	ED	N	N	2.8466E-01		N	72%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0251E+00				
*STLE AlpIsoWoBS JWP2L1AD pCi/L ,F7E100384-13 v4.8.26 Unk 456833,M31A-F																					
0	06/03/07 09:34	TH-228	499.4666666	998.95			Y	N	(8.540E-03)			5%		(0.000E+00)	(0.000E+00)	0.002508					
1	06/03/07 09:34	TH-229	423	3	ALP171	ED	Y	N	2.8466E-01		N	100%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00				
499.4666666 998.95 (8.540E-03)																					
2	06/03/07 09:34	TH-230	7	0	ALP171	ED	N	N	2.8466E-01		N	72%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00				
499.4666666 998.95 (8.540E-03)																					
3	06/03/07 09:34	TH-232	1	0	ALP171	ED	N	N	2.8466E-01		N	72%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00				
499.4666666 998.95 (8.540E-03)																					
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIkLc/MDC	StdDvMdc/LcC							
06/04/07	TH-228	R	0.005622		U4	1.00108E-03	0.004854	0.004854	0.3987 L	72%					0.067439						
			(0.01258)			(2.2384E-03)	(0.01086)	(0.01086)	(0.173205)						0.018495						
06/04/07	TH-229	R	3.34942			8.43900E-01	2.964621	2.964621	0.3987 L	72%											
			(0.254761)			(4.1214E-02)	(0.169921)	(0.169921)	(0.173205)												
06/04/07	TH-230	R	0.07678			1.40149E-02	0.067959	0.067959	0.3987 L	72%						0.06579					
			(0.0303)			(5.3909E-03)	(0.026603)	(0.026603)	(0.173205)							0.018043					
06/04/07	TH-232	R	0.010969		U4	2.00214E-03	0.009708	0.009708	0.3987 L	72%						0.06579					
			(0.012301)			(2.2384E-03)	(0.010877)	(0.010877)	(0.173205)							0.018043					
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIkLc/MDC	StdDvMdc/LcC							
06/04/07	TH-228	R	0.005622		U4	1.00108E-03	0.004854	0.004854	0.3987 L	72%					0.067439						
			(0.01258)			(2.2384E-03)	(0.01086)	(0.01086)	(0.173205)						0.018495						
06/04/07	TH-229	R	3.34942			8.43900E-01	2.964621	2.964621	0.3987 L	72%											
			(0.254761)			(4.1214E-02)	(0.169921)	(0.169921)	(0.173205)												
06/04/07	TH-230	R	0.07678			1.40149E-02	0.067959	0.067959	0.3987 L	72%						0.06579					
			(0.0303)			(5.3909E-03)	(0.026603)	(0.026603)	(0.173205)							0.018043					
06/04/07	TH-232	R	0.010969		U4	2.00214E-03	0.009708	0.009708	0.3987 L	72%						0.06579					
			(0.012301)			(2.2384E-03)	(0.010877)	(0.010877)	(0.173205)							0.018043					
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIkLc/MDC	StdDvMdc/LcC							
06/04/07	TH-228	R	0.005622		U4	1.00108E-03	0.004854	0.004854	0.3987 L	72%					0.067439						
			(0.01258)			(2.2384E-03)	(0.01086)	(0.01086)	(0.173205)						0.018495						
06/04/07	TH-229	R	3.34942			8.43900E-01	2.964621	2.964621	0.3987 L	72%											
			(0.254761)			(4.1214E-02)	(0.169921)	(0.169921)	(0.173205)												
06/04/07	TH-230	R	0.07678			1.40149E-02	0.067959	0.067959	0.3987 L	72%						0.06579					
			(0.0303)			(5.3909E-03)	(0.026603)	(0.026603)	(0.173205)							0.018043					
06/04/07	TH-232	R	0.010969		U4	2.00214E-03	0.009708	0.009708	0.3987 L	72%						0.06579					
			(0.012301)			(2.2384E-03)	(0.010877)	(0.010877)	(0.173205)							0.018043					

() - (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, Thiso by ALP , Calculated Results

6/4/2007 7:51:44 AM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BkLcC/MDC	StdDwMdc/LcC
06/04/07	TH-228	R	0.058396 (0.036369)		U4	1.00108E-02 (6.1710E-03)	0.050422 (0.031301)	0.050422 (0.031301)	0.3987 L (0.173205)	69%		0.125713 0.047059		
06/04/07	TH-229	R	3.191352 (0.244936)			8.12867E-01 (4.0566E-02)	2.824713 (0.164474)	2.824713 (0.164474)	0.3987 L (0.173205)	69%				
06/04/07	TH-230	R	0.079753 (0.033963)			1.40150E-02 (5.8372E-03)	0.070591 (0.029853)	0.070591 (0.029853)	0.3987 L (0.173205)	69%				
06/04/07	TH-232	R	0.028484 (0.031818)		U4	5.00546E-03 (5.5737E-03)	0.025211 (0.028134)	0.025211 (0.028134)	0.3987 L (0.173205)	69%				

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	Unk	*STLE	AlpIsoWoBS	JWP2PIAD	pCi/L		05/09/07 15:30	06/03/07 13:44		THTF1063	Alq		397.20 g	
456833	EB050709-Z															

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BkLcC/MDC	StdDwMdc/LcC
06/04/07	TH-228	R	0.016529 (0.016593)		U4	3.00322E-03 (3.0032E-03)	0.014219 (0.014256)	0.014219 (0.014256)	0.3972 L (0.173205)	87%		0.066095 0.018127		
06/04/07	TH-229	R	4.035773 (0.305274)			8.62920E-01 (4.1577E-02)	3.558684 (0.201986)	3.558684 (0.201986)	0.3972 L (0.173205)	87%				
06/04/07	TH-230	R	0.037626 (0.022407)			7.00749E-03 (4.1275E-03)	0.033178 (0.019689)	0.033178 (0.019689)	0.3972 L (0.173205)	87%				
06/04/07	TH-232	R	-0.005375 (0.012029)		U4	-1.00105E-03 (2.2384E-03)	-0.00474 (0.010604)	-0.00474 (0.010604)	0.3972 L (0.173205)	87%				

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	Unk	*STLE	AlpIsoWoBS	JWW901AA	pCi/L		05/09/07 14:35	06/03/07 13:44		THTF1064	Alq		399.00 g	
0	INTRA-LAB	BLANK														

Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Insir	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Bk Value	Ingr Fct	Conv Fct/Vol/Adj	Decay	Abn
5	06/03/07 09:34	TH-228	2	3	ALP174	ED	N	N	2.4588E-01		N	91%	N	1.0000E+00		4.5045E+02	1.0251E+00	
			499.4666666	998.95			Y		(7.376E-03)			6%		(0.0000E+00)		0.002506		

Page 2

() - (1s Uncertainties) Q - Qualifier, U Result is Less Than Lc = 1.645 * TPV
 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 v4.8.26
 STL Richland

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BkLcC/MDC	StdvMdc/LcC
6	06/03/07 09:34	TH-229	460	6	U4	1.00112E-03 (3.3202E-03)	0.004452 (0.014767)	0.004452 (0.014767)	0.399 L (0.173205)	100%	1.0000E+00 (0.0000E+00)	4.5045E+02 0.002506	1.0000E+00 (0.0000E+00)	1.0000E+00 0.002506
7	06/03/07 09:34	TH-230	499.4666666	998.95	3	1.10118E-02 (4.3011E-02)	0.048965 (0.207513)	3.721208 (0.207513)	0.399 L (0.173205)	91%	1.0000E+00 (0.0000E+00)	4.5045E+02 0.002506	1.0000E+00 (0.0000E+00)	1.0000E+00 0.002506
8	06/03/07 09:34	TH-232	499.4666666	998.95	4	1.00107E-02 (5.6629E-03)	0.044514 (0.02538)	0.044514 (0.02538)	0.399 L (0.173205)	91%	1.0000E+00 (0.0000E+00)	4.5045E+02 0.002506	1.0000E+00 (0.0000E+00)	1.0000E+00 0.002506

Sq	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
5	Calc	S1	Unk	*STLE	AlplsoWcBS	JWW901AC	pCi/L	Unk	S	05/09/07 14:35	06/03/07 13:44	THSO0142	1	g	398.50 g	
0	INTR	LAB	CHECK													

Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/03/07 09:34	TH-229	558	2	ALP175	ED	Y	N	2.8225E-01 (8.467E-03)		100%	N	1.0000E+00 (0.0000E+00)	1.0000E+00 (0.0000E+00)	4.5045E+02 0.002509	1.0000E+00	
2	06/03/07 09:34	TH-230	529	2	ALP175	ED	N	N	2.8225E-01 (8.467E-03)		97%	N	1.0000E+00 (0.0000E+00)	1.0000E+00 (0.0000E+00)	4.5045E+02 0.002509	1.0000E+00	

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BkLcC/MDC	StdvMdc/LcC
6	06/04/07	TH-229	4.466199			1.11519E+00 (4.7316E-02)	3.951117 (0.205312)	3.951117 (0.205312)	0.3985 L (0.173205)	97%				
6	06/04/07	TH-230	4.370963			1.05713E+00 (4.6071E-02)	3.866862 (0.31387)	3.866862 (0.31387)	0.3985 L (0.173205)	96%				

THORIUM ISOTOPIC COUNTING REQUEST 6/3/07 1754

Counting Time 500 Minutes
 Sample ENS
 Background See Alpha Analysis Report 5/9/07
 SOP's RICHRD008
 Operating: RICHRD0016
 Review: 7/3 43/2

WorkOrder #	TOTAL COUNTS				Det #	Comment		
	Th-229 (4845 KeV) Tracer	Th-228 (5423 KeV)	Th-230 (4688 KeV)	Th-232 (4010 KeV)				
ID	Activity	ROI Cts	BKG	(6)	(8)	(9)		
JWP2LIAD	10		0				171	See Alpha Analysis Report for ROI Information
JWP2NIAD	10		0				172	See Alpha Analysis Report for ROI Information
JWP2PIAD	10		0				173	See Alpha Analysis Report for ROI Information
JW90/AA	10		0				174	See Alpha Analysis Report for ROI Information
JW90IAC	10		0				175	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: 6/4/07

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

Sample Identity: JWP2L1AD

Detector: ALP171 1
Report Date: 04-Jun-07 06:08 AM
Acquire Date: 3-JUN-2007 09:34:18.33
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

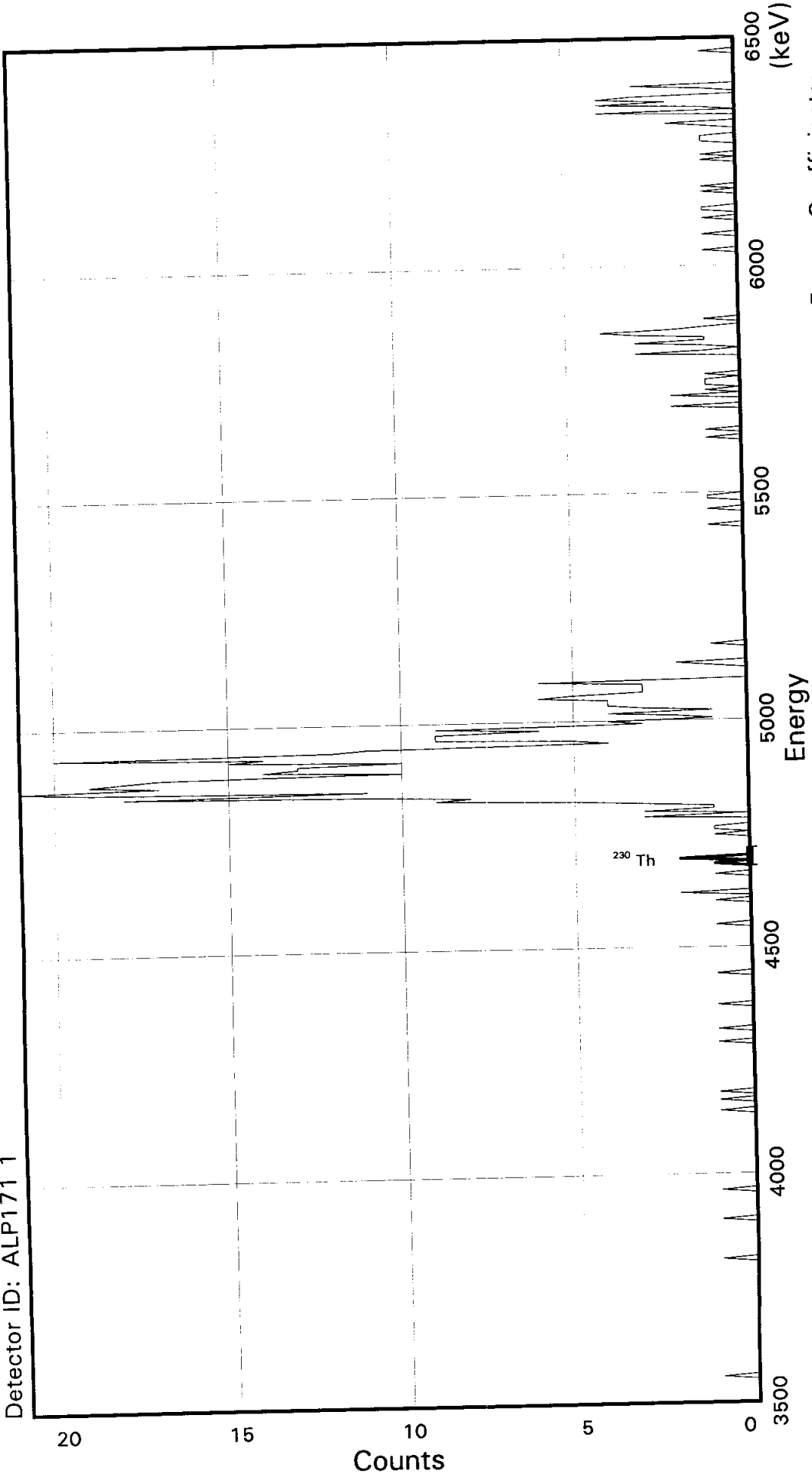
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	1	1	0.001	5423.2	116.3	316	336
TH-229	423	3	0.844	4845.3	331.5	225	282
TH-230	7	0	0.014	4687.7	116.3	190	210
TH-232	1	0	0.002	4013.0	116.2	73	93

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH ENS

Batch ID: 7134312

Sample ID: JWP2L1AD
Detector ID: ALP171 1



Energy Coefficients:
Offset: 3.49894E + 03
Slope: 5.80905E + 00
Quadrature: 1.23865E-05

Acquisition Start: 3-JUN-2007 09:34:18.33
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

SAMPLE IDENTIITY: JWP2L1AD

TITLE : TH ENS

DETECTOR : ALP171 1
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JWP2L1AD_030670934A.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-MAY-2007 10:21:48

REPORT DATE : 03-Jun-07 SAMPLE DATE: 09-MAY-2007 12:00:00
ACQUIRE DATE: 03-JUN-2007 09:34:18 CALIB DATE : 06-MAY-2007 03:53:42

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3498.94 keV CONSTANT FWHM : 8.66667 Channels
SLOPE : 5.80905 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 1.238650E-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: JWP2L1AD
Detector: ALP171 1
Report Date: 03-Jun-07 05:54 PM
Acquire Date: 3-JUN-2007 09:34:18.33

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
		1	0		51	0		101	0		151	0		201	5		251
		2	0		52	0		102	0		152	0		202	9		252
		3	0		53	0		103	0		153	0		203	9		253
0		4	1		54	0		104	0		154	1		204	9		254
0		5	0		55	0		105	0		155	0		205	6		255
0		6	0		56	0		106	0		156	2		206	9		256
0		7	0		57	0		107	0		157	0		207	3		257
0		8	0		58	0		108	0		158	0		208	4		258
0		9	0		59	0		109	0		159	0		209	1		259
1		10	0		60	1		110	0		160	0		210	2		260
0		11	0		61	0		111	0		161	0		211	4		261
0		12	0		62	0		112	1		162	0		212	1		262
0		13	0		63	0		113	0		163	0		213	3		263
0		14	0		64	1		114	0		164	0		214	4		264
0		15	0		65	0		115	0		165	1		215	4		265
0		16	0		66	0		116	0		166	0		216	4		266
0		17	0		67	1		117	0		167	1		217	6		267
0		18	0		68	0		118	0		168	1		218	5		268
0		19	1		69	0		119	0		169	0		219	3		269
0		20	0		70	0		120	0		170	0		220	3		270
0		21	0		71	0		121	0		171	0		221	3		271
0		22	0		72	0		122	0		172	3		222	3		272
0		23	0		73	0		123	0		173	0		223	6		273
0		24	0		74	0		124	0		174	3		224	0		274
0		25	0		75	0		125	0		175	1		225	0		275
0		26	0		76	0		126	0		176	1		226	0		276
0		27	0		77	0		127	0		177	3		227	0		277
0		28	0		78	0		128	0		178	5		228	0		278
0		29	0		79	0		129	0		179	9		229	1		279
0		30	1		80	0		130	0		180	8		230	2		280
0		31	0		81	0		131	1		181	11		231	0		281
0		32	0		82	0		132	0		182	18		232	0		282
0		33	0		83	0		133	0		183	11		233	0		283
0		34	0		84	0		134	0		184	19		234	0		284
0		35	0		85	0		135	0		185	21		235	0		285
0		36	0		86	1		136	0		186	17		236	0		286
0		37	0		87	0		137	0		187	19		237	1		287
0		38	0		88	0		138	0		188	18		238	0		288
0		39	0		89	0		139	0		189	17		239	0		289
0		40	0		90	0		140	1		190	10		240	0		290
0		41	0		91	1		141	0		191	14		241	0		291
0		42	0		92	0		142	0		192	13		242	0		292
0		43	0		93	0		143	2		193	13		243	0		293
0		44	0		94	0		144	0		194	10		244	0		294
0		45	0		95	0		145	0		195	15		245	0		295
0		46	0		96	0		146	0		196	14		246	0		296
0		47	0		97	0		147	0		197	20		247	0		297
0		48	0		98	0		148	0		198	12		248	0		298
0		49	0		99	0		149	0		199	11		249	0		299

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

VMS Peak Search Report V1.9 Generated 3-JUN-2007 17:54:51

```

Configuration      : $DISK1:[ALP171.SAMPLE]JWP2L1AD_030670934A.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH ENS
Sample date       : 9-MAY-2007 12:00:00  Acquisition date : 3-JUN-2007 09:34:18
Sample ID        : JWP2L1AD              Sample quantity  : 0.00000E+00 LITER
Sample type      : disk                  Sample geometry   :
Detector name    : ALP171 1             Detector geometry:
Elapsed live time: 0 08:19:28.00        Elapsed real time: 0 08:19:28.00  0.0%
Start energy     : 3516.37 keV          End energy       : 6476.42 keV
Sensitivity      : 3.00                 Sum Sensitivity  : 1.00
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4693.23	4	0	23.24	205.50	203	7	1.33E-04	50.0	

Error Report (Date: 03-Jun-07 05:54 PM)

Program: Alp_rgn_cnts
subroutine: Main
Message: No trace pk or nucl
Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

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

Sample Identity: JWP2N1AD

Detector: ALP171 2
Report Date: 04-Jun-07 06:08 AM
Acquire Date: 3-JUN-2007 09:34:18.33
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

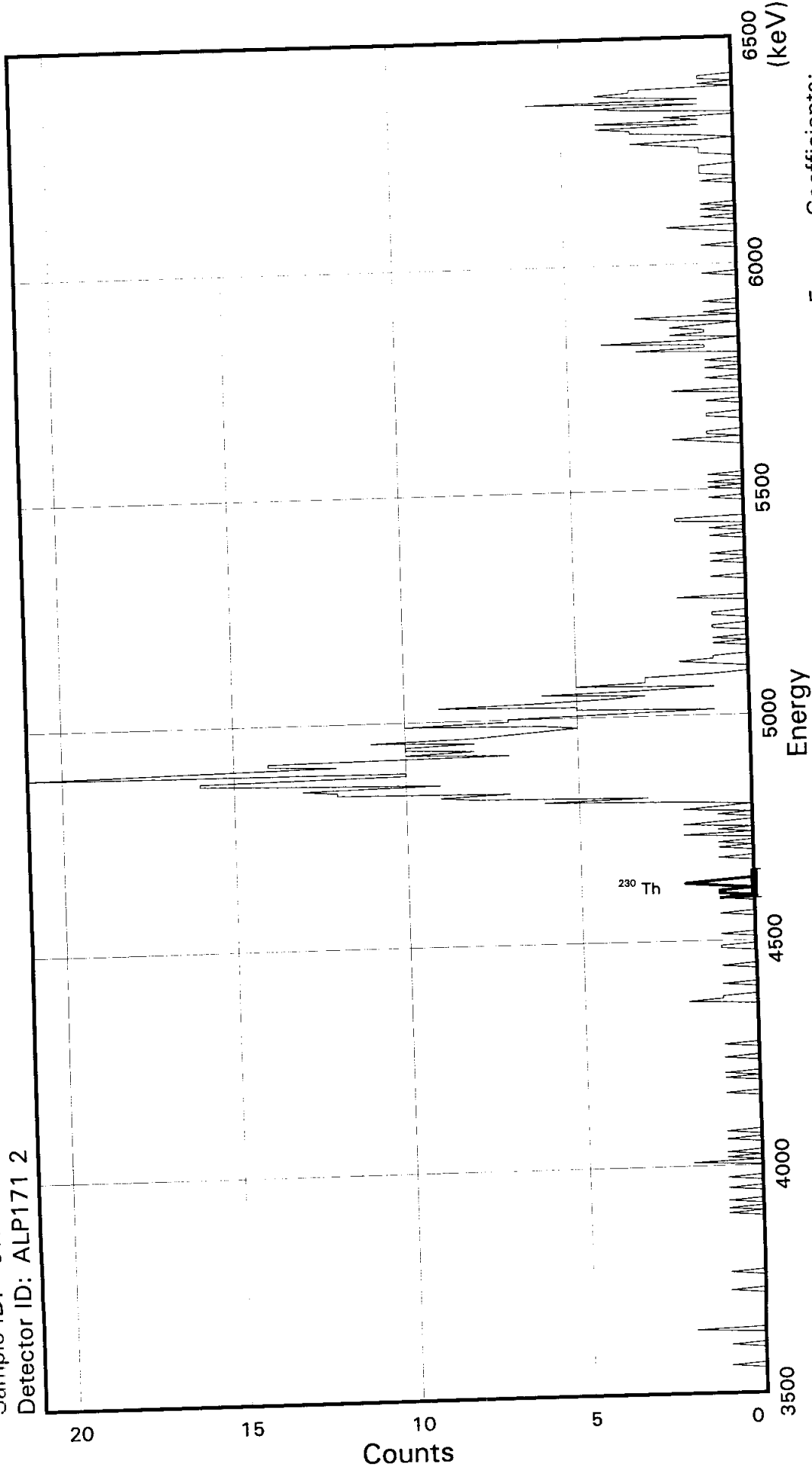
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	8	6	0.010	5423.2	113.0	320	340
TH-229	409	6	0.813	4845.3	316.2	222	278
TH-230	8	2	0.014	4687.7	112.9	189	209
TH-232	6	7	0.005	4013.0	112.9	70	90

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH ENS

Batch ID: 7134312

Sample ID: JWP2N1AD
Detector ID: ALP171 2



Energy Coefficients:
Offset: 3.53357E + 03
Slope: 5.64137E + 00
Quadrature: 1.15831E-05

Acquisition Start: 3-JUN-2007 09:34:18.33
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

SAMPLE IDENTITY: JWP2N1AD

TITLE : TH ENS

DETECTOR : ALP171 2
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JWP2N1AD_030670934B.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-MAY-2007 10:21:48

REPORT DATE : 03-Jun-07 SAMPLE DATE: 09-MAY-2007 12:00:00
ACQUIRE DATE: 03-JUN-2007 09:34:18 CALIB DATE : 06-MAY-2007 03:53:52

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3533.57 keV CONSTANT FWHM : 10.16670 Channels
SLOPE : 5.64137 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 1.158310E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

0 50 0 100 0 150 0 200 10 250 1 300 0 350 0 400 1 450 6 500

VMS Peak Search Report V1.9 Generated 3-JUN-2007 17:54:58

Configuration : \$DISK1:[ALP171.SAMPLE]JWP2N1AD_030670934B.CNF;1
 Analyses by : ALPHA V1.8
 Sample title : TH ENS
 Sample date : 9-MAY-2007 12:00:00 Acquisition date : 3-JUN-2007 09:34:18
 Sample ID : JWP2N1AD Sample quantity : 0.00000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Start energy : 3550.49 keV End energy : 6424.98 keV
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4619.96	8	0	45.13	192.50	188	11	2.67E-04	35.4	

Error Report (Date: 03-Jun-07 05:55 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: JWP2P1AD

Detector: ALP171 3
Report Date: 04-Jun-07 06:09 AM
Acquire Date: 3-JUN-2007 09:34:18.33
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

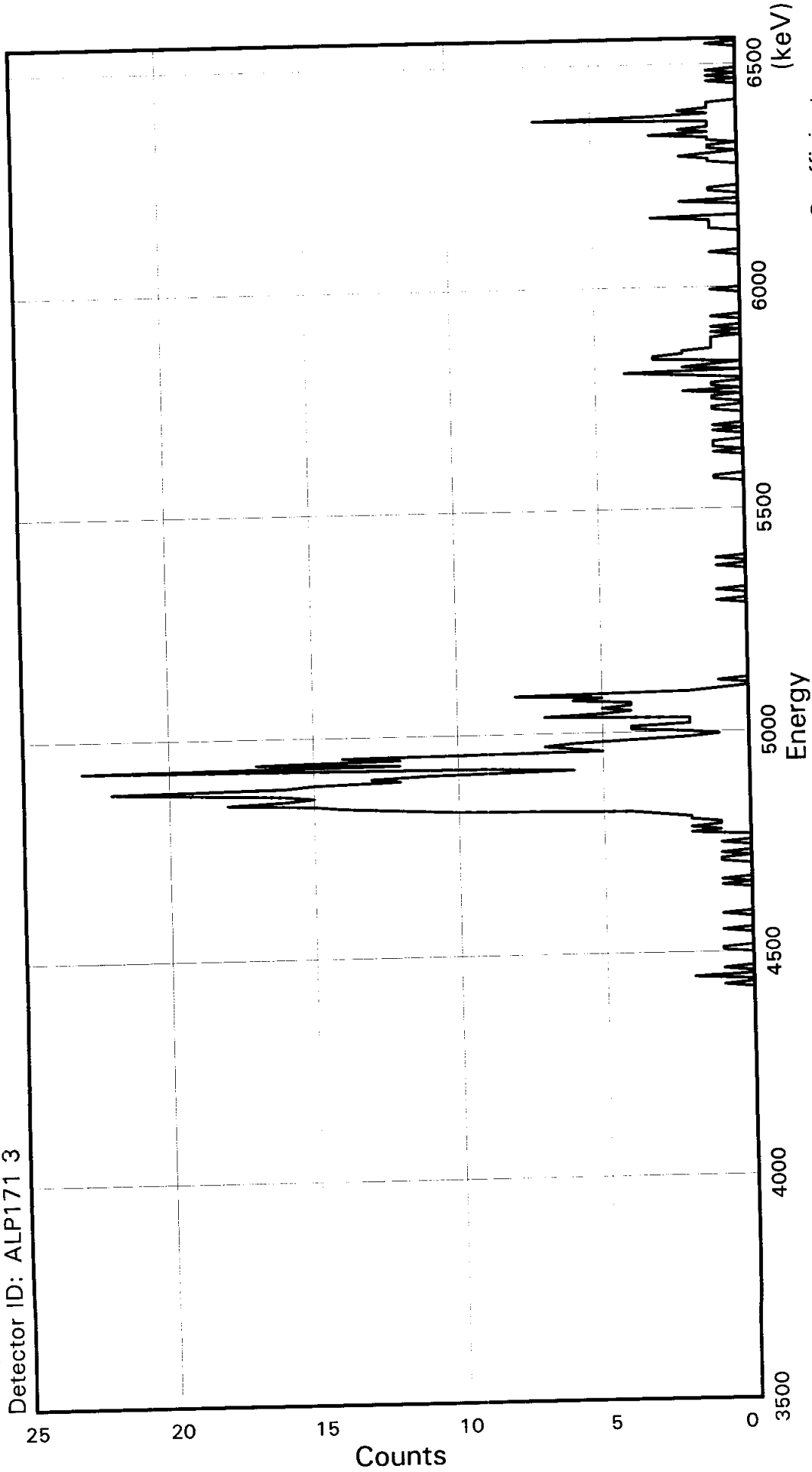
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	2	1	0.003	5423.2	119.5	308	328
TH-229	431	0	0.863	4845.3	322.3	215	269
TH-230	4	1	0.007	4687.7	119.2	185	205
TH-232	0	1	-0.001	4013.0	118.9	71	91

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH ENS

Batch ID: 7134312

Sample ID: JWP2P1AD
Detector ID: ALP171 3



Energy Coefficients:
Offset: 3.50067E + 03
Slope: 5.93696E + 00
Quadrature: 6.34889E-05

Acquisition Start: 3-JUN-2007 09:34:18.33
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

SAMPLE IDENTIITY: JWP2P1AD

TITLE : TH ENS

DETECTOR : ALP171 3
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JWP2P1AD_030670934C.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-MAY-2007 10:21:48

REPORT DATE : 03-Jun-07 SAMPLE DATE: 09-MAY-2007 12:00:00
ACQUIRE DATE: 03-JUN-2007 09:34:18 CALIB DATE : 06-MAY-2007 03:54:00

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3500.67 keV CONSTANT FWHM : 8.83333 Channels
SLOPE : 5.93696 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 6.348890E-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: JWP2PIAD
Detector: ALP171 3
Report Date: 03-Jun-07 05:55 PM
Acquire Date: 3-JUN-2007 09:34:18.33

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

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

VMS Peak Search Report V1.9 Generated 3-JUN-2007 17:55:02

Configuration : \$DISK1:[ALP171.SAMPLE]JWP2P1AD_030670934C.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH ENS
Sample date : 9-MAY-2007 12:00:00 Acquisition date : 3-JUN-2007 09:34:18
Sample ID : JWP2P1AD Sample quantity : 0.00000E+00 LITER
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Start energy : 3518.48 keV End energy : 6557.04 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00
No peaks were found

Error Report (Date: 03-Jun-07 05:55 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: JWW901AA

Detector: ALP171 4
Report Date: 04-Jun-07 06:09 AM
Acquire Date: 3-JUN-2007 09:34:18.33
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

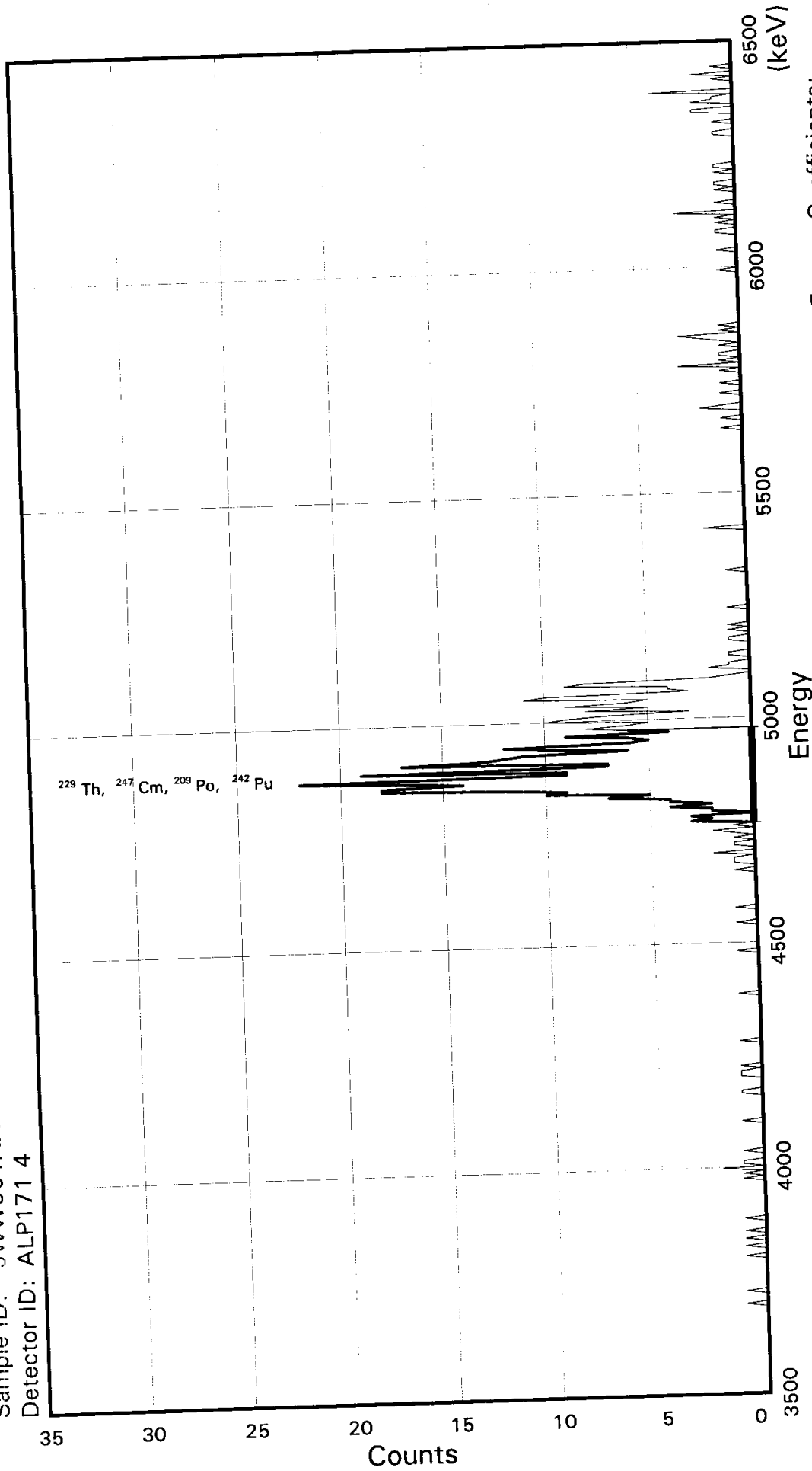
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	2	3	0.001	5423.2	111.0	308	328
TH-229	460	6	0.915	4845.3	343.7	204	266
TH-230	7	3	0.011	4687.7	110.8	176	196
TH-232	7	4	0.010	4013.0	110.6	54	74

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH ENS

Batch ID: 7134312

Sample ID: JWW901AA
Detector ID: ALP171 4



Energy Coefficients:
Offset: 3.63224E+03
Slope: 5.52851E+00
Quadrature: 3.11680E-05

Acquisition Start: 3-JUN-2007 09:34:18.33
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

SAMPLE IDENTIITY: JWW901AA

TITLE : TH ENS

DETECTOR : ALP171 4
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JWW901AA_030670934D.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-MAY-2007 10:21:48

REPORT DATE : 03-Jun-07 SAMPLE DATE: 09-MAY-2007 12:00:00
ACQUIRE DATE: 03-JUN-2007 09:34:18 CALIB DATE : 06-MAY-2007 03:54:09

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3632.24 keV CONSTANT FWHM : 11.16670 Channels
SLOPE : 5.52851 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 3.116800E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JWW901AA

Flags Key

Detector: ALP171 4
 Report Date: 03-Jun-07 05:55 PM
 Acquire Date: 3-JUN-2007 09:34:18.33
 Tracer Nuclide: TH-229
 High Counts Limit: 36
 Sample Live Time: 499 minutes
 Bkgrnd Live Time: 999 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	Right Chnl	Left Wdth	Right Wdth	Flags
PO-208	-9999	-9999	0	-10.010	5155.5	210.7	254	292	0.00	0.00	M
PO-209	327	1	0	0.654	4923.8	210.6	205	243	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5345.0	210.8	288	326	0.00	0.00	M
AC-227	6	4	10	0.009	6078.6	211.1	420	458	0.00	0.00	S
TH-227	6	4	10	0.009	6078.6	211.1	420	458	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5463.8	210.9	309	347	0.00	0.00	M
TH-229	327	1	0	0.654	4885.9	210.6	205	243	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4728.3	210.5	177	215	0.00	0.00	M I
TH-232	8	5	0	0.011	4053.6	210.3	55	93	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5360.8	210.8	291	329	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4815.2	210.6	192	230	0.00	0.00	M I
U-235	2	6	0	-0.002	4438.4	210.4	124	162	0.00	0.00	S
PU-236	13	8	17	0.018	5808.2	211.0	371	409	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4828.6	210.6	195	233	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5539.6	210.9	323	361	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4238.6	210.3	88	126	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5197.2	210.7	261	299	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5526.2	210.9	320	358	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5247.4	210.8	270	308	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6153.3	211.2	433	471	0.00	0.00	M
PU-242	327	1	0	0.654	4941.1	210.6	205	243	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5315.9	210.8	283	321	0.00	0.00	M
CM-244	9	6	17	0.012	5845.4	211.0	378	416	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5427.1	210.8	303	341	0.00	0.00	M
CM-247	327	1	0	0.654	4911.0	210.6	205	243	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5119.2	210.7	247	285	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

VMS Peak Search Report V1.9 Generated 3-JUN-2007 17:55:06

Configuration : \$DISK1:[ALP171.SAMPLE]JWW901AA_030670934D.CNF;1
 Analyses by : ALPHA V1.8
 Sample title : TH ENS
 Sample date : 9-MAY-2007 12:00:00 Acquisition date : 3-JUN-2007 09:34:18
 Sample ID : JWW901AA Sample quantity : 0.00000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Start energy : 3648.83 keV End energy : 6471.01 keV
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4885.89	327	0	93.98	226.47	205	38	1.09E-02	5.5	

Alpha Spectrum Listing
(Version: 1-Apr-07)

Flags Key

Sample Identity: JWW901AA
Detector: ALP171 4
Report Date: 03-Jun-07 05:55 PM
Acquire Date: 3-JUN-2007 09:34:18.33

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

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
			0-		101	0+		151	1@		201	8+		251	0@		301
		1	0		51	0-		102	2@		202	5+		252	0@		302
		2	0		52	0-		103	0@		203	9+		253	0-		303
0		3	0		53	1-		104	1@		204	6@		254	0@		304
0		4	0		54	1-		105	0@		205	5@		255	0@		305
0		5	0+		55	0-		106	3@		206	11@		256	1@		306
0		6	0+		56	0-		107	2@		207	10@		257	0@		307
0		7	0+		57	1-		108	3@		208	3@		258	0@		308
0		8	0+		58	0-		109	0@		209	4@		259	0@		309
0		9	0+		59	0-		110	2@		210	4@		260	0@		310
0		10	0+		60	0-		111	2@		211	9@		261	0@		311
0		11	0+		61	0-		112	4@		212	8@		262	0@		312
1		12	1+		62	0-		113	2@		213	2@		263	0@		313
0		13	0+		63	0-		114	4@		214	1@		264	0@		314
0		14	1+		64	0-		115	4@		215	0@		265	0@		315
0		15	0+		65	0-		116	7@		216	0@		266	0@		316
0		16	2+		66	0-		117	5@		217	2@		267	0@		317
1		17	0+		67	1-		118	10@		218	1@		268	0@		318
0		18	1+		68	0-		119	9@		219	1@		269	0@		319
0		19	1+		69	0-		120	12@		220	0@		270	0@		320
0		20	0+		70	0-		121	18@		221	0@		271	2+		321
0		21	0+		71	0-		122	18@		222	1@		272	1+		322
0		22	0+		72	0-		123	14@		223	1@		273	2@		323
0		23	1+		73	0-		124	17@		224	0@		274	0+		324
0		24	0+		74	0@		125	22@		225	0@		275	0+		325
0		25	0+		75	0@		126	9@		226	0@		276	0+		326
0		26	0+		76	0@		127	9@		227	0@		277	1+		327
0		27	0+		77	0+		128	19@		228	1@		278	0@		328
0		28	0+		78	0+		129	7@		229	1@		279	0@		329
0		29	0+		79	0+		130	7@		230	0@		280	0@		330
0		30	0+		80	0+		131	17@		231	0@		281	1@		331
1		31	0+		81	0+		132	13@		232	1@		282	0@		332
0		32	0+		82	0+		133	12@		233	0@		283	0@		333
0		33	0+		83	0+		134	11@		234	1@		284	0@		334
0		34	0+		84	0+		135	6@		235	0@		285	0@		335
1		35	1+		85	0+		136	10@		236	0@		286	1@		336
0		36	0+		86	1+		137	12@		237	0@		287	0@		337
0		37	0+		87	0+		138	6@		238	0@		288	3@		338
1		38	0@		88	0+		139	5@		239	0@		289	0@		339
0		39	0@		89	0+		140	6@		240	0@		290	1@		340
0		40	0@		90	0+		141	9@		241	1@		291	0@		341
1		41	0@		91	0+		142	4@		242	0@		292	1@		342
0		42	0@		92	0+		143	6		243	0@		293	1@		343
0		43	0@		93	0+		144	8		244	0@		294	0@		344
0		44	0-		94	0+		145	6		245	0@		295	0@		345
0		45	0-		95	0+		146	5		246	0@		296	1@		346
1		46	1-		96	0+		147	10+		247	0@		297	0@		347
0		47	1-		97	0+		148	9+		248	0@		298	1@		348
0		48	0-		98	0+		149	7+		249	0@		299	2@		349
0		49	0-		99	0+		150	3+		250	0@		300	3@		400
0		50	0-		100	0+		151	0@		200	3+		250	0@		350

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP171.SAMPLE]JWW901AA_030670934D.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4885.88	205	243	327	326	0.06		

End of Report

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

Sample Identity: JWW901AC

Detector: ALP171 5
Report Date: 04-Jun-07 06:09 AM
Acquire Date: 3-JUN-2007 09:34:18.33
Tracer Nuclide: TH-229
Sample Live Time: 499 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	0	0.000	5423.2	118.1	301	321
TH-229	558	2	1.115	4845.3	319.0	212	266
TH-230	529	2	1.057	4687.7	177.3	170	200
TH-232	4	1	0.007	4013.0	118.2	62	82

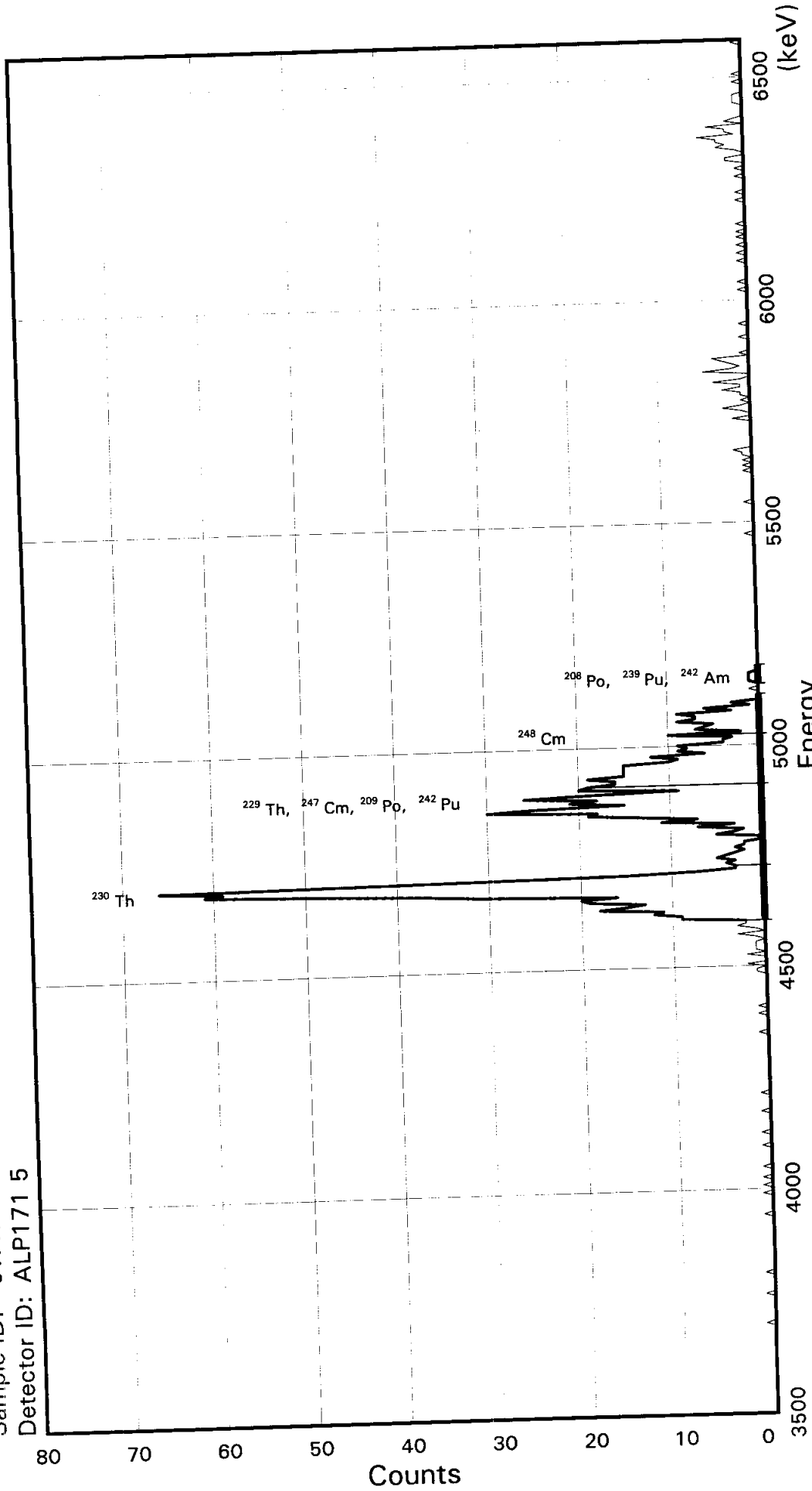
End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.

TH ENS

Batch ID: 7134312

Sample ID: JWW901AC
Detector ID: ALP171 5



Energy Coefficients:
Offset: 3.55882E + 03
Slope: 5.91117E + 00
Quadrature: -6.99313E-06

Acquisition Start: 3-JUN-2007 09:34:18.33
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

SAMPLE IDENTIITY: JWW901AC

TITLE : TH ENS

DETECTOR : ALP171 5
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JWW901AC_030670934E.CN
F;1
ACQUIRE DATE of BACKGROUND: 07-MAY-2007 08:53:46

REPORT DATE : 03-Jun-07 SAMPLE DATE: 09-MAY-2007 12:00:00
ACQUIRE DATE: 03-JUN-2007 09:34:18 CALIB DATE : 07-MAY-2007 03:03:19

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3558.82 keV CONSTANT FWHM : 7.50000 Channels
SLOPE : 5.91117 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.699313E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JWW901AC

Flags Key

Detector: ALP171 5
 Report Date: 03-Jun-07 05:55 PM
 Acquire Date: 3-JUN-2007 09:34:18.33
 Tracer Nuclide: TH-229
 High Counts Limit: 36
 Sample Live Time: 499 minutes
 Bkgrnd Live Time: 999 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 Mult	Right Wdth Mult	Flags
PO-208	4	1	0	0.007	5155.3	41.4	267	274	0.00	0.00	P
PO-209	466	2	0	0.931	4923.6	295.4	198	248	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5344.7	295.3	276	326	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6078.4	295.3	400	450	0.00	0.00	M
TH-227	-9999	-9999	0	-10.010	6078.4	295.3	400	450	0.00	0.00	M
TH-228	-9999	-9999	0	-10.010	5463.6	295.3	296	346	0.00	0.00	M
TH-229	466	2	0	0.931	4885.7	295.4	198	248	0.00	0.00	P
TH-230	524	1	0	1.048	4728.1	124.1	177	198	0.00	0.00	P
TH-232	7	3	3	0.010	4053.4	295.5	57	107	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5360.5	295.3	278	328	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4815.0	295.4	186	236	0.00	0.00	S I
U-235	17	3	1	0.030	4438.2	295.5	122	172	0.00	0.00	S
PU-236	-9999	-9999	0	-10.010	5808.0	295.3	354	404	0.00	0.00	M
NP-237	-9999	-9999	0	-10.010	4828.4	295.4	188	238	0.00	0.00	S I
PU-238	-9999	-9999	0	-10.010	5539.4	295.3	309	359	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4238.4	295.5	88	138	0.00	0.00	M
PU-239	4	1	0	0.007	5197.0	41.4	267	274	0.00	0.00	P
AM-241	-9999	-9999	0	-10.010	5526.0	295.3	306	356	0.00	0.00	M
AM-242M	4	1	0	0.007	5247.2	41.4	267	274	0.00	0.00	P
CM-242	-9999	-9999	0	-10.010	6153.1	295.3	413	463	0.00	0.00	M
PU-242	466	2	0	0.931	4940.9	295.4	198	248	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5315.7	295.4	271	321	0.00	0.00	M I
CM-244	-9999	-9999	0	-10.010	5845.2	295.3	360	410	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5426.9	295.3	290	340	0.00	0.00	M
CM-247	466	2	0	0.931	4910.8	295.4	198	248	0.00	0.00	P
CM-248	116	1	0	0.231	5119.0	200.9	229	263	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

VMS Peak Search Report V1.9 Generated 3-JUN-2007 17:55:11

Configuration : \$DISK1:[ALP171.SAMPLE]JWW901AC_030670934E.CNF;1
 Analyses by : ALPHA V1.8
 Sample title : TH ENS
 Sample date : 9-MAY-2007 12:00:00 Acquisition date : 3-JUN-2007 09:34:18
 Sample ID : JWW901AC Sample quantity : 0.00000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Start energy : 3576.55 keV End energy : 6583.51 keV
 Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4690.85	524	0	35.47	191.55	177	21	1.75E-02	4.4	
2	0	4885.66	466	0	100.49	224.52	198	50	1.55E-02	4.6	
3	0	5025.10	116	0	70.93	248.12	229	34	3.87E-03	9.3	
4	0	5151.37	4	0	23.64	269.50	267	7	1.33E-04	50.0	

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP171.SAMPLE]JWW901AC_030670934E.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4690.84	177	198	524	512	0.52		
4885.66	198	248	466	531	-3.01	0	-1.59
5025.10	229	263	116	294	-16.53	229	-0.58
5151.37	267	274	4	4	0.00		

End of Report

THORIUM
STANDARDS AND TRACEABILITY

7/12/2007 11:13:19 AM

Standard Material Fractions (Vials)

Vial Prep: 7/11/06 to 7/13/07, SMFractionIdentifier Between THTF1061 and THTF1064, 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: TH22906A100			Ref: 10/4/2004	2.1430E+01	± 7.070E-01	DPM/G
THTF1061	TH-229	4.0921E+00 ± 1.350E-01 DPM	0.191 g	5/24/2007 5/24/2007	Armstron	2.1425E+01 ± 7.068E-01 DPM/G
THTF1062	TH-229	4.0943E+00 ± 1.351E-01 DPM	0.1911 g	5/24/2007 5/24/2007	Armstron	2.1425E+01 ± 7.068E-01 DPM/G
THTF1063	TH-229	4.0857E+00 ± 1.348E-01 DPM	0.1907 g	5/24/2007 5/24/2007	Armstron	2.1425E+01 ± 7.068E-01 DPM/G
THTF1064	TH-229	4.0685E+00 ± 1.343E-01 DPM	0.1899 g	5/24/2007 5/24/2007	Armstron	2.1425E+01 ± 7.068E-01 DPM/G

4.0851E+000 ± 1.165E-002 (4) 0.285% 4.0685E+000 , 4.0943E+000

7/12/2007 11:13:27 AM

Standard Material Fractions (Vials)

Vial Prep: 7/11/06 to 7/13/07, SMFractionIdentifier Like: THSO0142%, 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:	TH22906A100	Ref: 10/4/2004	2.1430E+01	± 7.070E-01	DPM/G
THSO0142	TH-229	4.0793E+00 ± 1.346E-01 DPM	0.1904 g	5/24/2007 5/24/2007	Armstron	2.1425E+01 ± 7.068E-01 DPM/G
		4.0793E+000 ± 4.079E+000 (1)		4.0793E+000		4.0793E+000

Th22906A

Th22906A100
Ref. 6102
21.43 ± 0.707
dpm/g
6/8/2006 DVF

ISOTOPE DILUTION RECORD

1) Prepared by	<u>tda</u>	2) Date Prepared	<u>10/8/2004</u>
3) Source Identification Number / Ref. Number	<u>TH22906A100</u>	<u>6102</u>	
4) Source Activity (dpm ± dpm/g)	<u>2.1430E+03</u>	±	<u>7.070E-01</u>
5) Percent error of Source Activity	<u>3.3</u>	%	
6) Weight of Source Material used (g)	<u>1</u>		
7) (% Error) of Weight of Source Material used	<u>0.4800</u>	%	
8) Diluent	<u>0.5 M HNO3</u>		
9) Total Weight of the Dilution (g)	<u>100</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.3000</u>	%	
11) Specific Activity of Diluted Solution dpm/g	<u>2.1430E+01</u>	±	<u>7.175E-01</u>
12) Total Uncertainty	<u>3.348</u>	%	
13) Dilution Identification Number / Ref. Number	<u>TH22906A100</u>	<u>6102</u>	
14) Calibration Reference Date	<u>11/12/2003</u>		
15) Isotope Inventory File update by/date	<u>tda</u>		
16) Reviewed by/date	<u></u>		
17) Location	<u>QCLAB</u>	18) Exhausted	<u></u>

CALCULATIONS

7) % Error of Wt. used = $(0.0048 / \text{Weight of Source Material used} * 100)$

10) % error of Dilution Wt. = $(0.3 / \text{Total Weight of Dilution} * 100)$

11) Specific Activity = $\text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$

12) % Total Uncertainty = $\sqrt{(\% \text{ error of Source Activity}^2 + \% \text{ error of Wt. Used}^2 + \% \text{ error of Dilution Wt.}^2)}$

Form: CC-006, 7/15/99, Rev 3



ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

Received 10/2/04
R. H. Anderson

TH22904AL

69227-288

Th-229 5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated by liquid scintillation counting.

Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

ISOTOPE:	Th-229
ACTIVITY (dps):	3.633 E2
HALF-LIFE:	7340 years
CALIBRATION DATE:	October 4, 2004 12:00 EST
RELATIVE EXPANDED UNCERTAINTY (k=2):	3.3%

Impurities: γ -impurities <0.1%
Th-228 2.3 dps
Th-230 2.3 dps
Th-232 0.15 dps

5.08969 grams 0.5M HNO₃ solution.

P O NUMBER 2071151, Item 2

SOURCE PREPARED BY: *M. Dimitrova*
M. Dimitrova, Radiochemist

Q A APPROVED: *SMH* *10-7-04*



STL

STANDARD SOLUTION PREP SHEET

STL Denver

P A R E N T	1	STL# <u>TH22904AL</u> Isotope <u>²²⁹Th</u> Date received <u>10/8/04</u>	
	2	Activity (pCi or Bq) <u>71.37959 Bq</u> Per (gram or ml) <u>g</u>	
	3	on <u>10/4/2004</u> at <u>10:00</u> MST	
	3	Half life (t 1/2) <u>7340 y</u>	
	S O L U T I O N	4	Weight of source and vial <u>8.9313</u>
		5	Weight of vial <u>3.8671</u>
		6	Weight of source (line 4 - line 5) <u>5.0642</u>
		7	Total Activity (line 1 X line 6) = <u>361.53 Bq</u>
		8	Total Activity pCi (Bq/0.037) <u>9769.7 pCi</u>
	9	Diluted up to <u>1000</u> mls in <u>0.5 ml HNO3</u>	
10	Therefore making a solution of <u>9.77</u> pCi per 1 ml on the standard ref		
D E C A Y	Decay = exp(- Lambda x t) Lambda = (Natural log 2)/(t 1/2); t = decay duration Note: t and t 1/2 must be in ^{yr}		
	11	Lambda = 0.6931 / t 1/2 <u>9.443 x 10⁻⁵ y⁻¹</u>	
	12	Date to decay <u>10/8/2004</u>	
	13	Reference Date <u>10/4/2004</u>	
	14	Decay duration (12 - 13) <u>4 days</u>	
	15	Decay duration in t 1/2 units <u>.01095 y</u>	
	16	Decay = exp -(line 11 x line 15) Decay = exp - (<u>9.443 x 10⁻⁵ y⁻¹ x .01095 y) = <u>0.999999</u></u>	
	17	Decayed activity = original activity x decay = <u>9.77</u>	
NOTES: <u>ASSIGNED ID = TH22904ALAL1</u>			
Prepared by <u>[Signature]</u>		Preparation date <u>10/8/04</u>	

CAUTION RADIOACTIVE MATERIAL

Th-229
SRS 69227-288 Qty 9.82E-3 uCi CA 10/11
Date 10-04-04 12:00 EST Exp. XXXXX
PO # 2071151, Item 2
5.08969 g 0.5M HNO3 solution

ANALYTICS
1380 Seaboard Ind Blvd • Atlanta, GA 30318 • USA • 404-352-8677

RADIOCHEMISTRY LABORATORY
STANDARDS CALIBRATION CHECK WORKSHEET
PARENT SOLUTION



STL Denver

Standard Information:			
Isotope:	²²⁹ Th	Activity/unit:	9.77 pCi/ml
STL#:	TH22904ALA1	Cert. TPU:	3.30%
Cert#:	69227-288	Ref. Date:	10/4/2004
Date Rec'd:	10/8/2004	Date Prepared:	10/8/2004

Description of Mounting:	
1 ml run against 1 ml of TH23004ALA2, through UTEVA resin. NdF ₃ precipitation followed.	
Detector Efficiency:	22%
Chemical Yield =	59 - 73%

Determination of Acceptance Limit:			RESULT PASSES
Acceptance Limit(pCi) =	9.2	to 10.1	

SUMMARY OF RESULTS

Verification	Activity	2 sigma Error	Units
STD# 1	9.88	0.42	pCi/ml
STD# 2	9.81	0.46	pCi/ml
STD# 3	9.23	0.42	pCi/ml
MEAN	9.64	0.43	pCi/ml
STD. DEV.	0.36	0.02	pCi/ml

Date Performed: 10/28/04 Analyst: [Signature]
 *Expires one year from date performed.
 8/28/2003
 N:/QA/Forms/Rad/Standards Check Worksheet Parent.XLS

ISOTOPE RECORD FORM

1) Isotope TH229 2) Reference Number 6102
3) Half Life 7340 ±160 yrs 4) Storage Location Std Lab
5) Source Identification Number Th22906A000

CALIBRATION DATA

6) Activity as Received Units 9.77 pCi/ml
7) Overall Uncertainty Percent 3.3%
8) Reference Date / Time 10/4/2004 12:00 EST
9) Activity dpm/g 21.43 dpm/g
10) Volume or Mass (ml/g) 5.08969 g
11) Calibrated by Analytics
12) Certificate Solution Number 69227-288

SURVEY DATA

13) Date Received 6/6/2006
14) Surveyed by tda
15) Survey Reading (Beta/Gamma) cpm BKGD
16) Survey Reading (Alpha) cpm BKGD

17) Activity Conversion 9.77 pCi/ml * 2.22 dpm/g / 1.012 g/ml =
21.43 dpm/g

18) Remarks Diluted source from STL DENVER

19) Isotope File Updated by tda

20) QC Approved _____

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		
THSO0142	TH-230	4.0487E+00 ± 1.336E-01 DPM	0.1866 g	5/24/2007 5/24/2007	Armstron	2.1697E+01 ± 7.160E-01 DPM/G
		4.0487E+000 ± 4.049E+000 (1)	4.0487E+000 , 4.0487E+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>
3) Source Identification Number / Ref. Number	<u>FROM STL DENVER</u>		
4) Source Activity (dpm ± dpm/g)	_____	±	_____
5) Percent error of Source Activity	_____	%	
6) Weight of Source Material used (g)	_____		
7) (% Error) of Weight of Source Material used	<u>#DIV/0!</u>	%	
8) Diluent	_____		
9) Total Weight of the Dilution (g)	_____		
10) (% Error) of Total Weight of the Dilution	<u>3.3000</u>	%	
11) Specific Activity of Diluted Solution dpm/g	<u>2.1698E+01</u>	±	<u>7.160E-01</u>
12) Total Uncertainty	<u>#DIV/0!</u>	%	
13) Dilution Identification Number / Ref. Number	<u>Th23006A100</u>		<u>6096</u>
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	_____		_____
17) Location	<u>qclab</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

COUNTING REQUEST

Type of count: Alpha: _____ count time: _____ units: _____
 Beta: _____ count time: _____ units: _____
 Gamma: _____ count time: _____ 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	DUF2601	Th23006A100	
		#6096	
176	2602		
177	2603		
178	2604		

ADDITIONAL INSTRUCTIONS:

T060089 CpPT Th23006A100 #6096
DM 5/24/06 Th23406A100 #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

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

Sample ID	Isotope	Geometry
CAL5799	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
30-MAY-2006 09:17:29.00	116642	20.00	662	500.00	30A

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

Sample ID	Isotope	Geometry
CAL5801	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
30-MAY-2006 09:17:29.00	114775	20.00	711	500.00	30C

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

Sample ID	Isotope	Geometry
CAL5802	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
30-MAY-2006 09:17:29.00	115181	20.00	608	500.00	30D

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

Sample ID	Isotope	Geometry
DVF2604	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
24-MAY-2006 17:14:03.00	9951	20.00	562	500.00	30D

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
2	14	653	1492	24-MAY-2006 05:49:57.00

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

* Count Durations in Minutes.

STL RICHLAND
Richland, WA

GPC Report

24-MAY-2006 10:00:42.00

LBPRINT - Rev#: 2.4

Sample ID	Isotope	Geometry
CAL5734	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
24-MAY-2006 10:00:42.00	535	20.00	667	500.00	30A

Alpha Counts	Alpha Bkg Counts	Guard Counts	HV	Bkg Count Date/Time
2	18	646	1492	24-MAY-2006 05:49:57.00

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

* Count Durations in Minutes.

STL RICHLAND
Richland, WA

GPC Report

24-MAY-2006 10:00:42.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5735	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:00:42.00	431	20.00	795	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	15	646	1492	24-MAY-2006 05:49:57.00

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

* Count Durations in Minutes.

STL RICHLAND
Richland, WA

GPC Report

24-MAY-2006 10:00:42.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5736	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:00:42.00	478	20.00	704	500.00	30C

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
0	17	646	1492	24-MAY-2006 05:49:57.00

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

* Count Durations in Minutes.

STL RICHLAND
Richland, WA

GPC Report

24-MAY-2006 10:00:42.00

LBPRINT - Rev#: 2.4

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5737	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:00:42.00	440	20.00	562	500.00	30D

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
1	14	646	1492	24-MAY-2006 05:49:57.00

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

* Count Durations in Minutes.

Thorium Yield Determination by Beta-emitting Th-234 tracer

Reference Tracer Data: Ref. Date: 19-May-06

Ref. ID	Beta Detector	Gross Counts	Count Time	Bkg Counts	Bkg Time	Bkg CPM	Grams Found	SrY-90 Eff	DPM/g of Tracer
CAL5799	30A	138526	20	667	500	1.3340	3.891	0.4482	3971.00
CAL5800	30B	137549	20	795	500	1.5900	3.8941	0.4568	3865.08
CAL5801	30C	137829	20	704	500	1.4080	3.8875	0.4464	3970.03
CAL5802	30D	135033	20	562	500	1.1240	3.8977	0.4461	3882.36
Average DPM/g of tracer =									3905.82

Sample Tracer Data:

VIAL ID	Tracer Mass	DPM Tracer
DVF2601	0.2647	1033.87
DVF2602	0.2661	1039.34
DVF2603	0.2653	1036.22
DVF2604	0.265	1035.04
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
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		0.00
		0.00
		0.00
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		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

<u>Sample ID</u>	<u>Isotope</u>	<u>Geometry</u>
CAL5800	COP	COP

<u>Sample Count Date/Time</u>	<u>Beta Counts</u>	<u>Count Duration*</u>	<u>Beta Bkg Counts</u>	<u>Bkg Count Duration*</u>	<u>Instr ID</u>
24-MAY-2006 10:23:54.00	137549	20.00	795	500.00	30B

<u>Alpha Counts</u>	<u>Alpha Bkg Counts</u>	<u>Guard Counts</u>	<u>HV</u>	<u>Bkg Count Date/Time</u>
2	15	660	1492	24-MAY-2006 05:49:57.00

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

* Count Durations in Minutes.

STL RICHLAND
Richland, WA

GPC Report

24-MAY-2006 10:23:54.00

LBPRINT - Rev#: 2.4

Sample ID	Isotope	Geometry
CAL5801	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
24-MAY-2006 10:23:54.00	137829	20.00	704	500.00	30C

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

Sample ID	Isotope	Geometry
CAL5802	COP	COP

Sample Count Date/Time	Beta Counts	Count Duration*	Beta Bkg Counts	Bkg Count Duration*	Instr ID
24-MAY-2006 10:23:54.00	135033	20.00	562	500.00	30D

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

5/25
1041

C.R. Technician RD
 Date Counted 5/24/06
 C.R. Analyst D
 Date Analyzed 6/28/06

Counting Time 1000 Minutes
 Sample STR
 Background See Alpha Analysis Report
 Review: 5/24/06
 Operating: RICHRD008
 SOP's RICHRD0016
TO 60089

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)		
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

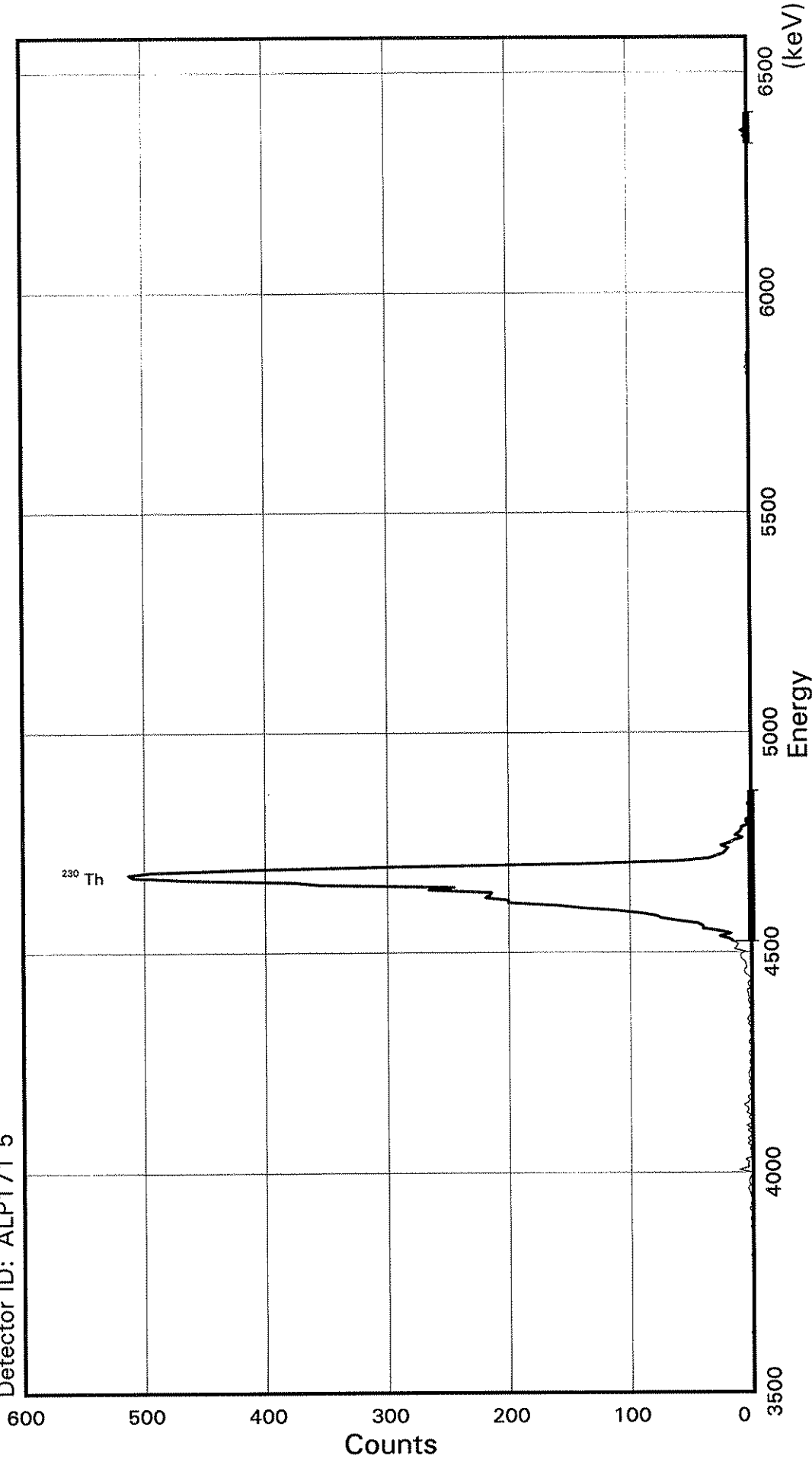
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Right Chnl
TH-228	2	1	0.001	5423.2	118.1	301	321
TH-230	6479	1	6.485	4687.7	436.6	146	220
TH-232	55	1	0.054	4013.0	117.9	62	82

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 %

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

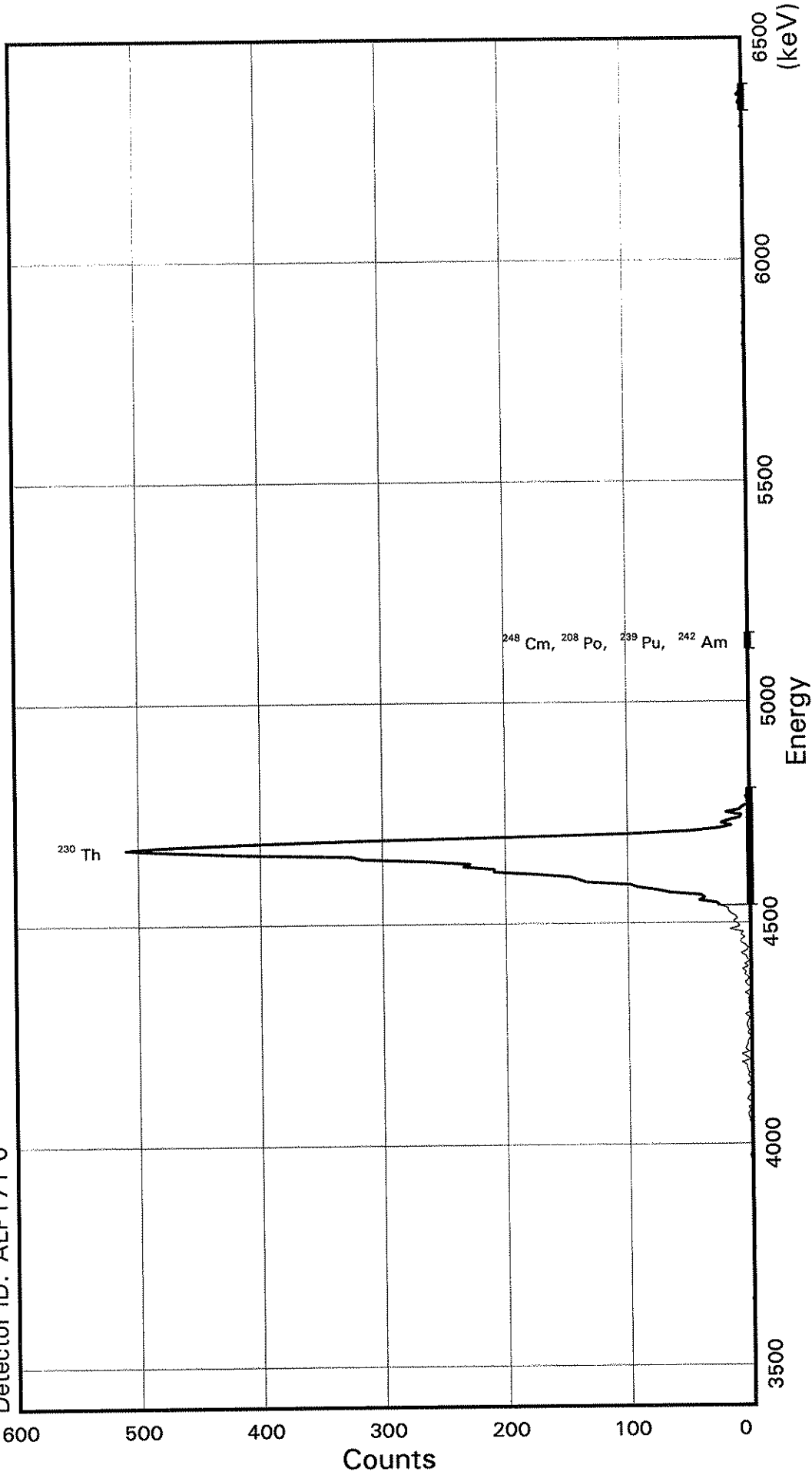
Nuclide	Smpl	Bkg	Count	Centrd	Region		
Name	Count	Count	Rate	Energy	Width	Left	Rght
			C/Min	keV	keV	Chnl	Chnl
TH-228	1	2	-0.001	5423.2	120.9	322	342
TH-230	6112	2	6.116	4687.7	325.6	179	233
TH-232	12	0	0.012	4013.0	120.3	89	109

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/C² SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing
for Spectra Not Processed by Alp_rgn_cnts
(Version: 29-Jun-92)

Sample Identity: DVF2602
Detector: ALP171 6
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					
		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	0	512
1		14	0	64	1	114	2	164	478	214	0	264	0	314	0	364	0	414	0	464	0	512
0		15	0	65	3	115	5	165	411	215	0	265	0	315	0	365	0	415	0	465	0	512
0		16	0	66	0	116	4	166	321	216	0	266	0	316	1	366	0	416	0	466	0	512
0		17	0	67	0	117	7	167	200	217	0	267	0	317	0	367	1	417	0	467	0	512
0		18	0	68	4	118	2	168	101	218	0	268	0	318	0	368	0	418	0	468	0	512
0		19	0	69	3	119	5	169	48	219	0	269	1	319	0	369	2	419	0	469	0	512
0		20	1	70	1	120	1	170	26	220	0	270	0	320	0	370	0	420	0	470	0	512
0		21	0	71	0	121	3	171	15	221	0	271	0	321	0	371	0	421	0	471	0	512
0		22	0	72	1	122	4	172	23	222	0	272	0	322	0	372	0	422	0	472	0	512
0		23	1	73	1	123	8	173	17	223	0	273	0	323	0	373	0	423	0	473	0	512
0		24	0	74	4	124	3	174	8	224	0	274	0	324	0	374	0	424	0	474	0	512
0		25	0	75	1	125	2	175	7	225	0	275	0	325	0	375	0	425	0	475	0	512
0		26	0	76	1	126	4	176	19	226	0	276	0	326	0	376	0	426	0	476	0	512
0		27	0	77	3	127	8	177	8	227	0	277	0	327	0	377	0	427	0	477	0	512
1		28	0	78	2	128	8	178	6	228	0	278	0	328	0	378	0	428	0	478	0	512
0		29	0	79	3	129	5	179	1	229	0	279	0	329	1	379	0	429	0	479	0	512
0		30	1	80	4	130	8	180	1	230	0	280	0	330	0	380	0	430	0	480	0	512
0		31	0	81	4	131	6	181	2	231	0	281	1	331	1	381	0	431	0	481	0	512
0		32	1	82	8	132	17	182	3	232	0	282	0	332	0	382	0	432	2	482	0	512
0		33	0	83	1	133	9	183	0	233	0	283	0	333	0	383	0	433	1	483	0	512
0		34	0	84	4	134	10	184	0	234	0	284	0	334	0	384	0	434	0	484	0	512
0		35	0	85	8	135	14	185	0	235	0	285	0	335	0	385	1	435	1	485	0	512
0		36	0	86	2	136	11	186	1	236	0	286	0	336	0	386	0	436	0	486	0	512
0		37	0	87	5	137	12	187	0	237	1	287	0	337	0	387	0	437	0	487	0	512
0		38	0	88	4	138	16	188	1	238	0	288	0	338	0	388	0	438	1	488	0	512
0		39	0	89	3	139	18	189	1	239	1	289	0	339	0	389	0	439	0	489	0	512
0		40	0	90	3	140	18	190	0	240	1	290	0	340	1	390	0	440	0	490	0	512
1		41	1	91	1	141	25	191	0	241	1	291	0	341	0	391	0	441	3	491	0	512
0		42	1	92	1	142	27	192	0	242	0	292	0	342	1	392	0	442	2	492	0	512
2		43	0	93	3	143	41	193	1	243	0	293	0	343	0	393	0	443	0	493	0	512
0		44	0	94	2	144	37	194	1	244	1	294	0	344	1	394	0	444	4	494	0	512
0		45	0	95	3	145	40	195	0	245	0	295	0	345	0	395	0	445	2	495	0	512
0		46	1	96	4	146	66	196	0	246	0	296	0	346	0	396	0	446	1	496	0	512
0		47	2	97	3	147	76	197	0	247	0	297	0	347	0	397	0	447	0	497	0	512
0		48	1	98	2	148	92	198	0	248	0	298	0	348	0	398	0	448	0	498	0	512
0		49	1	99	2	149	98	199	1	249	0	299	0	349	0	399	1	449	0	499	0	512

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

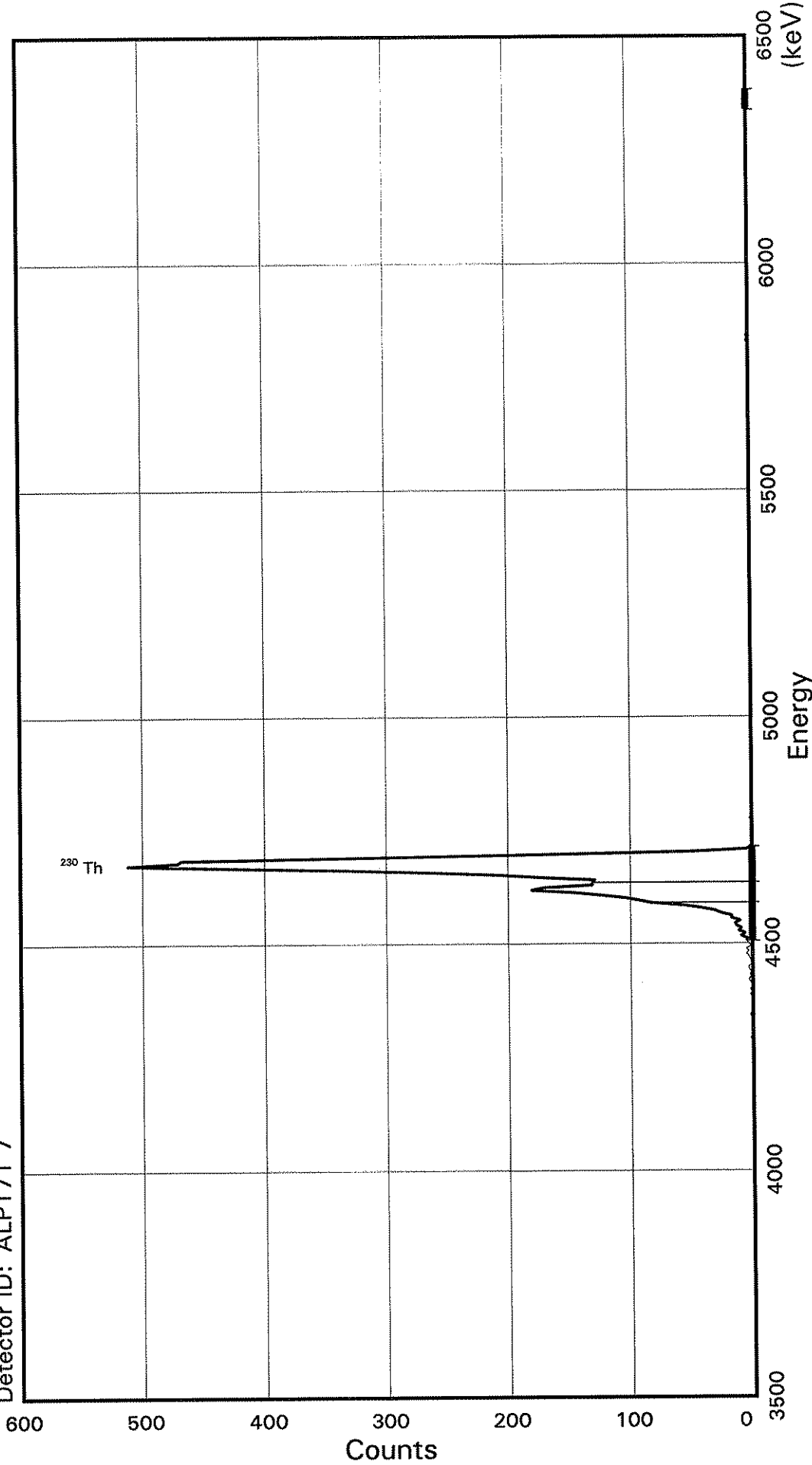
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	0	0	0.000	5423.2	112.7	311	331
TH-230	4956	3	4.958	4687.7	220.0	161	200
TH-232	2	0	0.002	4013.0	112.9	61	81

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	

```

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

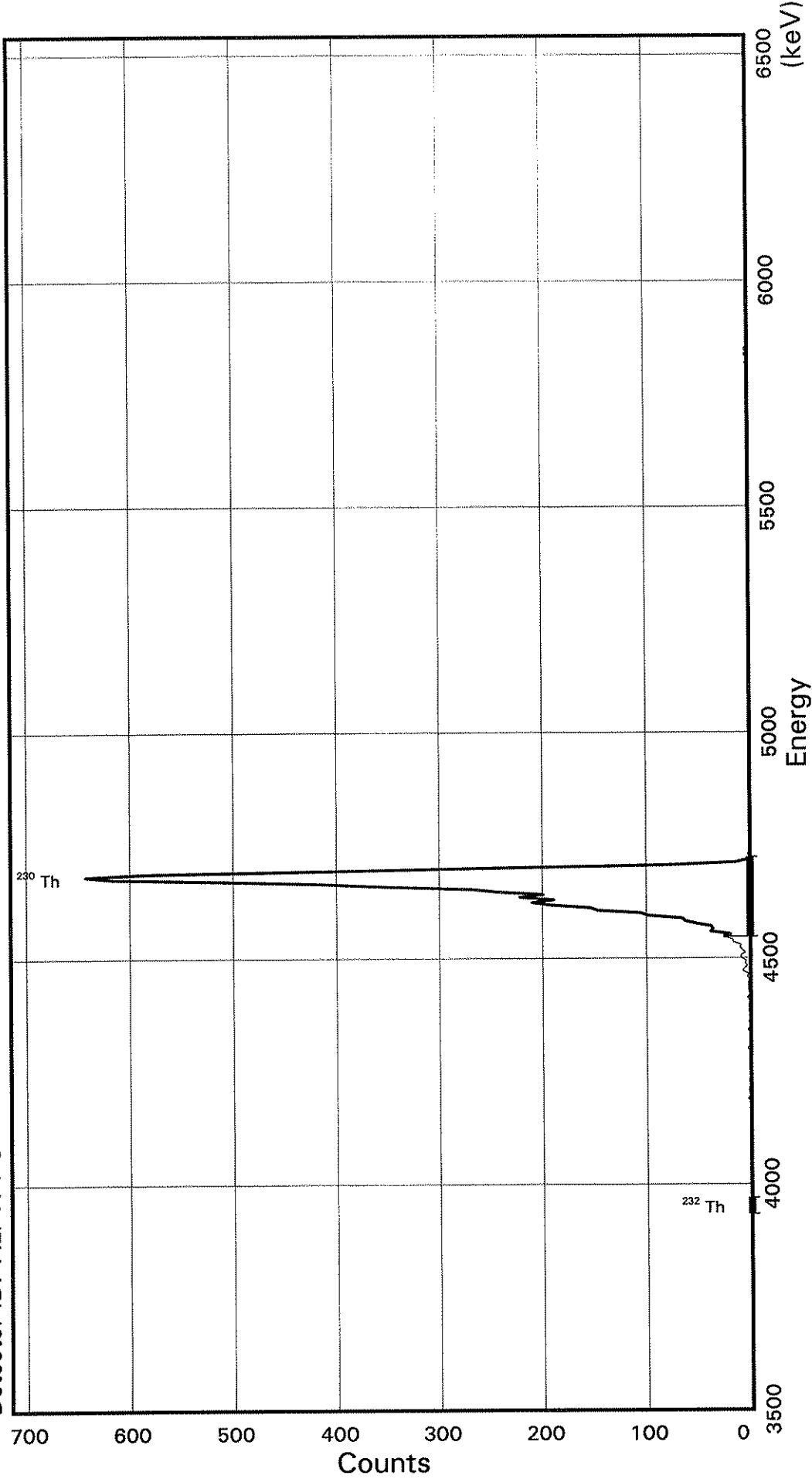
Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl
TH-228	0	2	-0.002	5423.2	117.7	307	327
TH-230	6331	0	6.338	4687.7	282.7	157	205
TH-232	4	0	0.004	4013.0	117.9	67	87

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		
<p>STL Richland, SMFractions v4.8.12</p> <p>* - Isotope is an Impurity</p>						

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 12-JUL-2007 11:14:37.36

QA Filename : \$DISK1:[ALP171.QA]GROUP_4_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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.240001 Std Deviation : 0.005064

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:40	chk		0.2464		
5-MAY-2007 11:12	chk		0.2422		
8-JUN-2007 08:19	chk		0.2454		

-- 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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 9.250000 Std Deviation : 0.353553

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:40	chk		11.5000	Ac	
5-MAY-2007 11:12	chk		11.1667	Ac	
8-JUN-2007 08:19	chk		10.6667	Ac	

-- 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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 338.075989 Std Deviation : 0.055070

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		336.0674	Ac
5-MAY-2007 11:12	chk		336.0241	Ac
8-JUN-2007 08:19	chk		336.0818	Ac

-- 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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.249314 Std Deviation : 0.003221

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				
			Page : 2	
1-APR-2007 09:40	chk		0.2456	
5-MAY-2007 11:12	chk		0.2503	
8-JUN-2007 08:19	chk		0.2548	

-- 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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 5.547164 Std Deviation : 0.027315

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

1-APR-2007 09:40	chk		5.5324	
5-MAY-2007 11:12	chk		5.5285	
8-JUN-2007 08:19	chk		5.5477	

Quality Assurance Report. Generated 12-JUL-2007 11:14:34.87

QA Filename : \$DISK1:[ALP171.QA]GROUP_3_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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00
Mean : 0.243208 Std Deviation : 0.000061

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		0.2485	Ac
5-MAY-2007 11:12	chk		0.2438	Ac
8-JUN-2007 08:19	chk		0.2479	Ac

-- 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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00
Mean : 7.500000 Std Deviation : 0.235702

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		9.0000	Ac
5-MAY-2007 11:12	chk		8.8333	Ac
8-JUN-2007 08:19	chk		9.3333	Ac

-- 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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 336.526917 Std Deviation : 0.113420

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		334.1066	Ac
5-MAY-2007 11:12	chk		334.1283	Ac
8-JUN-2007 08:19	chk		334.5813	Ac

-- 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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.242802 Std Deviation : 0.000120

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				
				Page : 2
1-APR-2007 09:40	chk		0.2490	Ac
5-MAY-2007 11:12	chk		0.2470	Ac
8-JUN-2007 08:19	chk		0.2490	Ac

-- 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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 5.964607 Std Deviation : 0.037815

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

1-APR-2007 09:40	chk		5.9661	
5-MAY-2007 11:12	chk		5.9370	
8-JUN-2007 08:19	chk		5.9249	

Quality Assurance Report. Generated 12-JUL-2007 11:14:27.42

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 : 0.298039 Std Deviation : 0.021915

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:40	chk		0.2967		
5-MAY-2007 11:12	chk		0.2835		
8-JUN-2007 08:19	chk		0.2922		

-- 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 : 9.467742 Std Deviation : 0.712137

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:40	chk		10.3333		
5-MAY-2007 11:12	chk		10.1667		
8-JUN-2007 08:19	chk		10.5000		

-- 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 : 348.050476 Std Deviation : 5.526649

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		347.0898	
5-MAY-2007 11:12	chk		347.0923	
8-JUN-2007 08:19	chk		347.1778	

-- 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 : 0.297686 Std Deviation : 0.024776

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

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

1-APR-2007 09:40	chk		0.2943	
5-MAY-2007 11:12	chk		0.2927	
8-JUN-2007 08:19	chk		0.2970	

-- 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 : 5.621659 Std Deviation : 0.105379

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		5.6075	
5-MAY-2007 11:12	chk		5.6414	
8-JUN-2007 08:19	chk		5.6225	

Quality Assurance Report. Generated 12-JUL-2007 11:14:28.91

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 : 0.001829 Std Deviation : 0.011304

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0030	
6-MAY-2007 10:21	bkg		0.0070	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----

Mean : 0.069734 Std Deviation : 0.681337

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:07	bkg		0.0030		
6-MAY-2007 10:21	bkg		0.0050		
9-JUN-2007 12:00	bkg		0.0040		

-- 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 : 0.003375 Std Deviation : 0.027324

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:07	bkg		0.0050		
6-MAY-2007 10:21	bkg		0.0040		
9-JUN-2007 12:00	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 : 0.010751 Std Deviation : 0.096162

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
2-APR-2007 07:07	bkg		0.0010		

6-MAY-2007 10:21 bkg 0.0020 | | |
 9-JUN-2007 12:00 bkg 0.0050 | | |

-- 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 : 0.068370 Std Deviation : 0.665558

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:07	bkg		0.0010		
6-MAY-2007 10:21	bkg		0.0010		
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.067437 Std Deviation : 0.656514

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:07	bkg		0.0020		
6-MAY-2007 10:21	bkg		0.0010		
9-JUN-2007 12:00	bkg		0.0040		

-- 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 : 0.043459 Std Deviation : 0.420406

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0030	
6-MAY-2007 10:21	bkg		0.0010	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.005063 Std Deviation : 0.040984

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0020	
6-MAY-2007 10:21	bkg		0.0010	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.002279 Std Deviation : 0.013566

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

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0010	
6-MAY-2007 10:21	bkg		0.0020	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.070924 Std Deviation : 0.684502

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0040	
6-MAY-2007 10:21	bkg		0.0030	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.004113 Std Deviation : 0.028892

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0010	
6-MAY-2007 10:21	bkg		0.0030	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----

Mean : 0.002681 Std Deviation : 0.013496

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

2-APR-2007 07:07	bkg		0.0010		
6-MAY-2007 10:21	bkg		0.0030		
9-JUN-2007 12:00	bkg		0.0060		

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

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

2-APR-2007 07:07	bkg		0.0010		
6-MAY-2007 10:21	bkg		0.0030		
9-JUN-2007 12:00	bkg		0.0060		

2-APR-2007 07:07	bkg		0.0010		
6-MAY-2007 10:21	bkg		0.0030		
9-JUN-2007 12:00	bkg		0.0060		

6-MAY-2007 10:21	bkg		0.0030		
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9-JUN-2007 12:00	bkg		0.0060		
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-- 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 : 0.002794 Std Deviation : 0.014489

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

2-APR-2007 07:07	bkg		0.0000		
6-MAY-2007 10:21	bkg		0.0040		
9-JUN-2007 12:00	bkg		0.0060		

2-APR-2007 07:07	bkg		0.0000		
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6-MAY-2007 10:21	bkg		0.0040		
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9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.012192 Std Deviation : 0.101669

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0040	
6-MAY-2007 10:21	bkg		0.0060	
9-JUN-2007 12:00	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 : 0.062144 Std Deviation : 0.590921

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0060	
6-MAY-2007 10:21	bkg		0.0050	
9-JUN-2007 12:00	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 : 0.068444 Std Deviation : 0.653742

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
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2-APR-2007 07:07 bkg	0.0040	
6-MAY-2007 10:21 bkg	0.0060	
9-JUN-2007 12:00 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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.062237 Std Deviation : 0.554729

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07 bkg			0.0040	
6-MAY-2007 10:21 bkg			0.0050	
9-JUN-2007 12:00 bkg			0.0130	

-- 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 : 0.112301 Std Deviation : 1.039762

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07 bkg			0.0060	
6-MAY-2007 10:21 bkg			0.0060	
9-JUN-2007 12:00 bkg			0.0250	

-- 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 : 0.071247 Std Deviation : 0.679446

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

2-APR-2007 07:07	bkg		0.0160	
6-MAY-2007 10:21	bkg		0.0090	
9-JUN-2007 12:00	bkg		0.0150	

Quality Assurance Report. Generated 12-JUL-2007 11:14:21.05

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 : 0.296750 Std Deviation : 0.038516

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		0.2959	
5-MAY-2007 11:12	chk		0.2948	
8-JUN-2007 08:19	chk		0.2928	

-- 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 : 8.370968 Std Deviation : 0.576892

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		9.0000	
5-MAY-2007 11:12	chk		8.6667	
8-JUN-2007 08:19	chk		8.5000	

-- 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 : 345.260529 Std Deviation : 8.887858

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		343.3436	
5-MAY-2007 11:12	chk		342.9446	
8-JUN-2007 08:19	chk		343.0359	

-- 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 : 0.299276 Std Deviation : 0.019255

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		0.2967	
5-MAY-2007 11:12	chk		0.2960	
8-JUN-2007 08:19	chk		0.2990	

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

-- Multi-Test Full Report --

Description : Energy Calibration Slope

Parameter Units : keV/chan Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2003 00:00 End Date : 30-MAY-2030 00:00
 Mean : 5.752758 Std Deviation : 0.235438

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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1-APR-2007 09:40	chk		5.7778	
5-MAY-2007 11:12	chk		5.8090	
8-JUN-2007 08:19	chk		5.8148	

Quality Assurance Report. Generated 12-JUL-2007 11:14:22.18

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 : 0.000569 Std Deviation : 0.000864

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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2-APR-2007 07:07	bkg		0.0000	
6-MAY-2007 10:21	bkg		0.0000	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.000692 Std Deviation : 0.001230

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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-----
2-APR-2007 07:07 bkg          0.0020  | | |
6-MAY-2007 10:21 bkg          0.0000  | | |
9-JUN-2007 12:00 bkg          0.0020  | | |

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-- 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 : 0.000528 Std Deviation : 0.000872

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0020	
6-MAY-2007 10:21	bkg		0.0000	
9-JUN-2007 12:00	bkg		0.0020	

-- 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 : 0.000791 Std Deviation : 0.001377

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0030	
6-MAY-2007 10:21	bkg		0.0000	
9-JUN-2007 12:00	bkg		0.0000	

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

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0030	
6-MAY-2007 10:21	bkg		0.0000	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.000704 Std Deviation : 0.000951

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0010	
6-MAY-2007 10:21	bkg		0.0010	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.000666 Std Deviation : 0.000886

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0000	
6-MAY-2007 10:21	bkg		0.0010	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----

Mean : 0.000829 Std Deviation : 0.001185

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:07	bkg		0.0000		
6-MAY-2007 10:21	bkg		0.0010		
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.000978 Std Deviation : 0.001221

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
2-APR-2007 07:07	bkg		0.0000		
6-MAY-2007 10:21	bkg		0.0000		
9-JUN-2007 12:00	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 : 0.001072 Std Deviation : 0.001258

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:07	bkg		0.0000		

6-MAY-2007 10:21 bkg 0.0000 | | |
 9-JUN-2007 12:00 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 : 0.001394 Std Deviation : 0.001560

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0020	
6-MAY-2007 10:21	bkg		0.0030	
9-JUN-2007 12:00	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 : 0.001162 Std Deviation : 0.001406

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0010	
6-MAY-2007 10:21	bkg		0.0020	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.001375 Std Deviation : 0.001627

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

2-APR-2007 07:07	bkg		0.0020	
6-MAY-2007 10:21	bkg		0.0020	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.001321 Std Deviation : 0.001720

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

2-APR-2007 07:07	bkg		0.0020	
6-MAY-2007 10:21	bkg		0.0020	
9-JUN-2007 12:00	bkg		0.0040	

-- 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 : 0.001761 Std Deviation : 0.001698

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0020	
6-MAY-2007 10:21	bkg		0.0010	
9-JUN-2007 12:00	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 : 0.002528 Std Deviation : 0.002316

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0040	
6-MAY-2007 10:21	bkg		0.0010	
9-JUN-2007 12:00	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 : 0.002475 Std Deviation : 0.002263

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
2-APR-2007 07:07	bkg		0.0040	
6-MAY-2007 10:21	bkg		0.0010	
9-JUN-2007 12:00	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 : 1-JAN-2002 00:00 End Date : -----
 Mean : 0.008944 Std Deviation : 0.015717

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:07	bkg		0.0050		
6-MAY-2007 10:21	bkg		0.0080		
9-JUN-2007 12:00	bkg		0.0130		

-- 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 : 0.008803 Std Deviation : 0.015309

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:07	bkg		0.0040		
6-MAY-2007 10:21	bkg		0.0090		
9-JUN-2007 12:00	bkg		0.0310		

-- 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 : 0.001809 Std Deviation : 0.002697

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:07	bkg		0.0010	
6-MAY-2007 10:21	bkg		0.0010	
9-JUN-2007 12:00	bkg		0.0050	

Quality Assurance Report. Generated 12-JUL-2007 11:14:40.01

QA Filename : \$DISK1:[ALP171.QA]GROUP_5_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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.247116 Std Deviation : 0.007902

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		0.2892	Ac
5-MAY-2007 11:12	chk		0.2733	Ac
6-MAY-2007 10:21	chk		0.2859	Ac
8-JUN-2007 08:19	chk		0.2921	Ac

-- 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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 7.000000 Std Deviation : 0.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		8.0000	Ac
5-MAY-2007 11:12	chk		8.0000	Ac
6-MAY-2007 10:21	chk		7.5000	Ac
8-JUN-2007 08:19	chk		8.0000	Ac

-- 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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 327.523956 Std Deviation : 0.073801

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		327.3987	
5-MAY-2007 11:12	chk		327.0861	Ac
6-MAY-2007 10:21	chk		327.0888	Ac
8-JUN-2007 08:19	chk		327.4407	

-- 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 : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.249854 Std Deviation : 0.002644

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:40	chk		0.2867	Ac
5-MAY-2007 11:12	chk		0.2866	Ac
6-MAY-2007 10:21	chk		0.2916	Ac
8-JUN-2007 08:19	chk		0.2936	Ac

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

-- Multi-Test Full Report --

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

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 10-JUL-2007 00:00 End Date : 30-MAY-2030 00:00
Mean : 5.916558 Std Deviation : 0.014300

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

1-APR-2007 09:40	chk		5.8908	
5-MAY-2007 11:12	chk		5.8831	In
6-MAY-2007 10:21	chk		5.9112	
8-JUN-2007 08:19	chk		5.8878	In

URANIUM ISOTOPIC
SAMPLE AND QC DATA

Lot No., Due Date: F7E100384; 06/07/2007
Client, Site: 456833; PHASE A WELLS Henderson, NV Source Area Inv.
QC Batch No., Method Test: 7134317; RUIISO Uiso by ALP
SDG, Matrix: ENSR0510RD; ,,

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

[Handwritten Signature]

Date

6/9/07



STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 7134317

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
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. QC Samples			
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 with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?			✓
C. Other			
1. Are all Nonconformances 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 Jorale Date: 6/4/17

PRIORITY

Balance Id:1120482733

Sample Preparation/Analysis

5/24/2007 1:33:29 PM

656833, ENSR International Corporation
ENSR International Corporation

7Y Uiso PrpRC5016/5086, SepRC5067(5039)
SR Uranium-234,235,238 by Alpha Spec
01 STANDARD TEST SET

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

PM, Quote: JAE, 75203

pCi/L

Prep Tech: Bocku

Batch: 7134317

SEQ Batch, Test: None

Count	On Off	CR Analyst,	Comments:
(24hr)	Circle	Init/Date	

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	Scr:	Alpha:	Beta:
1 JWP2L-1-AE F7E100384-13-SAMP 05/09/2007 14:35	397.00g,in		397.00g,in	397.00g	UITC17374 05/24/07.pd 01/20/04.L	500		Alpha: 2.74E-04 uCi/Sa	Beta: 3.67E-04 uCi/Sa	
2 JWP2N-1-AE F7E100384-14-SAMP 05/09/2007 14:15			398.00g,in	398.00g	UITC17375 05/24/07.pd 01/20/04.L			Alpha: 4.84E-04 uCi/Sa	Beta: 2.57E-04 uCi/Sa	
3 JWP2N-1-AF-X F7E100384-14-DUP 05/09/2007 14:15								Alpha: 4.84E-04 uCi/Sa	Beta: 2.57E-04 uCi/Sa	
4 JWP2P-1-AE F7E100384-15-SAMP 05/09/2007 15:30			401.20g,in	401.20g	UITC17376 05/24/07.pd 01/20/04.L			Alpha: 4.84E-04 uCi/Sa	Beta: 2.57E-04 uCi/Sa	
5 JWW92-1-AA-B J7E140000-317-BLK 05/09/2007 14:15			397.50g,in	397.50g	UITC17377 05/24/07.pd 01/20/04.L			Alpha: -2.68E-04 uCi/Sa	Beta: 1.47E-04 uCi/Sa	
6 JWW92-1-AC-C J7E140000-317-LCS 05/09/2007 14:15			403.70g,in	403.70g	UISF0554 05/24/07.pd 01/20/04.L			Alpha:	Beta:	

WO Cnt: 6

ISV - Insufficient Volume for Analysis

Page 1

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

STL Richland
Richland Wa.

Prep_SamplePrep v4.8.26

6/4/2007 1:01:33 PM

ICOC Fraction Transfer/Status Report

ByDate: 6/4/2006, 6/9/2007, Batch: '7134317', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
7134317				
AC	CalcC	BockJ	5/24/2007 1:27:35 PM	ICOC_RADCALC v4.8.26
SC		wagarr	IsBatched 5/14/2007 11:13:19 AM	rich-rc-5014 rEVISION 6
SC		BockJ	InPrep 5/24/2007 1:27:35 PM	RICH-RC-5016 REVISION 6
SC		BockJ	Prep1C 5/24/2007 1:33:33 PM	RICH-RC-5086 REV2
SC		HarveyK	InPrep2 5/29/2007 8:47:39 AM	RICH-RC-5086 REV2
SC		HarveyK	Prep2C 5/30/2007 7:43:38 PM	RICH-RC-5067 REV6
SC		HarveyK	InSep1 5/30/2007 7:44:05 PM	RICH-RC-5067 REV6
SC		HarveyK	Sep1C 5/31/2007 1:56:58 PM	RICH-RC-5039 REV5
SC		HarveyK	Sep2C 5/31/2007 8:15:11 PM	RICH-RC-5039 REV5
SC		DAWKINSO	InCnt1 5/31/2007 9:19:38 PM	RICH-RD-0008 REVISION 4
SC		BlackCL	CalcC 6/1/2007 7:21:48 AM	RICH-RD-0008 REVISION 4
AC		BockJ	5/24/2007 1:33:33 PM	
AC		HarveyK	5/29/2007 8:47:39	
AC		HarveyK	5/30/2007 7:43:38 PM	
AC		HarveyK	5/30/2007 7:44:05 PM	
AC		HarveyK	5/31/2007 1:56:58 PM	
AC		HarveyK	5/31/2007 8:15:11 PM	
AC		DAWKINSO	5/31/2007 9:19:38 PM	rEVISION 4
AC		BlackCL	6/1/2007 7:21:48 AM	

AC: Accepting Entry; SC: Status Change

STL Richland
Richland Wa.

Rpt DB Transfer log (Batch Results)

6/4/2007 1:01:31 PM

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
ENSR0510RD 9JWP2L10 F7E10038413 M31A-F WATER 5/10/2007 9:10:00 5/9/2007 2:35:00 PM										
U-234	7YSR	0	6/1/2007 1:24:12 AM	1.4001E+01	2.951E-01	1.118E+00	3.729E-02	pCi/L	1.007	3.97E-1
U-235	7YSR	0	6/1/2007 1:24:12 AM	2.7356E-01	4.136E-02	4.641E-02	3.729E-02	pCi/L	1.007	3.97E-1
U-238	7YSR	0	6/1/2007 1:24:12 AM	8.4896E+00	2.301E-01	6.93E-01	6.256E-02	pCi/L	1.007	3.97E-1
ENSR0510RD 9JWP2N10 F7E10038414 M31A-Z WATER 5/10/2007 9:10:00 5/9/2007 2:15:00 PM										
U-234	7YSR	0	6/1/2007 1:24:24 AM	1.3707E+01	2.949E-01	1.097E+00	7.597E-02	pCi/L	0.947	3.98E-1
U-235	7YSR	0	6/1/2007 1:24:24 AM	4.0799E-01	5.11E-02	6.001E-02	3.794E-02	pCi/L	0.947	3.98E-1
U-238	7YSR	0	6/1/2007 1:24:24 AM	8.0871E+00	2.266E-01	6.635E-01	7.217E-02	pCi/L	0.947	3.98E-1
ENSR0510RD 9JWP2P10 F7E10038415 EB050709-Z WATER 5/10/2007 9:10:00 5/9/2007 3:30:00 PM										
U-234	7YSR	0	6/1/2007 1:24:32 AM	3.062E-03	1.262E-02	1.262E-02	6.161E-02	pCi/L	0.984	4.012E-1
U-235	7YSR	0	6/1/2007 1:24:32 AM	9.1845E-03	9.184E-03	9.212E-03	3.673E-02	pCi/L	0.984	4.012E-1
U-238	7YSR	0	6/1/2007 1:24:32 AM	-1.5307E-02	1.015E-02	1.022E-02	6.986E-02	pCi/L	0.984	4.012E-1
ENSR0510RD JWW921AB J7E140000317 INTRA-LAB BLANK WATER 5/10/2007 9:10:00 5/9/2007 2:15:00 PM										
U-234	7YSR	0 B	6/1/2007 1:24:43 AM	-1.491E-02	1.606E-02	1.61E-02	8.688E-02	pCi/L	0.992	3.975E-1
U-235	7YSR	0 B	6/1/2007 1:24:43 AM	-8.947E-03	7.891E-03	7.921E-03	5.014E-02	pCi/L	0.992	3.975E-1
U-238	7YSR	0 B	6/1/2007 1:24:43 AM	8.9495E-03	1.55E-02	1.551E-02	6.806E-02	pCi/L	0.992	3.975E-1
ENSR0510RD JWW921CS J7E140000317 INTRA-LAB CHECK WATER 5/10/2007 9:10:00 5/9/2007 2:15:00 PM										
U-234	7YSR	0 S	6/1/2007 1:24:51 AM	2.287E+00	1.206E-01	2.139E-01	3.81E-02	pCi/L	2.3749E+00	0.947
U-235	7YSR	0 S	6/1/2007 1:24:51 AM	1.1117E-01	2.714E-02	2.847E-02	3.81E-02	pCi/L	1.0836E-01	0.947
U-238	7YSR	0 S	6/1/2007 1:24:51 AM	2.2235E+00	1.189E-01	2.089E-01	3.81E-02	pCi/L	2.4872E+00	0.947

7134317, **Samples Inserted | Updated | NotUpdated => 5 | 0 | 0,
 **Results Inserted | ReTestInserted | Updated | NotInserted => 15 | 0 | 0 | 0.
 **Diff RptDb | Qtimes => .

Alpha Spec, Ulso by ALP , Results

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	MLcC	MDC	QC	Yield	RYld
Ulso by ALP			Richland Standard Alplso Wo Blk Subt.											
Calc	SR	WATER	JWP2L1AE	U-234	1.40E+01	(1.12E+00)		pCi/L	R	1.02E-02	3.73E-02		101%	
Calc	SR	WATER	JWP2L1AE	U-235	2.74E-01	(4.64E-02)		pCi/L	R	1.02E-02	3.73E-02		101%	
Calc	SR	WATER	JWP2L1AE	U-238	8.49E+00	(6.93E-01)		pCi/L	R	2.29E-02	6.26E-02		101%	
Calc	SR	WATER	JWP2N1AE	U-234	1.37E+01	(1.10E+00)		pCi/L	R	2.94E-02	7.60E-02		95%	
Calc	SR	WATER	JWP2N1AE	U-235	4.08E-01	(6.00E-02)		pCi/L	R	1.04E-02	3.79E-02		95%	
Calc	SR	WATER	JWP2N1AE	U-238	8.09E+00	(6.64E-01)		pCi/L	R	2.75E-02	7.22E-02		95%	
Calc	SR	WATER	JWP2P1AE	U-234	3.06E-03	(1.26E-02)	U4	pCi/L	R	2.25E-02	6.16E-02		98%	
Calc	SR	WATER	JWP2P1AE	U-235	9.18E-03	(9.21E-03)	U4	pCi/L	R	1.01E-02	3.67E-02		98%	
Calc	SR	WATER	JWP2P1AE	U-238	-1.53E-02	(1.02E-02)	U4	pCi/L	R	2.66E-02	6.99E-02		98%	
Calc	SR	WATER	JWW921AA	U-234	-1.49E-02	(1.61E-02)	U4	pCi/L	R	3.54E-02	8.69E-02	B	99%	
Calc	SR	WATER	JWW921AA	U-235	-8.95E-03	(7.92E-03)	U4	pCi/L	R	1.70E-02	5.01E-02	B	99%	
Calc	SR	WATER	JWW921AA	U-238	8.95E-03	(1.55E-02)	U4	pCi/L	R	2.60E-02	6.81E-02	B	99%	
Calc	SR	WATER	JWW921AC	U-234	2.29E+00	(2.14E-01)		pCi/L	R	1.04E-02	3.81E-02	S	95%	96%
Calc	SR	WATER	JWW921AC	U-235	1.11E-01	(2.85E-02)		pCi/L	R	1.04E-02	3.81E-02	S	95%	103%
Calc	SR	WATER	JWW921AC	U-238	2.22E+00	(2.09E-01)		pCi/L	R	1.04E-02	3.81E-02	S	95%	89%

on
4E
6/4/07

() - (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

Alpha Spec, Also by ALP, Calculated Results Detailed Report

Batch Nbr: 7134317

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BIkLc/MDC	StdDV/MdC/LcC
0	05/31/07 21:14	U-232	1894	12	ALP1	ED	Y N	3.6496E-01	N	100%	N	1.0000E+00	4.5045E+02	1.0000E+00
			500.05	1000.1			Y	(1.095E-02)				(0.000E+00)	0.002519	
1	05/31/07 21:14	U-234	2252	0	ALP1	ED	N N	3.6496E-01	N	101%	N	1.0000E+00	4.5045E+02	1.0000E+00
			500.05	1000.1			Y	(1.095E-02)		5%		(0.000E+00)	0.002519	
2	05/31/07 21:14	U-235	44	0	ALP1	ED	N N	3.6496E-01	N	101%	N	1.0000E+00	4.5045E+02	1.0000E+00
			500.05	1000.1			Y	(1.095E-02)		5%		(0.000E+00)	0.002519	
3	05/31/07 21:14	U-238	1368	5	ALP1	ED	N N	3.6496E-01	N	101%	N	1.0000E+00	4.5045E+02	1.0000E+00
			500.05	1000.1			Y	(1.095E-02)		5%		(0.000E+00)	0.002519	

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BIkLc/MDC	StdDV/MdC/LcC
0	06/01/07	U-232	R	11.73803			10.345205	10.345205	0.397 L	101%				
				(0.736076)			(0.391506)	(0.391506)	(0.173205)					
0	06/01/07	U-234	R	14.001085			12.339726	12.339726	0.397 L	101%				
				(1.117724)			(0.767927)	(0.767927)	(0.173205)					
0	06/01/07	U-235	R	0.273556			0.241096	0.241096	0.397 L	101%				
				(0.046412)			(0.039088)	(0.039088)	(0.173205)					
0	06/01/07	U-238	R	8.489555			7.482192	7.482192	0.397 L	101%				
				(0.692993)			(0.482766)	(0.482766)	(0.173205)					

Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	05/31/07 21:14	U-232	1827	7	ALP3	ED	Y N	N	3.7764E-01	(1.133E-02)	N	100%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00	
			500.0833333	1000.1333			Y	N	(1.133E-02)					(0.000E+00)	0.002513			
1	05/31/07 21:14	U-234	2171	8	ALP3	ED	N N	N	3.7764E-01	(1.133E-02)	N	95%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00	
			500.0833333	1000.1333			Y	N	(1.133E-02)					(0.000E+00)	0.002513			
2	05/31/07 21:14	U-235	65	1	ALP3	ED	N N	N	3.7764E-01	(1.133E-02)	N	95%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00	
			500.0833333	1000.1333			Y	N	(1.133E-02)					(0.000E+00)	0.002513			
3	05/31/07 21:14	U-238	1282	7	ALP3	ED	N N	N	3.7764E-01	(1.133E-02)	N	95%	N	1.0000E+00	1.0000E+00	4.5045E+02	1.0000E+00	
			500.0833333	1000.1333			Y	N	(1.133E-02)					(0.000E+00)	0.002513			

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

Alpha Spec, Uiso by ALP , Calculated Results

6/1/2007 7:16:54 AM

Batch Nbr: 7134317

Yield,EnFct Chem Yld,EFctU IDC/LcC

BIKLC/MDC StdDvMdc/LcC

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKLC/MDC	StdDvMdc/LcC
06/01/07	U-232	R	10.928105 (0.686835)			3.64639E+00 (8.5514E-02)	9.655646 (0.367673)	9.655646 (0.367673)	0.398 L (0.173205)	95%				
06/01/07	U-234	R	13.707276 (1.097402)			4.33328E+00 (9.3215E-02)	12.111211 (0.757255)	12.111211 (0.757255)	0.398 L (0.173205)	95%	0.07597 0.029431			
06/01/07	U-235	R	0.407992 (0.060005)			1.28978E-01 (1.6153E-02)	0.360486 (0.04986)	0.360486 (0.04986)	0.398 L (0.173205)	95%	0.037941 0.010406			
06/01/07	U-238	R	8.087101 (0.663547)			2.56657E+00 (7.1647E-02)	7.145446 (0.46484)	7.145446 (0.46484)	0.398 L (0.173205)	95%	0.07217 0.027531			

Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On	Date	AnalysisDate/PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy	Vol	Final/Count	Vol	
3	Calc	SR	WATER	*STLE	AlpisoWoBS	JWP2P1AE	PC/L	WATER														
0																						
1																						
2																						
3																						

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKLC/MDC	StdDvMdc/LcC
06/01/07	U-232	R	11.14836 (0.70008)			3.70088E+00 (8.6258E-02)	9.929453 (0.37722)	9.929453 (0.37722)	0.4012 L (0.173205)	98%				
06/01/07	U-234	R	0.003062 (0.012625)			1.00013E-03 (4.1229E-03)	0.002727 (0.011244)	0.002727 (0.011244)	0.4012 L (0.173205)	98%	0.06161 0.022522			
06/01/07	U-235	R	0.009185 (0.009212)			2.99993E-03 (2.9999E-03)	0.00818 (0.008194)	0.00818 (0.008194)	0.4012 L (0.173205)	98%	0.036725 0.010072			
06/01/07	U-238	R	-0.015307 (0.010222)			-4.99960E-03 (3.3164E-03)	-0.013633 (0.009079)	-0.013633 (0.009079)	0.4012 L (0.173205)	98%	0.069858 0.026648			

Sq	Status	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On	Date	AnalysisDate/PptWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy	Vol	Final/Count	Vol	
4	Calc	SR	WATER	*STLE	AlpisoWoBS	JWW921AA	PC/L	WATER														
0																						

QC/BB Sa/On Date 05/09/07 15:30 06/01/07 01:24
 QC/BB Sa/On Date 05/09/07 14:15 06/01/07 01:24
 UITC17376 Alq 401.20 g
 UITC17377 Alq 397.50 g
 RecCnt:4
 RADCALC v4.8.26
 STL Richland

() - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU
 IDC - Instrument Detection Level in Conc Units, MDC - 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: 7134317

Alpha Spec, Also by ALP , Calculated Results

6/1/2007 7:16:55 AM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
1	05/31/07 21:14	U-234	4	13		ALP5 ED	N N	3.8285E-01 (1.149E-02)	N	99%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.002516	1.0000E+00
2	05/31/07 21:14	U-235	0	3		ALP5 ED	N N	3.8285E-01 (1.149E-02)	N	99%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.002516	1.0000E+00
3	05/31/07 21:14	U-238	5	7		ALP5 ED	N N	3.8285E-01 (1.149E-02)	N	99%	N	1.0000E+00 (0.000E+00)	4.5045E+02 0.002516	1.0000E+00

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
06/01/07	U-232		R	11.414581 (0.714715)		3.85636E+00 (8.7968E-02)	10.072807 (0.37962)	10.072807 (0.37962)	0.3975 L (0.173205)	99%				
06/01/07	U-234		R	-0.01491 (0.016102)	U4	-4.99808E-03 (5.3841E-03)	-0.013157 (0.014194)	-0.013157 (0.014194)	0.3975 L (0.173205)	99%			0.086881 0.035379	
06/01/07	U-235		R	-0.008947 (0.007921)	U4	-2.99925E-03 (2.6452E-03)	-0.007895 (0.006979)	-0.007895 (0.006979)	0.3975 L (0.173205)	99%			0.050136 0.016995	
06/01/07	U-238		R	0.008949 (0.015513)	U4	3.00008E-03 (5.1952E-03)	0.007897 (0.013684)	0.007897 (0.013684)	0.3975 L (0.173205)	99%			0.068056 0.025961	

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
06/01/07	U-232		R	10.642687 (0.670434)		3.53788E+00 (8.4330E-02)	9.538135 (0.365469)	9.538135 (0.365469)	0.4037 L (0.173205)	95%				
06/01/07	U-234		R	2.287006 (0.213868)		7.19976E-01 (3.7959E-02)	2.049648 (0.161971)	2.049648 (0.161971)	0.4037 L (0.173205)	95%			0.038103 0.01045	
06/01/07	U-235		R	0.111174 (0.028465)		3.49900E-02 (8.5437E-03)	0.099636 (0.02502)	0.099636 (0.02502)	0.4037 L (0.173205)	95%			0.038103 0.01045	
06/01/07	U-238		R	2.223477 (0.208869)		6.99977E-01 (3.7429E-02)	1.992714 (0.15847)	1.992714 (0.15847)	0.4037 L (0.173205)	95%			0.038103 0.01045	

QC/Tracer Vial Mult/EntYld Total/Analy Vol Final/Count Vol
 UISF0554 1 403.70 g
 UISF0554 Aliq

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

URANIUM ISOTOPIC COUNTING REQUEST

6/1/0534

SOP's
Operating: RICHRD008
Review: RICHRD0016

Counting Time 500 Minutes
Sample _____

Background See Alpha Regions Report

7134317

C.R. Technician OP

Date Counted 5/31/07

ENS 5/9/07

WorkOrder #	U-232 (5320 KeV) Tracer	TOTAL COUNTS			Det #	Comments/Edits
		U-238 (4196 KeV)	U-235 (4396 KeV)	U-234 (4776 KeV)		
JWP2LIAE	See Counting Room Printout for ROI information				1	
JWP2NIAE	See Counting Room Printout for ROI information				3	
JWP2PIAE	See Counting Room Printout for ROI information				4	
JWW921AA	See Counting Room Printout for ROI information				5	
JWW921AC	See Counting Room Printout for ROI information				6	
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
	See Counting Room Printout for ROI information					
Comments:						

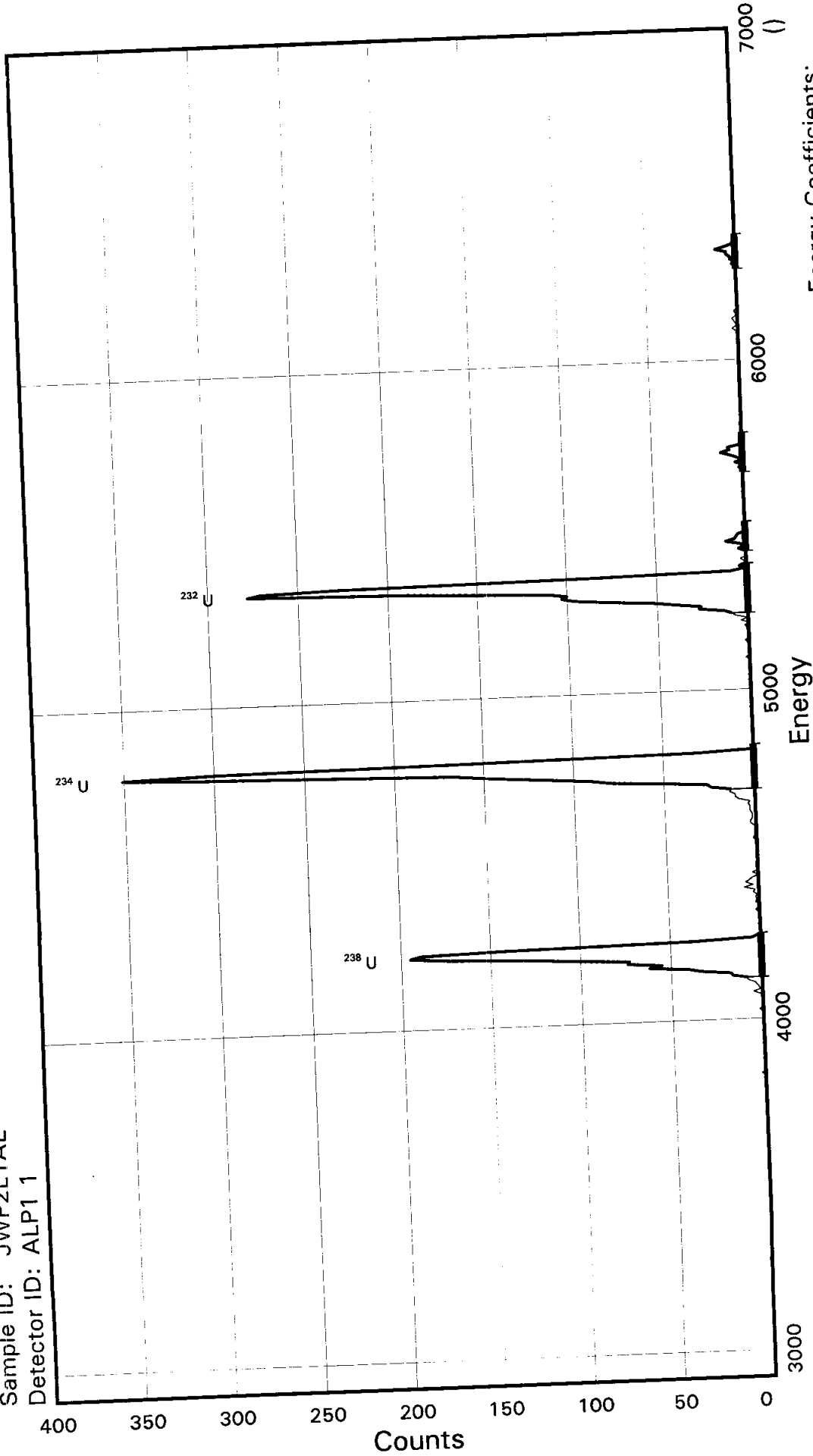
Approved by: S

Date: 6/1/07

STL Richland WA.
U ENS

Batch ID: 7134317

Sample ID: JWP2L1AE
Detector ID: ALP1 1



Energy Coefficients:
Offset: 2.89808E + 03
Slope: 7.41907E + 00
Quadrature: 1.08555E-04

Acquisition Start: 31-MAY-2007 21:14:10.89
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:03.00

SAMPLE IDENTIITY: JWP2L1AE

TITLE : U ENS

DETECTOR : ALP1 1
CONFIGURATION NAME : \$DISK1:[ALP1.SAMPLE]JWP2L1AE_310572114.CNF;1

ACQUIRE DATE of BACKGROUND: 03-MAY-2007 08:44:01

REPORT DATE : 01-Jun-07 SAMPLE DATE: 09-MAY-2007 12:00:00
ACQUIRE DATE: 31-MAY-2007 21:14:10 CALIB DATE : 03-MAY-2007 01:30:25

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:03

OFFSET : 2898.08 keV CONSTANT FWHM : 8.66667 Channels
SLOPE : 7.41907 keV/C SENSITIVITY : 4.00000 Std Dev's
QUAD COEFF : 1.085550E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JWP2L1AE

Flags Key

Detector: ALP1 1
 Report Date: 01-Jun-07 05:34 AM
 Acquire Date: 31-MAY-2007 21:14:10.89
 Tracer Nuclide: U-232
 High Counts Limit: 36
 Sample Live Time: 500 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	Right Chnl	Left Wdth	Right Wdth	Flags
U-232	1894	12	0	3.776	5328.5	149.8	313	333	0.00	0.00	P
U-234	2252	0	0	4.504	4782.9	134.5	242	260	0.00	0.00	P
U-235	44	0	0	0.088	4406.1	149.2	190	210	0.00	0.00	H
U-238	1368	5	0	2.731	4206.3	134.2	165	183	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

VMS Peak Search Report V1.9 Generated 1-JUN-2007 05:34:51

Configuration : \$DISK1:[ALP1.SAMPLE]JWP2L1AE_310572114.CNF;1
 Analyses by : ALPHA V1.8
 Sample title : U ENS
 Sample date : 9-MAY-2007 12:00:00 Acquisition date : 31-MAY-2007 21:14:10
 Sample ID : JWP2L1AE Sample quantity : 0.000000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP1 Detector geometry :
 Elapsed live time: 0 08:20:03.00 Elapsed real time: 0 08:20:03.00 0.0%
 Start energy : 2920.34 End energy : 6725.10
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4211.49	1368	0	44.51	176.58	165	18	4.56E-02	2.7	
2	0	4783.00	2252	0	51.93	253.13	242	18	7.51E-02	2.1	
3	0	5328.47	1894	0	51.93	326.03	313	20	6.31E-02	2.3	
4	0	5452.21	35	0	44.51	342.55	338	12	1.17E-03	16.9	
5	0	5718.66	47	0	37.10	378.09	370	16	1.57E-03	14.6	
6	0	6329.95	41	0	44.51	459.48	452	14	1.37E-03	15.6	

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP1.SAMPLE]JWP2L1AE_310572114.CNF;1

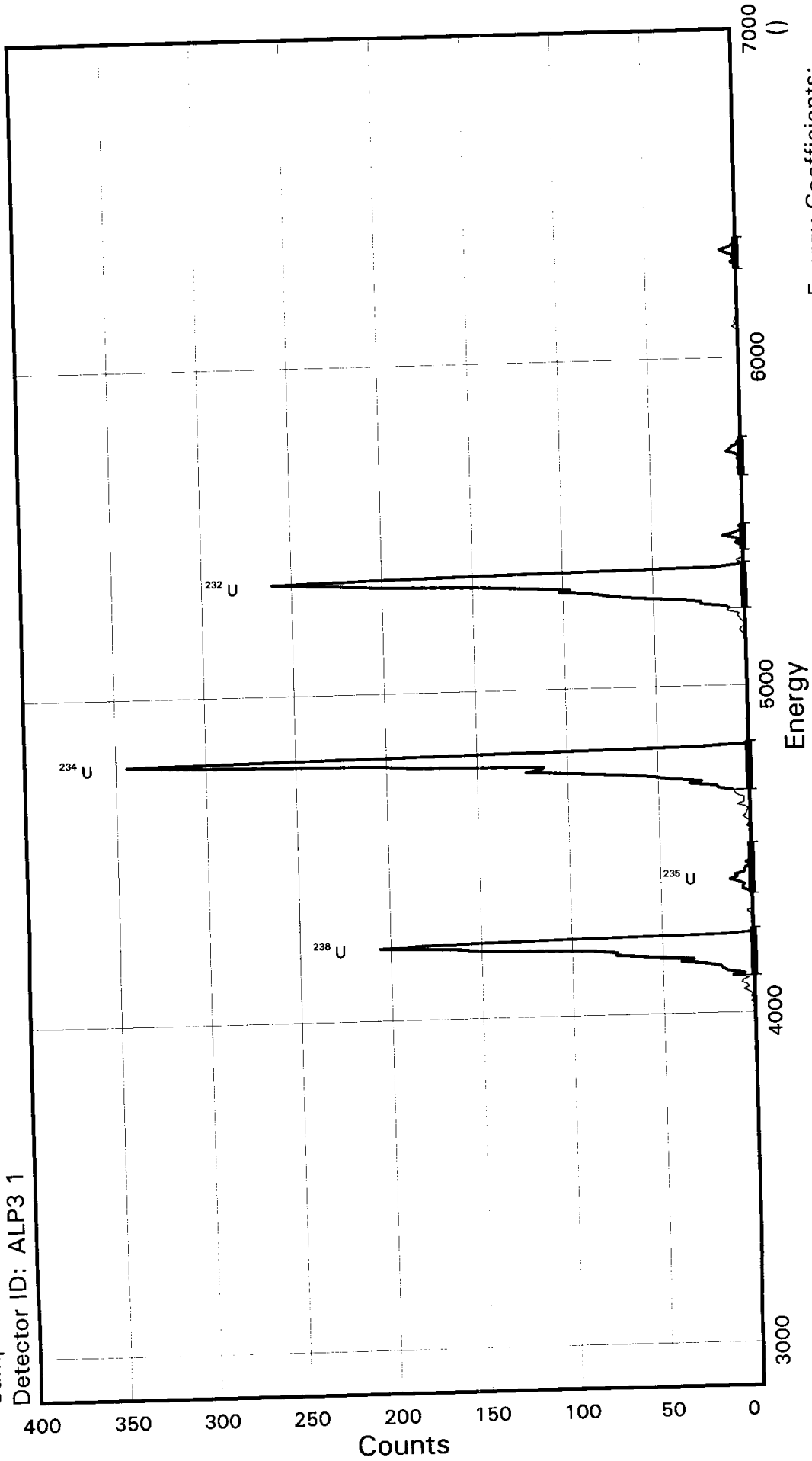
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4211.49	165	183	1368	1351	0.46		
4782.99	242	260	2252	2222	0.63		
5328.46	313	333	1894	1875	0.44		
5452.20	338	350	35	35	0.00		
5718.65	370	386	47	47	0.00		
6329.94	452	466	41	41	0.00		

End of Report

STL Richland WA.
U ENS

Batch ID: 7134317

Sample ID: JWP2N1AE
Detector ID: ALP3 1



Energy Coefficients:
Offset: 2.84539E + 03
Slope: 7.43950E + 00
Quadrature: -1.18585E-04

Acquisition Start: 31-MAY-2007 21:14:21.04
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:05.00

SAMPLE IDENTITY: JWP2N1AE

TITLE : U ENS

DETECTOR : ALP3 1
CONFIGURATION NAME : \$DISK1:[ALP3.SAMPLE]JWP2N1AE_310572114.CNF;1

ACQUIRE DATE of BACKGROUND: 03-MAY-2007 08:44:16

REPORT DATE : 01-Jun-07 SAMPLE DATE: 09-MAY-2007 12:00:00
ACQUIRE DATE: 31-MAY-2007 21:14:21 CALIB DATE : 03-MAY-2007 01:30:36

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:05

OFFSET : 2845.39 keV CONSTANT FWHM : 7.83333 Channels
SLOPE : 7.43950 keV/C SENSITIVITY : 4.00000 Std Dev's
QUAD COEFF : -.118585E-03 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JWP2N1AE

Flags Key

Detector: ALP3 1
 Report Date: 01-Jun-07 05:35 AM
 Acquire Date: 31-MAY-2007 21:14:21.04
 Tracer Nuclide: U-232
 High Counts Limit: 36
 Sample Live Time: 500 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	Intrscpt Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
U-232	1827	7	0	3.646	5330.0	139.9	323	342	0.00	0.00	P
U-234	2171	8	0	4.333	4784.4	147.6	248	268	0.00	0.00	P
U-235	65	1	0	0.129	4407.6	155.2	205	226	0.00	0.00	P
U-238	1282	7	0	2.557	4207.8	147.9	171	191	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

VMS Peak Search Report V1.9 Generated 1-JUN-2007 05:35:01

Configuration : \$DISK1:[ALP3.SAMPLE]JWP2N1AE_310572114.CNF;1
 Analyses by : ALPHA V1.8
 Sample title : U ENS
 Sample date : 9-MAY-2007 12:00:00 Acquisition date : 31-MAY-2007 21:14:21
 Sample ID : JWP2N1AE Sample quantity : 0.000000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP3 Detector geometry:
 Elapsed live time: 0 08:20:05.00 Elapsed real time: 0 08:20:05.00 0.0%
 Start energy : 2867.71 End energy : 6623.33
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1 0	4214.26	1282	0	44.64	184.54	171	20	4.27E-02	2.8	
2 0	4413.37	65	0	44.64	211.48	205	21	2.17E-03	12.4	
3 0	4787.70	2171	0	37.20	262.18	248	20	7.24E-02	2.1	
4 0	5330.01	1827	0	44.64	335.77	323	19	6.09E-02	2.3	
5 0	5456.76	31	0	37.20	353.00	347	11	1.03E-03	18.0	
6 0	5718.26	34	0	29.76	388.57	378	16	1.13E-03	17.1	
7 0	6327.27	31	0	29.76	471.57	464	13	1.03E-03	18.0	

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP3.SAMPLE]JWP2N1AE_310572114.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4214.25	171	191	1282	1276	0.17		
4413.37	205	226	65	67	-0.25		
4787.70	248	268	2171	2160	0.24		
5330.00	323	342	1827	1814	0.30		
5456.75	347	358	31	31	0.00		
5718.26	378	394	34	34	0.00		
6327.27	464	477	31	30	0.18		

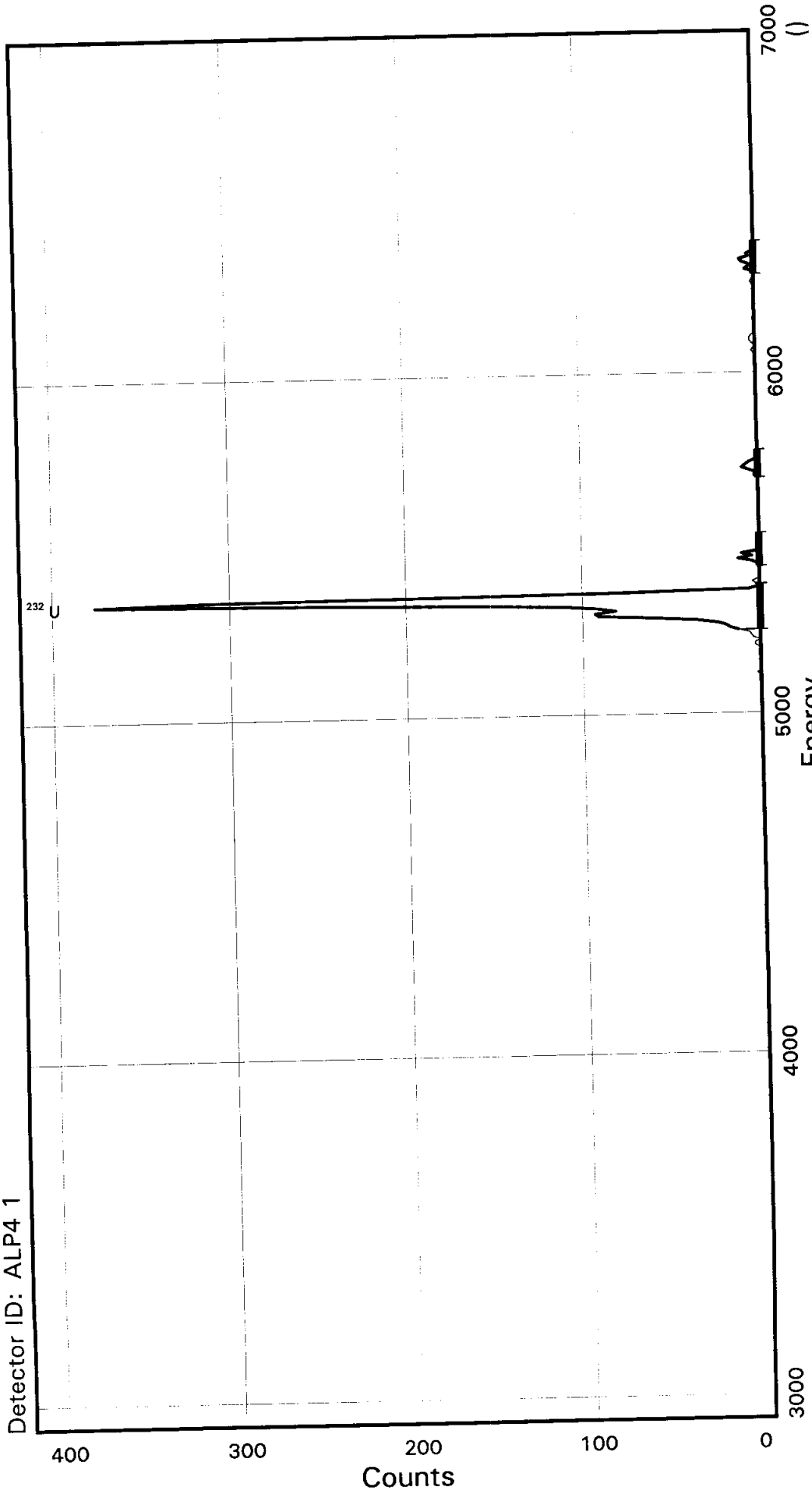
End of Report

STL Richland WA.

U ENS

Batch ID: 7134317

Sample ID: JWP2P1AE
Detector ID: ALP4 1



Energy Coefficients:
Offset: 2.91063E + 03
Slope: 7.36652E + 00
Quadrature: 1.22408E-04

Acquisition Start: 31-MAY-2007 21:14:31.40
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:01.00

SAMPLE IDENTIITY: JWP2P1AE

TITLE : U ENS

DETECTOR : ALP4 1
CONFIGURATION NAME : \$DISK1:[ALP4.SAMPLE]JWP2P1AE_310572114.CNF;1

ACQUIRE DATE of BACKGROUND: 03-MAY-2007 08:44:21

REPORT DATE : 01-Jun-07 SAMPLE DATE: 09-MAY-2007 12:00:00
ACQUIRE DATE: 31-MAY-2007 21:14:31 CALIB DATE : 03-MAY-2007 01:30:45

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:01

OFFSET : 2910.63 keV CONSTANT FWHM : 7.83333 Channels
SLOPE : 7.36652 keV/C SENSITIVITY : 4.00000 Std Dev's
QUAD COEFF : 1.224080E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JWP2P1AE

Flags Key

Detector: ALP4 1
 Report Date: 01-Jun-07 05:35 AM
 Acquire Date: 31-MAY-2007 21:14:31.40
 Tracer Nuclide: U-232
 High Counts Limit: 36
 Sample Live Time: 500 minutes
 Bkgnd Live Time: 1000 minutes

P: Peak Identified
 I: Peak Intersect
 S: Single Non-peak Intersect
 M: Multiple Non-peak Intersect
 H: High Non-peak Sample Count
 A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrsrct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth	Rght Wdth	Flags
U-232	1857	13	0	3.701	5337.2	134.0	315	333	0.00	0.00	P
U-234	3	5	0	0.001	4791.6	133.7	242	260	0.00	0.00	
U-235	2	1	0	0.003	4414.8	133.5	191	209	0.00	0.00	
U-238	1	7	0	-0.005	4215.0	133.4	164	182	0.00	0.00	

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

VMS Peak Search Report V1.9 Generated 1-JUN-2007 05:35:09

Configuration : \$DISK1:[ALP4.SAMPLE]JWP2P1AE_310572114.CNF;1
 Analyses by : ALPHA V1.8
 Sample title : U ENS
 Sample date : 9-MAY-2007 12:00:00 Acquisition date : 31-MAY-2007 21:14:31
 Sample ID : JWP2P1AE Sample quantity : 0.00000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP4 Detector geometry:
 Elapsed live time: 0 08:20:01.00 Elapsed real time: 0 08:20:01.00 0.0%
 Start energy : 2932.73 End energy : 6714.38
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5337.17	1857	0	29.47	327.62	315	18	6.19E-02	2.3	
2	0	5455.89	37	0	29.47	343.56	340	13	1.23E-03	16.4	
3	0	5723.86	31	0	29.47	379.50	375	11	1.03E-03	18.0	
4	0	6326.03	33	0	36.83	460.12	455	13	1.10E-03	17.4	

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP4.SAMPLE]JWP2P1AE_310572114.CNF;1

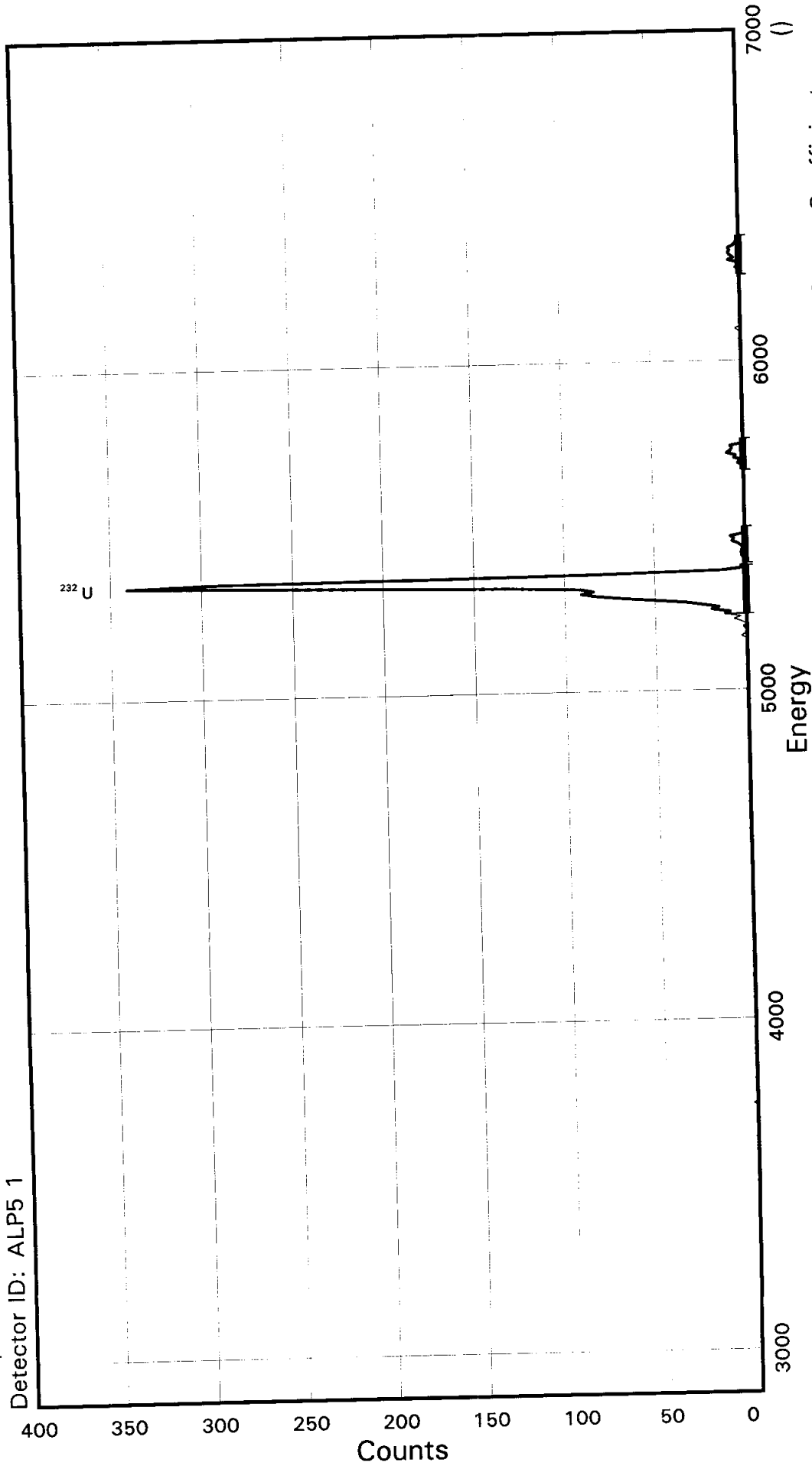
Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5337.16	315	333	1857	1836	0.49		
5455.88	340	353	37	37	0.00		
5723.85	375	386	31	32	-0.18		
6326.03	455	468	33	34	-0.17		

End of Report

STL Richland WA.
U ENS

Batch ID: 7134317

Sample ID: JWW921AA
Detector ID: ALP5 1



Energy Coefficients:
Offset: 2.84847E + 03
Slope: 7.38017E + 00
Quadrature: 4.40055E-05

Acquisition Start: 31-MAY-2007 21:14:40.46
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:05.00

SAMPLE IDENTIITY: JWW921AA

TITLE : U ENS

DETECTOR : ALP5 1
CONFIGURATION NAME : \$DISK1:[ALP5.SAMPLE]JWW921AA_310572114.CNF;1

ACQUIRE DATE of BACKGROUND: 03-MAY-2007 08:44:25

REPORT DATE : 01-Jun-07 SAMPLE DATE: 09-MAY-2007 12:00:00
ACQUIRE DATE: 31-MAY-2007 21:14:40 CALIB DATE : 03-MAY-2007 01:31:04

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:05

OFFSET : 2848.47 keV CONSTANT FWHM : 7.33333 Channels
SLOPE : 7.38017 keV/C SENSITIVITY : 4.00000 Std Dev's
QUAD COEFF : 4.400550E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JWW921AA

Flags Key

Detector: ALP5 1 Report Date: 01-Jun-07 05:35 AM Acquire Date: 31-MAY-2007 21:14:40.46 Tracer Nuclide: U-232 High Counts Limit: 36 Sample Live Time: 500 minutes Bkgnd Live Time: 1000 minutes	P: Peak Identified I: Peak Intersect S: Single Non-peak Intersect M: Multiple Non-peak Intersect H: High Non-peak Sample Count A: Altered via ALP-RGN-EDIT
--	---

Nuclide Name	Smpl Count	Bkg Count	Intrsrct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl	Left Wdth	Right Wdth	Flags
U-232	1933	9	0	3.856	5337.3	148.2	322	342	0.00	0.00	P
U-234	4	13	0	-0.005	4791.8	148.1	248	268	0.00	0.00	
U-235	0	3	0	-0.003	4415.0	148.0	197	217	0.00	0.00	
U-238	5	7	0	0.003	4215.2	147.9	170	190	0.00	0.00	

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

VMS Peak Search Report V1.9 Generated 1-JUN-2007 05:35:21

```

Configuration      : $DISK1:[ALP5.SAMPLE]JWW921AA_310572114.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : U ENS
Sample date       : 9-MAY-2007 12:00:00   Acquisition date : 31-MAY-2007 21:14:40
Sample ID        : JWW921AA               Sample quantity  : 0.00000E+00 LITER
Sample type      : disk                   Sample geometry  :
Detector name    : ALP5                   Detector geometry:
Elapsed live time: 0 08:20:05.00          Elapsed real time: 0 08:20:05.00   0.0%
Start energy     : 2870.61                 End energy       : 6638.65
Sensitivity      : 4.00                     Sum Sensitivity  : 1.00
  
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5337.33	1933	0	29.52	336.56	322	20	6.44E-02	2.3	
2	0	5456.12	38	0	29.52	352.59	343	15	1.27E-03	16.2	
3	0	5720.75	43	0	36.90	388.29	381	13	1.43E-03	15.2	
4	0	6327.77	41	0	51.66	470.12	461	16	1.37E-03	15.6	

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP5.SAMPLE]JWW921AA_310572114.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
5337.32	322	342	1933	1921	0.27		
5456.12	343	358	38	37	0.16		
5720.75	381	394	43	43	0.00		
6327.76	461	477	41	41	0.00		

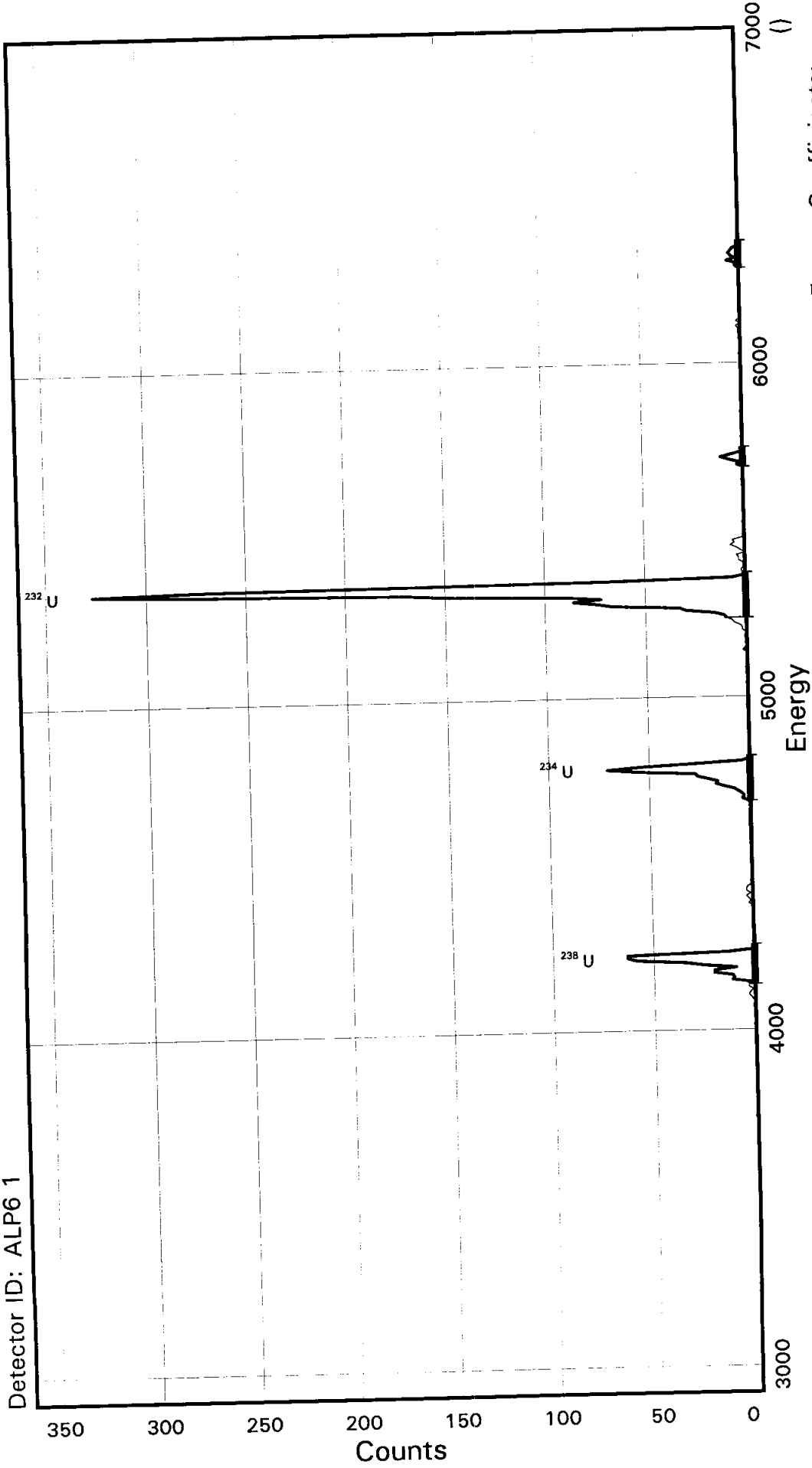
End of Report

STL Richland WA.

U ENS

Batch ID: 7134317

Sample ID: JWW921AC
Detector ID: ALP6 1



Energy Coefficients:
Offset: 2.89956E+03
Slope: 7.41732E+00
Quadrature: 1.54348E-04

Acquisition Start: 31-MAY-2007 21:14:50.67
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:01.00

SAMPLE IDENTIITY: JWW921AC

TITLE : U ENS

DETECTOR : ALP6 1
CONFIGURATION NAME : \$DISK1:[ALP6.SAMPLE]JWW921AC_310572114.CNF;1

ACQUIRE DATE of BACKGROUND: 03-MAY-2007 08:44:29

REPORT DATE : 01-Jun-07 SAMPLE DATE: 09-MAY-2007 12:00:00
ACQUIRE DATE: 31-MAY-2007 21:14:50 CALIB DATE : 03-MAY-2007 01:31:39

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:01

OFFSET : 2899.56 keV CONSTANT FWHM : 7.00000 Channels
SLOPE : 7.41732 keV/C SENSITIVITY : 4.00000 Std Dev's
QUAD COEFF : 1.543480E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JWW921AC

Flags Key

Detector: ALP6 1
 Report Date: 01-Jun-07 05:35 AM
 Acquire Date: 31-MAY-2007 21:14:50.67
 Tracer Nuclide: U-232
 High Counts Limit: 36
 Sample Live Time: 500 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	Intrstct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Right Chnl	Left Wdth Mult	Right Wdth Mult	Flags
U-232	1775	12	0	3.538	5330.6	135.3	313	331	0.00	0.00	P
U-234	360	0	0	0.720	4785.0	134.9	240	258	0.00	0.00	P
U-235	18	1	0	0.035	4408.2	134.6	190	208	0.00	0.00	P
U-238	350	0	0	0.700	4208.4	119.5	166	182	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

VMS Peak Search Report V1.9 Generated 1-JUN-2007 05:35:27

Configuration : \$DISK1:[ALP6.SAMPLE]JWW921AC_310572114.CNF;1
 Analyses by : ALPHA V1.8
 Sample title : U ENS
 Sample date : 9-MAY-2007 12:00:00 Acquisition date : 31-MAY-2007 21:14:50
 Sample ID : JWW921AC Sample quantity : 0.00000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP6 Detector geometry:
 Elapsed live time: 0 08:20:01.00 Elapsed real time: 0 08:20:01.00 0.0%
 Start energy : 2921.82 End energy : 6737.69
 Sensitivity : 4.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4214.17	350	0	29.67	176.59	166	16	1.17E-02	5.3	
2	0	4785.48	360	0	37.09	252.93	240	18	1.20E-02	5.3	
3	0	5330.56	1775	0	29.67	325.54	313	18	5.92E-02	2.4	
4	0	5714.64	31	0	29.67	376.58	373	8	1.03E-03	18.0	
5	0	6316.79	27	0	51.92	456.37	452	11	9.00E-04	19.2	

Alpha Spectrum Listing
(Version: 1-Apr-07)

Sample Identity: JWW921AC
 Detector: ALP6 1
 Report Date: 01-Jun-07 05:35 AM
 Acquire Date: 31-MAY-2007 21:14:50.67

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	0	101	0	151	2+	201	27+	251	1	301	1	351	0	401	0	451	0	501	
		2	0	52	0	102	0	152	3+	202	55+	252	0	302	0	352	0	402	0	452	0	502	
0		3	0	53	0	103	0	153	1+	203	71+	253	1	303	0	353	0	403	2	453	0	503	
0		4	0	54	0	104	0	154	3+	204	54+	254	0	304	0	354	0	404	1	454	0	504	
0		5	0	55	0	105	0	155	3+	205	28+	255	1	305	0	355	0	405	6	455	0	505	
0		6	0	56	0	106	0	156	2+	206	4+	256	1	306	0	356	0	406	2	456	0	506	
0		7	0	57	0	107	1	157	0+	207	0+	257	0	307	0	357	0	407	4	457	0	507	
0		8	0	58	0	108	1	158	1+	208	1	258	2	308	0	358	0	408	5	458	0	508	
0		9	0	59	0	109	0	159	0	209	0	259	2	309	0	359	0	409	4	459	0	509	
0		10	0	60	0	110	1	160	0	210	0	260	3	310	0	360	0	410	3	460	0	510	
0		11	0	61	0	111	2	161	0	211	0	261	6	311	0	361	0	411	0	461	0	511	
0		12	0	62	0	112	3	162	0	212	0	262	7	312	0	362	0	412	0	462	0	512	
0		13	0	63	1	113	2	163	0	213	0	263	10+	313	0	363	0	413	0	463			
0		14	0	64	0	114	1	164	0	214	0	264	11+	314	0	364	0	414	0	464			
0		15	0	65	0	115	3	165	0	215	0	265	16+	315	0	365	0	415	0	465			
0		16	0	66	0	116	3+	166	0	216	0	266	30+	316	0	366	0	416	0	466			
0		17	0	67	0	117	2+	167	0	217	0	267	33+	317	0	367	0	417	0	467			
0		18	0	68	0	118	11+	168	0	218	0	268	66+	318	1	368	1	418	0	468			
0		19	1	69	0	119	10+	169	0	219	0	269	74+	319	0	369	0	419	0	469			
0		20	0	70	0	120	11+	170	0	220	0	270	86+	320	0	370	0	420	0	470			
0		21	0	71	0	121	20+	171	0	221	0	271	72+	321	0	371	0	421	0	471			
0		22	0	72	0	122	20+	172	0	222	0	272	90+	322	0	372	0	422	0	472			
0		23	0	73	0	123	9+	173	1	223	0	273	148+	323	0	373	0	423	0	473			
0		24	0	74	0	124	25+	174	0	224	0	274	170+	324	3	374	1	424	0	474			
0		25	0	75	0	125	34+	175	0	225	0	275	272+	325	2	375	0	425	0	475			
0		26	0	76	0	126	58+	176	0	226	0	276	327+	326	7	376	1	426	0	476			
0		27	0	77	0	127	63+	177	0	227	1	277	274+	327	11	377	1	427	0	477			
0		28	0	78	0	128	63+	178	0	228	1	278	70+	328	6	378	1	428	0	478			
0		29	0	79	0	129	13+	179	0	229	0	279	7+	329	1	379	2	429	0	479			
0		30	0	80	0	130	0+	180	1	230	0	280	0+	330	0	380	0	430	0	480			
0		31	0	81	0	131	0+	181	1	231	0	281	1	331	0	381	2	431	0	481			
0		32	0	82	0	132	0	182	1	232	0	282	2	332	0	382	0	432	0	482			
0		33	0	83	0	133	1	183	1	233	0	283	1	333	0	383	0	433	0	483			
0		34	0	84	0	134	0	184	1	234	0	284	1	334	0	384	0	434	0	484			
0		35	0	85	0	135	0	185	1	235	0	285	1	335	1	385	0	435	0	485			
0		36	0	86	0	136	0	186	1	236	0	286	3	336	0	386	0	436	0	486			
0		37	0	87	0	137	0	187	0	237	1	287	3	337	0	387	0	437	0	487			
0		38	0	88	0	138	0	188	1	238	0	288	4	338	0	388	0	438	0	488			
0		39	0	89	0	139	0	189	1	239	0	289	0	339	0	389	0	439	0	489			
0		40	0	90	0	140	0+	190	1+	240	0	290	2	340	0	390	0	440	0	490			
0		41	0	91	0	141	0+	191	4+	241	1	291	4	341	0	391	0	441	0	491			
0		42	0	92	0	142	0+	192	3+	242	0	292	7	342	0	392	0	442	0	492			
1		43	0	93	0	143	0+	193	4+	243	1	293	5	343	0	393	0	443	0	493			
0		44	0	94	0	144	0+	194	6+	244	0	294	6	344	0	394	0	444	0	494			
0		45	0	95	0	145	0+	195	8+	245	0	295	1	345	1	395	0	445	0	495			
1		46	0	96	0	146	0+	196	13+	246	0	296	1	346	0	396	0	446	0	496			
0		47	0	97	0	147	0+	197	17+	247	0	297	0	347	0	397	0	447	0	497			
0		48	0	98	0	148	0+	198	16+	248	0	298	0	348	0	398	0	448	0	498			
0		49	0	99	0	149	2+	199	21+	249	0	299	0	349	0	399	0	449	0	499			
0		50	0	100	1	150	1+	200	26+	250	2	300	0	350	0	400	0	450	0	500			

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP6.SAMPLE]JWW921AC_310572114.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/StDev	Overlap Counts	Multiplet Diff/StDev
4214.17	166	182	350	342	0.43		
4785.48	240	258	360	359	0.05		
5330.56	313	331	1775	1757	0.43		
5714.64	373	381	31	30	0.18		
6316.78	452	463	27	27	0.00		

End of Report

URANIUM ISOTOPIC
STANDARDS AND TRACEABILITY

Standard Material Fractions (Vials)

Vial Prep: 6/ 3/06 to 6/ 5/07, SMFractionIdentifier Between UITC17374 and UITC17377, 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: U23206A000		Ref: 1/20/2004	2.0630E+02 ± 6.808E+00 DPM/G			
UITC17374	U-232	1.0273E+01 ± 3.402E-01 DPM	0.0515 g	5/24/2007 5/24/2007	Armstron	1.9948E+02 ± 6.583E+00 DPM/G
UITC17375	U-232	1.0194E+01 ± 3.376E-01 DPM	0.0511 g	5/24/2007 5/24/2007	Armstron	1.9948E+02 ± 6.583E+00 DPM/G
UITC17376	U-232	1.0094E+01 ± 3.343E-01 DPM	0.0506 g	5/24/2007 5/24/2007	Armstron	1.9948E+02 ± 6.583E+00 DPM/G
UITC17377	U-232	1.0154E+01 ± 3.363E-01 DPM	0.0509 g	5/24/2007 5/24/2007	Armstron	1.9948E+02 ± 6.583E+00 DPM/G
		1.0179E+001 ± 7.530E-002 (4)	0.740%	1.0094E+001 , 1.0273E+001		

Standard Material Fractions (Vials)

Vial Prep: 6/ 3/06 to 6/ 5/07, SMFractionIdentifier Like: UISF0554%, 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:	U23206A000	Ref: 1/20/2004	2.0630E+02	± 6.808E+00	DPM/G
UISF0554	U-232	1.0074E+01 ± 3.336E-01 DPM	0.0505 g	5/24/2007	5/24/2007	Armstron 1.9948E+02 ± 6.583E-00 DPM/G

5.0369E+000 ± 7.123E+000 (2) 1.0074E+001 , 1.0074E+001

U23206A

U23206A000
Ref. 6085
1.92E+4 ± 1.49E+6
dpm/g
8/29/05 REF



U23206A100
Ref. 6056
20.08 ± 0.665
dpm/g
4/21/06 DVF

ISOTOPE DILUTION RECORD

1) Prepared by	<u>tda</u>	2) Date Prepared	<u>8/29/2005</u>
3) Source Identification Number / Ref. Number	<u>U23206A000</u>	<u>6085</u>	
4) Source Activity (dpm ± dpm/g)	<u>1.9200E+04</u>	±	<u>1.497E+06</u>
5) Percent error of Source Activity	<u>3.3</u>	%	
6) Weight of Source Material used (g)	<u>1.5692</u>		
7) (% Error) of Weight of Source Material used	<u>0.3059</u>	%	
8) Diluent	<u>1 M HCl</u>		
9) Total Weight of the Dilution (g)	<u>1500</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.0200</u>	%	
11) Specific Activity of Diluted Solution dpm/g	<u>2.0086E+01</u>	±	<u>6.657E-01</u>
12) Total Uncertainty	<u>3.314</u>	%	
13) Dilution Identification Number / Ref. Number	<u>U23206A100</u>	<u>6086</u>	
14) Calibration Reference Date	<u>1/20/2004</u>		
15) Isotope Inventory File update by/date	<u>tda</u>		<u>4/17/2006</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 U-232 2) Reference Number 6085

3) Half Life 69.9 yrs 4) Storage Location STDLAB

5) Source Identification Number U23206A000

CALIBRATION DATA

6) Activity as Received Units 3552 dps

7) Overall Uncertainty Percent 3.3%

8) Reference Date / Time 1/20/2004

9) Activity dpm/g 40869 ± 1348 dpm/g

10) Volume or Mass (ml/g) 5.21467 g

11) Calibrated by Analytics

12) Certificate Solution Number 67541-288

SURVEY DATA

13) Date Received 4/17/2006

14) Surveyed by tda

15) Survey Reading (Beta/Gamma) cpm <100 cpm

16) Survey Reading (Alpha) cpm <100 cpm

17) Activity Conversion 3552 dps * 60 / 5.21467 g =

40869 ± 1348 dpm/g

18) Remarks _____

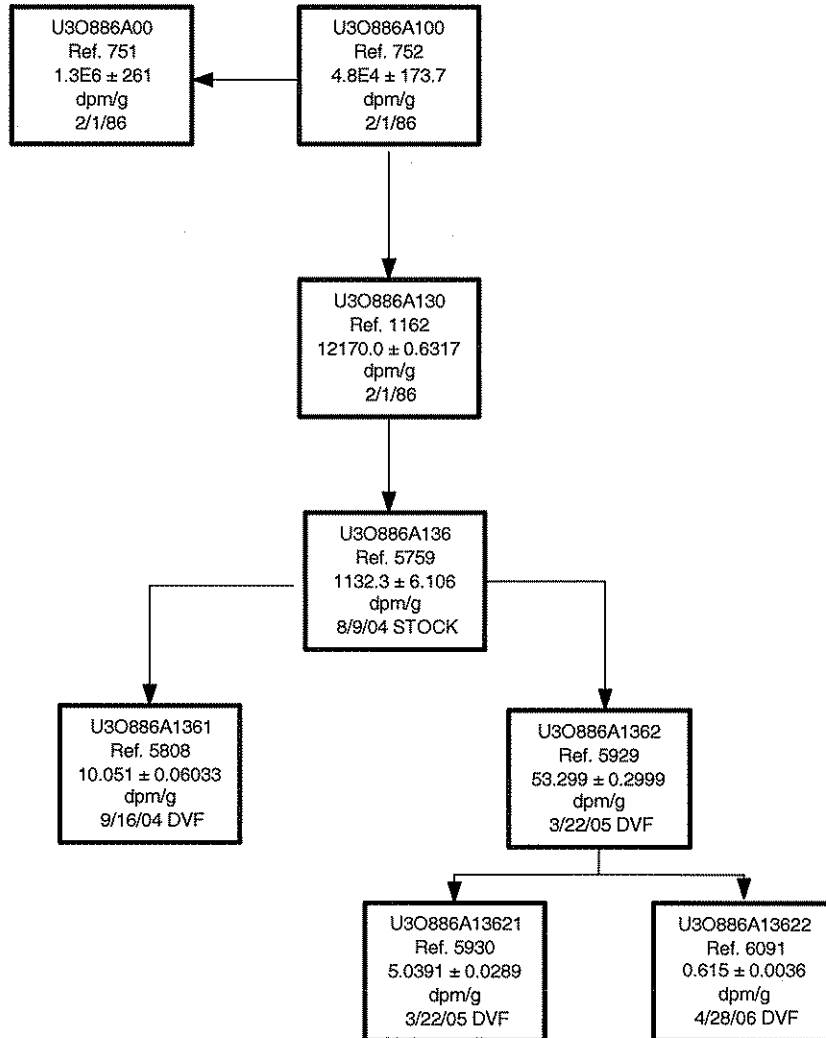
19) Isotope File Updated by 5/18/06 tda

20) QC Approved _____

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		
UISF0554	U	2.8963E+00 ± 1.684E-02 UG	0.0825 g	5/24/2007 5/24/2007	Armstron	3.5107E+01 ± 1.950E-01 UG/G
		2.8963E+000 ± 2.896E+000 (1)		2.8963E+000 , 2.8963E+000		

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decay	Activity/Concentration
Parent Standard: U3O886A1362		Ref: 3/22/2005	5.3995E+01 ± 2.999E-01	DPM/G			
UISF0554	UI50	4.4546E+00 ± 2.589E-02 DPM	0.0825 g	5/24/2007 5/24/2007	Armstron	5.3995E+01 ± 2.999E-01	DPM/G
		4.4546E+000 ± 4.455E+000 (1)	4.4546E+000 , 4.4546E+000				

U3088A136
Link



ISOTOPE DILUTION RECORD

1) Prepared by <u>tda</u>	2) Date Prepared	<u>5/8/2006</u>
3) Source Identification Number / Ref. Number	<u>U30886A1362</u>	<u>5929</u>
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>	%
12) Specific Activity of Diluted Solution dpm/g	<u>3.1241E+00</u>	± <u>1.777E-02</u>
13) Specific Activity of Diluted Solution ug/g	<u>2.0313E+00</u>	± <u>1.155E-02</u>
14) Specific Activity of Diluted Solution ug/ml	<u>2.1654E+00</u>	± <u>1.232E-02</u>
15) Total Uncertainty	<u>0.569</u>	%
16) Dilution Identification Number / Ref. Number	<u>U30886A13623</u>	<u>6103</u>
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	

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 = $\sqrt{(\% \text{ error of Source Activity}^2 + \% \text{ error of Wt. Used}^2 + \% \text{ error of Dilution Wt.}^2)}$

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 _____

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>
3) Source Identification Number / Ref. Number	<u>U30886A130</u>	<u>1162</u>	
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>	%	
12) Specific Activity of Diluted Solution dpm/g	<u>1.1323E+03</u>	±	<u>6.106E+00</u>
13) Specific Activity of Diluted Solution ug/g	<u>7.3623E+02</u>	±	<u>3.970E+00</u>
14) Total Uncertainty	<u>0.539</u>	%	
15) Dilution Identification Number / Ref. Number	<u>U30886A136</u>	<u>5759</u>	
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		

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 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

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>
3) Source Identification Number / Ref. Number	<u>U3O886A000</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>	%	
12) Specific Activity of Diluted Solution dpm/g	<u>4.7985E+04</u>	±	<u>1.731E+02</u>
13) Specific Activity of Diluted Solution ug/g	<u>3.1200E+04</u>	±	<u>1.125E+02</u>
14) Total Uncertainty	<u>0.361</u>	%	
15) Dilution Identification Number / Ref. Number	<u>U3O886A100</u>	<u>752</u>	
16) Calibration Reference Date	<u>2/1/86</u>		
17) Isotope Inventory File update by/date	<u>D.D.</u>		<u>5/7/86</u>
18) Reviewed by/date	<u>D.M.</u>		<u>6/15/94</u>
19) Location	<u>PF-8</u>	20) Exhausted	<u>11/8/93</u>

CALCULATIONS

$$7) \% \text{ Error of Wt. used} = (0.0048 / \text{Weight of Source Material used} * 100) ^2$$

$$10) \% \text{ error of Dilution Wt.} = (0.3 / \text{Total Weight of Dilution} * 100) ^2$$

$$11) \text{ Specific Activity} = \text{Source Activity} * \text{Wt. of Source Material used} / \text{Total Wt. of the Dilution}$$

$$12) \% \text{ Total Uncertainty} = \sqrt{(\% \text{ error of Source Activity} ^2 + \% \text{ error of Wt. used} + \% \text{ error of Dilution Wt.})}$$

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 ± 0.002 percent

The stated uncertainty of ±0.002 percent associated with the certified value is the linear sum of 0.0016 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 0.0012 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 preferable 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 12-JUL-2007 11:41:12.34

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 : 0.386558 Std Deviation : 0.005615

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:27	chk		0.3892	
2-MAY-2007 08:47	chk		0.3928	
2-JUN-2007 12:01	chk		0.3821	

-- 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 : 7.311966 Std Deviation : 0.236258

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:27	chk		7.6667	
2-MAY-2007 08:47	chk		7.3333	
2-JUN-2007 12:01	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 : 357.613800 Std Deviation : 2.138167

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:27	chk		357.5912	
2-MAY-2007 08:47	chk		357.5509	
2-JUN-2007 12:01	chk		360.4585	

-- 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 : 0.396554 Std Deviation : 0.002025

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued) Page : 2				
1-APR-2007 09:27	chk		0.3964	
2-MAY-2007 08:47	chk		0.4006	In
2-JUN-2007 12:01	chk		0.3973	

-- 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 : 7.405946 Std Deviation : 0.057409

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:27	chk		7.3608	
2-MAY-2007 08:47	chk		7.3802	
2-JUN-2007 12:01	chk		7.3085	

Quality Assurance Report. Generated 12-JUL-2007 11:41:13.01

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 : 0.006682 Std Deviation : 0.002796

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0030	
3-MAY-2007 08:44	bkg		0.0050	
3-JUN-2007 09:23	bkg		0.0060	

-- 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 : 0.010852 Std Deviation : 0.004906

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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-----
2-APR-2007 07:06 bkg          0.0080  | | |
3-MAY-2007 08:44 bkg          0.0070  | | |
3-JUN-2007 09:23 bkg          0.0060  | | |
```

-- 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 : 0.002341 Std Deviation : 0.001559

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
-----
2-APR-2007 07:06 bkg          0.0050  | | |
3-MAY-2007 08:44 bkg          0.0030  | | |
3-JUN-2007 09:23 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 : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.010413 Std Deviation : 0.003666

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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```
-----
2-APR-2007 07:06 bkg          0.0070  | | |
3-MAY-2007 08:44 bkg          0.0110  | | |
3-JUN-2007 09:23 bkg          0.0070  | | |
```

-- 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 : 0.010267 Std Deviation : 0.004024

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0110	
3-MAY-2007 08:44	bkg		0.0140	
3-JUN-2007 09:23	bkg		0.0090	

-- 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 : 0.009486 Std Deviation : 0.003768

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0100	
3-MAY-2007 08:44	bkg		0.0140	
3-JUN-2007 09:23	bkg		0.0090	

-- 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 : 0.004926 Std Deviation : 0.003019

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0090		
3-MAY-2007 08:44	bkg		0.0090		
3-JUN-2007 09:23	bkg		0.0050		

-- 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 : 0.001951 Std Deviation : 0.001448

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
2-APR-2007 07:06	bkg		0.0040		
3-MAY-2007 08:44	bkg		0.0020		
3-JUN-2007 09:23	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
2-APR-2007 07:06	bkg		0.0020		
3-MAY-2007 08:44	bkg		0.0000		
3-JUN-2007 09:23	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
2-APR-2007 07:06	bkg		0.0030	
3-MAY-2007 08:44	bkg		0.0020	
3-JUN-2007 09:23	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
2-APR-2007 07:06	bkg		0.0050	
3-MAY-2007 08:44	bkg		0.0040	
3-JUN-2007 09:23	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 : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.003804 Std Deviation : 0.002502

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0050	
3-MAY-2007 08:44	bkg		0.0050	
3-JUN-2007 09:23	bkg		0.0080	

-- 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 : 0.005121 Std Deviation : 0.003171

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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2-APR-2007 07:06	bkg		0.0070		
3-MAY-2007 08:44	bkg		0.0070		
3-JUN-2007 09:23	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 : 7-FEB-2005 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.033093 Std Deviation : 0.024916

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 07:06	bkg		0.0530		
3-MAY-2007 08:44	bkg		0.0590		
3-JUN-2007 09:23	bkg		0.0700		

-- 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 : 0.032117 Std Deviation : 0.023814

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 07:06 bkg          0.0560  | | |
3-MAY-2007 08:44 bkg          0.0580  | | |
3-JUN-2007 09:23 bkg          0.0680  | | |
```

-- 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 : 0.030386 Std Deviation : 0.022604

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0550	
3-MAY-2007 08:44	bkg		0.0570	
3-JUN-2007 09:23	bkg		0.0630	

-- 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 : 0.031630 Std Deviation : 0.024232

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0440	
3-MAY-2007 08:44	bkg		0.0680	
3-JUN-2007 09:23	bkg		0.0560	

Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0440	
3-MAY-2007 08:44	bkg		0.0680	
3-JUN-2007 09:23	bkg		0.0560	

-- 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 : 0.028191 Std Deviation : 0.021899

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0400	
3-MAY-2007 08:44	bkg		0.0600	
3-JUN-2007 09:23	bkg		0.0470	

-- 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 : 0.009511 Std Deviation : 0.008496

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0150	
3-MAY-2007 08:44	bkg		0.0280	In
3-JUN-2007 09:23	bkg		0.0080	

Quality Assurance Report. Generated 12-JUL-2007 11:41:05.17

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 : 0.236561 Std Deviation : 0.004447

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:27	chk		0.2416		
2-MAY-2007 08:47	chk		0.2347		
2-JUN-2007 12:01	chk		0.2368		

-- 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 : 7.492593 Std Deviation : 0.246069

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:27	chk		7.3333		
2-MAY-2007 08:47	chk		7.8333		
2-JUN-2007 12:01	chk		7.5000		

-- 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 : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 348.315063 Std Deviation : 0.975453

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:27	chk		348.5472	
2-MAY-2007 08:47	chk		348.5786	
2-JUN-2007 12:01	chk		349.6433	

-- 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 : 0.295842 Std Deviation : 0.002592

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:27	chk		0.2975	
2-MAY-2007 08:47	chk		0.2958	
2-JUN-2007 12:01	chk		0.2969	

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

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:27	chk		0.2975	
2-MAY-2007 08:47	chk		0.2958	
2-JUN-2007 12:01	chk		0.2969	

-- 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 : 7.457888 Std Deviation : 0.054816

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:27	chk		7.4264		
2-MAY-2007 08:47	chk		7.3665		
2-JUN-2007 12:01	chk		7.4723		

1-APR-2007 09:27	chk		7.4264		
2-MAY-2007 08:47	chk		7.3665		
2-JUN-2007 12:01	chk		7.4723		

Quality Assurance Report. Generated 12-JUL-2007 11:41:05.89

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 : 0.004367 Std Deviation : 0.003876

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0020		
3-MAY-2007 08:44	bkg		0.0010		
3-JUN-2007 09:23	bkg		0.0040		

2-APR-2007 07:06	bkg		0.0020		
3-MAY-2007 08:44	bkg		0.0010		
3-JUN-2007 09:23	bkg		0.0040		

-- 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 : 0.008346 Std Deviation : 0.011186

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0090		
3-MAY-2007 08:44	bkg		0.0070		
3-JUN-2007 09:23	bkg		0.0110		

-- 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 : 0.002387 Std Deviation : 0.002387

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0010		
3-MAY-2007 08:44	bkg		0.0030		
3-JUN-2007 09:23	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 : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.007407 Std Deviation : 0.008175

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
2-APR-2007 07:06	bkg		0.0060		

3-MAY-2007 08:44 bkg 0.0060 | | |
 3-JUN-2007 09:23 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 : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.007958 Std Deviation : 0.009730

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0050		
3-MAY-2007 08:44	bkg		0.0080		
3-JUN-2007 09:23	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 : 0.007325 Std Deviation : 0.009352

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0050		
3-MAY-2007 08:44	bkg		0.0070		
3-JUN-2007 09:23	bkg		0.0060		

-- 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 : 0.004244 Std Deviation : 0.005366

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0030	
3-MAY-2007 08:44	bkg		0.0070	
3-JUN-2007 09:23	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-AUG-2004 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.002245 Std Deviation : 0.002495

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0010	
3-MAY-2007 08:44	bkg		0.0040	
3-JUN-2007 09:23	bkg		0.0040	

-- 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 : 0.001428 Std Deviation : 0.001554

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0010	
3-MAY-2007 08:44	bkg		0.0040	
3-JUN-2007 09:23	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 : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.002285 Std Deviation : 0.002389

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0010	
3-MAY-2007 08:44	bkg		0.0000	
3-JUN-2007 09:23	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-AUG-2004 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.002694 Std Deviation : 0.002347

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0020	
3-MAY-2007 08:44	bkg		0.0030	
3-JUN-2007 09:23	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-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.003163 Std Deviation : 0.002664

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

2-APR-2007 07:06	bkg		0.0040		
3-MAY-2007 08:44	bkg		0.0080		
3-JUN-2007 09:23	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 : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.003836 Std Deviation : 0.003268

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

2-APR-2007 07:06	bkg		0.0070		
3-MAY-2007 08:44	bkg		0.0110	In	
3-JUN-2007 09:23	bkg		0.0060		

-- Multi-Test Full Report --

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

Parameter Units : cnts/min Parameter Type : Nuclide

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.032710 Std Deviation : 0.026836

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0650	
3-MAY-2007 08:44	bkg		0.0730	
3-JUN-2007 09:23	bkg		0.0660	

 2-APR-2007 07:06 bkg 0.0650 |||
 3-MAY-2007 08:44 bkg 0.0730 |||
 3-JUN-2007 09:23 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 : 8-AUG-2004 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.034200 Std Deviation : 0.027938

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0650	
3-MAY-2007 08:44	bkg		0.0760	
3-JUN-2007 09:23	bkg		0.0710	

 2-APR-2007 07:06 bkg 0.0650 |||
 3-MAY-2007 08:44 bkg 0.0760 |||
 3-JUN-2007 09:23 bkg 0.0710 |||

-- 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 : 0.032384 Std Deviation : 0.026674

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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2-APR-2007 07:06 bkg	0.0630	
3-MAY-2007 08:44 bkg	0.0730	
3-JUN-2007 09:23 bkg	0.0690	

-- 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 : 0.032017 Std Deviation : 0.031594

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06 bkg			0.0660	
3-MAY-2007 08:44 bkg			0.0780	
3-JUN-2007 09:23 bkg			0.0690	

-- 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 : 0.028915 Std Deviation : 0.028979

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06 bkg			0.0620	
3-MAY-2007 08:44 bkg			0.0720	
3-JUN-2007 09:23 bkg			0.0590	

-- 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 : 0.010264 Std Deviation : 0.010573

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

2-APR-2007 07:06	bkg		0.0190	
3-MAY-2007 08:44	bkg		0.0250	
3-JUN-2007 09:23	bkg		0.0230	

Quality Assurance Report. Generated 12-JUL-2007 11:40:58.23

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 : 0.365617 Std Deviation : 0.005185

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:27	chk		0.3637		
2-MAY-2007 08:47	chk		0.3591		
2-JUN-2007 12:01	chk		0.3639		

-- 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 : 7.988636 Std Deviation : 0.234046

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:27	chk		8.0000		
2-MAY-2007 08:47	chk		7.8333		
2-JUN-2007 12:01	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 : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00

Mean : 357.420349 Std Deviation : 1.001372

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:27	chk		357.7631		
2-MAY-2007 08:47	chk		357.7482		
2-JUN-2007 12:01	chk		359.4568	In	

-- 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 : 0.371403 Std Deviation : 0.002419

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:27	chk		0.3726		
2-MAY-2007 08:47	chk		0.3726		
2-JUN-2007 12:01	chk		0.3695		

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

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:27	chk		0.3726		
2-MAY-2007 08:47	chk		0.3726		
2-JUN-2007 12:01	chk		0.3695		

-- 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 : 7.393364 Std Deviation : 0.061187

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:27	chk		7.3891	
2-MAY-2007 08:47	chk		7.4395	
2-JUN-2007 12:01	chk		7.4862	

Quality Assurance Report. Generated 12-JUL-2007 11:40:58.91

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 : 0.005499 Std Deviation : 0.004063

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0070	
3-MAY-2007 08:44	bkg		0.0110	
3-JUN-2007 09:23	bkg		0.0110	

-- 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 : 0.006958 Std Deviation : 0.005111

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
-----
2-APR-2007 07:06 bkg          0.0090  | | |
3-MAY-2007 08:44 bkg          0.0080  | | |
3-JUN-2007 09:23 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 : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.002479 Std Deviation : 0.001989

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
-----
2-APR-2007 07:06 bkg          0.0020  | | |
3-MAY-2007 08:44 bkg          0.0010  | | |
3-JUN-2007 09:23 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 : 0.007270 Std Deviation : 0.005262

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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```
-----
2-APR-2007 07:06 bkg          0.0040  | | |
3-MAY-2007 08:44 bkg          0.0090  | | |
3-JUN-2007 09:23 bkg          0.0060  | | |
```

-- 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 : 0.006624 Std Deviation : 0.004230

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0100		
3-MAY-2007 08:44	bkg		0.0090		
3-JUN-2007 09:23	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 : 0.005916 Std Deviation : 0.003896

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0090		
3-MAY-2007 08:44	bkg		0.0080		
3-JUN-2007 09:23	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 : 0.003645 Std Deviation : 0.002794

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0070		
3-MAY-2007 08:44	bkg		0.0070		
3-JUN-2007 09:23	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 : 9-AUG-2004 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.002646 Std Deviation : 0.002445

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
2-APR-2007 07:06	bkg		0.0030		
3-MAY-2007 08:44	bkg		0.0060		
3-JUN-2007 09:23	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 : 0.002041 Std Deviation : 0.001956

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0020		

3-MAY-2007 08:44 bkg 0.0050 | | |
 3-JUN-2007 09:23 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 : 0.002791 Std Deviation : 0.002405

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0020		
3-MAY-2007 08:44	bkg		0.0020		
3-JUN-2007 09:23	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 : 0.004687 Std Deviation : 0.003591

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0020		
3-MAY-2007 08:44	bkg		0.0050		
3-JUN-2007 09:23	bkg		0.0070		

-- 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 : 0.005124 Std Deviation : 0.003641

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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2-APR-2007 07:06	bkg		0.0040	
3-MAY-2007 08:44	bkg		0.0060	
3-JUN-2007 09:23	bkg		0.0080	

-- 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 : 0.005708 Std Deviation : 0.003864

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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2-APR-2007 07:06	bkg		0.0060	
3-MAY-2007 08:44	bkg		0.0060	
3-JUN-2007 09:23	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 : 0.034662 Std Deviation : 0.026784

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0600	
3-MAY-2007 08:44	bkg		0.0740	
3-JUN-2007 09:23	bkg		0.0700	

-- 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 : 0.036162 Std Deviation : 0.028563

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0670	
3-MAY-2007 08:44	bkg		0.0890	
3-JUN-2007 09:23	bkg		0.0690	

-- 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 : 0.034038 Std Deviation : 0.026653

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
2-APR-2007 07:06	bkg		0.0640	
3-MAY-2007 08:44	bkg		0.0830	
3-JUN-2007 09:23	bkg		0.0640	

-- 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 : 0.030975 Std Deviation : 0.027533

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0450		
3-MAY-2007 08:44	bkg		0.0820		
3-JUN-2007 09:23	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 : 0.027684 Std Deviation : 0.024435

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0390		
3-MAY-2007 08:44	bkg		0.0670		
3-JUN-2007 09:23	bkg		0.0490		

-- 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 : 0.009395 Std Deviation : 0.007913

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0160		
3-MAY-2007 08:44	bkg		0.0210		
3-JUN-2007 09:23	bkg		0.0180		

Quality Assurance Report. Generated 12-JUL-2007 11:40:50.15

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 : 0.209905 Std Deviation : 0.003787

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:27	chk		0.2097	
2-MAY-2007 08:47	chk		0.2120	
2-JUN-2007 12:00	chk		0.2134	

-- 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 : 8.064445 Std Deviation : 0.365450

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:27	chk		8.8333	In
2-MAY-2007 08:47	chk		8.6667	
2-JUN-2007 12:00	chk		8.3333	

-- 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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 347.815857 Std Deviation : 0.820905

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:27	chk		347.7506	
2-MAY-2007 08:47	chk		347.7007	
2-JUN-2007 12:00	chk		348.7531	

-- 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 : 0.178282 Std Deviation : 0.002123

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
Quality Assurance Multi-Test Full Report (continued)				
1-APR-2007 09:27	chk		0.1765	
2-MAY-2007 08:47	chk		0.1761	
2-JUN-2007 12:00	chk		0.1768	

-- 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 : 7.475778 Std Deviation : 0.074218

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:27	chk		7.5572	
2-MAY-2007 08:47	chk		7.4191	
2-JUN-2007 12:00	chk		7.5987	

Quality Assurance Report. Generated 12-JUL-2007 11:40:50.85

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 : 0.004415 Std Deviation : 0.003389

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0040	
3-MAY-2007 08:44	bkg		0.0010	
3-JUN-2007 09:22	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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.005544 Std Deviation : 0.004445

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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-----
2-APR-2007 07:06 bkg          0.0030  | | |
3-MAY-2007 08:44 bkg          0.0040  | | |
3-JUN-2007 09:22 bkg          0.0060  | | |

```

-- 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 : 0.002120 Std Deviation : 0.001973

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0010	
3-MAY-2007 08:44	bkg		0.0000	
3-JUN-2007 09:22	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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00
Mean : 0.006082 Std Deviation : 0.004797

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
2-APR-2007 07:06	bkg		0.0090	
3-MAY-2007 08:44	bkg		0.0010	
3-JUN-2007 09:22	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 : 0.005632 Std Deviation : 0.004215

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0050		
3-MAY-2007 08:44	bkg		0.0000		
3-JUN-2007 09:22	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 : 0.005182 Std Deviation : 0.003730

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0050		
3-MAY-2007 08:44	bkg		0.0000		
3-JUN-2007 09:22	bkg		0.0030		

-- 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 : 0.002882 Std Deviation : 0.002203

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0010		
3-MAY-2007 08:44	bkg		0.0000		
3-JUN-2007 09:22	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 : 0.001295 Std Deviation : 0.001248

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
2-APR-2007 07:06	bkg		0.0010		
3-MAY-2007 08:44	bkg		0.0000		
3-JUN-2007 09:22	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 : 0.000945 Std Deviation : 0.001102

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0010		

3-MAY-2007 08:44 bkg 0.0000 | | |
 3-JUN-2007 09:22 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 : 0.001525 Std Deviation : 0.001559

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0010		
3-MAY-2007 08:44	bkg		0.0050	In	
3-JUN-2007 09:22	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 : 0.002887 Std Deviation : 0.002349

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0020		
3-MAY-2007 08:44	bkg		0.0050		
3-JUN-2007 09:22	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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.003512 Std Deviation : 0.002732

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

2-APR-2007 07:06	bkg		0.0050	
3-MAY-2007 08:44	bkg		0.0040	
3-JUN-2007 09:22	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 : 0.005074 Std Deviation : 0.003679

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

2-APR-2007 07:06	bkg		0.0070	
3-MAY-2007 08:44	bkg		0.0050	
3-JUN-2007 09:22	bkg		0.0060	

-- Multi-Test Full Report --

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

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.052379 Std Deviation : 0.031633

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.1170	In
3-MAY-2007 08:44	bkg		0.0980	
3-JUN-2007 09:22	bkg		0.0860	

-- 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 : 0.052449 Std Deviation : 0.031492

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.1110	
3-MAY-2007 08:44	bkg		0.1010	
3-JUN-2007 09:22	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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.049574 Std Deviation : 0.029518

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
2-APR-2007 07:06	bkg		0.1050	
3-MAY-2007 08:44	bkg		0.0930	
3-JUN-2007 09:22	bkg		0.0840	

-- 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 : 0.043463 Std Deviation : 0.027773

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0750		
3-MAY-2007 08:44	bkg		0.0940		
3-JUN-2007 09:22	bkg		0.0840		

-- 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 : 0.039459 Std Deviation : 0.025408

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0680		
3-MAY-2007 08:44	bkg		0.0770		
3-JUN-2007 09:22	bkg		0.0740		

-- 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 : 0.013735 Std Deviation : 0.008965

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0260		
3-MAY-2007 08:44	bkg		0.0330	In	
3-JUN-2007 09:22	bkg		0.0330	In	

Quality Assurance Report. Generated 12-JUL-2007 11:41:19.05

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 : 0.325616 Std Deviation : 0.006551

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:28	chk		0.3340		
2-MAY-2007 08:47	chk		0.3295		
2-JUN-2007 12:01	chk		0.3296		

-- 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 : 6.666667 Std Deviation : 0.463373

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
1-APR-2007 09:28	chk		6.6667		
2-MAY-2007 08:47	chk		7.0000		
2-JUN-2007 12:01	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 : 347.836121 Std Deviation : 1.421680

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:28	chk		347.0351	
2-MAY-2007 08:47	chk		346.9843	
2-JUN-2007 12:01	chk		348.0742	

-- 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 : 0.333002 Std Deviation : 0.003700

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
1-APR-2007 09:28	chk		0.3362	
2-MAY-2007 08:47	chk		0.3335	
2-JUN-2007 12:01	chk		0.3361	

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

-- Multi-Test Full Report --

Description : Energy Calibration Slope

Parameter Units : keV/chan Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00
 Mean : 7.490195 Std Deviation : 0.065037

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

1-APR-2007 09:28	chk		7.4383	
2-MAY-2007 08:47	chk		7.4173	
2-JUN-2007 12:01	chk		7.4507	

Quality Assurance Report. Generated 12-JUL-2007 11:41:19.80

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 : 0.000768 Std Deviation : 0.001010

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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2-APR-2007 07:06	bkg		0.0000	
3-MAY-2007 08:44	bkg		0.0010	
3-JUN-2007 09:23	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 : 0.001061 Std Deviation : 0.001034

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
-----
2-APR-2007 07:06 bkg          0.0000  | | |
3-MAY-2007 08:44 bkg          0.0020  | | |
3-JUN-2007 09:23 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 : 0.000549 Std Deviation : 0.000834

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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```
-----
2-APR-2007 07:06 bkg          0.0000  | | |
3-MAY-2007 08:44 bkg          0.0020  | | |
3-JUN-2007 09:23 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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.000927 Std Deviation : 0.001028

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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```
-----
2-APR-2007 07:06 bkg          0.0000  | | |
3-MAY-2007 08:44 bkg          0.0000  | | |
3-JUN-2007 09:23 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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000927 Std Deviation : 0.001016

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0010	
3-MAY-2007 08:44	bkg		0.0000	
3-JUN-2007 09:23	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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000939 Std Deviation : 0.001010

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0010	
3-MAY-2007 08:44	bkg		0.0000	
3-JUN-2007 09:23	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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00

Mean : 0.000695 Std Deviation : 0.000870

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0020		
3-MAY-2007 08:44	bkg		0.0000		
3-JUN-2007 09:23	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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.000561 Std Deviation : 0.000803

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
2-APR-2007 07:06	bkg		0.0020		
3-MAY-2007 08:44	bkg		0.0000		
3-JUN-2007 09:23	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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.000500 Std Deviation : 0.000774

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0020		

3-MAY-2007 08:44 bkg 0.0000 | | |
 3-JUN-2007 09:23 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 : 0.001219 Std Deviation : 0.001286

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0030		
3-MAY-2007 08:44	bkg		0.0000		
3-JUN-2007 09:23	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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.002256 Std Deviation : 0.002392

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 07:06	bkg		0.0030		
3-MAY-2007 08:44	bkg		0.0060		
3-JUN-2007 09:23	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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.003012 Std Deviation : 0.003109

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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2-APR-2007 07:06	bkg		0.0030	
3-MAY-2007 08:44	bkg		0.0060	
3-JUN-2007 09:23	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 : 3-SEP-2002 00:00 End Date : 30-MAY-2030 00:00
 Mean : 0.004316 Std Deviation : 0.004540

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
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2-APR-2007 07:06	bkg		0.0030	
3-MAY-2007 08:44	bkg		0.0100	
3-JUN-2007 09:23	bkg		0.0020	

-- 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 : 0.040713 Std Deviation : 0.019429

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0350	
3-MAY-2007 08:44	bkg		0.0700	
3-JUN-2007 09:23	bkg		0.0400	

-- 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 : 0.040773 Std Deviation : 0.019709

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0560	
3-MAY-2007 08:44	bkg		0.0680	
3-JUN-2007 09:23	bkg		0.0650	

-- 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 : 0.038396 Std Deviation : 0.018666

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0520	
3-MAY-2007 08:44	bkg		0.0640	
3-JUN-2007 09:23	bkg		0.0640	

Quality Assurance Multi-Test Full Report (continued) Page : 5

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 07:06	bkg		0.0520	
3-MAY-2007 08:44	bkg		0.0640	
3-JUN-2007 09:23	bkg		0.0640	

-- 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 : 0.034994 Std Deviation : 0.022243

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 07:06	bkg		0.0530		
3-MAY-2007 08:44	bkg		0.0710		
3-JUN-2007 09:23	bkg		0.0460		

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

2-APR-2007 07:06	bkg		0.0490		
3-MAY-2007 08:44	bkg		0.0620		
3-JUN-2007 09:23	bkg		0.0460		

-- 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 : 0.010754 Std Deviation : 0.006866

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 07:06	bkg		0.0110		
------------------	-----	--	--------	--	--

3-MAY-2007 08:44 bkg

0.0200 | | |

3-JUN-2007 09:23 bkg

0.0160 | | |

RADIUM 228

SAMPLE AND QC DATA

Lot No., Due Date: **F7E100384; 06/07/2007**
 Client, Site: **456833; PHASE A WELLS Henderson, NV Source Area Inv.**
 QC Batch No., Method Test: **7172084; RRA228 Ra-228 by GPC**
 SDG, Matrix: **ENSR0510RD; ,,,,,,,,,,,,,,**

- | | | | |
|---|-------------------------------------|--------------------------|--------------------------|
| 1.0 COC | | | |
| 1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.0 QC Batch | | | |
| 2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.2 Are the QC appropriate for the analysis included in the batch? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.4 Does the Worksheets include a Tracer Vial label for each sample? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.0 QC & Samples | | | |
| 3.1 Is the blank results, yield, and MDA within contract limits? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.2 Is the LCS result, yield, and MDA within contract limits? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.3 Are the MS/MSD results, yields, and MDA within contract limits? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.4 Are the duplicate result, yields, and MDAs within contract limits? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.5 Are the sample yields and MDAs within contract limits? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.0 Raw Data | | | |
| 4.1 Were results calculated in the correct units? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.2 Were analysis volumes entered correctly? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.3 Were Yields entered correctly? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.4 Were spectra reviewed/meet contractual requirements? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.5 Were raw counts reviewed for anomalies? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.0 Other | | | |
| 5.1 Are all nonconformances included and noted? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.2 Are all required forms filled out? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.3 Was the correct methodology used? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.4 Was transcription checked? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.5 Were all calculations checked at a minimum frequency? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.6 Are worksheet entries complete and correct? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.0 Comments on any No response:
Please see NCM#10-10259 | | | |

First Level Review *John Norton*

Date 6-29-07

Clouseau Nonconformance Memo

STL

NCM #: 10-10259	Classification: Anomaly
NCM Initiated By: John Norton	Status: GLREVIEW
Date Opened: 06/29/2007	Production Area: Environmental - Prep
Date Closed:	Tests: Ra-228 by GPC
	Lot #'s (Sample #'s): J7E140000 (321),
	QC Batches: 7172084,
Nonconformance: LCS result out of limits	
Subcategory: Other (explanation required)	

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
John Norton	06/29/2007	Incorrect reagent used during processing of these samples causing low spike yield.
John Norton	06/29/2007	Sample F7E100384-2 and -3 did not meet the RDL due to low yield.
John Norton	06/29/2007	Insufficient volume provided for the creation of a duplicate sample.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
John Norton	06/29/2007	Batch failed due to low spike yield, on request from project management the data is submitted for evaluation purposes only.
John Norton	06/29/2007	
John Norton	06/29/2007	

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>

Balance Id: 1120403183
 Sample Preparation/Analysis
 Pipet #: AL 6/21/07 725
 Sep1 DT/Trm Tech: 6/25/07 11.2794
 Sep2 DT/Trm Tech: 6/25/07 11.2794
 Prep Tech: Longa

BU Ra-226/228 Prp/SepRC5005
 TF Radium-228 by GPC
 01 STANDARD TEST SET
 PM, Quote: JAE, 75203
 All Tests: 7134312 9NS1, 7134317 7YSR, 7134319 BUTE,
 BU Ra-226/228 Prp/SepRC5005
 TF Radium-228 by GPC
 01 STANDARD TEST SET

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, Iniv/Date	Comments:
1 JWP17-3-AC		1000.80g.in	rate26765 05/17/07	4.92	1"	31.0	3X50	7A	0914	6/21/07	
F7E100384-1-SAMP				74508				7A	1728	6/25/07	
 05/09/2007 06:45 AmtRec: 2XLP #Containers: 2 F5V 											
2 JWP17-3-AE-X											
F7E100384-1-DUP											
05/09/2007 06:45											
3 JWP18-3-AC		1002.00g.in	rate26766 05/17/07	2.977			29.3	65	0915	6/21/07	
F7E100384-2-SAMP				75253				65	0826	6/25/07	
 05/09/2007 07:15 AmtRec: 2XLP #Containers: 2 219 1.289 count 2 											
4 JWP19-3-AC		1001.40g.in	rate26767 05/17/07	4.687			29.5	66	0917	6/21/07	
F7E100384-3-SAMP				74322				70	1728	6/25/07	
 05/09/2007 07:30 AmtRec: 2XLP #Containers: 2 6306 											
05/09/2007 07:30											
 05/09/2007 07:30 AmtRec: 2XLP #Containers: 2 6306 											

Alpha: 1.60E-04 uCi/Sa Beta: 4.20E-04 uCi/Sa
 Alpha: 1.60E-04 uCi/Sa Beta: 4.20E-04 uCi/Sa
 Alpha: 1.57E-04 uCi/Sa Beta: 3.33E-04 uCi/Sa
 Alpha: 4.04E-04 uCi/Sa Beta: 3.65E-04 uCi/Sa

6/21/2007 7:22:01 AM Balance Id:1120403183
 456833, ENSR International Corporation Pipet #:
 ENSR International Corporation
 BU Ra-226/228 Prp/SepRC5005
 TF Radium-228 by GPC
 01 STANDARD TEST SET
 AnalyDueDate: 06/06/2007
 PM, Quote: JAE, 75203
 pCi/L
 SEQ Batch, Test: 7134319, BUTE 7159393, BUTE

Work Order Lot, Sample Date Time Initial Aliquot Amt/Unit Total Amt/Unit GC 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:
 Prep Tech: LongA

5 JWP2A-3-AC	1000.50g.in	rata26768	05/17/07	5.691	30.4	67	0917	6/21/07	
F7E100384-4-SAMP				7.3949		1B	1728	6/25/07	
				6.8884		1b	0632	6/26/07	

05/09/2007 08:35	AmtRec: 2XLP	#Containers: 2	Alpha: 2.12E-04 uCi/Sa	Beta: 2.93E-04 uCi/Sa
6 JWP2C-3-AC	1000.80g.in	rata26769	05/17/07	4.587
F7E100384-5-SAMP				7.4136
				6.6187

05/09/2007 09:30	AmtRec: 2XLP	#Containers: 2	Alpha: 1.95E-04 uCi/Sa	Beta: 3.47E-04 uCi/Sa
7 JWP2D-3-AC	1001.70g.in	rata26770	05/17/07	5.973
F7E100384-6-SAMP				7.4601
				8.007

05/09/2007 09:10	AmtRec: 2XLP	#Containers: 2	Alpha: 1.54E-04 uCi/Sa	Beta: 5.11E-04 uCi/Sa
8 JWP2E-3-AC	1000.70g.in	rata26771	05/17/07	4.636
F7E100384-7-SAMP				7.5626
				3.97.613
				6/25/07

05/09/2007 10:35	AmtRec: 2XLP	#Containers: 2	Alpha: -5.63E-05 uCi/Sa	Beta: 2.68E-04 uCi/Sa
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6/21/2007 7:22:02 AM

Sample Preparation/Analysis

Balance Id:1120403183

456833, ENSR International Corporation
ENSR International Corporation

BU Ra-226/228 Prp/SepRC5005
TF Radium-228 by GPC

Pipet #:

AnalyteDueDate: 06/06/2007

Sep1 DT/Tm Tech:

Batch: 7172084 pCi/L

PM, Quote: JAE, 75203

Sep2 DT/Tm Tech:

SEQ Batch, Test: 7134319, BUTE 7159393, BUTE

Prep Tech: Longa

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
9 JWP2F-3-AC F7E100384-8-SAMP		1001.50g.in	rate26772 05/17/07	4.671 75067 5406		28.1		612 2B 2b	0919 1728 0032	6/21/07 6/25/07 6/26/07	
05/09/2007 11:30	#Containers: 2	AmtRec: 2XLP						Scr: 613	Alpha: 2.60E-04 uCi/Sa	Beta: 1.71E-04 uCi/Sa	
10 JWP2G-3-AC F7E100384-9-SAMP		1002.80g.in	rate26773 05/17/07	4.030 75626 5329		30.1		2C 2C	0919 1728 0032	6/21/07 6/25/07 6/26/07	
05/09/2007 11:15	#Containers: 2	AmtRec: 2XLP						Scr: 2D	Alpha: 7.84E-05 uCi/Sa	Beta: 1.71E-04 uCi/Sa	
11 JWP2H-3-AC F7E100384-10-SAMP		1000.10g.in	rate26774 05/17/07	4.14 75905 5797		29.9		2D 2d	0958 1728 0032	6/21/07 6/25/07 6/26/07	
05/09/2007 12:45	#Containers: 2	AmtRec: 2XLP						Scr: 6S	Alpha: 1.39E-04 uCi/Sa	Beta: 1.93E-04 uCi/Sa	
12 JWP2J-3-AC F7E100384-11-SAMP		1001.70g.in	rate26775 05/17/07	5.638 75719 7446		30.0		3A 3A	0958 1728 0032	6/21/07 6/25/07 6/26/07	
05/09/2007 13:05	#Containers: 2	AmtRec: 2XLP						Scr: 3A	Alpha: -8.43E-06 uCi/Sa	Beta: 3.24E-04 uCi/Sa	

6/21/2007 7:22:02 AM Balance Id:1120403183
 456833, ENSR International Corporation BU Ra-226/228 Prp/SepRC5005
 ENSR International Corporation TF Radium-228 by GPC
 AnalyDueDate: 06/06/2007 01 STANDARD TEST SET
 Sep1 DT/Tm Tech: Sep2 DT/Tm Tech: PM, Quote: JAE, 75203
 Prep Tech: LongA

Batch: 7172084 pCi/L
 SEQ Batch, Test: 7134319, BUTE 7159393, 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, Ini/Date	Comments:
13 JWP2K-3-AC F7E100384-12-SAMP	1001.40g.in	1001.40g.in	rate26776 05/17/07	5.454 75067 7266	1"	29.4	3X586	3B	1000 1728	6/21/07 6/25/07	
05/09/2007 13:35			AmtRec: 2XLP	#Containers: 2							Beta: 3.02E-04 uCi/Sa
14 JWP2L-3-AC F7E100384-13-SAMP	1000.00g.in	1000.00g.in	rate26777 05/17/07	5.165 74974 6889		28.9			1001 1728	6/21/07 6/25/07	
05/09/2007 14:35			AmtRec: 2XLP	#Containers: 2							Beta: 3.67E-04 uCi/Sa
15 JWP2N-3-AC F7E100384-14-SAMP	1000.90g.in	1000.90g.in	rate26778 05/17/07	3.702 76650 483		29.7			1001 1728	6/21/07 6/25/07	
05/09/2007 14:15			AmtRec: 2XLP	#Containers: 2							Beta: 3.67E-04 uCi/Sa
16 JWP2P-3-AC F7E100384-15-SAMP	1001.10g.in	1001.10g.in	rate26779 05/17/07	4.165 75532 6203		29.9			1001 1728	6/21/07 6/25/07	
05/09/2007 15:30			AmtRec: 2XLP	#Containers: 2							Beta: 1.47E-04 uCi/Sa

6/21/2007 7:22:02 AM Balance Id:1120403183
 Sample Preparation/Analysis
 BU Ra-226/228 Prp/SepRC5005
 TF Radium-228 by GPC
 01 STANDARD TEST SET
 Analyte Due Date: 06/06/2007
 Batch: 7172084
 SEQ Batch, Test: None
 pCi/L
 Prep Tech: FABREM, Longa
 Sep1 DT/Tm Tech:
 Sep2 DT/Tm Tech:

Work Order, Lot, Sample Date	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
17 JWW98-3-AA-B J7E140000-321-BLK	1003.50g.in	1000.60g.in	rate26780 05/17/07	5.773 7.5439 7.6553	1"	30.0	3XSO 612	4B	1002	6/21/07	r
18 JWW98-3-AC-C J7E140000-321-LCS	1000.60g.in	1000.60g.in	rate4433 05/09/07	4.336 7.4244 1.584		30.2		4C	1002	6/21/07	r

05/09/2007 06:45 AmtRec: #Containers: 1
 Alpha: 1002
 Beta: 6/21/07 r

05/09/2007 06:45 AmtRec: #Containers: 1
 Alpha: 1728
 Beta: 6/21/07 r

05/09/2007 06:45 AmtRec: #Containers: 1
 Alpha: 0632
 Beta: 6/26/07

Comments: JWP17-SAMP "Comments:ISV - INSUFFICIENT VOLUME FOR DUP SAMPLE. ALL TRACERS USED HAVE NOT BEEN VERIFIED FOR BARIUM VERIFICATION"
 JWP2L-SAMP "Comments."
 JWP2N-SAMP "Comments No DUP aliquot due to insufficient sample amount. JB 05/24/07"
 JWW98-BLK "Comments ALL TRACERS USED HAVE NOT BEEN VERIFIED FOR BARIUM PURIFICATION"

All Clients for Batch:
 456833, ENSR International Corporation
 ENSR International Corporation, JAE, 75203

JWP173AC-SAMP Constituent List:

RDL:	pCi/L	LCL:	UCL:	RPD:	RDL:	RA-228	RDL:	RA-228	RPD:	pCi/L	LCL:	UCL:	RPD:
Ba-133													
RA-228DA													
JWW983AC-LCS:													
Ba-133													
RA-228													

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 5
 Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added
 ISV - Insufficient Volume for Analysis
 WO Cnt: 18
 Prep_SamplePrep v4.8.26

6/21/2007 7:22:05 AM Balance Id:1120403183

Sample Preparation/Analysis

BU Ra-226/228 Prp/SepRC-5005 Pipet #:

TF Radium-228 by GPC

01 STANDARD TEST SET Sep1 DT/Tm Tech:

AnalytDueDate: 06/06/2007 Sep2 DT/Tm Tech:

Batch: 7172084 Prep Tech: FABREM, LongA

SEQ Batch, Test: None pCi/L

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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JWP173AC-SAMP Calc Info:

Uncert Level (#s): 4	Decay to SaDt: N	Blk Subt.: N	Sci.Not.: N	ODRs: B
JWW983AA-BLK:				
Uncert Level (#s): 4	Decay to SaDt: N	Blk Subt.: N	Sci.Not.: N	ODRs: B
JWW983AC-LCS:				
Uncert Level (#s): 4	Decay to SaDt: N	Blk Subt.: N	Sci.Not.: N	ODRs: B

Approved By _____ Date: _____

STL RICHLAND WO Cnt: 18

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 6

pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktalled Added ISV - Insufficient Volume for Analysis

Prep_SamplePrep v4.8.26

6/29/2007 11:30:53 AM

Rpt DB Transfer log (Batch Results)

SDG or Batch Isotope	Rot Db Id Method	RTst Qc	LotSample Analysis Date	Client Id Result	Matrix Cnt Uncert	Received Date Tot uncert	Sample Date Units	Expected Yield	Volumes
ENSR0510RD 9JWP1830	RA-228	BUTF 2	F7E1003842 6/26/2007 6:33:52 AM	M100-F 9.8201E-01	Unk 3.641E-01	5/10/2007 9:10:00 3.644E-01 1.517E+00	5/9/2007 7:15:00 AM pCi/L	0.337	1.002E+0
ENSR0510RD 9JWP1930	RA-228	BUTF 2	F7E1003843 6/26/2007 6:33:52 AM	M100-Z 2.4046E-01	Unk 2.432E-01	5/10/2007 9:10:00 2.432E-01 1.101E+00	5/9/2007 7:30:00 AM pCi/L	0.541	1.001E+0
ENSR0510RD 9JWP2A30	RA-228	BUTF 2	F7E1003844 6/26/2007 6:34:19 AM	M2A-L 4.9923E-01	Unk 1.791E-01	5/10/2007 9:10:00 1.854E-01 7.741E-01	5/9/2007 8:35:00 AM pCi/L	0.608	1.0E+0
ENSR0510RD 9JWP2C30	RA-228	BUTF 2	F7E1003845 6/26/2007 6:34:19 AM	M2A-F 6.3223E-01	Unk 2.08E-01	5/10/2007 9:10:00 2.134E-01 8.732E-01	5/9/2007 9:30:00 AM pCi/L	0.538	1.001E+0
ENSR0510RD 9JWP2D30	RA-228	BUTF 2	F7E1003846 6/26/2007 6:34:19 AM	M2A-Z 4.0226E-01	Unk 1.615E-01	5/10/2007 9:10:00 1.756E-01 7.511E-01	5/9/2007 9:10:00 AM pCi/L	0.673	1.002E+0
ENSR0510RD 9JWP2E30	RA-228	BUTF 2	F7E1003847 6/26/2007 6:34:52 AM	M13-L 4.6198E-01	Unk 1.565E-01	5/10/2007 9:10:00 1.628E-01 6.52E-01	5/9/2007 10:35:00 AM pCi/L	0.551	1.001E+0
ENSR0510RD 9JWP2F30	RA-228	BUTF 2	F7E1003848 6/26/2007 6:34:52 AM	M13-F 4.8602E-01	Unk 1.867E-01	5/10/2007 9:10:00 1.951E-01 8.131E-01	5/9/2007 11:30:00 AM pCi/L	0.442	1.002E+0
ENSR0510RD 9JWP2G30	RA-228	BUTF 2	F7E1003849 6/26/2007 6:34:52 AM	M13-Z 1.5182E-01	Unk 1.662E-01	5/10/2007 9:10:00 1.67E-01 7.947E-01	5/9/2007 11:15:00 AM pCi/L	0.466	1.003E+0
ENSR0510RD 9JWP2H30	RA-228	BUTF 2	F7E10038410 6/26/2007 6:34:52 AM	M76-L 4.0881E-01	Unk 1.716E-01	5/10/2007 9:10:00 1.759E-01 7.41E-01	5/9/2007 12:45:00 PM pCi/L	0.504	1.0E+0
ENSR0510RD 9JWP2J30	RA-228	BUTF 2	F7E10038411 6/26/2007 6:35:27 AM	M76-F 4.7501E-01	Unk 1.28E-01	5/10/2007 9:10:00 1.391E-01 5.118E-01	5/9/2007 1:05:00 PM pCi/L	0.649	1.002E+0
ENSR0510RD 9JWP2K30	RA-228	BUTF 2	F7E10038412 6/26/2007 6:35:27 AM	M76-Z 5.435E-01	Unk 1.447E-01	5/10/2007 9:10:00 1.521E-01 5.445E-01	5/9/2007 1:35:00 PM pCi/L	0.618	1.001E+0
ENSR0510RD 9JWP2L30	RA-228	BUTF 2	F7E10038413 6/26/2007 6:35:27 AM	M31A-F 7.7464E-01	Unk 1.774E-01	5/10/2007 9:10:00 1.892E-01 6.593E-01	5/9/2007 2:35:00 PM pCi/L	0.579	1.0E+0
ENSR0510RD 9JWP2N30	RA-228	BUTF 2	F7E10038414 6/26/2007 6:35:27 AM	M31A-Z 8.6231E-01	Unk 2.319E-01	5/10/2007 9:10:00 2.404E-01 8.754E-01	5/9/2007 2:15:00 PM pCi/L	0.417	1.001E+0
ENSR0510RD 9JWP2P30	RA-228	BUTF 2	F7E10038415 6/26/2007 6:36:41 AM	EB050709-Z 1.2421E-01	Unk 1.266E-01	5/10/2007 9:10:00 1.405E-01 6.69E-01	5/9/2007 3:30:00 PM pCi/L	0.539	1.001E+0
ENSR0510RD JWW983AB	RA-228	BUTF 2	J7E140000321 6/26/2007 6:36:41 AM	INTRA-LAB BLANK 4.0109E-01	Unk 1.334E-01	5/10/2007 9:10:00 1.371E-01 5.484E-01	5/9/2007 6:45:00 AM pCi/L	0.667	1.004E+0
ENSR0510RD JWW983CS	RA-228	BUTF 2	J7E140000321 6/26/2007 6:36:41 AM	INTRA-LAB CHECK 2.8555E+00	Unk 2.826E-01	5/10/2007 9:10:00 3.289E-01 7.479E-01	5/9/2007 6:45:00 AM pCi/L	4.9808E+00 0.513	1.001E+0

7172084, **Samples Inserted | Updated | NotUpdated => 0 | 0 | 16,

**Results Inserted | ReTestInserted | Updated | NotInserted => 16 | 0 | 0 | 0.

**Diff RptDb | Qtims => *wo:JWP183AC=>, mat:Unk | Water, unt: | pCi/L *wo:JWP183AC=>, mat:Unk | Water, unt: | pCi/L *wo:JWP183AC=>, mat:Unk | Water, unt: | pCi/L *wo:JWP183AC=>, mat:Unk | Water, unt: | pCi/L *wo:JWP183AC=>, mat:Unk | Water, unt: | pCi/L *wo:JWP183AC=>, mat:Unk | Water, unt: | pCi/L

ICOC Fraction Transfer/Status Report

ByDate: 6/29/2006, 7/4/2007, Batch: '7172084', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
7172084				
AC	CalcC	LongA	6/21/2007 6:01:31	
SC		longa	IsBatched 6/21/2007 5:59:07 AM	ICOC_RADCALC v4.8.26
SC		LongA	InPrep 6/21/2007 6:01:31 AM	RICH-RC-5005 REVISION 6
SC		LongA	Sep1C 6/21/2007 7:40:09 AM	RICH-RC-5005 REVISION 6
SC		StringerR	InCnt1 6/21/2007 8:37:56 AM	RICH-RD-0007 REVISION 6
SC		StringerR	Cnt1C 6/21/2007 10:04:58 AM	RICH-RD-0007 REVISION 6
SC		HarrisonJ	Sep2C 6/25/2007 11:00:10 AM	RICH-RC-5005 REVISION 6
SC		DAWKINSO	InCnt2 6/25/2007 2:50:06 PM	RICH-RD-0003 REVISION 5
SC		StringerR	CalcC 6/26/2007 10:46:00 AM	RICH-RD-0003 REVISION 5
AC		LongA	6/21/2007 7:40:09	
AC		StringerR	6/21/2007 8:37:56	
AC		StringerR	6/21/2007 10:04:58	
AC		HarrisonJ	6/25/2007 11:00:10	
AC		DAWKINSO	6/25/2007 2:50:06 PM	
AC		StringerR	6/26/2007 10:46:00	

AC: Accepting Entry; SC: Status Change

STL Richland

Alpha Beta, Ra-228 by GPC , Results

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC Yield	RYld
Ra-228 by GPC				Ra-226/Ra-228 Deem With Out Blk Subt.									
Calc	TF	WATER	JWP173AC	RA-228	8.92E-01	(3.65E-01)		pCi/L	R	6.44E-01	1.41E+00	60%	
Calc	TF	WATER	JWP173AC	RA-228	6.52E-01	(3.77E-01)		pCi/L	R	7.15E-01	1.56E+00	60%	
Calc	TF	WATER	JWP173AC	RA-228	-2.68E-02	(3.60E-01)	U4	pCi/L	R	7.94E-01	1.73E+00	60%	
Calc	TF	WATER	JWP173AC	RA-228	5.06E-01	(2.12E-01)		pCi/L	A	4.14E-01	9.04E-01	60%	
Calc	TF	WATER	JWP173AC	RA-228	6.51E-01	(1.62E+00)	U4	pCi/L	R	3.45E+00	7.53E+00	60%	
Calc	TF	WATER	JWP183AC	RA-228	7.61E-01	(5.52E-01)	U4	pCi/L	R	1.08E+00	2.36E+00	34%	
Calc	TF	WATER	JWP183AC	RA-228	5.91E-01	(5.92E-01)	U4	pCi/L	R	1.20E+00	2.62E+00	34%	
Calc	TF	WATER	JWP183AC	RA-228	1.59E+00	(7.35E-01)		pCi/L	R	1.33E+00	2.91E+00	34%	
Calc	TF	WATER	JWP183AC	RA-228	9.82E-01	(3.64E-01)		pCi/L	A	6.93E-01	1.52E+00	34%	
Calc	TF	WATER	JWP183AC	RA-228	-2.69E+00	(2.45E+00)	U4	pCi/L	R	5.82E+00	1.27E+01	34%	
Calc	TF	WATER	JWP193AC	RA-228	-1.18E-01	(3.52E-01)	U4	pCi/L	R	7.89E-01	1.71E+00	54%	
Calc	TF	WATER	JWP193AC	RA-228	3.11E-01	(4.21E-01)	U4	pCi/L	R	8.75E-01	1.90E+00	54%	
Calc	TF	WATER	JWP193AC	RA-228	5.29E-01	(4.81E-01)	U4	pCi/L	R	9.71E-01	2.11E+00	54%	
Calc	TF	WATER	JWP193AC	RA-228	2.40E-01	(2.43E-01)	U4	pCi/L	A	5.07E-01	1.10E+00	54%	
Calc	TF	WATER	JWP193AC	RA-228	3.48E+00	(2.09E+00)		pCi/L	R	3.99E+00	8.70E+00	54%	
Calc	TF	WATER	JWP2A3AC	RA-228	5.47E-01	(2.97E-01)		pCi/L	R	5.43E-01	1.20E+00	61%	
Calc	TF	WATER	JWP2A3AC	RA-228	6.55E-01	(3.34E-01)		pCi/L	R	6.03E-01	1.34E+00	61%	
Calc	TF	WATER	JWP2A3AC	RA-228	2.96E-01	(3.31E-01)	U4	pCi/L	R	6.69E-01	1.48E+00	61%	
Calc	TF	WATER	JWP2A3AC	RA-228	4.99E-01	(1.85E-01)		pCi/L	A	3.49E-01	7.74E-01	61%	
Calc	TF	WATER	JWP2A3AC	RA-228	1.22E+00	(1.55E+00)	U4	pCi/L	R	3.17E+00	6.98E+00	61%	
Calc	TF	WATER	JWP2C3AC	RA-228	7.07E-01	(3.44E-01)		pCi/L	R	6.11E-01	1.36E+00	54%	
Calc	TF	WATER	JWP2C3AC	RA-228	5.05E-01	(3.56E-01)	U4	pCi/L	R	6.78E-01	1.51E+00	54%	
Calc	TF	WATER	JWP2C3AC	RA-228	6.85E-01	(4.06E-01)		pCi/L	R	7.52E-01	1.67E+00	54%	
Calc	TF	WATER	JWP2C3AC	RA-228	6.32E-01	(2.13E-01)		pCi/L	A	3.93E-01	8.73E-01	54%	
Calc	TF	WATER	JWP2C3AC	RA-228	-2.75E-01	(1.60E+00)	U4	pCi/L	R	3.56E+00	7.86E+00	54%	
Calc	TF	WATER	JWP2D3AC	RA-228	8.27E-01	(3.13E-01)		pCi/L	R	5.31E-01	1.17E+00	67%	
Calc	TF	WATER	JWP2D3AC	RA-228	4.34E-01	(3.05E-01)	U4	pCi/L	R	5.89E-01	1.30E+00	67%	
Calc	TF	WATER	JWP2D3AC	RA-228	-5.49E-02	(2.93E-01)	U4	pCi/L	R	6.54E-01	1.44E+00	67%	
Calc	TF	WATER	JWP2D3AC	RA-228	4.02E-01	(1.76E-01)		pCi/L	A	3.41E-01	7.51E-01	67%	
Calc	TF	WATER	JWP2D3AC	RA-228	5.39E-02	(1.23E+00)	U4	pCi/L	R	2.69E+00	5.96E+00	67%	
Calc	TF	WATER	JWP2E3AC	RA-228	4.47E-01	(2.57E-01)		pCi/L	R	4.29E-01	1.01E+00	55%	
Calc	TF	WATER	JWP2E3AC	RA-228	8.15E-01	(3.25E-01)		pCi/L	R	4.76E-01	1.13E+00	55%	
Calc	TF	WATER	JWP2E3AC	RA-228	1.24E-01	(2.59E-01)	U4	pCi/L	R	5.28E-01	1.25E+00	55%	
Calc	TF	WATER	JWP2E3AC	RA-228	4.62E-01	(1.63E-01)		pCi/L	A	2.76E-01	6.52E-01	55%	
Calc	TF	WATER	JWP2E3AC	RA-228	1.88E+00	(1.36E+00)	U4	pCi/L	R	2.42E+00	5.68E+00	55%	
Calc	TF	WATER	JWP2F3AC	RA-228	7.30E-01	(3.40E-01)		pCi/L	R	5.39E-01	1.26E+00	44%	
Calc	TF	WATER	JWP2F3AC	RA-228	5.05E-01	(3.40E-01)	U4	pCi/L	R	5.99E-01	1.40E+00	44%	
Calc	TF	WATER	JWP2F3AC	RA-228	2.22E-01	(3.33E-01)	U4	pCi/L	R	6.64E-01	1.56E+00	44%	

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Page 1

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

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	TF	WATER	JWP2F3AC	RA-228	4.86E-01	(1.95E-01)		pCi/L	A	3.47E-01	8.13E-01		44%	
Calc	TF	WATER	JWP2F3AC	RA-228	1.54E+00	(1.52E+00)	U4	pCi/L	R	2.87E+00	6.75E+00		44%	
Calc	TF	WATER	JWP2G3AC	RA-228	1.36E-01	(2.59E-01)	U4	pCi/L	R	5.26E-01	1.24E+00		47%	
Calc	TF	WATER	JWP2G3AC	RA-228	1.51E-01	(2.87E-01)	U4	pCi/L	R	5.84E-01	1.37E+00		47%	
Calc	TF	WATER	JWP2G3AC	RA-228	1.68E-01	(3.19E-01)	U4	pCi/L	R	6.48E-01	1.52E+00		47%	
Calc	TF	WATER	JWP2G3AC	RA-228	1.52E-01	(1.67E-01)	U4	pCi/L	A	3.38E-01	7.95E-01		47%	
Calc	TF	WATER	JWP2G3AC	RA-228	2.78E+00	(1.74E+00)	U4	pCi/L	R	3.05E+00	7.10E+00		47%	
Calc	TF	WATER	JWP2H3AC	RA-228	5.40E-01	(2.95E-01)		pCi/L	R	4.92E-01	1.15E+00		50%	
Calc	TF	WATER	JWP2H3AC	RA-228	2.52E-01	(2.83E-01)	U4	pCi/L	R	5.46E-01	1.28E+00		50%	
Calc	TF	WATER	JWP2H3AC	RA-228	4.34E-01	(3.34E-01)	U4	pCi/L	R	6.05E-01	1.42E+00		50%	
Calc	TF	WATER	JWP2H3AC	RA-228	4.09E-01	(1.76E-01)		pCi/L	A	3.16E-01	7.41E-01		50%	
Calc	TF	WATER	JWP2H3AC	RA-228	2.98E-01	(1.25E+00)	U4	pCi/L	R	2.64E+00	6.21E+00		50%	
Calc	TF	WATER	JWP2J3AC	RA-228	7.14E-01	(2.55E-01)		pCi/L	R	3.35E-01	7.96E-01		65%	
Calc	TF	WATER	JWP2J3AC	RA-228	6.89E-01	(2.69E-01)		pCi/L	R	3.72E-01	8.83E-01		65%	
Calc	TF	WATER	JWP2J3AC	RA-228	2.15E-02	(1.91E-01)	U4	pCi/L	R	4.13E-01	9.80E-01		65%	
Calc	TF	WATER	JWP2J3AC	RA-228	4.75E-01	(1.39E-01)		pCi/L	A	2.16E-01	5.12E-01		65%	
Calc	TF	WATER	JWP2J3AC	RA-228	3.63E+00	(1.35E+00)		pCi/L	R	1.82E+00	4.33E+00		65%	
Calc	TF	WATER	JWP2K3AC	RA-228	3.42E-01	(2.13E-01)	U4	pCi/L	R	3.60E-01	8.47E-01		62%	
Calc	TF	WATER	JWP2K3AC	RA-228	6.93E-01	(2.82E-01)		pCi/L	R	3.99E-01	9.40E-01		62%	
Calc	TF	WATER	JWP2K3AC	RA-228	5.95E-01	(2.88E-01)		pCi/L	R	4.43E-01	1.04E+00		62%	
Calc	TF	WATER	JWP2K3AC	RA-228	5.43E-01	(1.52E-01)		pCi/L	A	2.31E-01	5.44E-01		62%	
Calc	TF	WATER	JWP2K3AC	RA-228	1.41E+00	(1.12E+00)	U4	pCi/L	R	2.02E+00	4.74E+00		62%	
Calc	TF	WATER	JWP2L3AC	RA-228	8.75E-01	(3.17E-01)		pCi/L	R	4.42E-01	1.03E+00		58%	
Calc	TF	WATER	JWP2L3AC	RA-228	5.65E-01	(2.98E-01)		pCi/L	R	4.91E-01	1.14E+00		58%	
Calc	TF	WATER	JWP2L3AC	RA-228	8.84E-01	(3.65E-01)		pCi/L	R	5.45E-01	1.26E+00		58%	
Calc	TF	WATER	JWP2L3AC	RA-228	7.75E-01	(1.89E-01)		pCi/L	A	2.84E-01	6.59E-01		58%	
Calc	TF	WATER	JWP2L3AC	RA-228	2.95E+00	(1.50E+00)		pCi/L	R	2.44E+00	5.65E+00		58%	
Calc	TF	WATER	JWP2N3AC	RA-228	4.30E-01	(3.24E-01)	U4	pCi/L	R	5.86E-01	1.36E+00		42%	
Calc	TF	WATER	JWP2N3AC	RA-228	1.02E+00	(4.31E-01)		pCi/L	R	6.50E-01	1.51E+00		42%	
Calc	TF	WATER	JWP2N3AC	RA-228	1.13E+00	(4.79E-01)		pCi/L	R	7.22E-01	1.68E+00		42%	
Calc	TF	WATER	JWP2N3AC	RA-228	8.62E-01	(2.40E-01)		pCi/L	A	3.77E-01	8.75E-01		42%	
Calc	TF	WATER	JWP2N3AC	RA-228	2.67E+00	(1.77E+00)	U4	pCi/L	R	3.08E+00	7.19E+00		42%	
Calc	TF	WATER	JWP2P3AC	RA-228	2.67E-01	(2.38E-01)	U4	pCi/L	R	4.48E-01	1.04E+00		54%	
Calc	TF	WATER	JWP2P3AC	RA-228	2.37E-01	(2.57E-01)	U4	pCi/L	R	4.97E-01	1.15E+00		54%	
Calc	TF	WATER	JWP2P3AC	RA-228	-1.32E-01	(2.34E-01)	U4	pCi/L	R	5.52E-01	1.28E+00		54%	
Calc	TF	WATER	JWP2P3AC	RA-228	1.24E-01	(1.40E-01)	U4	pCi/L	A	2.88E-01	6.69E-01		54%	
Calc	TF	WATER	JWP2P3AC	RA-228	1.78E+00	(1.22E+00)	U4	pCi/L	R	2.13E+00	5.04E+00		54%	
Calc	TF	WATER	JWW983AA	RA-228	5.41E-01	(2.34E-01)		pCi/L	R	3.67E-01	8.53E-01	B	67%	
Calc	TF	WATER	JWW983AA	RA-228	1.59E-01	(2.06E-01)	U4	pCi/L	R	4.07E-01	9.46E-01	B	67%	

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Alpha Beta, Ra-228 by GPC , Results
Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	TF	WATER	JWW983AA	RA-228	5.03E-01	(2.69E-01)		pCi/L	R	4.52E-01	1.05E+00	B	67%	
Calc	TF	WATER	JWW983AA	RA-228	4.01E-01	(1.37E-01)		pCi/L	A	2.36E-01	5.48E-01	B	67%	
Calc	TF	WATER	JWW983AA	RA-228	8.42E-01	(9.78E-01)	U4	pCi/L	R	1.90E+00	4.44E+00	B	67%	
Calc	TF	WATER	JWW983AC	RA-228	3.18E+00	(5.74E-01)		pCi/L	R	5.05E-01	1.16E+00	S	51%	64%
Calc	TF	WATER	JWW983AC	RA-228	3.28E+00	(6.12E-01)		pCi/L	R	5.61E-01	1.29E+00	S	51%	66%
Calc	TF	WATER	JWW983AC	RA-228	2.11E+00	(5.19E-01)		pCi/L	R	6.22E-01	1.43E+00	S	51%	42%
Calc	TF	WATER	JWW983AC	RA-228	2.86E+00	(3.29E-01)		pCi/L	A	3.25E-01	7.48E-01	S	51%	57%
Calc	TF	WATER	JWW983AC	RA-228	6.50E+00	(1.92E+00)		pCi/L	R	2.47E+00	5.77E+00	S	51%	131%

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Page 3

Q - Qualifier, U is Less Than Lc = 1.645*TPU
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 Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:85
 RADCALC v4.8.26
 STL Richland

Alpha Beta, Ra-228 by GPC, Calculated Results Detailed Report

Batch Nbr: 7172084

Sq	Calc TF	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB Sa/On Date	Analysis Date/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol					
1	456833.M100-L	WATER	*STLE Ra228WoBS JWP173AC	pCv/L	WATER	05/09/07 06:45	06/26/07 06:33	06/21/07 07:25	06/25/07 11:27	Alq	1	1000.80 g	9					
2	456833.M100-F	WATER	*STLE Ra228WoBS JWP173AC	pCv/L	WATER	05/09/07 06:45	06/26/07 06:33	06/21/07 07:25	06/25/07 11:27	Alq	1	1000.80 g	9					
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Bik Value	Ingr Fct	Conv Fct/Vol/Adj	Decay	Abn
0	06/25/07 15:35	RA-228	61	324	GPC7A	1	N	N	5.3710E-01	1.0000E+00	N	60%	N	1.5233E+00	4.5045E+02	1.0143E+00		
				400			Y		(1.609E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
1	06/25/07 16:30	RA-228	54	324	GPC7A	1	N	N	5.3710E-01	1.0000E+00	N	60%	N	1.6906E+00	4.5045E+02	1.0143E+00		
				400			Y		(1.609E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
2	06/25/07 17:26	RA-228	40	324	GPC7A	1	N	N	5.3710E-01	1.0000E+00	N	60%	N	1.8761E+00	4.5045E+02	1.0143E+00		
				400			Y		(1.609E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
3	06/26/07 06:33	RA-228	42	314	GPC7A	1	N	N	5.3710E-01	1.0000E+00	N	60%	N	8.2804E+00	4.5045E+02	1.0143E+00		
				400			N		(1.609E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield/EntFct	Chem Yld/EntFct	IDC/ILeC	BikLc/MDC	StdDv/MdC/LcC				
	06/29/07	RA-228	R	0.892168	4.10000E-01	1.95425	1.95425	(0.792605)	1.0008 L	60%			1.405814					
				(0.364585)	(1.6256E-01)	(0.792605)	(0.792605)		(0.173205)				0.64432					
	06/29/07	RA-228	R	0.652019	2.70000E-01	1.428215	1.428215	(0.82215)	1.0008 L	60%			1.560133					
				(0.376747)	(1.5370E-01)	(0.82215)	(0.82215)		(0.173205)				0.715048					
	06/29/07	RA-228	R	-0.026799	-1.00000E-02	-0.058702	-0.058702	(0.788127)	1.0008 L	60%			1.731337					
				(0.359804)	(1.3426E-01)	(0.788127)	(0.788127)		(0.173205)				0.793515					
	06/29/07	RA-228	A	0.505796	2.23333E-01	1.107921	1.107921	(0.462517)	1.0008 L	60%			0.903993					
				(0.211954)	(8.6971E-02)	(0.462517)	(0.462517)		(0.10)				0.414322					
	06/29/07	RA-228	R	0.650544	5.50000E-02	1.424983	1.424983	(3.550976)	1.0008 L	60%			7.532626					
				(1.621444)	(1.3698E-01)	(3.550976)	(3.550976)		(0.173205)				3.447819					
Sq	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB Sa/On Date	Analysis Date/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol					
2	Calc TF	WATER	*STLE Ra228WoBS JWP173AC	pCv/L	WATER	05/09/07 07:15	06/26/07 06:33	06/21/07 07:25	06/25/07 11:27	Alq	1	1002.00 g	9					
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Bik Value	Ingr Fct	Conv Fct/Vol/Adj	Decay	Abn
0	06/25/07 15:35	RA-228	47	296	GPC7B	1	N	N	5.4167E-01	1.0000E+00	N	34%	N	1.5233E+00	4.5045E+02	1.0143E+00		
				400			Y		(1.557E-02)	(0.000E+00)		3%		(0.000E+00)	0.000998			
1	06/25/07 16:30	RA-228	44	296	GPC7B	1	N	N	5.4167E-01	1.0000E+00	N	34%	N	1.6906E+00	4.5045E+02	1.0143E+00		
				400			Y		(1.557E-02)	(0.000E+00)		3%		(0.000E+00)	0.000998			
2	06/25/07 17:26	RA-228	54	296	GPC7B	1	N	N	5.4167E-01	1.0000E+00	N	34%	N	1.8761E+00	4.5045E+02	1.0143E+00		
				400			Y		(1.557E-02)	(0.000E+00)		3%		(0.000E+00)	0.000998			

0 - (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 Beta, Ra-228 by GPC, Calculated Results

Batch Nbr: 7172084	30	292	34%	N	5.4167E-01	1.0000E+00	N	34%	N	8.2804E+00	4.5045E+02	1.0143E+00		
06/26/07 06:33 RA-228	50	400	3%	N	(1.557E-02)	(0.0000E+00)				(0.0000E+00)	0.000998			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC
06/29/07	RA-228	R	0.761155	(0.552022)	U4	2.00000E-01	1.669284	(1.207754)	1.002 L	34%		2.35919		
						(1.4370E-01)	(1.207754)		(0.173205)			1.077098		
06/29/07	RA-228	R	0.591296	(0.591909)	U4	1.40000E-01	1.296766	(1.29649)	1.002 L	34%		2.618162		
						(1.3946E-01)	(1.29649)		(0.173205)			1.195333		
06/29/07	RA-228	R	1.593587	(0.734747)	U4	3.40000E-01	3.494883	(1.601864)	1.002 L	34%		2.90547		
						(1.5313E-01)	(1.601864)		(0.173205)			1.326505		
06/29/07	RA-228	A	0.982013	(0.364377)	U4	2.26667E-01	2.153644	(0.796208)	1.002 L	34%		1.51705		
						(8.4030E-02)	(0.796208)		(0.10)			0.692615		
06/29/07	RA-228	R	-2.68929	(2.446771)	U4	-1.30000E-01	-5.897859	(5.357884)	1.002 L	34%		12.744372		
						(1.1758E-01)	(5.357884)		(0.173205)			5.815025		

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	TF	WATER	*STLE	Ra228WoBS	JWPI93AC	pCi/L			05/09/07 07:30	06/26/07 06:33	06/21/07 07:25					
456833,M100-Z										29.5		06/25/07 11:27	rate26767	Alq	63%	1001.40 g	

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC
06/29/07	RA-228	R	-0.118241	(0.351518)	U4	-4.75000E-02	-0.259158	(0.770344)	1.0014 L	54%		1.711432		
						(1.4113E-01)	(0.770344)		(0.173205)			0.788725		
06/29/07	RA-228	R	0.310784	(0.421178)	U4	1.12500E-01	0.681172	(0.922502)	1.0014 L	54%		1.899299		
						(1.5205E-01)	(0.922502)		(0.173205)			0.875305		
06/29/07	RA-228	R	0.528829	(0.48097)	U4	1.72500E-01	1.159081	(1.052589)	1.0014 L	54%		2.107722		
						(1.5594E-01)	(1.052589)		(0.173205)			0.971358		
06/29/07	RA-228	A	0.240458	(0.243194)	U4	7.91667E-02	0.527032	(0.532539)	1.0014 L	54%		1.100517		
						(8.6510E-02)	(0.532539)		(0.10)			0.507181		
06/29/07	RA-228	R	3.484183	(2.09025)	U4	2.57500E-01	7.636583	(4.565441)	1.0014 L	54%		8.704395		
						(1.5234E-01)	(4.565441)		(0.173205)			3.987881		

RecCnt: 4 RADCALC v4.8.26
STL 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 Beta, Ra-228 by GPC , Calculated Results

6/29/2007 2:23:42 PM

Batch Nbr: 7172084

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	TF	WATER	*STLE	Ra228WoBS	JWP2A3AC	pCi/L		05/09/07 08:35	06/26/07 06:34	06/21/07 07:25	rate26768	Alq	69%	1000.50 g			
456833	M2A-L						WATER			30.4	06/25/07 11:27							
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/25/07 15:35	RA-228	41	228	GPC1B	1	N	N	5.2334E-01	1.0000E+00	N	61%	N	1.5241E+00	4.5045E+02	1.0143E+00		
			50	400			Y		(1.538E-02)	(0.000E+00)		5%		(0.000E+00)	0.001			
1	06/25/07 16:31	RA-228	42	228	GPC1B	1	N	N	5.2334E-01	1.0000E+00	N	61%	N	1.6914E+00	4.5045E+02	1.0143E+00		
			50	400			Y		(1.538E-02)	(0.000E+00)		5%		(0.000E+00)	0.001			
2	06/25/07 17:26	RA-228	34	228	GPC1B	1	N	N	5.2334E-01	1.0000E+00	N	61%	N	1.8771E+00	4.5045E+02	1.0143E+00		
			50	400			Y		(1.538E-02)	(0.000E+00)		5%		(0.000E+00)	0.001			
3	06/26/07 06:34	RA-228	38	263	GPC1B	1	N	N	5.2334E-01	1.0000E+00	N	61%	N	8.2874E+00	4.5045E+02	1.0143E+00		
			50	400			N		(1.538E-02)	(0.000E+00)		5%		(0.000E+00)	0.001			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield/EntFct	Chem Yld	IDC/ILcC	BikLc/MDC	StdDvMDC/LcC				
06/29/07	RA-228	R	0.546516		2.50000E-01	1.196787	1.196787	1.0005 L	1.0005 L	61%		1.20383						
			(0.296816)		(1.3351E-01)	(0.647221)	(0.647221)	(0.173205)	(0.173205)			0.542995						
06/29/07	RA-228	R	0.655028		2.70000E-01	1.434413	1.434413	1.0005 L	1.0005 L	61%		1.335977						
			(0.333848)		(1.3500E-01)	(0.72755)	(0.72755)	(0.173205)	(0.173205)			0.602601						
06/29/07	RA-228	R	0.296157		1.10000E-01	0.64854	0.64854	1.0005 L	1.0005 L	61%		1.482629						
			(0.331312)		(1.2258E-01)	(0.724799)	(0.724799)	(0.173205)	(0.173205)			0.668749						
06/29/07	RA-228	A	0.499234		2.10000E-01	1.093246	1.093246	1.0005 L	1.0005 L	61%		0.774118						
			(0.185389)		(7.5333E-02)	(0.404634)	(0.404634)	(0.10)	(0.10)			0.349171						
06/29/07	RA-228	R	1.218393		1.02500E-01	2.668097	2.668097	1.0005 L	1.0005 L	61%		6.98266						
			(1.547396)		(1.2978E-01)	(3.385935)	(3.385935)	(0.173205)	(0.173205)			3.171082						
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	TF	WATER	*STLE	Ra228WoBS	JWP2C3AC	pCi/L		05/09/07 09:30	06/26/07 06:34	06/21/07 07:25	rate26769	Alq	62%	1000.80 g			
456833	M2A-F						WATER			29.9	06/25/07 11:27							
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/25/07 15:35	RA-228	41	216	GPC1C	1	N	N	5.1209E-01	1.0000E+00	N	54%	N	1.5241E+00	4.5045E+02	1.0143E+00		
			50	400			Y		(1.848E-02)	(0.000E+00)		4%		(0.000E+00)	0.000999			
1	06/25/07 16:31	RA-228	36	216	GPC1C	1	N	N	5.1209E-01	1.0000E+00	N	54%	N	1.6914E+00	4.5045E+02	1.0143E+00		
			50	400			Y		(1.848E-02)	(0.000E+00)		4%		(0.000E+00)	0.000999			
2	06/25/07 17:26	RA-228	38	216	GPC1C	1	N	N	5.1209E-01	1.0000E+00	N	54%	N	1.8771E+00	4.5045E+02	1.0143E+00		
			50	400			Y		(1.848E-02)	(0.000E+00)		4%		(0.000E+00)	0.000999			
3	06/26/07 06:34	RA-228	30	248	GPC1C	1	N	N	5.1209E-01	1.0000E+00	N	54%	N	8.2874E+00	4.5045E+02	1.0143E+00		
			50	400			N		(1.848E-02)	(0.000E+00)		4%		(0.000E+00)	0.000999			

Page 3
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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
 RecCnt:5
 RADCALC v4.8.26
 STL Richland

Alpha Beta, Ra-228 by GPC , Calculated Results

Batch Nbr: 7172084

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BKlCc/MDC	StdDvMdc/LcC
06/29/07	RA-228	R	0.707434 (0.34411)		2.80000E-01 (1.3323E-01)	1.549657 (0.749792)	1.549657 (0.749792)	1.0008 L (0.173205)	54%			1.357874 0.61083		
06/29/07	RA-228	R	0.504701 (0.355559)		1.80000E-01 (1.2550E-01)	1.105563 (0.7769)	1.105563 (0.7769)	1.0008 L (0.173205)	54%			1.50693 0.677882		
06/29/07	RA-228	R	0.68457 (0.406235)		2.20000E-01 (1.2865E-01)	1.499572 (0.886708)	1.499572 (0.886708)	1.0008 L (0.173205)	54%			1.672348 0.752294		
06/29/07	RA-228	A	0.632235 (0.213401)		2.26667E-01 (7.4573E-02)	1.384931 (0.465715)	1.384931 (0.465715)	1.0008 L (0.10)	54%			0.873175 0.392792		
06/29/07	RA-228	R	-0.274763 (1.599425)		-2.00000E-02 (1.1640E-01)	-0.601878 (3.503463)	-0.601878 (3.503463)	1.0008 L (0.173205)	54%			7.858259 3.558939		

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
6	Calc	TF	WATER	*STLE	Ra228WoBS	JWP2D3AC	pcil/L			05/09/07 09:10	06/26/07 06:34	06/21/07 07:25	1				
456833,M2A-Z											28.9	06/25/07 11:27	rate26770	Alq	80%	1001.70	9

Sq	Calc Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trd/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/25/07 15:35	RA-228	54	265	GPC1D 1	1	N	N	5.2148E-01 (1.783E-02)	1.0000E+00 (0.000E+00)	N	67%	N	1.5241E+00 (0.000E+00)	4.5045E+02 0.000998	1.0143E+00		
1	06/25/07 16:31	RA-228	43	265	GPC1D 1	1	N	N	5.2148E-01 (1.783E-02)	1.0000E+00 (0.000E+00)	N	67%	N	1.6914E+00 (0.000E+00)	4.5045E+02 0.000998	1.0143E+00		
2	06/25/07 17:26	RA-228	32	265	GPC1D 1	1	N	N	5.2148E-01 (1.783E-02)	1.0000E+00 (0.000E+00)	N	67%	N	1.8771E+00 (0.000E+00)	4.5045E+02 0.000998	1.0143E+00		
3	06/26/07 06:34	RA-228	29	230	GPC1D 1	1	N	N	5.2148E-01 (1.783E-02)	1.0000E+00 (0.000E+00)	N	67%	N	8.2874E+00 (0.000E+00)	4.5045E+02 0.000998	1.0143E+00		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BKlCc/MDC	StdDvMdc/LcC
06/29/07	RA-228	R	0.827348 (0.313401)		4.17500E-01 (1.5250E-01)	1.813955 (0.681117)	1.813955 (0.681117)	1.0017 L (0.173205)	67%			1.168107 0.530665		
06/29/07	RA-228	R	0.434343 (0.305119)		1.97500E-01 (1.3732E-01)	0.952293 (0.667275)	0.952293 (0.667275)	1.0017 L (0.173205)	67%			1.296332 0.588917		
06/29/07	RA-228	R	-0.054914 (0.293497)		-2.25000E-02 (1.2023E-01)	-0.120398 (0.643462)	-0.120398 (0.643462)	1.0017 L (0.173205)	67%			1.438633 0.653564		
06/29/07	RA-228	A	0.402259 (0.175581)		1.97500E-01 (7.9281E-02)	0.88195 (0.383438)	0.88195 (0.383438)	1.0017 L (0.10)	67%			0.751147 0.341242		
06/29/07	RA-228	R	0.053877 (1.230366)		5.00000E-03 (1.1418E-01)	0.118125 (2.697561)	0.118125 (2.697561)	1.0017 L (0.173205)	67%			5.957247 2.688207		

RecCnt:7

RADCALC v4.8.26

STL Richland

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Alpha Beta, Ra-228 by GPC , Calculated Results

Batch Nbr: 7172084 Units/Matrix QC/BB Sa/On Date Analysis Date/PptWt Sep1/Sep2 Date QC/Tracer Vial Multi/EntYld Total/Analy Vol Final/Count Vol

Sq	Calc TF	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	Analysis Date/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
7	456833.M13-L	WATER	*STLE	Ra228WoBS	JWP2F3AC	pCi/L		05/09/07 10:35	06/26/07 06:34	06/21/07 07:25	rata26771 Alq	61%	1000.70 g	
									30.9	06/25/07 11:27				

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EntFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/ILcC
0	06/25/07 15:36	RA-228	18	82	GPC2A 1	1.55000E-01 (8.7821E-02)	0.97803 (0.560151)	0.97803 (0.560151)	1.0007 L (0.173205)	55%	1.013872			
1	06/25/07 16:31	RA-228	50	400	GPC2A 1	2.55000E-01 (9.8552E-02)	1.785642 (0.706108)	1.785642 (0.706108)	1.0007 L (0.173205)	55%	1.125166			
2	06/25/07 17:26	RA-228	50	400	GPC2A 1	3.50000E-02 (7.2887E-02)	0.271983 (0.566858)	0.271983 (0.566858)	1.0007 L (0.173205)	55%	1.248638			
3	06/26/07 06:34	RA-228	17	88	GPC2A 1	1.48333E-01 (5.0263E-02)	1.011885 (0.354916)	1.011885 (0.354916)	1.0007 L (0.10)	55%	0.651959			
	06/29/07	RA-228	50	400	GPC2A 1	1.20000E-01 (8.5732E-02)	4.117985 (2.962148)	4.117985 (2.962148)	1.0007 L (0.173205)	55%	5.68164			

Sq	Status Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	Analysis Date/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol
8	456833.M13-F	WATER	*STLE	Ra228WoBS	JWP2F3AC	pCi/L		05/09/07 11:30	06/26/07 06:34	06/21/07 07:25	rata26772 Alq	54%	1001.50 g	
									28.1	06/25/07 11:27				

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	EfficiencyY1	EfficiencyY2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/25/07 15:36	RA-228	22	91	GPC2B 1	1	N	N	4.5845E-01 (1.334E-02)	1.0000E+00 (0.000E+00)	N	44%	N	1.5254E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00		
1	06/25/07 16:31	RA-228	50	400	GPC2B 1	1	Y	N	4.5845E-01 (1.334E-02)	1.0000E+00 (0.000E+00)	N	44%	N	1.6928E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00		
2	06/25/07 17:26	RA-228	14	91	GPC2B 1	1	N	N	4.5845E-01 (1.334E-02)	1.0000E+00 (0.000E+00)	N	44%	N	1.8786E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00		
3	06/26/07 06:34	RA-228	50	400	GPC2B 1	1	Y	N	4.5845E-01 (1.334E-02)	1.0000E+00 (0.000E+00)	N	44%	N	8.2960E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00		
	06/26/07 06:34	RA-228	15	87	GPC2B 1	1	N	N	4.5845E-01 (1.334E-02)	1.0000E+00 (0.000E+00)	N	44%	N	8.2960E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00		
	06/26/07 06:34	RA-228	50	400	GPC2B 1	1	N	N	4.5845E-01 (1.334E-02)	1.0000E+00 (0.000E+00)	N	44%	N	8.2960E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00		

RecCnt:8 RADCALC v4.8.26 STL Richland

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Alpha Beta, Ra-228 by GPC, Calculated Results

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BikLcC/MDC	StdDVMdC/LcC
06/29/07	RA-228	R	0.730398 (0.340416)	1.601124 (0.741928)	2.12500E-01 (9.6792E-02)	1.601124 (0.741928)	1.601124 (0.741928)	1.0015 L (0.173205)	44%	1.264395				
06/29/07	RA-228	R	0.505417 (0.339892)	1.107938 (0.743023)	1.32500E-01 (8.8141E-02)	1.107938 (0.743023)	1.107938 (0.743023)	1.0015 L (0.173205)	44%	0.539371				
06/29/07	RA-228	R	0.222236 (0.333193)	0.487168 (0.729995)	5.25000E-02 (7.8541E-02)	0.487168 (0.729995)	0.487168 (0.729995)	1.0015 L (0.173205)	44%	1.40319				
06/29/07	RA-228	A	0.486017 (0.195058)	1.06541 (0.42628)	1.32500E-01 (5.0888E-02)	1.06541 (0.42628)	1.06541 (0.42628)	1.0015 L (0.10)	44%	0.598578				
06/29/07	RA-228	R	1.542188 (1.519802)	3.38067 (3.327306)	8.25000E-02 (8.0893E-02)	3.38067 (3.327306)	3.38067 (3.327306)	1.0015 L (0.173205)	44%	1.557171				

Sq	Calc TF	Matrix	Method	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
9	456833,M13-Z	WATER	*STLE Ra228WoBS JWP2G3AC		pCi/L		05/09/07 11:15	06/26/07 06:34	06/21/07 07:25	1	1	53%	1002.809	
								30.1	06/25/07 11:27	rata26773	Alq			

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BikLcC/MDC	StdDVMdC/LcC
06/29/07	RA-228	R	0.136311 (0.258752)	0.299198 (0.567755)	4.00000E-02 (7.5829E-02)	0.299198 (0.567755)	0.299198 (0.567755)	1.0028 L (0.173205)	47%	1.235819				
06/29/07	RA-228	R	0.151274 (0.287156)	0.332042 (0.630078)	4.00000E-02 (7.5829E-02)	0.332042 (0.630078)	0.332042 (0.630078)	1.0028 L (0.173205)	47%	0.525871				
06/29/07	RA-228	R	0.167875 (0.318668)	0.368479 (0.699221)	4.00000E-02 (7.5829E-02)	0.368479 (0.699221)	0.368479 (0.699221)	1.0028 L (0.173205)	47%	1.371477				
06/29/07	RA-228	A	0.15182 (0.166987)	0.33324 (0.366402)	4.00000E-02 (4.3780E-02)	0.33324 (0.366402)	0.33324 (0.366402)	1.0028 L (0.10)	47%	0.583596				
06/29/07	RA-228	R	2.780007 (1.742607)	6.102013 (3.812771)	1.50000E-01 (9.2871E-02)	6.102013 (3.812771)	6.102013 (3.812771)	1.0028 L (0.173205)	47%	1.521978				

Page 6
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Alpha Beta, Ra-228 by GPC, Calculated Results

Batch Nbr: 7172084

Batch Nbr: 7172084		Protocol Equation Set		Wrk Ord		Units/Matrix		QC/BB Sa/On Date		AnalysisDate/PptWt		Sep1/Sep2 Date		QC/Tracer Vial		Multi/EntYld		Total/Analy Vol		Final/Count Vol			
Sq	Calc TF	Method	Matrix	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct	Vol/Adj	Decay	Abn			
10	456833.M76-L	TF	WATER	20	91	GPC2D	1	N	N	4.4147E-01	1.0000E+00	N	50%	N	1.5254E+00	(0.000E+00)	4.5045E+02	1000.10 g	1.0142E+00				
				*STLE Ra228WobS JWP2H3AC		pCi/L		05/09/07 12:45		06/26/07 06:34		06/21/07 07:25		rata26774 Alq		58%		1000.10 g					
				,F7E100384-10 v4.8.26		WATER		29.9		06/25/07 11:27													
1	06/25/07 15:36	RA-228		50	400	GPC2D	1	Y	N	(1.169E-02)	(0.000E+00)	N	4%	N	1.6928E+00	(0.000E+00)	4.5045E+02	1.0142E+00					
2	06/25/07 16:31	RA-228		50	400	GPC2D	1	Y	N	(1.169E-02)	(0.000E+00)	N	4%	N	1.8786E+00	(0.000E+00)	4.5045E+02	1.0142E+00					
3	06/25/07 17:26	RA-228		50	400	GPC2D	1	Y	N	(1.169E-02)	(0.000E+00)	N	4%	N	8.2960E+00	(0.000E+00)	4.5045E+02	1.0142E+00					
3	06/26/07 06:34	RA-228		50	89	GPC2D	1	N	N	4.4147E-01	1.0000E+00	N	50%	N	(0.000E+00)	(0.000E+00)	0.001						
				Q		Net Cnt Rt		Dpm Wo Blk		Dpm-Blk		Vol Used		Yield,EnFct		Chem Yld,EFctU		IDC/ILcC		BlkLcC/MDC StdDvMdc/LcC			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Q	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC								
06/29/07	RA-228	R	0.540372	(0.294771)	1.72500E-01	1.182927	1.0001 L	1.182927	(0.642566)	(0.173205)	50%	1.152354	0.491575	1.278849	0.545536	1.419186	0.605402	0.741008	0.316102	6.208079	2.643914		
06/29/07	RA-228	R	0.252043	(0.28284)	7.25000E-02	0.551748	1.0001 L	0.551748	(0.618549)	(0.173205)	50%	0.491575	1.278849	0.545536	1.419186	0.605402	0.741008	0.316102	6.208079	2.643914			
06/29/07	RA-228	R	0.43402	(0.33892)	1.12500E-01	0.950112	1.0001 L	0.950112	(0.729377)	(0.173205)	50%	0.491575	1.278849	0.545536	1.419186	0.605402	0.741008	0.316102	6.208079	2.643914			
06/29/07	RA-228	A	0.408812	(0.17587)	1.19167E-01	0.894929	1.0001 L	0.894929	(0.384055)	(0.10)	50%	0.491575	1.278849	0.545536	1.419186	0.605402	0.741008	0.316102	6.208079	2.643914			
06/29/07	RA-228	R	0.298143	(1.2472)	1.75000E-02	0.652664	1.0001 L	0.652664	(2.730048)	(0.173205)	50%	0.491575	1.278849	0.545536	1.419186	0.605402	0.741008	0.316102	6.208079	2.643914			
				Protocol Equation Set		Wrk Ord		Units/Matrix		QC/BB Sa/On Date		AnalysisDate/PptWt		Sep1/Sep2 Date		QC/Tracer Vial		Multi/EntYld		Total/Analy Vol		Final/Count Vol	
Sq	Calc TF	Method	Matrix	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct <td>Vol/Adj</td> <td>Decay</td> <td>Abn</td>	Vol/Adj	Decay	Abn			
11	456833.M76-F	TF	WATER	25	77	GPC3A	1	N	N	4.6168E-01	1.0000E+00	N	65%	N	1.5266E+00	(0.000E+00)	4.5045E+02	1.0142E+00					
				*STLE Ra228WobS JWP2J3AC		pCi/L		05/09/07 13:05		06/26/07 06:35		06/21/07 07:25		rata26775 Alq		74%		1001.70 g					
				,F7E100384-11 v4.8.26		WATER		30.0		06/25/07 11:27													
0	06/25/07 15:36	RA-228		50	400	GPC3A	1	Y	N	(4.105E-02)	(0.000E+00)	N	5%	N	1.6942E+00	(0.000E+00)	4.5045E+02	1.0142E+00					
1	06/25/07 16:31	RA-228		50	400	GPC3A	1	Y	N	(4.105E-02)	(0.000E+00)	N	5%	N	1.8802E+00	(0.000E+00)	4.5045E+02	1.0142E+00					
2	06/25/07 17:27	RA-228		50	400	GPC3A	1	Y	N	(4.105E-02)	(0.000E+00)	N	5%	N	8.3051E+00	(0.000E+00)	4.5045E+02	1.0142E+00					
3	06/26/07 06:35	RA-228		50	77	GPC3A	1	N	N	4.6168E-01	1.0000E+00	N	65%	N	(0.000E+00)	(0.000E+00)	0.000998						
				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	
				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	
				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:11

RADCALC v4.8.26
STL Richland

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- (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-228 by GPC , Calculated Results

6/29/2007 2:23:43 PM

Batch Nbr: 7172084

BIKLC/MDC StdDvMdc/LcC

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKLC/MDC	StdDvMdc/LcC
06/29/07	RA-228	R	0.714143 (0.255152)	3.07500E-01 (1.0238E-01)	U4	1.565837 (0.553943)	1.565837 (0.553943)	1.0017 L (0.173205)	65%	0.79595	0.335236			
06/29/07	RA-228	R	0.689441 (0.268883)	2.67500E-01 (9.8393E-02)		1.511677 (0.58469)	1.511677 (0.58469)	1.0017 L (0.173205)	65%	0.883322	0.372036			
06/29/07	RA-228	R	0.021452 (0.191493)	7.50000E-03 (6.6942E-02)		0.047036 (0.419863)	0.047036 (0.419863)	1.0017 L (0.173205)	65%	0.980286	0.412875			
06/29/07	RA-228	A	0.475012 (0.139072)	1.94167E-01 (5.2328E-02)		1.041517 (0.302765)	1.041517 (0.302765)	1.0017 L (0.10)	65%	0.511832	0.215572			
06/29/07	RA-228	R	3.632428 (1.353151)	2.87500E-01 (1.0041E-01)		7.964501 (2.940087)	7.964501 (2.940087)	1.0017 L (0.173205)	65%	4.330169	1.823772			

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKLC/MDC	StdDvMdc/LcC
0	06/25/07 15:36	RA-228	18	86	GPC3B 1	N	4.7832E-01 (5.343E-02)	1.0000E+00 (0.000E+00)	62% 5%	N	1.5266E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00	
1	06/25/07 16:31	RA-228	24	86	GPC3B 1	N	4.7832E-01 (5.343E-02)	1.0000E+00 (0.000E+00)	62% 5%	N	1.6942E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00	
2	06/25/07 17:27	RA-228	21	86	GPC3B 1	N	4.7832E-01 (5.343E-02)	1.0000E+00 (0.000E+00)	62% 5%	N	1.8802E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00	
3	06/26/07 06:35	RA-228	17	92	GPC3B 1	N	4.7832E-01 (5.343E-02)	1.0000E+00 (0.000E+00)	62% 5%	N	8.3051E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00	
06/29/07	RA-228	R	0.341865 (0.213328)	1.45000E-01 (8.7963E-02)	U4	0.749358 (0.466105)	0.749358 (0.466105)	1.0014 L (0.173205)	62%	0.846696	0.359668			
06/29/07	RA-228	R	0.693372 (0.282275)	2.65000E-01 (1.0069E-01)		1.51985 (0.614054)	1.51985 (0.614054)	1.0014 L (0.173205)	62%	0.939639	0.399149			
06/29/07	RA-228	R	0.595261 (0.287979)	2.05000E-01 (9.4538E-02)		1.304795 (0.62786)	1.304795 (0.62786)	1.0014 L (0.173205)	62%	1.042785	0.442965			
06/29/07	RA-228	A	0.543499 (0.152067)	2.05000E-01 (5.4582E-02)		1.191334 (0.331415)	1.191334 (0.331415)	1.0014 L (0.10)	62%	0.544464	0.231283			
06/29/07	RA-228	R	1.410908 (1.120656)	1.10000E-01 (8.5878E-02)	U4	3.092666 (2.451571)	3.092666 (2.451571)	1.0014 L (0.173205)	62%	4.740372	2.023791			

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

1 06/21/07 07:25 rata26776 Alq 72% 1001.40 g

06/25/07 11:27

AnalysisDate/PptWt Sep1/Sep2 Date

06/26/07 06:35 05/09/07 13:35

29.4

Efficiency 2 Ent Yld Fct Ent Blk Value Ingr Fct Conv Fct/VolAdj Decay Abn

Efficiency 1 Ent Trc/Av Ent Efficiency1

Units/Matrix QC/BB Sa/On Date

Wk Ord

Protocol Equation Set

12 Calc TF WATER *STLE Ra228WoBS JWPZK3AC pCi/L

456833,M76-Z ,F7E100384-12 v4.8.26 WATER

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

06/29/07 2:23:43 PM

RecCnt:13 RADCALC v4.8.26 STL Richland

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U - (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-228 by GPC , Calculated Results

6/29/2007 2:23:43 PM

Batch Nbr: 7172084

Sq	Calc	TF	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	06/25/07	15:36	WATER	*STLE	Ra228WoBS	JWP2L3AC	pCi/L		05/09/07 14:35	06/26/07 06:35	06/21/07 07:25						
456833.M31A-F							WATER			28.9	06/25/07 11:27	ata26777	Alq	69%	1000.00 g		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/25/07	RA-228	30	106	GPC3C 1	1	N	N	4.6154E-01 (4.539E-02)	1.0000E+00 (0.000E+00)	58%	N	1.5266E+00 (0.000E+00)	4.5045E+02 0.001	1.0142E+00		
1	06/25/07	RA-228	23	106	GPC3C 1	1	N	N	4.6154E-01 (4.539E-02)	1.0000E+00 (0.000E+00)	58%	N	1.6942E+00 (0.000E+00)	4.5045E+02 0.001	1.0142E+00		
2	06/25/07	RA-228	27	106	GPC3C 1	1	N	N	4.6154E-01 (4.539E-02)	1.0000E+00 (0.000E+00)	58%	N	1.8802E+00 (0.000E+00)	4.5045E+02 0.001	1.0142E+00		
3	06/26/07	RA-228	24	109	GPC3C 1	1	N	N	4.6154E-01 (4.539E-02)	1.0000E+00 (0.000E+00)	58%	N	8.3051E+00 (0.000E+00)	4.5045E+02 0.001	1.0142E+00		
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield/EntFct	Chem Yld/EFctU	IDC/LcC	BkLcC/MDC	StdDvMdc/LcC			
06/29/07	RA-228	R	0.87464 (0.317052)		3.35000E-01 (1.1253E-01)	1.914531 (0.687373)	1.914531 (0.687373)	1.00L (0.173205)	58%			1.025353 0.442185					
06/29/07	RA-228	R	0.565006 (0.297871)		1.95000E-01 (9.9310E-02)	1.236761 (0.649081)	1.236761 (0.649081)	1.00L (0.173205)	58%			1.137908 0.490724					
06/29/07	RA-228	R	0.88427 (0.364745)		2.75000E-01 (1.0706E-01)	1.935608 (0.792515)	1.935608 (0.792515)	1.00L (0.173205)	58%			1.262818 0.544591					
06/29/07	RA-228	A	0.774639 (0.189235)		2.68333E-01 (6.1452E-02)	1.695633 (0.411213)	1.695633 (0.411213)	1.00L (0.10)	58%			0.659349 0.284345					
06/29/07	RA-228	R	2.947284 (1.495169)		2.07500E-01 (1.0140E-01)	6.451413 (3.256892)	6.451413 (3.256892)	1.00L (0.173205)	58%			5.645749 2.4394					
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	TF	WATER	*STLE	Ra228WoBS	JWP2N3AC	pCi/L		05/09/07 14:15	06/21/07 07:25							
456833.M31A-Z							WATER			06/25/07 11:27	ata26778	Alq	48%	1000.90 g			
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/25/07	RA-228	19	103	GPC3D 1	1	N	N	4.7611E-01 (4.502E-02)	1.0000E+00 (0.000E+00)	42%	N	1.5266E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00		
1	06/25/07	RA-228	26	103	GPC3D 1	1	N	N	4.7611E-01 (4.502E-02)	1.0000E+00 (0.000E+00)	42%	N	1.6942E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00		
2	06/25/07	RA-228	26	103	GPC3D 1	1	N	N	4.7611E-01 (4.502E-02)	1.0000E+00 (0.000E+00)	42%	N	1.8802E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+00		
3	06/26/07	RA-228	19	96	GPC3D 1	1	N	N	4.7611E-01 (4.502E-02)	1.0000E+00 (0.000E+00)	42%	N	8.3051E+00 (0.000E+00)	4.5045E+02 0.000999	1.0142E+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

Alpha Beta, Ra-228 by GPC , Calculated Results

Batch Nbr: 7172084		Alpha Beta, Ra-228 by GPC , Calculated Results										6/29/2007 2:23:43 PM																																																																																																																																																																																																																																								
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BKLC/MDC	StdDvMdc/LcC																																																																																																																																																																																																																																						
06/29/07	RA-228	R	0.429921 (0.323784)	1.22500E-01 (9.0795E-02)	U4	0.941912 (0.707812)	0.941912 (0.707812)	1.0009 L (0.173205)	42%	1.361359																																																																																																																																																																																																																																										
06/29/07	RA-228	R	1.022388 (0.431484)	2.62500E-01 (1.0509E-01)	U4	2.239944 (0.938677)	2.239944 (0.938677)	1.0009 L (0.173205)	42%	0.585918																																																																																																																																																																																																																																										
06/29/07	RA-228	R	1.134617 (0.478848)	2.62500E-01 (1.0509E-01)	U4	2.485826 (1.041717)	2.485826 (1.041717)	1.0009 L (0.173205)	42%	1.510798																																																																																																																																																																																																																																										
06/29/07	RA-228	A	0.862309 (0.240442)	2.15833E-01 (5.8053E-02)	U4	1.889227 (0.523587)	1.889227 (0.523587)	1.0009 L (0.10)	42%	0.650236																																																																																																																																																																																																																																										
06/29/07	RA-228	R	2.673006 (1.765417)	1.40000E-01 (9.0554E-02)	U4	5.856275 (3.856742)	5.856275 (3.856742)	1.0009 L (0.173205)	42%	1.676641																																																																																																																																																																																																																																										
<table border="1"> <thead> <tr> <th>Sq</th> <th>Calc Date</th> <th>Parameter</th> <th>Avg</th> <th>Sa Act</th> <th>Q</th> <th>Net Cnt Rt</th> <th>Dpm Wo Blk</th> <th>Dpm-Blk</th> <th>Vol Used</th> <th>Yield,EnFct</th> <th>Chem Yld,EFctU</th> <th>IDC/ILcC</th> <th>BKLC/MDC</th> <th>StdDvMdc/LcC</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>06/25/07 15:37</td> <td>RA-228</td> <td>18</td> <td>104</td> <td>GPC4A 1</td> <td>1.0000E+00</td> <td>1.0000E+00</td> <td>1.0000E+00</td> <td>54%</td> <td>N</td> <td>1.5288E+00 (0.000E+00)</td> <td>4.5045E+02 1.0142E+00</td> <td>0.000999</td> <td></td> </tr> <tr> <td>1</td> <td>06/25/07 16:32</td> <td>RA-228</td> <td>50</td> <td>400</td> <td>GPC4A 1</td> <td>1.0000E+00</td> <td>1.0000E+00</td> <td>1.0000E+00</td> <td>54%</td> <td>N</td> <td>1.6965E+00 (0.000E+00)</td> <td>4.5045E+02 1.0142E+00</td> <td>0.000999</td> <td></td> </tr> <tr> <td>2</td> <td>06/25/07 17:27</td> <td>RA-228</td> <td>11</td> <td>104</td> <td>GPC4A 1</td> <td>1.0000E+00</td> <td>1.0000E+00</td> <td>1.0000E+00</td> <td>54%</td> <td>N</td> <td>1.8828E+00 (0.000E+00)</td> <td>4.5045E+02 1.0142E+00</td> <td>0.000999</td> <td></td> </tr> <tr> <td>3</td> <td>06/26/07 06:36</td> <td>RA-228</td> <td>16</td> <td>79</td> <td>GPC4A 1</td> <td>1.0000E+00</td> <td>1.0000E+00</td> <td>1.0000E+00</td> <td>54%</td> <td>N</td> <td>8.3244E+00 (0.000E+00)</td> <td>4.5045E+02 1.0142E+00</td> <td>0.000999</td> <td></td> </tr> <tr> <td>06/29/07</td> <td>RA-228</td> <td>R</td> <td>0.267094 (0.238253)</td> <td>1.00000E-01 (8.8600E-02)</td> <td>U4</td> <td>0.585302 (0.52128)</td> <td>0.585302 (0.52128)</td> <td>1.0011 L (0.173205)</td> <td>54%</td> <td>1.040375</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>06/29/07</td> <td>RA-228</td> <td>R</td> <td>0.237123 (0.257009)</td> <td>8.00000E-02 (8.6313E-02)</td> <td>U4</td> <td>0.519625 (0.562603)</td> <td>0.519625 (0.562603)</td> <td>1.0011 L (0.173205)</td> <td>54%</td> <td>0.448071</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>06/29/07</td> <td>RA-228</td> <td>R</td> <td>-0.131576 (0.234152)</td> <td>-4.00000E-02 (7.1063E-02)</td> <td>U4</td> <td>-0.288333 (0.512912)</td> <td>-0.288333 (0.512912)</td> <td>1.0011 L (0.173205)</td> <td>54%</td> <td>1.154542</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>06/29/07</td> <td>RA-228</td> <td>A</td> <td>0.124214 (0.140493)</td> <td>4.66667E-02 (4.7551E-02)</td> <td>U4</td> <td>0.272198 (0.307559)</td> <td>0.272198 (0.307559)</td> <td>1.0011 L (0.10)</td> <td>54%</td> <td>0.497241</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>06/29/07</td> <td>RA-228</td> <td>R</td> <td>1.781621 (1.221535)</td> <td>1.22500E-01 (8.3029E-02)</td> <td>U4</td> <td>3.90419 (2.669708)</td> <td>3.90419 (2.669708)</td> <td>1.0011 L (0.173205)</td> <td>54%</td> <td>1.281278</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>															Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BKLC/MDC	StdDvMdc/LcC	0	06/25/07 15:37	RA-228	18	104	GPC4A 1	1.0000E+00	1.0000E+00	1.0000E+00	54%	N	1.5288E+00 (0.000E+00)	4.5045E+02 1.0142E+00	0.000999		1	06/25/07 16:32	RA-228	50	400	GPC4A 1	1.0000E+00	1.0000E+00	1.0000E+00	54%	N	1.6965E+00 (0.000E+00)	4.5045E+02 1.0142E+00	0.000999		2	06/25/07 17:27	RA-228	11	104	GPC4A 1	1.0000E+00	1.0000E+00	1.0000E+00	54%	N	1.8828E+00 (0.000E+00)	4.5045E+02 1.0142E+00	0.000999		3	06/26/07 06:36	RA-228	16	79	GPC4A 1	1.0000E+00	1.0000E+00	1.0000E+00	54%	N	8.3244E+00 (0.000E+00)	4.5045E+02 1.0142E+00	0.000999		06/29/07	RA-228	R	0.267094 (0.238253)	1.00000E-01 (8.8600E-02)	U4	0.585302 (0.52128)	0.585302 (0.52128)	1.0011 L (0.173205)	54%	1.040375					06/29/07	RA-228	R	0.237123 (0.257009)	8.00000E-02 (8.6313E-02)	U4	0.519625 (0.562603)	0.519625 (0.562603)	1.0011 L (0.173205)	54%	0.448071					06/29/07	RA-228	R	-0.131576 (0.234152)	-4.00000E-02 (7.1063E-02)	U4	-0.288333 (0.512912)	-0.288333 (0.512912)	1.0011 L (0.173205)	54%	1.154542					06/29/07	RA-228	A	0.124214 (0.140493)	4.66667E-02 (4.7551E-02)	U4	0.272198 (0.307559)	0.272198 (0.307559)	1.0011 L (0.10)	54%	0.497241					06/29/07	RA-228	R	1.781621 (1.221535)	1.22500E-01 (8.3029E-02)	U4	3.90419 (2.669708)	3.90419 (2.669708)	1.0011 L (0.173205)	54%	1.281278																																																																																				
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() - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU
 IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time
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 RADCALC v4.8.26
 STL Richland

Alpha Beta, Ra-228 by GPC , Calculated Results

Batch Nbr: 7172084

Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
16	06/25/07 15:37	RA-228	25	102	GPC4B	1	N	N	4.7234E-01 (9.012E-03)	1.0000E+00 (0.000E+00)	N	67%	N	1.5288E+00 (0.000E+00)	4.5045E+02 0.000997	1.0143E+00		
			50	400			Y					5%						
1	06/25/07 16:32	RA-228	16	102	GPC4B	1	N	N	4.7234E-01 (9.012E-03)	1.0000E+00 (0.000E+00)	N	67%	N	1.6965E+00 (0.000E+00)	4.5045E+02 0.000997	1.0143E+00		
			50	400			Y					5%						
2	06/25/07 17:27	RA-228	22	102	GPC4B	1	N	N	4.7234E-01 (9.012E-03)	1.0000E+00 (0.000E+00)	N	67%	N	1.8828E+00 (0.000E+00)	4.5045E+02 0.000997	1.0143E+00		
			50	400			Y					5%						
3	06/26/07 06:36	RA-228	15	92	GPC4B	1	N	N	4.7234E-01 (9.012E-03)	1.0000E+00 (0.000E+00)	N	67%	N	8.3244E+00 (0.000E+00)	4.5045E+02 0.000997	1.0143E+00		
			50	400			N					5%						

Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/25/07 15:37	RA-228	71	118	GPC4C	1	N	N	4.8154E-01 (1.240E-02)	1.0000E+00 (0.000E+00)	N	51%	N	1.5288E+00 (0.000E+00)	4.5045E+02 0.000999	1.0143E+00		
			50	400			Y				4%							
1	06/25/07 16:32	RA-228	67	118	GPC4C	1	N	N	4.8154E-01 (1.240E-02)	1.0000E+00 (0.000E+00)	N	51%	N	1.6965E+00 (0.000E+00)	4.5045E+02 0.000999	1.0143E+00		
			50	400			Y				4%							
2	06/25/07 17:27	RA-228	45	118	GPC4C	1	N	N	4.8154E-01 (1.240E-02)	1.0000E+00 (0.000E+00)	N	51%	N	1.8828E+00 (0.000E+00)	4.5045E+02 0.000999	1.0143E+00		
			50	400			Y				4%							
3	06/26/07 06:36	RA-228	33	95	GPC4C	1	N	N	4.8154E-01 (1.240E-02)	1.0000E+00 (0.000E+00)	N	51%	N	8.3244E+00 (0.000E+00)	4.5045E+02 0.000999	1.0143E+00		
			50	400			N				4%							

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

Alpha Beta, Ra-228 by GPC , Calculated Results

Batch Nbr: 7172084

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield.EnFct	Chem Yld.EFctU	IDC/LcC	BklLcC/MDC	StdDvMdc/LcC
06/29/07	RA-228	R	3.1809 (0.574202)		1.12500E+00 (1.7070E-01)	6.96621 (1.208307)	6.96621 (1.208307)	1.0006 L (0.173205)	51%	64%	1.163144 0.505248			
06/29/07	RA-228	R	3.278942 (0.611508)		1.04500E+00 (1.6594E-01)	7.180923 (1.29018)	7.180923 (1.29018)	1.0006 L (0.173205)	51%	66%	1.290784 0.560692			
06/29/07	RA-228	R	2.106718 (0.519277)		6.05000E-01 (1.3688E-01)	4.613739 (1.113579)	4.613739 (1.113579)	1.0006 L (0.173205)	51%	42%	1.432475 0.62224			
06/29/07	RA-228	A	2.85552 (0.328853)		9.25000E-01 (9.1538E-02)	6.253624 (0.69639)	6.253624 (0.69639)	1.0006 L (0.10)	51%	57%	0.747939 0.32489			
06/29/07	RA-228	R	6.504876 (1.916862)		4.22500E-01 (1.1745E-01)	14.245757 (4.137081)	14.245757 (4.137081)	1.0006 L (0.173205)	51%	131%	5.768618 2.468539			

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RADCALC v4.8.26
STL Richland

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 (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

UST Number: 7172084 Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-A File: [quad7.sample.A]7172084.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD7.BKGRND]CURRENT.A_1;3301

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00061	0050	01156	1700	25-JUN-2007 15:35:32.34
2	00000	00054	0050	01155	1700	25-JUN-2007 16:30:48.18
3	00000	00040	0050	01148	1700	25-JUN-2007 17:26:03.78

Bkg File: [quad7.bkgrnd]2007-06-24_2010.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00324	0400	0.81	09306	1700	24-JUN-2007 20:10:29.02

UST Number: JWP173AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-A File: [quad7.sample.A]JWP173AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD7.BKGRND]CURRENT.A_1;3302

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00042	0050	01129	1700	26-JUN-2007 06:33:52.00

Bkg File: [quad7.bkgrnd]2007-06-26_0356.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00314	0400	0.79	09083	1700	26-JUN-2007 03:56:42.24

UST Number: JWP183AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-B File: [quad7.sample.B]JWP183AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD7.BKGRND]CURRENT.B_1;3288

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00047	0050	01156	1700	25-JUN-2007 15:35:32.34
2	00000	00044	0050	01155	1700	25-JUN-2007 16:30:48.18
3	00000	00054	0050	01148	1700	25-JUN-2007 17:26:03.78

Bkg File: [quad7.bkgrnd]2007-06-24_2010.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00296	0400	0.74	09306	1700	24-JUN-2007 20:10:29.02

UST Number: JWP183AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-B File: [quad7.sample.B]JWP183AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD7.BKGRND]CURRENT.B_1;3289

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00030	0050	01129	1700	26-JUN-2007 06:33:52.00

Bkg File: [quad7.bkgrnd]2007-06-26_0356.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00292	0400	0.73	09083	1700	26-JUN-2007 03:56:42.24

UST Number: JWP193AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-C File: [quad7.sample.C]JWP193AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD7.BKGRND]CURRENT.C_1;3293

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00044	0050	01156	1700	25-JUN-2007 15:35:32.34
2	00000	00052	0050	01155	1700	25-JUN-2007 16:30:48.18
3	00000	00055	0050	01148	1700	25-JUN-2007 17:26:03.78

Bkg File: [quad7.bkgrnd]2007-06-24_2010.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00371	0400	0.93	09306	1700	24-JUN-2007 20:10:29.02

UST Number: JWP193AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-C File: [quad7.sample.C]JWP193AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD7.BKGRND]CURRENT.C_1;3294

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00053	0050	01129	1700	26-JUN-2007 06:33:52.00

Bkg File: [quad7.bkgrnd]2007-06-26_0356.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00321	0400	0.80	09083	1700	26-JUN-2007 03:56:42.24

UST Number: JWP2A3AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-B File: [quad1.sample.B]JWP2A3AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD1.BKGRND]CURRENT.B_1;3350

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00041	0050	01162	1650	25-JUN-2007 15:35:48.79
2	00000	00042	0050	01157	1650	25-JUN-2007 16:31:04.37
3	00000	00034	0050	01162	1650	25-JUN-2007 17:26:20.09

Bkg File: [quad1.bkgrnd]2007-06-24_2009.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00228	0400	0.57	09394	1650	24-JUN-2007 20:09:43.97

UST Number: JWP2A3AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-B File: [quad1.sample.B]JWP2A3AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD1.BKGRND]CURRENT.B_1;3351

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00038	0050	01147	1650	26-JUN-2007 06:34:19.56

Bkg File: [quad1.bkgrnd]2007-06-26_0355.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00263	0400	0.66	09171	1650	26-JUN-2007 03:55:03.42

UST Number: JWP2C3AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-C File: [quad1.sample.C]JWP2C3AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD1.BKGRND]CURRENT.C_1;3347

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00041	0050	01162	1650	25-JUN-2007 15:35:48.79
2	00000	00036	0050	01157	1650	25-JUN-2007 16:31:04.37
3	00000	00038	0050	01162	1650	25-JUN-2007 17:26:20.09

Bkg File: [quad1.bkgrnd]2007-06-24_2009.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00216	0400	0.54	09394	1650	24-JUN-2007 20:09:43.97

UST Number: JWP2C3AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-C File: [quad1.sample.C]JWP2C3AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD1.BKGRND]CURRENT.C_1;3348

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00030	0050	01147	1650	26-JUN-2007 06:34:19.56

Bkg File: [quad1.bkgrnd]2007-06-26_0355.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00248	0400	0.62	09171	1650	26-JUN-2007 03:55:03.42

UST Number: JWP2D3AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-D File: [quad1.sample.D]JWP2D3AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD1.BKGRND]CURRENT.D_1;3350

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00054	0050	01162	1650	25-JUN-2007 15:35:48.79
2	00000	00043	0050	01157	1650	25-JUN-2007 16:31:04.37
3	00000	00032	0050	01162	1650	25-JUN-2007 17:26:20.09

Bkg File: [quad1.bkgrnd]2007-06-24_2009.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00265	0400	0.66	09394	1650	24-JUN-2007 20:09:43.97

UST Number: JWP2D3AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-D File: [quad1.sample.D]JWP2D3AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD1.BKGRND]CURRENT.D_1;3351

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00029	0050	01147	1650	26-JUN-2007 06:34:19.56

Bkg File: [quad1.bkgrnd]2007-06-26_0355.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00230	0400	0.58	09171	1650	26-JUN-2007 03:55:03.42

UST Number: JWP2E3AC Isotope: 180 (QREPORT Rev 11-OCT-98)
 Detector: 2-A File: [quad2.sample.A]JWP2E3AC.180
 Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.A_1;3890

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00018	0050	01166	1810	25-JUN-2007 15:36:15.24
2	00000	00023	0050	01168	1810	25-JUN-2007 16:31:31.08
3	00000	00012	0050	01157	1810	25-JUN-2007 17:26:46.85

Bkg File: [quad2.bkgrnd]2007-06-24_2009.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00082	0400	0.21	09424	1810	24-JUN-2007 20:09:52.43

UST Number: JWP2E3AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-A File: [quad2.sample.A]JWP2E3AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.A_1;3891

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00017	0050	01147	1810	26-JUN-2007 06:34:52.12

Bkg File: [quad2.bkgrnd]2007-06-26_0355.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00088	0400	0.22	09242	1810	26-JUN-2007 03:55:08.03

UST Number: JWP2F3AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-B File: [quad2.sample.B]JWP2F3AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.B_1;3887

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00022	0050	01166	1810	25-JUN-2007 15:36:15.24
2	00000	00018	0050	01168	1810	25-JUN-2007 16:31:31.08
3	00000	00014	0050	01157	1810	25-JUN-2007 17:26:46.85

Bkg File: [quad2.bkgrnd]2007-06-24_2009.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00091	0400	0.23	09424	1810	24-JUN-2007 20:09:52.43

UST Number: JWP2F3AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-B File: [quad2.sample.B]JWP2F3AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.B_1;3888

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01147	1810	26-JUN-2007 06:34:52.12

Bkg File: [quad2.bkgrnd]2007-06-26_0355.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00087	0400	0.22	09242	1810	26-JUN-2007 03:55:08.03

UST Number: JWP2G3AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-C File: [quad2.sample.C]JWP2G3AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.C_1;3888

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00013	0050	01166	1810	25-JUN-2007 15:36:15.24
2	00000	00013	0050	01168	1810	25-JUN-2007 16:31:31.08
3	00000	00013	0050	01157	1810	25-JUN-2007 17:26:46.85

Bkg File: [quad2.bkgrnd]2007-06-24_2009.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00088	0400	0.22	09424	1810	24-JUN-2007 20:09:52.43

UST Number: JWP2G3AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-C File: [quad2.sample.C]JWP2G3AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.C_1;3889

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00020	0050	01147	1810	26-JUN-2007 06:34:52.12

Bkg File: [quad2.bkgrnd]2007-06-26_0355.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00100	0400	0.25	09242	1810	26-JUN-2007 03:55:08.03

UST Number: JWP2H3AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-D File: [quad2.sample.D]JWP2H3AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.D_1;3887

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00020	0050	01166	1810	25-JUN-2007 15:36:15.24
2	00000	00015	0050	01168	1810	25-JUN-2007 16:31:31.08
3	00000	00017	0050	01157	1810	25-JUN-2007 17:26:46.85

Bkg File: [quad2.bkgrnd]2007-06-24_2009.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00091	0400	0.23	09424	1810	24-JUN-2007 20:09:52.43

UST Number: JWP2H3AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-D File: [quad2.sample.D]JWP2H3AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.D_1;3888

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00012	0050	01147	1810	26-JUN-2007 06:34:52.12

Bkg File: [quad2.bkgrnd]2007-06-26_0355.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00089	0400	0.22	09242	1810	26-JUN-2007 03:55:08.03

UST Number: JWP2J3AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JWP2J3AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.A_1;5806

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00025	0050	01226	1920	25-JUN-2007 15:36:40.86
2	00000	00023	0050	01236	1920	25-JUN-2007 16:31:56.63
3	00000	00010	0050	01251	1920	25-JUN-2007 17:27:12.28

Bkg File: [quad3.bkgrnd]2007-06-24_2010.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00077	0400	0.19	10140	1920	24-JUN-2007 20:10:03.80

UST Number: JWP2J3AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JWP2J3AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.A_1;5807

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00024	0050	01230	1920	26-JUN-2007 06:35:27.11

Bkg File: [quad3.bkgrnd]2007-06-26_0355.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00077	0400	0.19	09913	1920	26-JUN-2007 03:55:10.97

UST Number: JWP2K3AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JWP2K3AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.B_1;5814

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00018	0050	01226	1920	25-JUN-2007 15:36:40.86
2	00000	00024	0050	01236	1920	25-JUN-2007 16:31:56.63
3	00000	00021	0050	01251	1920	25-JUN-2007 17:27:12.28

Bkg File: [quad3.bkgrnd]2007-06-24_2010.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00086	0400	0.22	10140	1920	24-JUN-2007 20:10:03.80

UST Number: JWP2K3AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JWP2K3AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.B_1;5815

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00017	0050	01230	1920	26-JUN-2007 06:35:27.11

Bkg File: [quad3.bkgrnd]2007-06-26_0355.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00092	0400	0.23	09913	1920	26-JUN-2007 03:55:10.97

UST Number: JWP2L3AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JWP2L3AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.C_1;5819

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00030	0050	01226	1920	25-JUN-2007 15:36:40.86
2	00000	00023	0050	01236	1920	25-JUN-2007 16:31:56.63
3	00000	00027	0050	01251	1920	25-JUN-2007 17:27:12.28

Bkg File: [quad3.bkgrnd]2007-06-24_2010.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00106	0400	0.27	10140	1920	24-JUN-2007 20:10:03.80

UST Number: JWP2L3AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JWP2L3AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.C_1;5820

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00024	0050	01230	1920	26-JUN-2007 06:35:27.11

Bkg File: [quad3.bkgrnd]2007-06-26_0355.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00109	0400	0.27	09913	1920	26-JUN-2007 03:55:10.97

UST Number: JWP2N3AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JWP2N3AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.D_1;5804

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01226	1920	25-JUN-2007 15:36:40.86
2	00000	00026	0050	01236	1920	25-JUN-2007 16:31:56.63
3	00000	00026	0050	01251	1920	25-JUN-2007 17:27:12.28

Bkg File: [quad3.bkgrnd]2007-06-24_2010.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00103	0400	0.26	10140	1920	24-JUN-2007 20:10:03.80

UST Number: JWP2N3AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JWP2N3AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.D_1;5805

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01230	1920	26-JUN-2007 06:35:27.11

Bkg File: [quad3.bkgrnd]2007-06-26_0355.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00096	0400	0.24	09913	1920	26-JUN-2007 03:55:10.97

UST Number: JWP2P3AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JWP2P3AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.A_1;5819

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00018	0050	01203	1850	25-JUN-2007 15:37:25.18
2	00000	00017	0050	01202	1850	25-JUN-2007 16:32:40.91
3	00000	00011	0050	01218	1850	25-JUN-2007 17:27:56.56

Bkg File: [quad4.bkgrnd]2007-06-24_2005.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00104	0400	0.26	09742	1850	24-JUN-2007 20:05:08.37

UST Number: JWP2P3AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JWP2P3AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.A_1;5820

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00016	0050	01184	1850	26-JUN-2007 06:36:41.03

Bkg File: [quad4.bkgrnd]2007-06-26_0355.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00079	0400	0.20	09528	1850	26-JUN-2007 03:55:16.91

UST Number: JWW983AA Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JWW983AA.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.B_1;5818

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00025	0050	01203	1850	25-JUN-2007 15:37:25.18
2	00000	00016	0050	01202	1850	25-JUN-2007 16:32:40.91
3	00000	00022	0050	01218	1850	25-JUN-2007 17:27:56.56

Bkg File: [quad4.bkgrnd]2007-06-24_2005.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00102	0400	0.26	09742	1850	24-JUN-2007 20:05:08.37

UST Number: JWW983AA Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JWW983AA.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.B_1;5819

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01184	1850	26-JUN-2007 06:36:41.03

Bkg File: [quad4.bkgrnd]2007-06-26_0355.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00092	0400	0.23	09528	1850	26-JUN-2007 03:55:16.91

UST Number: JWW983AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JWW983AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.C_1;5821

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00071	0050	01203	1850	25-JUN-2007 15:37:25.18
2	00000	00067	0050	01202	1850	25-JUN-2007 16:32:40.91
3	00000	00045	0050	01218	1850	25-JUN-2007 17:27:56.56

Bkg File: [quad4.bkgrnd]2007-06-24_2005.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00118	0400	0.30	09742	1850	24-JUN-2007 20:05:08.37

UST Number: JWW983AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JWW983AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.C_1;5822

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00033	0050	01184	1850	26-JUN-2007 06:36:41.03

Bkg File: [quad4.bkgrnd]2007-06-26_0355.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00095	0400	0.24	09528	1850	26-JUN-2007 03:55:16.91

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: BA13306A000			Ref: 10/4/2004	1.1069E+04 ± 1.889E+02	DPM/G	
RATA26765	BA-133	7.4508E+02 ± 1.278E+01 DPM	0.08 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26766	BA-133	7.5253E+02 ± 1.291E+01 DPM	0.0808 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26767	BA-133	7.4322E+02 ± 1.275E+01 DPM	0.0798 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26768	BA-133	7.3949E+02 ± 1.269E+01 DPM	0.0794 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26769	BA-133	7.4136E+02 ± 1.272E+01 DPM	0.0796 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26770	BA-133	7.4601E+02 ± 1.280E+01 DPM	0.0801 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26771	BA-133	7.5626E+02 ± 1.297E+01 DPM	0.0812 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26772	BA-133	7.5067E+02 ± 1.288E+01 DPM	0.0806 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26773	BA-133	7.5626E+02 ± 1.297E+01 DPM	0.0812 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26774	BA-133	7.5905E+02 ± 1.302E+01 DPM	0.0815 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26775	BA-133	7.5719E+02 ± 1.299E+01 DPM	0.0813 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26776	BA-133	7.5067E+02 ± 1.288E+01 DPM	0.0806 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26777	BA-133	7.4974E+02 ± 1.286E+01 DPM	0.0805 g	5/17/2007 5/17/2007	Armstron	9.3135E+03 ± 1.589E+02 DPM/G
RATA26778	BA-133	7.6650E+02 ± 1.315E+01 DPM	0.0823 g	5/17/2007 5/17/2007	Armstron	9.3134E+03 ± 1.589E+02 DPM/G
RATA26779	BA-133	7.5532E+02 ± 1.296E+01 DPM	0.0811 g	5/17/2007 5/17/2007	Armstron	9.3134E+03 ± 1.589E+02 DPM/G
RATA26780	BA-133	7.5439E+02 ± 1.294E+01 DPM	0.081 g	5/17/2007 5/17/2007	Armstron	9.3134E+03 ± 1.589E+02 DPM/G

7.5148E+002 ± 7.189E+000 (16) 0.957% 7.3949E+002 , 7.6650E+002

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
	Parent Standard:	BA13306A000	Ref: 10/4/2004	1.1069E+04 ± 1.889E+02	DPM/G	
RASC4433	BA-133	7.4244E+02 ± 1.274E+01 DPM	0.0796 g	5/9/2007 5/9/2007	Armstron	9.3271E+03 ± 1.592E+02 DPM/G
		7.4244E+002 ± 7.424E+002 (1)		7.4244E+002 , 7.4244E+002		

Standard Material Fractions (Vials)

Vial Prep: 6/20/06 to 6/22/07, SMFractionIdentifier Between RATA26765 and RATA26780, Order by

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: BA-30-6220		Ref:	2.9412E+01 ± 2.057E-01 mg/g			
RATA26765	Ba	3.0123E+01 ± 2.107E-01 mg	1.0242 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26766	Ba	3.0097E+01 ± 2.105E-01 mg	1.0233 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26767	Ba	3.0153E+01 ± 2.109E-01 mg	1.0252 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26768	Ba	3.0056E+01 ± 2.102E-01 mg	1.0219 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26769	Ba	3.0076E+01 ± 2.104E-01 mg	1.0226 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26770	Ba	3.0064E+01 ± 2.103E-01 mg	1.0222 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26771	Ba	3.0091E+01 ± 2.105E-01 mg	1.0231 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26772	Ba	3.0097E+01 ± 2.105E-01 mg	1.0233 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26773	Ba	3.0088E+01 ± 2.105E-01 mg	1.023 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26774	Ba	3.0082E+01 ± 2.104E-01 mg	1.0228 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26775	Ba	3.0032E+01 ± 2.101E-01 mg	1.0211 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26776	Ba	3.0094E+01 ± 2.105E-01 mg	1.0232 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26777	Ba	3.0076E+01 ± 2.104E-01 mg	1.0226 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26778	Ba	3.0091E+01 ± 2.105E-01 mg	1.0231 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26779	Ba	3.0114E+01 ± 2.107E-01 mg	1.0239 g	5/17/2007 5/17/2007	Armstron	± mg/g
RATA26780	Ba	3.0006E+01 ± 2.099E-01 mg	1.0202 g	5/17/2007 5/17/2007	Armstron	± mg/g

3.0084E+001 ± 3.452E-002 (16) 0.115% 3.0006E+001 , 3.0153E+001

6/21/2007 8:41:41 AM

Standard Material Fractions (Vials)

Vial Prep: 6/20/06 to 6/22/07, SMFractionIdentifier Between RASC4433 and RASC4433, 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: BA-30-6164	Ref:	2.9121E+01 ± 6.090E-01		mg/g
RASC4433	Ba	3.0059E+01 ± 6.286E-01 mg	1.0322 g	5/9/2007 5/9/2007	Armstron	± mg/g

3.0059E+001 ± 3.006E+001 (1) 3.0059E+001 , 3.0059E+001

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		
RASC4433	RA-226	3.1115E+00 ± 4.787E-02 DPM	0.1481 g	5/9/2007 5/9/2007	Armstron	2.1010E+01 ± 3.226E-01 DPM/G
		3.1115E+000 ± 3.112E+000 (1)	3.1115E+000 , 3.1115E+000			

Vial Identifier	Constituent	Prep Activity/Concentration	Std Wt Used	Prep,Decayed To Date	Prep by	Std Decayed Activity/Concentration
Parent Standard: RA22804A110		Ref: 7/19/2004	1.0994E+02 ± 3.355E+00	DPM/G		
RASC4433	RA-228	1.1080E+01 ± 3.383E-01 DPM	0.1413 g	5/9/2007 5/9/2007	Armstron	7.8412E+01 ± 2.393E+00 DPM/G
		1.1080E+001 ± 1.108E+001 (1)		1.1080E+001 , 1.1080E+001		

STL Richland WA.

BA133

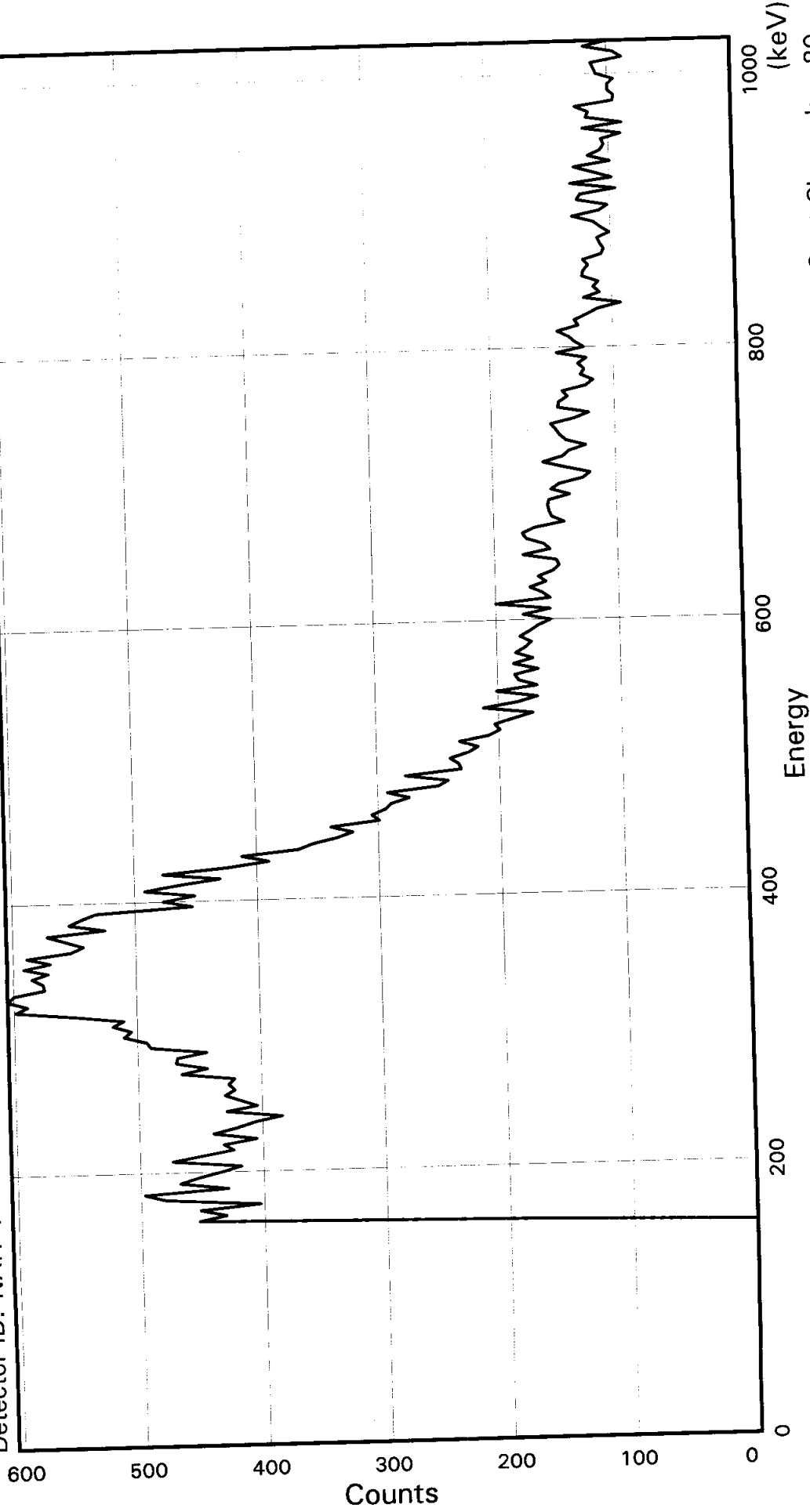
7172084

BatchID:

[NUC_LIBR]BA133.NLB

Sample ID: JWP173AC

Detector ID: NAI1 1



Start Channel: 80
End Channel: 113
Iterations: 5
Gain shift: Iter

Acquisition Start: 21-JUN-2007 08:44:01.59

Preset Live Time: 0 00:30:00

Elapsed Live Time: 0 00:30:00

Weighting: DERIVED

SAMPLE IDENTIFICATION: JWP173AC

CONFIGURATION ID: NAI1:JWP173AC_210670844
TITLE : BA133
SAMPLE ID : JWP173AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 08:44:01
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-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/C²
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]JWP173AC_210670844.CNF;1
Analyses by : NAI V3.0
Sample title : BA133
Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:44:01
Sample ID : JWP173AC Sample quantity : 1.0000 sampl
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.62 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:	6.3	4.9	5.5	3.8	1.8	1.6	2.6	0.9
88:	2.4	1.2	0.5	-0.5	-1.3	-1.7	1.2	-0.4
96:	0.4	-0.8	-1.2	-4.5	-3.6	-2.7	-1.1	-1.5
104:	-3.4	-0.8	-3.2	-4.2	-2.2	-3.7	-4.2	-4.4
112:	-4.1	-2.4						

List of Suspicious Channels

81 82

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	9.47E+00	0.00E+00	1.01E+00
2	5.49E+00	0.00E+00	1.03E+00
3	2.55E+00	0.00E+00	1.05E+00
4	1.49E+00	0.00E+00	1.06E+00
5	8.35E-01	0.00E+00	1.07E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	492.	7.40

Total Activity :	492.	

STL Richland WA.

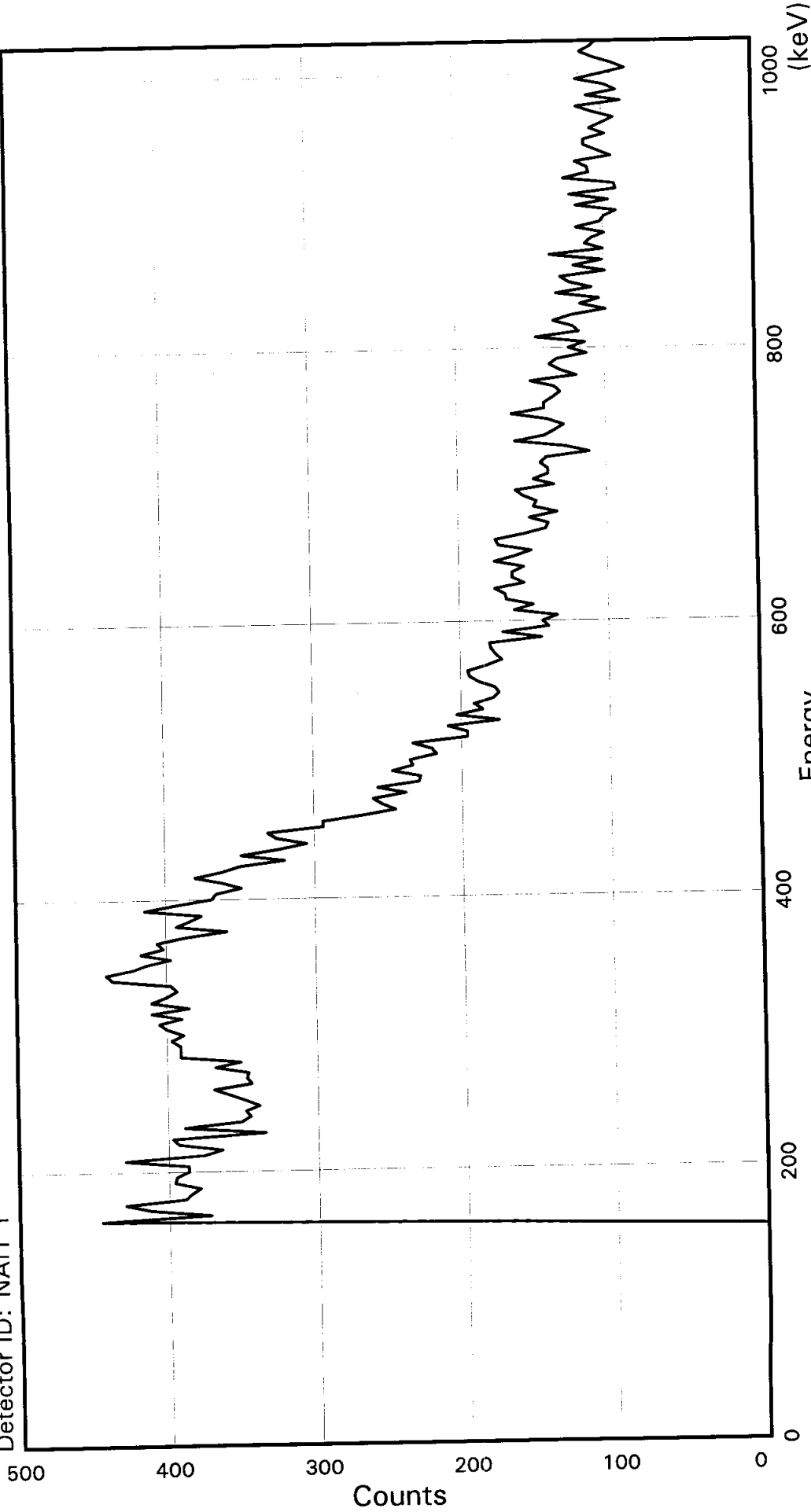
BA133

BatchID: 7172084

Library: [NUC_LIBR]BA133.NLB

Sample ID: JWP183AC

Detector ID: NAI1 1



Acquisition Start: 25-JUN-2007 07:56:48.57
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: JWP183AC

CONFIGURATION ID: NAI1:JWP183AC_250670756
TITLE : BA133
SAMPLE ID : JWP183AC

REPORT DATE: 25-JUN-07
ACQUIRE DATE: 25-JUN-07 07:56:48
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-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/C²
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] JWP183AC_250670756.CNF;1
Analyses by : NAI V3.0
Sample title : BA133
Sample date : 17-MAY-2007 12:00:00 Acquisition date : 25-JUN-2007 07:56:48
Sample ID : JWP183AC Sample quantity : 1.0000 sampl
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.57 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:	1.9	2.3	1.6	1.0	0.6	1.6	2.4	1.6
88:	1.3	0.3	0.2	-0.2	0.6	-0.5	-2.1	-0.2
96:	-0.3	-1.3	0.9	0.4	-1.1	0.1	-1.4	-1.0
104:	-0.2	-0.5	-0.1	-2.0	-0.1	-1.2	-1.7	-0.9
112:	0.6	-1.3						

List of Suspicious Channels

None

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.65E+00	0.00E+00	1.00E+00
2	1.18E+00	0.00E+00	1.01E+00

Brief Report

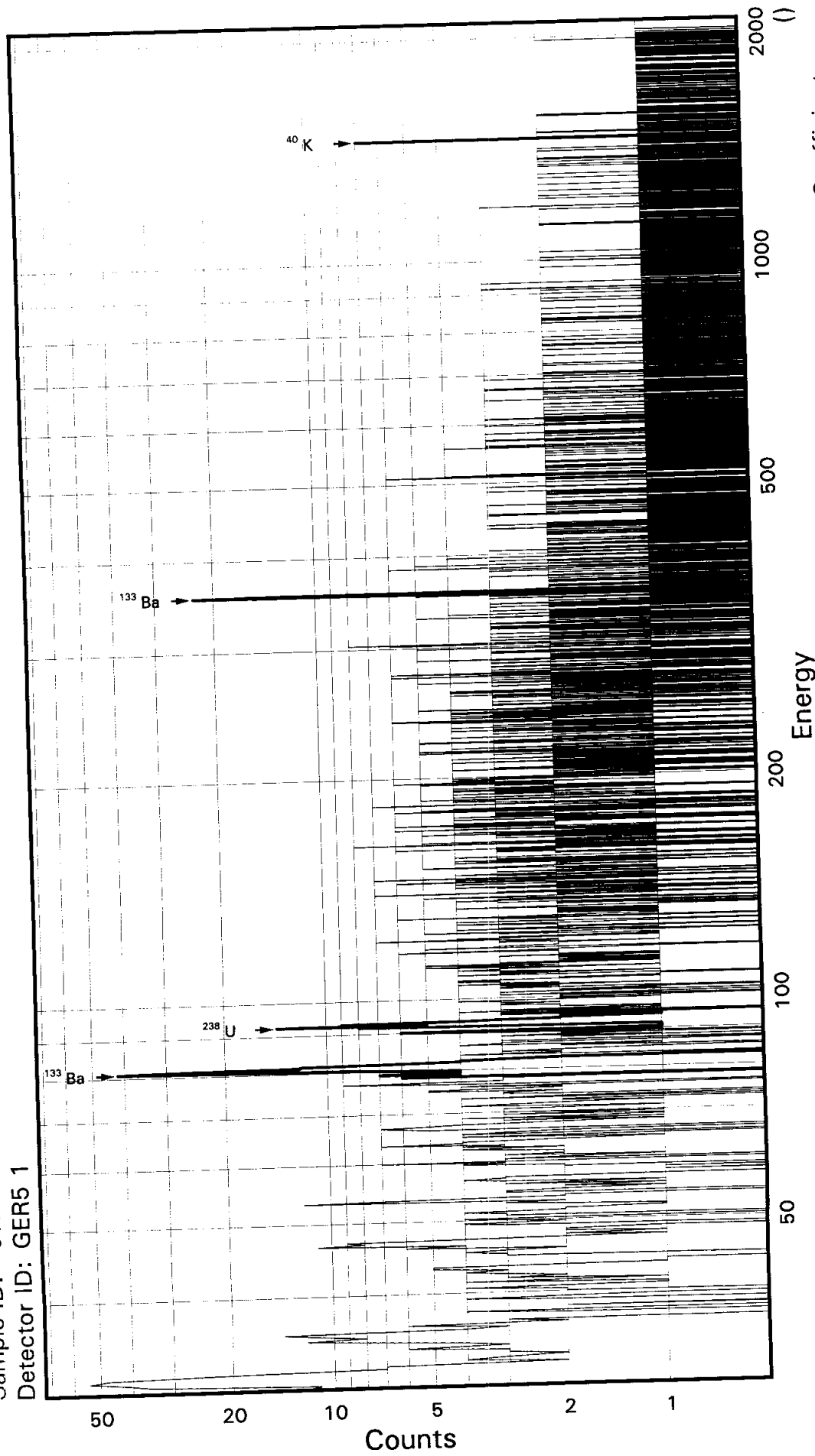
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	219.	7.53

Total Activity :	219.	

STL Richland WA.
BA133

Batch ID: 7172084

Sample ID: JWP183AC
Detector ID: GER5 1



Energy Coefficients:
Offset: -3.67530E-01
Slope: 2.49339E-01
Quadrature: 4.35552E-10

Acquisition Start: 21-JUN-2007 08:44:35.68
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION:

JWP183AC

CONFIGURATION ID: GER5:JWP183AC_210670844
TITLE : BA133
SAMPLE ID : JWP183AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 08:44:35
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 21-JUN-2007 05:40:06.67
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.3675E+00 keV
ENERGY SLOPE: 2.4934E-01 keV/C
ENERGY Q COEFF: 4.3555E-10 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 7.5467E-01 keV
FWHM SLOPE: 2.8730E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 09:14:50

```

Configuration      : RDND06$DKA100:[GER5.SAMPLE]JWP183AC_210670844.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:44:35
Sample ID         : JWP183AC Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Start energy      : 19.58 End energy : 2042.25
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	31.02	199	50	0.98	125.87	120	12	1.11E-01	10.1	
2	0	46.37*	27	16	1.13	187.46	180	19	1.49E-02	43.3	
3	0	53.32	18	12	0.35	215.31	211	9	1.03E-02	40.3	
4	0	80.86	164	21	0.59	325.76	315	21	9.12E-02	10.5	
5	0	92.29*	23	30	1.09	371.62	360	24	1.28E-02	70.3	
6	0	355.85	114	4	1.20	1428.66	1419	17	6.35E-02	10.2	
7	0	1460.76*	1	6	0.89	5859.94	5852	14	4.43E-04	813.8	

Flag: "*" = Peak area was modified by background subtraction

Configuration : RDND06\$DKA100:[GER5.SAMPLE]JWP183AC_210670844.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:44:35
 Sample ID : JWP183AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 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 DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
K-40	1460.81	1	10.67*	1.933E+00	1.289E+01	1.289E+01	813.81

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP183AC

Page : 2
Acquisition date : 21-JUN-2007 08:44:35

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	31.02	199	50	0.98	125.87	120	12	1.11E-01	10.1	1.68E+00	
0	46.37	27	16	1.13	187.46	180	19	1.49E-02	43.3	1.79E+00	
0	53.32	18	12	0.35	215.31	211	9	1.03E-02	40.3	1.82E+00	
0	80.86	164	21	0.59	325.76	315	21	9.12E-02	10.5	1.92E+00	T
0	92.29	23	30	1.09	371.62	360	24	1.28E-02	70.3	1.94E+00	T
0	355.85	114	4	1.20	1428.66	1419	17	6.35E-02	10.2	2.08E+00	T

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP183AC

Page : 3
Acquisition date : 21-JUN-2007 08:44:35

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
BA-133	10.50Y	0.01	81.00	33.00	8.696E+02	11.80	Abun.
			276.40	6.90	---	Not Found	---
			302.84	17.80	---	Not Found	---
			356.00*	62.05	2.977E+02	11.54	
			383.85	8.70	---	Not Found	---
		% Abundances Found =		74.00			
U-238DHP	4.47E+09Y	0.00	63.28*	3.80	---	Not Found	---
			92.59	5.41	7.328E+02	70.54	Abun.
		% Abundances Found =		58.74			

Flag: "*" = Keyline

Configuration : RDND06\$DKA100:[GER5.SAMPLE]JWP183AC_210670844.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 : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:44:35
 Sample ID : JWP183AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
K-40	1.289E+01	1.049E+02	1.507E+02	3.237E+00	0.086

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.905E+02	1.025E+02	3.089E+02	6.197E+00	-0.617
NA-22	-5.057E+00	3.834E+00	1.285E+01	2.724E-01	-0.394
NA-24	2.423E+11	1.286E+11	Half-Life too short		
SC-46	-3.821E+00	6.662E+00	2.550E+01	5.346E-01	-0.150
CR-51	1.843E+02	2.536E+02	9.926E+02	1.986E+01	0.186
MN-54	7.469E-01	7.381E+00	2.965E+01	6.088E-01	0.025
CO-57	1.433E+02	1.257E+02	4.951E+02	1.023E+01	0.290
CO-58	-2.567E+00	4.174E+00	1.712E+01	3.508E-01	-0.150
FE-59	9.948E+00	1.265E+01	6.136E+01	1.285E+00	0.162
CO-60	1.548E+00	3.798E+00	1.830E+01	3.897E-01	0.085
ZN-65	1.052E+01	1.229E+01	5.492E+01	1.151E+00	0.192
SE-75	-2.528E+01	2.081E+01	6.911E+01	1.387E+00	-0.366
SR-85	-4.411E+01	1.664E+01	4.754E+01	9.555E-01	-0.928
Y-88	-4.445E+00	3.152E+00	6.034E+00	1.329E-01	-0.737
NB-94	5.635E-01	4.055E+00	1.828E+01	3.763E-01	0.031
NB-95	-5.874E-01	1.054E+01	4.288E+01	8.760E-01	-0.014
TC-95M	1.228E+01	2.171E+01	8.448E+01	1.709E+00	0.145
ZR-95	1.323E+01	1.324E+01	6.156E+01	1.257E+00	0.215
ZRNB-95	-8.581E-01	1.540E+01	6.265E+01	1.280E+00	-0.014
MO-99	-1.019E-02	4.054E-02	Half-Life too short		
RH-101	1.111E+01	1.888E+01	7.117E+01	1.441E+00	0.156
RH-102M	3.068E+00	6.599E+00	2.749E+01	5.515E-01	0.112
RU-103	-8.334E+00	1.375E+01	5.009E+01	1.006E+00	-0.166
RU-106DA	1.516E+02	6.301E+01	3.149E+02	6.368E+00	0.482
AG-108M	-2.292E+00	1.005E+01	3.706E+01	7.422E-01	-0.062
AG-110M	-2.029E+00	8.180E+00	3.288E+01	6.774E-01	-0.062
SN-113DA	6.286E+00	1.553E+01	6.137E+01	1.228E+00	0.102

---- Non-Identified Nuclides ----

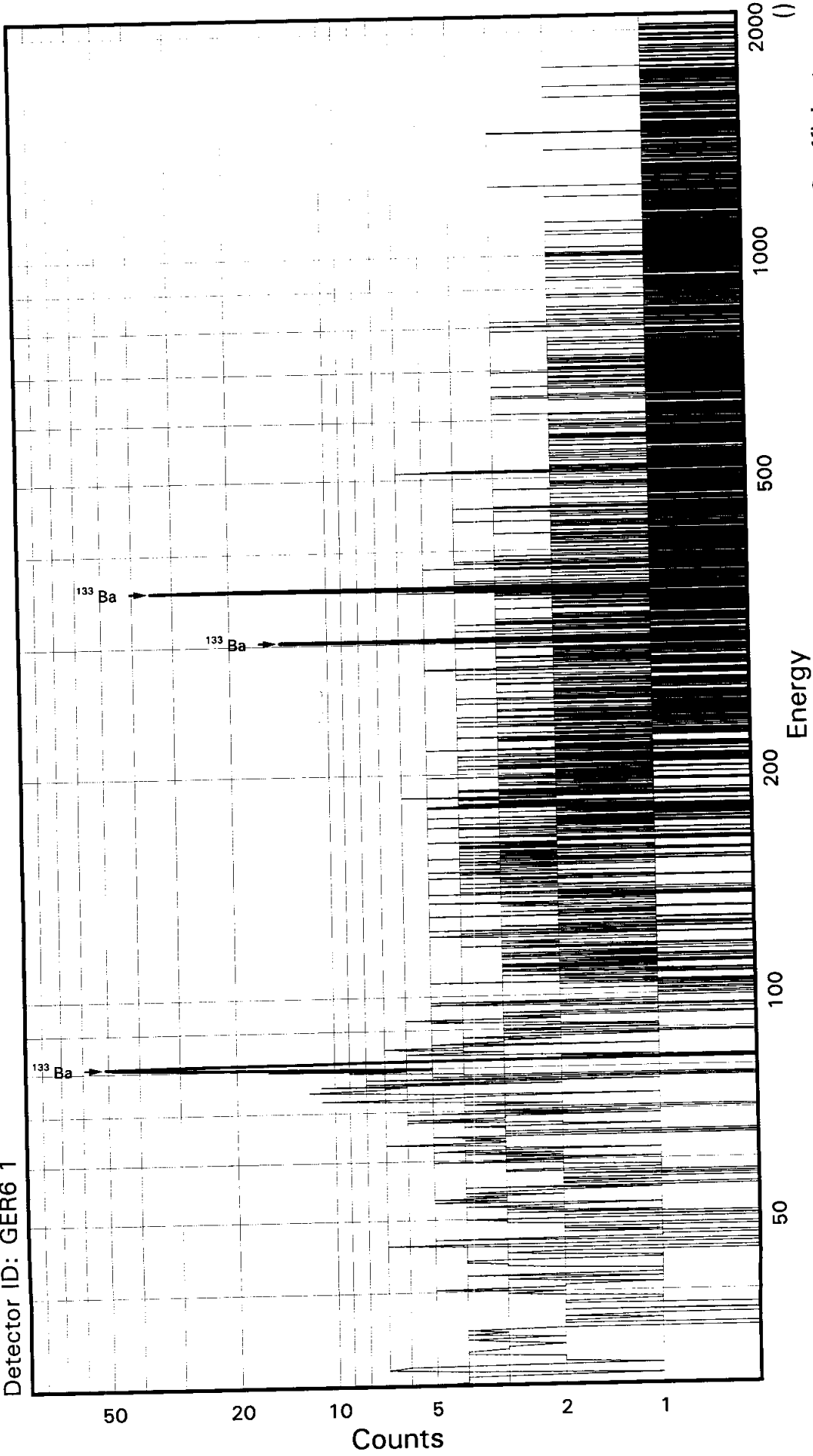
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-1.273E+01		1.107E+01	3.831E+01	7.739E-01	-0.332
SB-125	-1.203E+01		2.401E+01	8.899E+01	1.782E+00	-0.135
SN-126DA	5.694E-01		6.588E+00	2.629E+01	5.334E-01	0.022
I-131	-3.037E+02		1.943E+02	6.366E+02	1.273E+01	-0.477
BA-133	2.977E+02	+	3.434E+01	1.387E+02	2.774E+00	2.146
CS-134	9.751E+00		6.046E+00	2.982E+01	6.103E-01	0.327
CS-137DA	-3.810E+00		7.169E+00	2.702E+01	5.478E-01	-0.141
LA-138	-7.827E+00		5.825E+00	1.898E+01	4.071E-01	-0.412
CE-139	-2.442E-01		1.676E+01	6.209E+01	1.268E+00	-0.004
BA-140	-4.258E+01		1.590E+02	6.265E+02	1.261E+01	-0.068
BALA-140	4.275E+01		4.768E+01	2.534E+02	5.495E+00	0.169
LA-140	-1.224E-01		3.082E+00	Half-Life too short		
CE-141	4.452E+01		5.465E+01	2.104E+02	4.331E+00	0.212
CE-144	-6.645E+01		1.122E+02	4.044E+02	8.372E+00	-0.164
CEPR-144	-1.034E+02		2.220E+02	8.079E+02	1.673E+01	-0.128
PM-144	-1.360E+00		6.733E+00	2.639E+01	5.336E-01	-0.052
PM-146	1.204E+00		1.155E+01	4.491E+01	9.001E-01	0.027
EU-152	1.094E+01		2.905E+01	1.163E+02	2.327E+00	0.094
EU-154	-1.398E+01		1.060E+01	3.552E+01	7.532E-01	-0.394
EU-155	1.880E+01		6.337E+01	2.322E+02	4.899E+00	0.081
HF-181	-1.297E-01		1.504E+01	5.819E+01	1.168E+00	-0.002
BI-207	5.505E+00		6.756E+00	2.895E+01	5.837E-01	0.190
TL-208	1.395E+01		9.155E+00	3.984E+01	8.038E-01	0.350
BI-210M	-2.528E+01		1.975E+01	6.520E+01	1.308E+00	-0.388
BI-212	-1.241E+02		9.198E+01	3.042E+02	9.299E+00	-0.408
PB-212	3.825E+01		3.037E+01	1.223E+02	2.461E+00	0.313
BI-214	2.185E+01		1.842E+01	7.664E+01	1.549E+00	0.285
PB-214	3.316E+01		2.421E+01	9.276E+01	1.855E+00	0.357
RA-223	1.033E+02		7.639E+01	3.054E+02	6.126E+00	0.338
RA-224DA	3.960E+01		3.144E+01	1.267E+02	2.548E+00	0.313
RA-226DA	2.185E+01		1.842E+01	7.665E+01	1.549E+00	0.285
AC-227DA	-1.272E+02		1.145E+02	3.843E+02	7.732E+00	-0.331
AC-228	-1.840E+01		1.791E+01	7.617E+01	1.572E+00	-0.242
RA-228DA	-1.862E+01		1.812E+01	7.705E+01	1.591E+00	-0.242
TH-228DA	4.021E+01		2.638E+01	1.148E+02	2.316E+00	0.350
TH-232DA	-6.409E+01		6.027E+01	2.111E+02	4.223E+00	-0.304
TH-234DA	-2.575E+02		6.795E+02	2.761E+03	5.738E+01	-0.093
U-234DA	2.717E+01		5.273E+01	2.053E+02	4.111E+00	0.132
U-235HP	4.395E+01		1.217E+02	4.573E+02	9.420E+00	0.096
NP-237DA	-2.540E+01		2.349E+01	8.210E+01	1.643E+00	-0.309
U-238DA	3.316E+01		2.421E+01	9.276E+01	1.855E+00	0.357
U-238DHP	-2.153E+02		3.743E+02	1.469E+03	3.271E+01	-0.147
AM-241HP	-1.827E+01		3.638E+01	1.296E+02	2.908E+00	-0.141

STL Richland WA.

BA133

Batch ID: 7172084

Sample ID: JWP193AC
Detector ID: GER6 1



Energy Coefficients:
Offset: 7.81966E-02
Slope: 2.49285E-01
Quadrature: 1.26250E-08

Acquisition Start: 21-JUN-2007 08:47:08.24
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JWP193AC

CONFIGURATION ID: GER6:JWP193AC_210670847
TITLE : BA133
SAMPLE ID : JWP193AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 08:47:08
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 21-JUN-2007 05:12:57.91
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 7.8197E-02 keV
ENERGY SLOPE: 2.4929E-01 keV/C
ENERGY Q COEFF: 1.2625E-08 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.8071E-02 keV
FWHM SLOPE: 6.8000E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 09:17:25

```

Configuration      : $DISK1:[GER6.SAMPLE]JWP193AC_210670847.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:47:08
Sample ID         : JWP193AC Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Start energy      : 20.02 End energy : 2043.07
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.06	172	48	0.81	324.84	320	11	9.54E-02	11.4	
2	0	302.95	76	4	1.08	1214.88	1207	16	4.22E-02	12.9	
3	0	355.96	196	4	1.27	1427.52	1418	18	1.09E-01	7.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 21-JUN-2007 09:17:26

```

Configuration      : $DISK1:[GER6.SAMPLE]JWP193AC_210670847.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:47:08
Sample ID        : JWP193AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00
    
```

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	172	33.00	2.091E+00	8.297E+02	8.350E+02	12.68
	276.40	-----	6.90	2.253E+00	-----	Line Not Found	-----
	302.84	76	17.80	2.256E+00	6.307E+02	6.347E+02	13.98
	356.00	196	62.05*	2.258E+00	4.658E+02	4.687E+02	9.30
	383.85	-----	8.70	2.257E+00	-----	Line Not Found	-----

Flag: "*" = Keyline

Acquisition date : 21-JUN-2007 08:47:08

Unidentified Energy Lines
Sample ID : JWP193AC

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP193AC

Page : 3
Acquisition date : 21-JUN-2007 08:47:08

Flag: "*" = Keyline

Configuration : \$DISK1:[GER6.SAMPLE]JWP193AC_210670847.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 : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:47:08
 Sample ID : JWP193AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	4.687E+02	4.359E+01	4.353E+01	8.706E-01	10.768

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	8.051E+01	8.039E+01	3.609E+02	7.240E+00	0.223
NA-22	-8.149E+00	4.316E+00	1.180E+01	2.498E-01	-0.691
K-40	1.151E+02	8.260E+01	4.053E+02	8.694E+00	0.284
SC-46	1.894E+00	6.247E+00	2.703E+01	5.661E-01	0.070
CR-51	1.075E+02	2.050E+02	8.031E+02	1.607E+01	0.134
MN-54	-3.611E+00	5.286E+00	1.964E+01	4.030E-01	-0.184
CO-57	-2.954E+01	9.724E+01	3.480E+02	7.190E+00	-0.085
CO-58	2.999E+00	6.648E+00	2.908E+01	5.957E-01	0.103
FE-59	9.183E+00	1.493E+01	6.619E+01	1.384E+00	0.139
CO-60	6.405E+00	3.890E+00	2.082E+01	4.427E-01	0.308
ZN-65	-2.067E+01	1.085E+01	3.120E+01	6.532E-01	-0.662
SE-75	-1.843E+01	1.596E+01	5.381E+01	1.080E+00	-0.342
SR-85	-2.244E+01	1.632E+01	5.446E+01	1.094E+00	-0.412
Y-88	-4.125E+00	2.925E+00	5.537E+00	1.217E-01	-0.745
NB-94	-7.359E+00	3.949E+00	1.116E+01	2.297E-01	-0.659
NB-95	1.743E-01	1.199E+01	4.771E+01	9.740E-01	0.004
TC-95M	2.583E+01	2.209E+01	8.676E+01	1.754E+00	0.298
ZR-95	6.484E+00	1.344E+01	5.809E+01	1.185E+00	0.112
ZRNB-95	2.540E-01	1.752E+01	6.969E+01	1.423E+00	0.004
RH-101	3.129E+01	1.314E+01	5.575E+01	1.129E+00	0.561
RH-102M	-5.673E+00	5.788E+00	2.089E+01	4.190E-01	-0.272
RU-103	-1.143E+01	1.211E+01	4.338E+01	8.710E-01	-0.263
RU-106DA	2.138E+00	6.028E+01	2.440E+02	4.934E+00	0.009
AG-108M	-1.181E+01	7.630E+00	2.469E+01	4.944E-01	-0.478
AG-110M	1.623E+01	7.674E+00	3.841E+01	7.908E-01	0.423
SN-113DA	9.200E+00	1.207E+01	5.088E+01	1.018E+00	0.181
SB-124	-9.901E+00	8.732E+00	3.056E+01	6.171E-01	-0.324

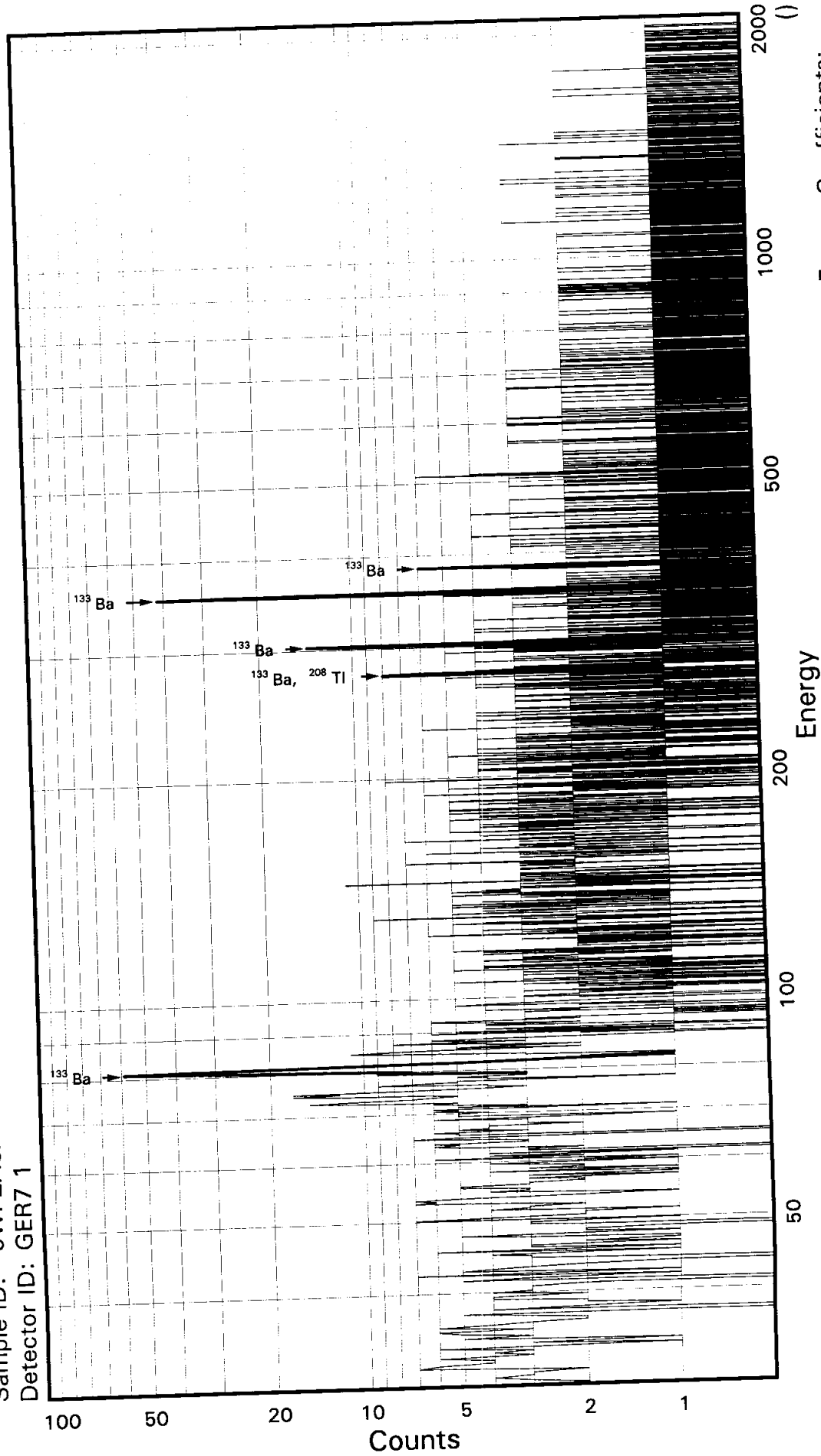
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	-4.625E+01		2.160E+01	6.265E+01	1.254E+00	-0.738
SN-126DA	-3.244E+00		7.080E+00	2.607E+01	5.286E-01	-0.124
I-131	-4.525E+00		2.015E+02	7.522E+02	1.504E+01	-0.006
CS-134	-3.713E+00		3.688E+00	1.343E+01	2.747E-01	-0.277
CS-137DA	-8.817E+00		8.167E+00	2.813E+01	5.703E-01	-0.313
LA-138	4.530E+00		6.693E+00	3.087E+01	6.611E-01	0.147
CE-139	2.279E+00		1.408E+01	5.320E+01	1.086E+00	0.043
BA-140	1.427E+02		1.660E+02	7.040E+02	1.416E+01	0.203
BALA-140	1.629E-01		4.423E+01	2.056E+02	4.450E+00	0.001
CE-141	-1.501E+01		4.786E+01	1.752E+02	3.603E+00	-0.086
CE-144	9.349E+01		9.894E+01	3.856E+02	7.977E+00	0.242
CEPR-144	1.882E+02		1.980E+02	7.718E+02	1.597E+01	0.244
PM-144	5.002E+00		5.761E+00	2.552E+01	5.158E-01	0.196
PM-146	-1.385E+01		1.211E+01	4.091E+01	8.198E-01	-0.339
EU-152	-2.861E+01		3.177E+01	1.101E+02	2.201E+00	-0.260
EU-154	-2.253E+01		1.193E+01	3.262E+01	6.908E-01	-0.691
EU-155	3.893E+01		3.869E+01	1.607E+02	3.385E+00	0.242
HF-181	1.654E+01		1.358E+01	5.936E+01	1.191E+00	0.279
BI-207	3.703E+00		6.704E+00	2.734E+01	5.511E-01	0.135
TL-208	4.722E+00		7.439E+00	3.078E+01	6.210E-01	0.153
BI-210M	-3.873E+00		1.516E+01	5.607E+01	1.125E+00	-0.069
BI-212	-5.996E+01		1.029E+02	3.804E+02	1.163E+01	-0.158
PB-212	-2.400E+00		2.023E+01	7.910E+01	1.591E+00	-0.030
BI-214	3.920E+01		1.581E+01	7.225E+01	1.460E+00	0.543
PB-214	1.091E+01		3.226E+01	1.083E+02	2.165E+00	0.101
RA-223	5.881E+01		6.490E+01	2.566E+02	5.145E+00	0.229
RA-224DA	-2.485E+00		2.095E+01	8.189E+01	1.647E+00	-0.030
RA-226DA	3.920E+01		1.581E+01	7.226E+01	1.460E+00	0.543
AC-227DA	-8.435E+01		8.148E+01	2.811E+02	5.656E+00	-0.300
AC-228	2.048E+01		2.035E+01	9.027E+01	1.862E+00	0.227
RA-228DA	2.071E+01		2.058E+01	9.131E+01	1.884E+00	0.227
TH-228DA	1.361E+01		2.144E+01	8.871E+01	1.789E+00	0.153
TH-232DA	-2.347E+01		6.147E+01	2.258E+02	4.517E+00	-0.104
TH-234DA	-6.293E+02		9.541E+02	3.539E+03	7.348E+01	-0.178
U-234DA	3.996E+01		4.434E+01	1.788E+02	3.580E+00	0.223
U-235HP	8.683E+01		1.046E+02	3.951E+02	8.134E+00	0.220
NP-237DA	3.656E+01		2.333E+01	9.776E+01	1.956E+00	0.374
U-238DA	1.091E+01		3.226E+01	1.083E+02	2.165E+00	0.101
U-238DHP	-4.505E-01		3.143E+02	1.198E+03	2.662E+01	0.000
AM-241HP	-1.696E+00		2.615E+01	9.936E+01	2.224E+00	-0.017

STL Richland WA.
BA133

Batch ID: 7172084

Sample ID: JWP2A3AC
Detector ID: GER7 1



Energy Coefficients:
Offset: 5.44113E-01
Slope: 2.49335E-01
Quadrature: 1.39234E-07

Acquisition Start: 21-JUN-2007 08:47:32.73
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION:

JWP2A3AC

CONFIGURATION ID: GER7:JWP2A3AC_210670847
TITLE : BA133
SAMPLE ID : JWP2A3AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 08:47:32
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 21-JUN-2007 05:13:29.65
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 5.4411E-01 keV
ENERGY SLOPE: 2.4934E-01 keV/C
ENERGY Q COEFF: 1.3923E-07 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.6668E-01 keV
FWHM SLOPE: 3.1775E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 09:17:49

```

Configuration      : $DISK1:[GER7.SAMPLE]JWP2A3AC_210670847.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:47:32
Sample ID        : JWP2A3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.19 0.0%
Start energy     : 20.49 End energy : 2052.44
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.39*	25	58	0.96	300.14	294	16	1.39E-02	78.0	
2	0	80.95	204	36	0.69	322.44	314	16	1.13E-01	9.6	
3	0	276.42	29	16	1.27	1105.77	1099	13	1.61E-02	34.2	
4	0	302.93	67	4	1.21	1211.95	1203	17	3.70E-02	14.2	
5	0	355.91	195	12	1.14	1424.12	1415	17	1.08E-01	8.3	
6	0	383.98	25	3	1.37	1536.52	1530	13	1.39E-02	24.9	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER7.SAMPLE]JWP2A3AC_210670847.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:47:32
Sample ID        : JWP2A3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.19 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00
    
```

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	204	33.00	1.909E+00	1.079E+03	1.085E+03	11.05
	276.40	29	6.90	2.061E+00	6.775E+02	6.818E+02	34.64
	302.84	67	17.80	2.064E+00	6.051E+02	6.090E+02	15.14
	356.00	195	62.05*	2.065E+00	5.059E+02	5.091E+02	9.90
	383.85	25	8.70	2.065E+00	4.632E+02	4.661E+02	25.45

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2A3AC

Page : 2
Acquisition date : 21-JUN-2007 08:47:32

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.39	25	58	0.96	300.14	294	16	1.39E-02	78.0	1.89E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2A3AC

Page : 3
Acquisition date : 21-JUN-2007 08:47:32

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	6.875E+02	34.64	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

Configuration : \$DISK1:[GER7.SAMPLE]JWP2A3AC_210670847.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 : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:47:32
 Sample ID : JWP2A3AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.19 0.0%
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.091E+02	5.041E+01	6.193E+01	1.239E+00	8.221

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.511E+02	7.911E+01	2.266E+02	4.546E+00	-0.667
NA-22	-3.407E+00	4.263E+00	1.630E+01	3.456E-01	-0.209
K-40	4.958E+00	5.883E+01	2.993E+02	6.431E+00	0.017
SC-46	3.028E+00	7.084E+00	3.073E+01	6.444E-01	0.099
CR-51	-1.746E+02	1.839E+02	6.327E+02	1.266E+01	-0.276
MN-54	-6.576E+00	5.489E+00	1.926E+01	3.953E-01	-0.342
CO-57	-2.709E+02	1.349E+02	4.193E+02	8.669E+00	-0.646
CO-58	-1.031E+01	8.402E+00	2.809E+01	5.758E-01	-0.367
FE-59	1.637E+01	1.185E+01	6.298E+01	1.319E+00	0.260
CO-60	3.482E+00	3.484E+00	1.872E+01	3.985E-01	0.186
ZN-65	-8.377E+00	1.305E+01	4.820E+01	1.010E+00	-0.174
SE-75	4.206E+01	2.144E+01	8.890E+01	1.784E+00	0.473
SR-85	-1.725E+01	1.648E+01	5.554E+01	1.116E+00	-0.311
Y-88	-3.772E-02	3.201E+00	1.650E+01	3.636E-01	-0.002
NB-94	-2.411E+00	5.714E+00	2.228E+01	4.586E-01	-0.108
NB-95	1.536E+01	8.602E+00	4.543E+01	9.281E-01	0.338
TC-95M	4.235E+01	2.380E+01	9.838E+01	1.990E+00	0.430
ZR-95	1.278E+01	1.162E+01	5.692E+01	1.162E+00	0.224
ZRNB-95	2.302E+01	1.268E+01	6.693E+01	1.367E+00	0.344
RH-101	2.064E+01	1.592E+01	6.349E+01	1.286E+00	0.325
RH-102M	-9.025E+00	5.895E+00	1.875E+01	3.761E-01	-0.481
RU-103	2.275E+01	1.565E+01	6.765E+01	1.358E+00	0.336
RU-106DA	-2.132E+01	6.234E+01	2.442E+02	4.940E+00	-0.087
AG-108M	-2.153E+01	8.512E+00	2.358E+01	4.724E-01	-0.913
AG-110M	-1.166E+01	8.259E+00	2.758E+01	5.684E-01	-0.423
SN-113DA	1.506E+01	1.449E+01	6.107E+01	1.222E+00	0.247
SB-124	-4.158E+00	1.037E+01	3.946E+01	7.970E-01	-0.105

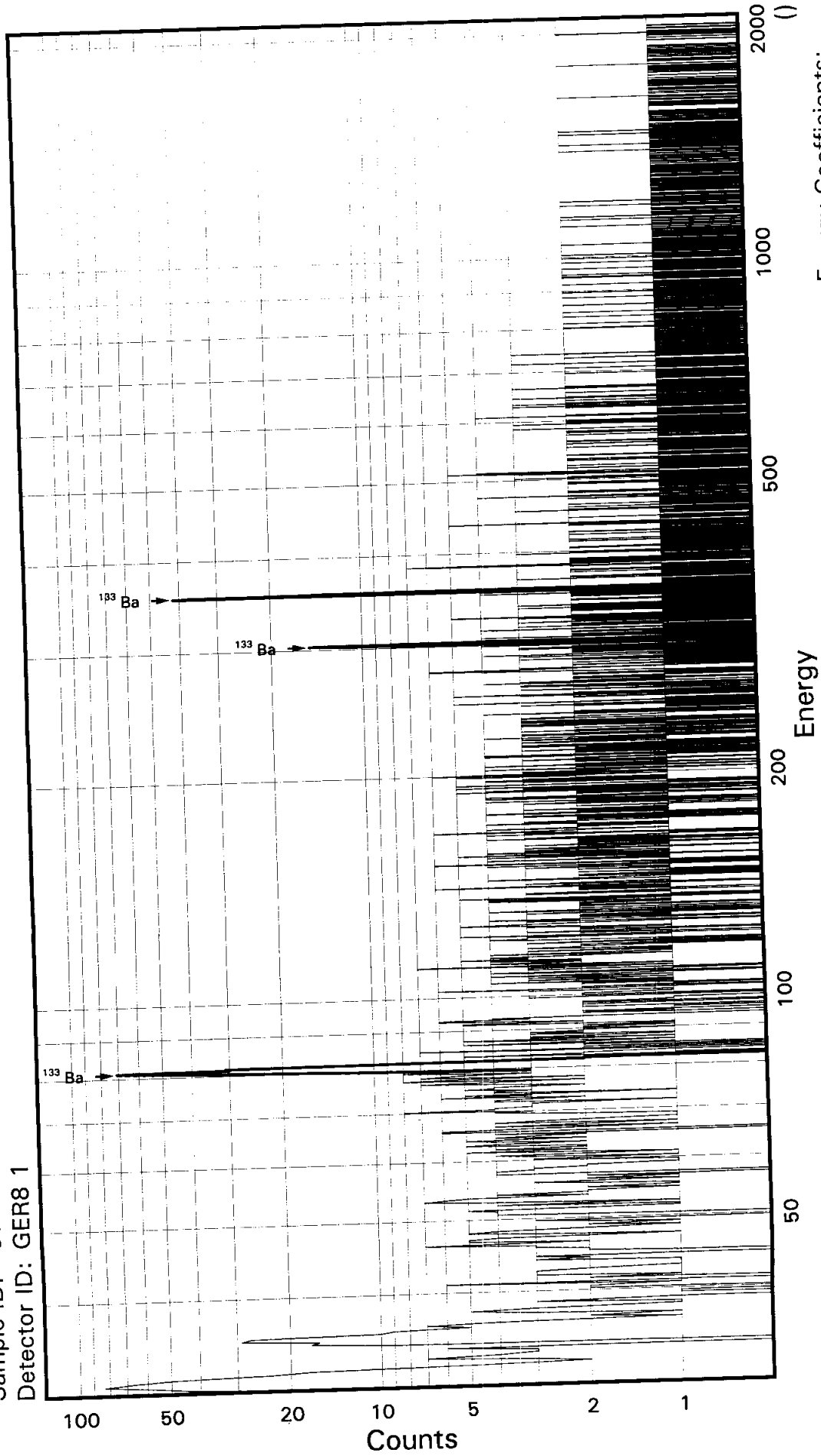
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	-1.791E+01	2.687E+01	9.725E+01	1.947E+00	-0.184
SN-126DA	6.966E-02	6.109E+00	2.457E+01	4.985E-01	0.003
I-131	-2.112E+02	1.761E+02	6.099E+02	1.220E+01	-0.346
CS-134	-4.478E-01	6.460E+00	2.617E+01	5.357E-01	-0.017
CS-137DA	-4.013E+00	6.028E+00	2.283E+01	4.630E-01	-0.176
LA-138	-6.001E-02	3.712E+00	1.908E+01	4.093E-01	-0.003
CE-139	1.654E+01	1.760E+01	6.716E+01	1.372E+00	0.246
BA-140	-2.841E+02	1.792E+02	5.633E+02	1.133E+01	-0.504
BALA-140	1.872E+00	6.741E+00	9.692E+01	2.102E+00	0.019
CE-141	5.044E+01	5.339E+01	2.039E+02	4.197E+00	0.247
CE-144	-7.044E+01	1.296E+02	4.518E+02	9.355E+00	-0.156
CEPR-144	-1.395E+02	2.593E+02	9.043E+02	1.872E+01	-0.154
PM-144	-3.195E+00	6.005E+00	2.305E+01	4.662E-01	-0.139
PM-146	2.485E+01	1.242E+01	5.494E+01	1.101E+00	0.452
EU-152	-4.287E+01	3.133E+01	1.065E+02	2.131E+00	-0.402
EU-154	-9.421E+00	1.179E+01	4.506E+01	9.556E-01	-0.209
EU-155	3.307E+01	5.123E+01	1.997E+02	4.212E+00	0.166
HF-181	3.437E+00	1.167E+01	4.915E+01	9.862E-01	0.070
BI-207	-2.189E+00	5.236E+00	2.078E+01	4.190E-01	-0.105
TL-208	1.378E+01	6.946E+00	3.366E+01	6.791E-01	0.409
BI-210M	1.015E+01	2.154E+01	8.174E+01	1.640E+00	0.124
BI-212	2.221E+01	9.085E+01	3.748E+02	1.146E+01	0.059
PB-212	-3.432E+01	2.437E+01	8.755E+01	1.761E+00	-0.392
BI-214	3.313E+01	1.715E+01	7.900E+01	1.597E+00	0.419
PB-214	9.071E+01	3.403E+01	1.331E+02	2.662E+00	0.682
RA-223	-4.151E+00	7.442E+01	2.745E+02	5.506E+00	-0.015
RA-224DA	-3.553E+01	2.522E+01	9.064E+01	1.823E+00	-0.392
RA-226DA	3.313E+01	1.715E+01	7.900E+01	1.597E+00	0.419
AC-227DA	-1.706E+02	9.934E+01	3.213E+02	6.465E+00	-0.531
AC-228	-2.986E+01	2.265E+01	8.410E+01	1.736E+00	-0.355
RA-228DA	-3.020E+01	2.291E+01	8.507E+01	1.756E+00	-0.355
TH-228DA	3.969E+01	2.001E+01	9.699E+01	1.957E+00	0.409
TH-232DA	-6.424E+01	6.888E+01	2.448E+02	4.897E+00	-0.262
TH-234DA	-1.040E+03	6.376E+02	1.897E+03	3.943E+01	-0.548
U-234DA	1.507E+02	5.739E+01	2.422E+02	4.851E+00	0.622
U-235HP	4.749E+01	1.171E+02	4.338E+02	8.936E+00	0.109
NP-237DA	4.945E+01	2.404E+01	1.042E+02	2.084E+00	0.475
U-238DA	9.071E+01	3.403E+01	1.331E+02	2.662E+00	0.682
U-238DHP	-4.648E+01	4.282E+02	1.591E+03	3.542E+01	-0.029
AM-241HP	2.377E+01	3.676E+01	1.372E+02	3.079E+00	0.173

STL Richland WA.
BA133

Batch ID: 7172084

Sample ID: JWP2C3AC
Detector ID: GER8 1



Energy Coefficients:
Offset: 2.85676E-01
Slope: 2.49652E-01
Quadrature: 1.98082E-08

Acquisition Start: 21-JUN-2007 08:47:55.04
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION:

JWP2C3AC

CONFIGURATION ID: GER8:JWP2C3AC_210670847
TITLE : BA133
SAMPLE ID : JWP2C3AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 08:47:55
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 21-JUN-2007 05:13:46.12
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 2.8568E-01 keV
ENERGY SLOPE: 2.4965E-01 keV/C
ENERGY Q COEFF: 1.9808E-08 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 8.9990E-01 keV
FWHM SLOPE: 2.5808E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 09:18:11

Configuration : \$DISK1:[GER8.SAMPLE]JWP2C3AC_210670847.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:47:55
 Sample ID : JWP2C3AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.18 0.0%
 Start energy : 20.26 End energy : 2046.76
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.81	331	76	0.99	122.28	115	14	1.84E-01	7.9	
2	0	35.15	104	33	0.92	139.66	135	14	5.79E-02	15.5	
3	0	81.06	262	38	0.74	323.54	317	14	1.46E-01	8.1	
4	0	303.02	67	14	1.00	1212.51	1202	17	3.72E-02	17.4	
5	0	356.07	196	5	0.88	1424.98	1415	19	1.09E-01	7.6	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER8.SAMPLE]JWP2C3AC_210670847.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:47:55
 Sample ID : JWP2C3AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.18 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	262	33.00	2.140E+00	1.238E+03	1.245E+03	9.73
	276.40	-----	6.90	2.306E+00	-----	Line Not Found	-----
	302.84	67	17.80	2.309E+00	5.429E+02	5.463E+02	18.19
	356.00	196	62.05*	2.311E+00	4.559E+02	4.587E+02	9.34
	383.85	-----	8.70	2.310E+00	-----	Line Not Found	-----

Flag: "*" = Keyline

Acquisition date : 21-JUN-2007 08:47:55

Unidentified Energy Lines
Sample ID : JWP2C3AC

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.81	331	76	0.99	122.28	115	14	1.84E-01	7.9	1.87E+00	
0	35.15	104	33	0.92	139.66	135	14	5.79E-02	15.5	1.92E+00	

Flags: "T" = Tentatively associated

Acquisition date : 21-JUN-2007 08:47:55

Rejected Report
Sample ID : JWP2C3AC

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER8.SAMPLE]JWP2C3AC_210670847.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:47:55
Sample ID        : JWP2C3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.18 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	4.587E+02	4.282E+01	4.478E+01	8.957E-01	10.243

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.092E+02	8.282E+01	2.807E+02	5.632E+00	-0.389
NA-22	8.140E-03	2.211E+00	1.152E+01	2.440E-01	0.001
K-40	2.600E+01	3.792E+01	2.092E+02	4.487E+00	0.124
SC-46	8.135E+00	4.927E+00	2.640E+01	5.529E-01	0.308
CR-51	8.821E+01	2.035E+02	7.853E+02	1.571E+01	0.112
MN-54	-4.725E+00	3.552E+00	1.176E+01	2.412E-01	-0.402
CO-57	1.268E+02	1.067E+02	4.186E+02	8.644E+00	0.303
CO-58	2.277E+00	6.880E+00	2.947E+01	6.034E-01	0.077
FE-59	9.553E+00	1.110E+01	5.507E+01	1.151E+00	0.173
CO-60	-1.572E+00	2.701E+00	1.142E+01	2.426E-01	-0.138
ZN-65	-6.198E+00	6.393E+00	2.415E+01	5.055E-01	-0.257
SE-75	1.651E+01	1.758E+01	7.026E+01	1.409E+00	0.235
SR-85	-2.009E+01	1.376E+01	4.552E+01	9.148E-01	-0.441
Y-88	-8.547E-03	2.835E+00	1.471E+01	3.232E-01	-0.001
NB-94	1.488E+00	3.316E+00	1.596E+01	3.282E-01	0.093
NB-95	4.439E-01	9.157E+00	3.851E+01	7.862E-01	0.012
TC-95M	-6.320E+00	2.362E+01	8.603E+01	1.739E+00	-0.073
ZR-95	-7.255E+00	9.310E+00	3.602E+01	7.348E-01	-0.201
ZRNB-95	6.485E-01	1.338E+01	5.626E+01	1.149E+00	0.012
RH-101	1.871E+01	1.643E+01	6.372E+01	1.290E+00	0.294
RH-102M	3.375E+00	6.171E+00	2.595E+01	5.204E-01	0.130
RU-103	3.414E+00	1.302E+01	5.236E+01	1.051E+00	0.065
RU-106DA	-8.951E+01	4.795E+01	1.358E+02	2.746E+00	-0.659
AG-108M	-7.066E+00	7.855E+00	2.799E+01	5.605E-01	-0.252
AG-110M	-2.178E+00	6.784E+00	2.716E+01	5.591E-01	-0.080
SN-113DA	-1.309E+01	1.334E+01	4.568E+01	9.139E-01	-0.287
SB-124	1.325E+01	9.011E+00	4.043E+01	8.164E-01	0.328

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	-3.775E+01		1.963E+01	6.053E+01	1.212E+00	-0.624
SN-126DA	1.004E+01		5.360E+00	2.547E+01	5.165E-01	0.394
I-131	-1.928E+02		1.236E+02	3.865E+02	7.730E+00	-0.499
CS-134	-9.378E-01		3.263E+00	1.475E+01	3.017E-01	-0.064
CS-137DA	-2.251E+00		6.358E+00	2.427E+01	4.919E-01	-0.093
LA-138	2.255E+00		4.046E+00	2.148E+01	4.598E-01	0.105
CE-139	8.464E+00		1.700E+01	6.283E+01	1.282E+00	0.135
BA-140	8.712E+01		1.347E+02	5.856E+02	1.178E+01	0.149
BALA-140	-6.133E+01		5.600E+01	2.008E+02	4.345E+00	-0.305
CE-141	-2.419E+00		4.074E+01	1.494E+02	3.074E+00	-0.016
CE-144	9.176E+01		1.041E+02	4.018E+02	8.311E+00	0.228
CEPR-144	2.120E+02		2.058E+02	8.025E+02	1.660E+01	0.264
PM-144	7.489E+00		4.719E+00	2.335E+01	4.719E-01	0.321
PM-146	5.001E+00		8.868E+00	3.742E+01	7.500E-01	0.134
EU-152	5.438E-01		2.640E+01	1.010E+02	2.020E+00	0.005
EU-154	2.270E-02		6.113E+00	3.186E+01	6.746E-01	0.001
EU-155	4.946E+00		5.499E+01	2.020E+02	4.255E+00	0.024
HF-181	9.534E+00		1.019E+01	4.639E+01	9.308E-01	0.206
BI-207	1.179E+01		4.240E+00	2.352E+01	4.741E-01	0.501
TL-208	-6.919E-01		6.455E+00	2.549E+01	5.142E-01	-0.027
BI-210M	-1.890E+01		1.808E+01	6.212E+01	1.246E+00	-0.304
BI-212	-1.284E+02		5.296E+01	6.032E+01	1.844E+00	-2.129
PB-212	-1.961E+01		2.271E+01	8.080E+01	1.625E+00	-0.243
BI-214	3.600E+01		1.337E+01	6.426E+01	1.298E+00	0.560
PB-214	3.397E+01		2.304E+01	8.699E+01	1.740E+00	0.391
RA-223	-4.841E+01		6.502E+01	2.293E+02	4.599E+00	-0.211
RA-224DA	-2.030E+01		2.351E+01	8.365E+01	1.682E+00	-0.243
RA-226DA	3.625E+01		1.341E+01	6.442E+01	1.301E+00	0.563
AC-227DA	-3.078E+01		8.488E+01	3.080E+02	6.196E+00	-0.100
AC-228	-5.512E+00		1.208E+01	4.984E+01	1.028E+00	-0.111
RA-228DA	-5.576E+00		1.222E+01	5.041E+01	1.040E+00	-0.111
TH-228DA	-1.994E+00		1.860E+01	7.347E+01	1.482E+00	-0.027
TH-232DA	7.378E+01		6.758E+01	2.720E+02	5.440E+00	0.271
TH-234DA	4.463E+02		5.708E+02	2.765E+03	5.741E+01	0.161
U-234DA	4.752E+01		4.438E+01	1.785E+02	3.574E+00	0.266
U-235HP	5.525E+00		9.466E+01	3.479E+02	7.161E+00	0.016
NP-237DA	-4.269E+00		1.948E+01	7.310E+01	1.463E+00	-0.058
U-238DA	3.397E+01		2.304E+01	8.699E+01	1.740E+00	0.391
U-238DHP	-3.151E+02		3.808E+02	1.414E+03	3.138E+01	-0.223
AM-241HP	-2.010E+01		3.527E+01	1.256E+02	2.810E+00	-0.160

SAMPLE IDENTIFICATION:

JWP2D3AC

CONFIGURATION ID: GER14:JWP2D3AC_210670848
TITLE : BA133
SAMPLE ID : JWP2D3AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 08:48:13
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 21-JUN-2007 05:14:31.62
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.7416E+00 keV
ENERGY SLOPE: 2.4827E-01 keV/C
ENERGY Q COEFF: 2.0580E-09 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.0603E+00 keV
FWHM SLOPE: 2.7532E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 09:18:30

```

Configuration      : $DISK1:[GER14.SAMPLE]JWP2D3AC_210670848.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:48:13
Sample ID        : JWP2D3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.39 0.0%
Start energy     : 19.12 End energy : 2033.22
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	30.54	522	60	1.61	126.01	116	40	2.90E-01	5.5	1.35E+00
2	3	35.00	99	28	1.63	143.95	116	40	5.50E-02	21.3	
3	0	80.87	269	42	1.47	328.73	319	19	1.50E-01	8.4	
4	0	303.11	51	28	0.59	1223.86	1212	18	2.84E-02	24.8	
5	0	356.03	215	17	1.29	1437.02	1427	20	1.20E-01	7.9	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER14.SAMPLE]JWP2D3AC_210670848.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:48:13
Sample ID         : JWP2D3AC Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.39 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	269	33.00	1.818E+00	1.497E+03	1.506E+03	10.02
	276.40	-----	6.90	1.945E+00	-----	Line Not Found	-----
	302.84	51	17.80	1.948E+00	4.910E+02	4.941E+02	25.35
	356.00	215	62.05*	1.949E+00	5.936E+02	5.973E+02	9.54
	383.85	-----	8.70	1.949E+00	-----	Line Not Found	-----

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2D3AC

Page : 2
Acquisition date : 21-JUN-2007 08:48:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	30.54	522	60	1.61	126.01	116	40	2.90E-01	5.5	1.61E+00	
3	35.00	99	28	1.63	143.95	116	40	5.50E-02	21.3	1.64E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2D3AC

Page : 3
Acquisition date : 21-JUN-2007 08:48:13

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER14.SAMPLE]JWP2D3AC_210670848.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:48:13
Sample ID        : JWP2D3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.39 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.973E+02	5.698E+01	8.096E+01	1.619E+00	7.378

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	2.556E+02	1.274E+02	5.646E+02	1.132E+01	0.453
NA-22	6.141E+00	5.071E+00	2.493E+01	5.249E-01	0.246
K-40	1.206E+02	1.055E+02	5.158E+02	1.099E+01	0.234
SC-46	9.413E+00	8.233E+00	3.762E+01	7.843E-01	0.250
CR-51	-1.615E+02	2.798E+02	9.809E+02	1.963E+01	-0.165
MN-54	1.124E+01	6.610E+00	3.149E+01	6.445E-01	0.357
CO-57	1.554E+01	1.665E+02	5.935E+02	1.222E+01	0.026
CO-58	-7.708E+00	9.662E+00	3.485E+01	7.122E-01	-0.221
FE-59	-1.073E+01	1.079E+01	3.983E+01	8.293E-01	-0.269
CO-60	8.780E+00	4.837E+00	2.551E+01	5.391E-01	0.344
ZN-65	-7.668E+00	1.341E+01	5.079E+01	1.059E+00	-0.151
SE-75	1.945E+01	2.733E+01	1.030E+02	2.067E+00	0.189
SR-85	-1.250E+01	2.087E+01	7.251E+01	1.456E+00	-0.172
Y-88	4.780E+00	4.670E+00	2.529E+01	5.508E-01	0.189
NB-94	5.691E+00	6.495E+00	2.836E+01	5.818E-01	0.201
NB-95	2.383E+01	1.516E+01	6.740E+01	1.373E+00	0.354
TC-95M	-2.205E+01	3.656E+01	1.275E+02	2.575E+00	-0.173
ZR-95	-1.846E+01	1.947E+01	6.878E+01	1.401E+00	-0.268
ZRNB-95	4.622E+01	2.116E+01	9.925E+01	2.022E+00	0.466
RH-101	-3.359E+01	2.366E+01	7.891E+01	1.595E+00	-0.426
RH-102M	-3.266E+00	8.731E+00	3.251E+01	6.519E-01	-0.100
RU-103	-1.483E+01	1.760E+01	6.205E+01	1.245E+00	-0.239
RU-106DA	-1.314E+00	6.301E+01	2.595E+02	5.242E+00	-0.005
AG-108M	-1.266E+01	9.503E+00	3.196E+01	6.399E-01	-0.396
AG-110M	-4.688E-01	1.085E+01	4.241E+01	8.708E-01	-0.011
SN-113DA	-7.988E+00	1.838E+01	6.735E+01	1.347E+00	-0.119
SB-124	-1.201E+01	1.152E+01	3.947E+01	7.965E-01	-0.304

---- Non-Identified Nuclides ----

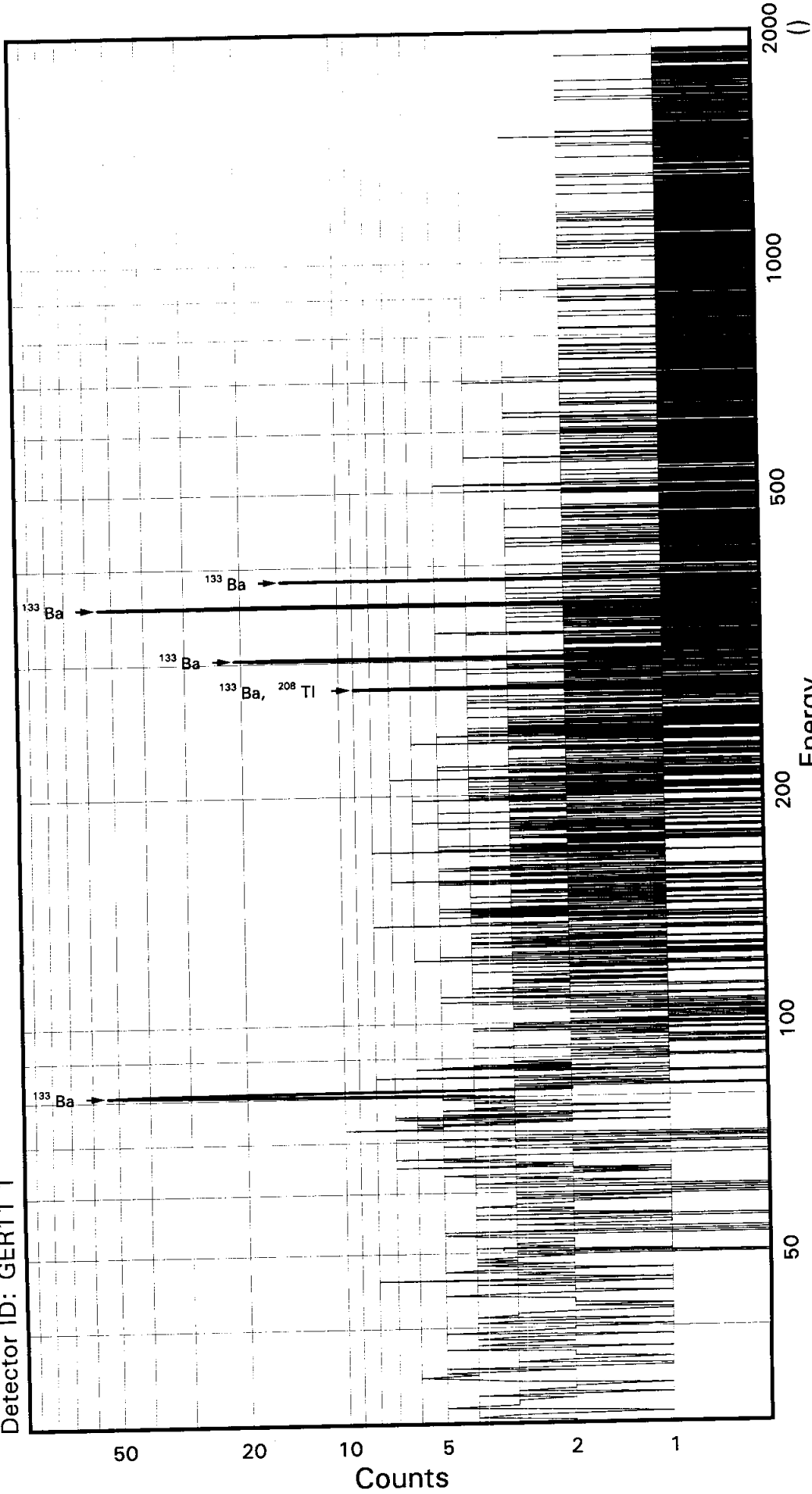
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	3.291E+01		2.624E+01	1.140E+02	2.283E+00	0.289
SN-126DA	-4.400E+00		8.878E+00	3.265E+01	6.611E-01	-0.135
I-131	-4.552E+02		2.575E+02	8.365E+02	1.673E+01	-0.544
CS-134	1.501E+01		8.274E+00	3.847E+01	7.854E-01	0.390
CS-137DA	1.611E+00		1.033E+01	4.023E+01	8.145E-01	0.040
LA-138	-2.483E+00		7.124E+00	2.933E+01	6.239E-01	-0.085
CE-139	-5.143E+01		2.384E+01	7.637E+01	1.556E+00	-0.673
BA-140	4.324E+02		2.044E+02	9.328E+02	1.876E+01	0.464
BALA-140	-6.143E+01		6.055E+01	2.188E+02	4.699E+00	-0.281
CE-141	-1.891E+02		6.369E+01	1.808E+02	3.710E+00	-1.045
CE-144	-9.762E+01		1.668E+02	5.728E+02	1.181E+01	-0.170
CEPR-144	-1.953E+02		3.336E+02	1.146E+03	2.362E+01	-0.170
PM-144	-1.218E+01		7.024E+00	2.235E+01	4.514E-01	-0.545
PM-146	-1.567E+01		1.682E+01	5.826E+01	1.167E+00	-0.269
EU-152	5.420E+00		4.415E+01	1.621E+02	3.242E+00	0.033
EU-154	1.883E+01		1.436E+01	7.076E+01	1.490E+00	0.266
EU-155	9.097E+01		6.545E+01	2.570E+02	5.387E+00	0.354
HF-181	1.703E-01		1.804E+01	6.920E+01	1.388E+00	0.002
BI-207	-6.227E+00		9.023E+00	3.201E+01	6.446E-01	-0.195
TL-208	-1.039E+00		1.024E+01	3.850E+01	7.760E-01	-0.027
BI-210M	2.920E+01		2.695E+01	1.034E+02	2.074E+00	0.282
BI-212	-1.031E+02		1.052E+02	3.722E+02	1.137E+01	-0.277
PB-212	-3.564E+01		3.503E+01	1.189E+02	2.390E+00	-0.300
BI-214	2.528E+01		2.244E+01	9.472E+01	1.912E+00	0.267
PB-214	1.052E+02		3.762E+01	1.450E+02	2.900E+00	0.725
RA-223	3.979E+01		9.831E+01	3.645E+02	7.308E+00	0.109
RA-224DA	-3.689E+01		3.627E+01	1.231E+02	2.474E+00	-0.300
RA-226DA	2.513E+01		2.243E+01	9.465E+01	1.910E+00	0.265
AC-227DA	-6.538E+01		1.370E+02	4.799E+02	9.650E+00	-0.136
AC-228	-1.770E+01		2.205E+01	7.967E+01	1.639E+00	-0.222
RA-228DA	-1.790E+01		2.230E+01	8.060E+01	1.658E+00	-0.222
TH-228DA	-2.993E+00		2.951E+01	1.109E+02	2.236E+00	-0.027
TH-232DA	-4.249E+01		9.839E+01	3.463E+02	6.926E+00	-0.123
TH-234DA	-7.864E+02		5.967E+02	2.001E+03	4.140E+01	-0.393
U-234DA	1.054E+02		7.042E+01	2.747E+02	5.500E+00	0.384
U-235HP	1.232E+02		1.238E+02	4.743E+02	9.736E+00	0.260
NP-237DA	1.223E+01		3.260E+01	1.220E+02	2.441E+00	0.100
U-238DA	1.052E+02		3.762E+01	1.450E+02	2.900E+00	0.725
U-238DHP	-2.852E+02		4.773E+02	1.668E+03	3.666E+01	-0.171
AM-241HP	5.089E+01		4.478E+01	1.719E+02	3.806E+00	0.296

STL Richland WA.

BA133

Batch ID: 7172084

Sample ID: JWP2E3AC
Detector ID: GER11 1



Energy Coefficients:
Offset: -1.02504E + 00
Slope: 2.31778E-01
Quadrature: 3.60814E-08

Acquisition Start: 21-JUN-2007 08:48:35.08
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION:

JWP2E3AC

CONFIGURATION ID: GER11:JWP2E3AC_210670848
TITLE : BA133
SAMPLE ID : JWP2E3AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 08:48:35
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 21-JUN-2007 05:33:54.03
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.1025E+01 keV
ENERGY SLOPE: 2.3178E-01 keV/C
ENERGY Q COEFF: 3.6081E-08 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.9312E-01 keV
FWHM SLOPE: 4.2604E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 09:18:55

Configuration : \$DISK1:[GER11.SAMPLE]JWP2E3AC_210670848.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:48:35
 Sample ID : JWP2E3AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.89 0.0%
 Start energy : 1.29 End energy : 1900.12
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.09	142	32	0.59	354.25	349	11	7.88E-02	11.5	
2	0	276.11	45	7	1.13	1195.45	1187	15	2.52E-02	19.7	
3	0	303.08	83	25	1.15	1311.79	1300	19	4.62E-02	17.9	
4	0	355.76	265	0	0.96	1538.96	1532	15	1.47E-01	6.1	
5	0	383.61	32	2	0.33	1659.08	1654	9	1.75E-02	19.8	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER11.SAMPLE]JWP2E3AC_210670848.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:48:35
Sample ID         : JWP2E3AC Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.89 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	142	33.00	2.880E+00	4.978E+02	5.009E+02	12.69
	276.40	45	6.90	3.084E+00	7.119E+02	7.164E+02	20.42
	302.84	83	17.80	3.088E+00	5.042E+02	5.074E+02	18.67
	356.00	265	62.05*	3.090E+00	4.607E+02	4.636E+02	8.17
	383.85	32	8.70	3.090E+00	3.915E+02	3.940E+02	20.51

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2E3AC

Page : 2
Acquisition date : 21-JUN-2007 08:48:35

None

Flags: "T" = Tentatively associated

Rejected Report
 Sample ID : JWP2E3AC

Acquisition date : 21-JUN-2007 08:48:35

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma (DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	7.223E+02	20.42	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER11.SAMPLE]JWP2E3AC_210670848.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:48:35
Sample ID        : JWP2E3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.89 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	4.636E+02	3.787E+01	3.140E+01	6.281E-01	14.762

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.872E+01	6.489E+01	2.473E+02	4.959E+00	-0.076
NA-22	-4.403E+00	3.386E+00	1.134E+01	2.390E-01	-0.388
K-40	2.954E+01	5.021E+01	2.533E+02	5.403E+00	0.117
SC-46	-2.160E-01	3.767E+00	1.615E+01	3.370E-01	-0.013
CR-51	-8.002E+00	1.193E+02	4.573E+02	9.150E+00	-0.017
MN-54	-1.147E-01	3.416E+00	1.432E+01	2.932E-01	-0.008
CO-57	-1.389E+02	7.698E+01	2.353E+02	4.848E+00	-0.590
CO-58	-3.208E+00	4.448E+00	1.679E+01	3.431E-01	-0.191
FE-59	1.314E+01	1.202E+01	5.421E+01	1.129E+00	0.242
CO-60	-1.221E+00	2.041E+00	8.495E+00	1.797E-01	-0.144
ZN-65	-1.181E+00	5.963E+00	2.516E+01	5.248E-01	-0.047
SE-75	2.809E+01	1.134E+01	5.130E+01	1.029E+00	0.548
SR-85	-2.773E+01	9.273E+00	2.608E+01	5.238E-01	-1.063
Y-88	9.528E-01	2.421E+00	1.287E+01	2.808E-01	0.074
NB-94	-3.559E+00	3.025E+00	1.027E+01	2.108E-01	-0.347
NB-95	6.056E+00	8.370E+00	3.600E+01	7.337E-01	0.168
TC-95M	4.472E+00	1.372E+01	5.261E+01	1.063E+00	0.085
ZR-95	8.908E+00	9.560E+00	4.349E+01	8.858E-01	0.205
ZRNB-95	8.433E+00	1.217E+01	5.226E+01	1.065E+00	0.161
RH-101	9.183E+00	1.069E+01	4.290E+01	8.676E-01	0.214
RH-102M	7.296E+00	4.153E+00	1.973E+01	3.957E-01	0.370
RU-103	1.355E+00	8.942E+00	3.565E+01	7.155E-01	0.038
RU-106DA	3.293E+01	3.935E+01	1.764E+02	3.564E+00	0.187
AG-108M	6.544E+00	4.735E+00	2.131E+01	4.267E-01	0.307
AG-110M	-3.783E+00	4.909E+00	1.808E+01	3.714E-01	-0.209
SN-113DA	1.016E+00	8.551E+00	3.434E+01	6.871E-01	0.030
SB-124	3.303E+00	5.764E+00	2.493E+01	5.031E-01	0.132

---- Non-Identified Nuclides ----

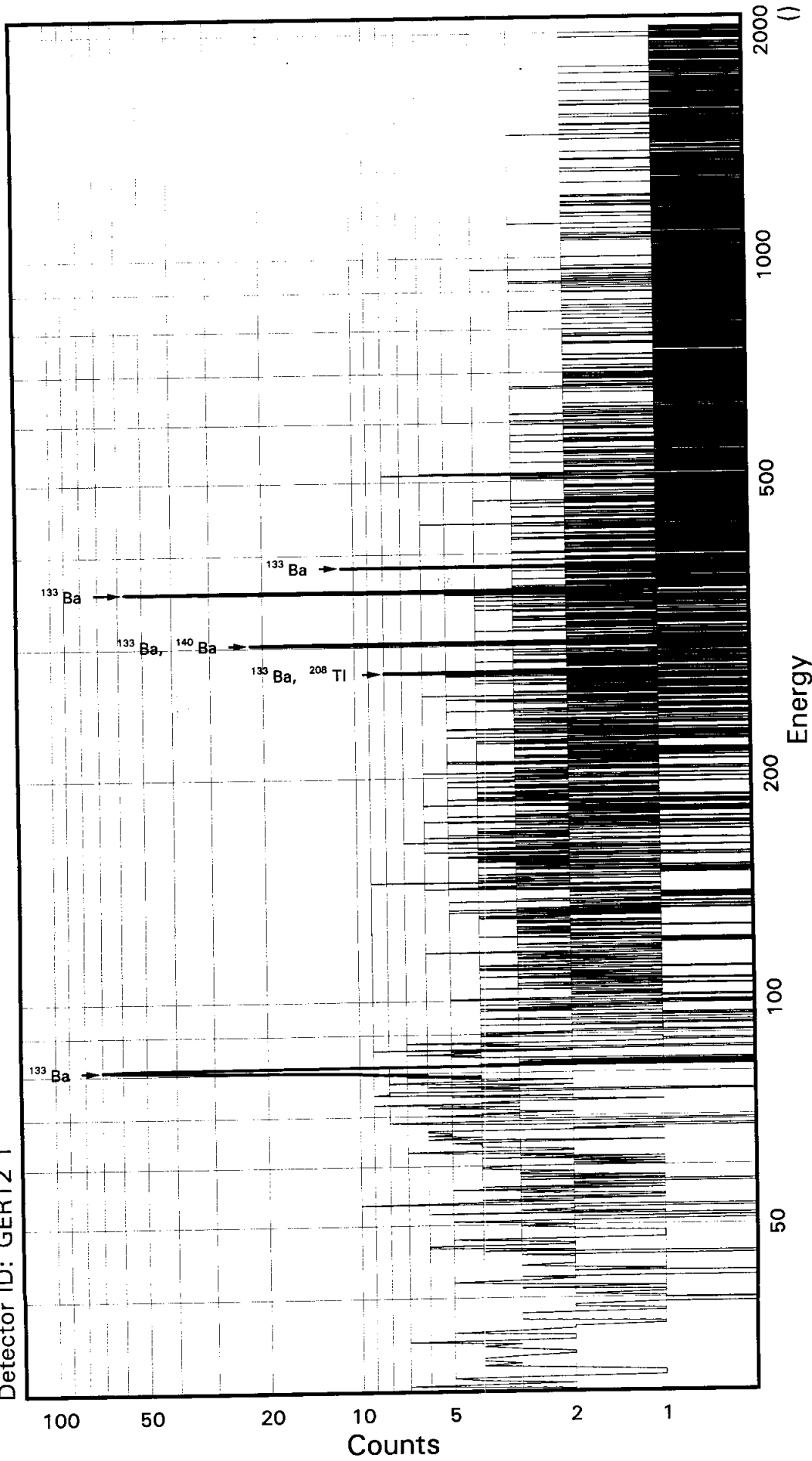
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	1.331E+01		1.823E+01	7.453E+01	1.492E+00	0.179
SN-126DA	-2.387E+00		2.763E+00	1.014E+01	2.054E-01	-0.235
I-131	-2.480E+02		1.247E+02	3.933E+02	7.866E+00	-0.631
CS-134	-8.024E+00		4.244E+00	1.236E+01	2.524E-01	-0.649
CS-137DA	6.346E+00		3.915E+00	1.932E+01	3.912E-01	0.328
LA-138	3.444E+00		2.442E+00	1.598E+01	3.402E-01	0.216
CE-139	5.350E+00		9.694E+00	3.800E+01	7.744E-01	0.141
BA-140	5.873E+01		5.690E+01	3.089E+02	6.213E+00	0.190
BALA-140	-1.680E+01		2.828E+01	1.183E+02	2.543E+00	-0.142
CE-141	-4.436E+00		2.423E+01	9.307E+01	1.910E+00	-0.048
CE-144	-2.024E+02		7.417E+01	2.017E+02	4.160E+00	-1.003
CEPR-144	-4.066E+02		1.482E+02	4.020E+02	8.293E+00	-1.012
PM-144	-5.997E+00		3.947E+00	1.264E+01	2.552E-01	-0.475
PM-146	1.561E+00		5.081E+00	2.201E+01	4.410E-01	0.071
EU-152	3.491E+00		1.950E+01	7.545E+01	1.509E+00	0.046
EU-154	-1.958E+01		1.033E+01	2.994E+01	6.310E-01	-0.654
EU-155	-6.639E+00		2.440E+01	9.225E+01	1.935E+00	-0.072
HF-181	2.522E+00		8.612E+00	3.538E+01	7.098E-01	0.071
BI-207	2.356E-01		4.929E+00	1.939E+01	3.906E-01	0.012
TL-208	-1.146E+00		4.633E+00	1.824E+01	3.676E-01	-0.063
BI-210M	-9.844E+00		1.132E+01	4.031E+01	8.083E-01	-0.244
BI-212	2.154E+01		5.472E+01	2.367E+02	7.231E+00	0.091
PB-212	-7.979E+00		1.412E+01	5.179E+01	1.041E+00	-0.154
BI-214	-9.860E-02		8.174E+00	3.314E+01	6.690E-01	-0.003
PB-214	1.556E+01		1.603E+01	6.006E+01	1.201E+00	0.259
RA-223	7.439E+01		3.647E+01	1.657E+02	3.322E+00	0.449
RA-224DA	-8.260E+00		1.462E+01	5.361E+01	1.078E+00	-0.154
RA-226DA	-9.860E-02		8.175E+00	3.314E+01	6.690E-01	-0.003
AC-227DA	-1.211E+02		5.948E+01	1.773E+02	3.564E+00	-0.683
AC-228	-3.664E+00		6.746E+00	2.946E+01	6.062E-01	-0.124
RA-228DA	-3.706E+00		6.824E+00	2.980E+01	6.132E-01	-0.124
TH-228DA	-3.303E+00		1.335E+01	5.255E+01	1.059E+00	-0.063
TH-232DA	-1.429E+01		4.291E+01	1.577E+02	3.154E+00	-0.091
TH-234DA	1.736E+02		5.148E+02	2.250E+03	4.658E+01	0.077
U-234DA	-3.284E+01		3.088E+01	1.063E+02	2.128E+00	-0.309
U-235HP	-6.447E+01		5.664E+01	1.992E+02	4.092E+00	-0.324
NP-237DA	-1.052E+01		1.241E+01	4.416E+01	8.838E-01	-0.238
U-238DA	1.556E+01		1.603E+01	6.006E+01	1.201E+00	0.259
U-238DHP	1.714E+01		1.976E+02	7.165E+02	1.578E+01	0.024
AM-241HP	5.951E+00		1.609E+01	6.249E+01	1.385E+00	0.095

STL Richland WA.

BA133

Batch ID: 7172084

Sample ID: JWP2F3AC
Detector ID: GER12 1



Energy Coefficients:
Offset: 1.14240E+01
Slope: 2.47571E-01
Quadrature: 6.87926E-09

Acquisition Start: 21-JUN-2007 08:49:14.76
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JWP2F3AC

CONFIGURATION ID: GER12:JWP2F3AC_210670849
TITLE : BA133
SAMPLE ID : JWP2F3AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 08:49:14
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 21-JUN-2007 05:34:08.34
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 1.1424E+01 keV
ENERGY SLOPE: 2.4757E-01 keV/C
ENERGY Q COEFF: 6.8793E-09 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.9535E-01 keV
FWHM SLOPE: 3.6397E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 09:19:31

```

Configuration      : $DISK1:[GER12.SAMPLE]JWP2F3AC_210670849.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:49:14
Sample ID         : JWP2F3AC Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.32 0.0%
Start energy      : 11.67 End energy : 2039.99
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.91	250	43	0.83	280.68	273	14	1.39E-01	8.4	
2	0	276.21	53	0	1.78	1069.51	1061	16	2.94E-02	13.7	
3	0	302.84	91	11	0.91	1177.07	1170	15	5.03E-02	13.3	
4	0	356.03	268	29	1.04	1391.90	1382	17	1.49E-01	7.7	
5	0	384.12	40	13	0.82	1505.34	1495	18	2.22E-02	26.7	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER12.SAMPLE]JWP2F3AC_210670849.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:49:14
Sample ID         : JWP2F3AC Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.32 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 DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	250	33.00	2.915E+00	8.674E+02	8.729E+02	9.99
	276.40	53	6.90	3.094E+00	8.275E+02	8.328E+02	14.75
	302.84	91	17.80	3.097E+00	5.473E+02	5.508E+02	14.32
	356.00	268	62.05*	3.100E+00	4.642E+02	4.671E+02	9.38
	383.85	40	8.70	3.099E+00	4.936E+02	4.967E+02	27.25

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2F3AC

Page : 2
Acquisition date : 21-JUN-2007 08:49:14

None

Flags: "T" = Tentatively associated.

Nuclide	Half-life	Half-Life		Energy	%Abund	Activity 1-Sigma		Rejected by	
		Ratio				(DPM/SAMPL)	%Error		
BA-140	12.79D	2.73		162.64	6.70	---	Not Found	---	Abun.
				304.84	4.50	1.433E+04	14.32		
				423.70	3.20	---	Not Found	---	
				537.32*	25.00	---	Not Found	---	
% Abundances Found =			11.42						
TL-208	1.41E+10Y	0.00		277.35	6.80	8.397E+02	14.75		Abun.
				510.84	21.60	---	Not Found	---	
				583.14*	84.20	---	Not Found	---	
				860.37	12.46	---	Not Found	---	
% Abundances Found =			5.44						

Flag: "*" = Keyline

Configuration : \$DISK1:[GER12.SAMPLE]JWP2F3AC_210670849.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 : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:49:14
 Sample ID : JWP2F3AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.32 0.0%
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %
 Energy tolerance : 2.00 Half life ratio : 8.00
 Errors propagatd: 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	4.671E+02	4.383E+01	4.770E+01	9.541E-01	9.792

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.534E+02	7.297E+01	2.131E+02	4.272E+00	-0.720
NA-22	2.310E+00	1.638E+00	1.072E+01	2.243E-01	0.216
K-40	-7.683E+01	4.417E+01	2.005E+02	4.239E+00	-0.383
SC-46	3.993E+00	4.810E+00	2.180E+01	4.523E-01	0.183
CR-51	1.158E+02	1.548E+02	6.047E+02	1.210E+01	0.192
MN-54	-2.648E+00	4.607E+00	1.730E+01	3.531E-01	-0.153
CO-57	4.280E+01	5.979E+01	2.404E+02	4.933E+00	0.178
CO-58	3.641E+00	4.890E+00	2.216E+01	4.516E-01	0.164
FE-59	2.356E+00	1.086E+01	4.629E+01	9.594E-01	0.051
CO-60	9.906E-01	3.084E+00	1.372E+01	2.882E-01	0.072
ZN-65	1.381E+00	5.105E+00	2.447E+01	5.076E-01	0.056
SE-75	-2.898E+00	1.296E+01	4.780E+01	9.583E-01	-0.061
SR-85	-2.503E+01	1.210E+01	3.715E+01	7.458E-01	-0.674
Y-88	1.464E+00	1.466E+00	1.076E+01	2.320E-01	0.136
NB-94	-1.029E+00	3.627E+00	1.441E+01	2.947E-01	-0.071
NB-95	-5.181E+00	7.169E+00	2.620E+01	5.326E-01	-0.198
TC-95M	2.140E+01	1.560E+01	6.369E+01	1.285E+00	0.336
ZR-95	1.718E+00	1.147E+01	4.570E+01	9.286E-01	0.038
ZRNB-95	-7.568E+00	1.047E+01	3.827E+01	7.781E-01	-0.198
RH-101	9.093E+00	1.137E+01	4.375E+01	8.834E-01	0.208
RH-102M	3.803E+00	5.192E+00	2.145E+01	4.300E-01	0.177
RU-103	-1.382E+01	8.129E+00	2.479E+01	4.974E-01	-0.557
RU-106DA	-7.128E-01	4.369E+01	1.758E+02	3.546E+00	-0.004
AG-108M	-8.356E+00	6.236E+00	2.086E+01	4.176E-01	-0.401
AG-110M	2.528E-02	4.080E+00	1.796E+01	3.677E-01	0.001
SN-113DA	1.313E+01	9.106E+00	4.005E+01	8.012E-01	0.328
SB-124	5.279E+00	7.146E+00	2.999E+01	6.045E-01	0.176

---- Non-Identified Nuclides ----

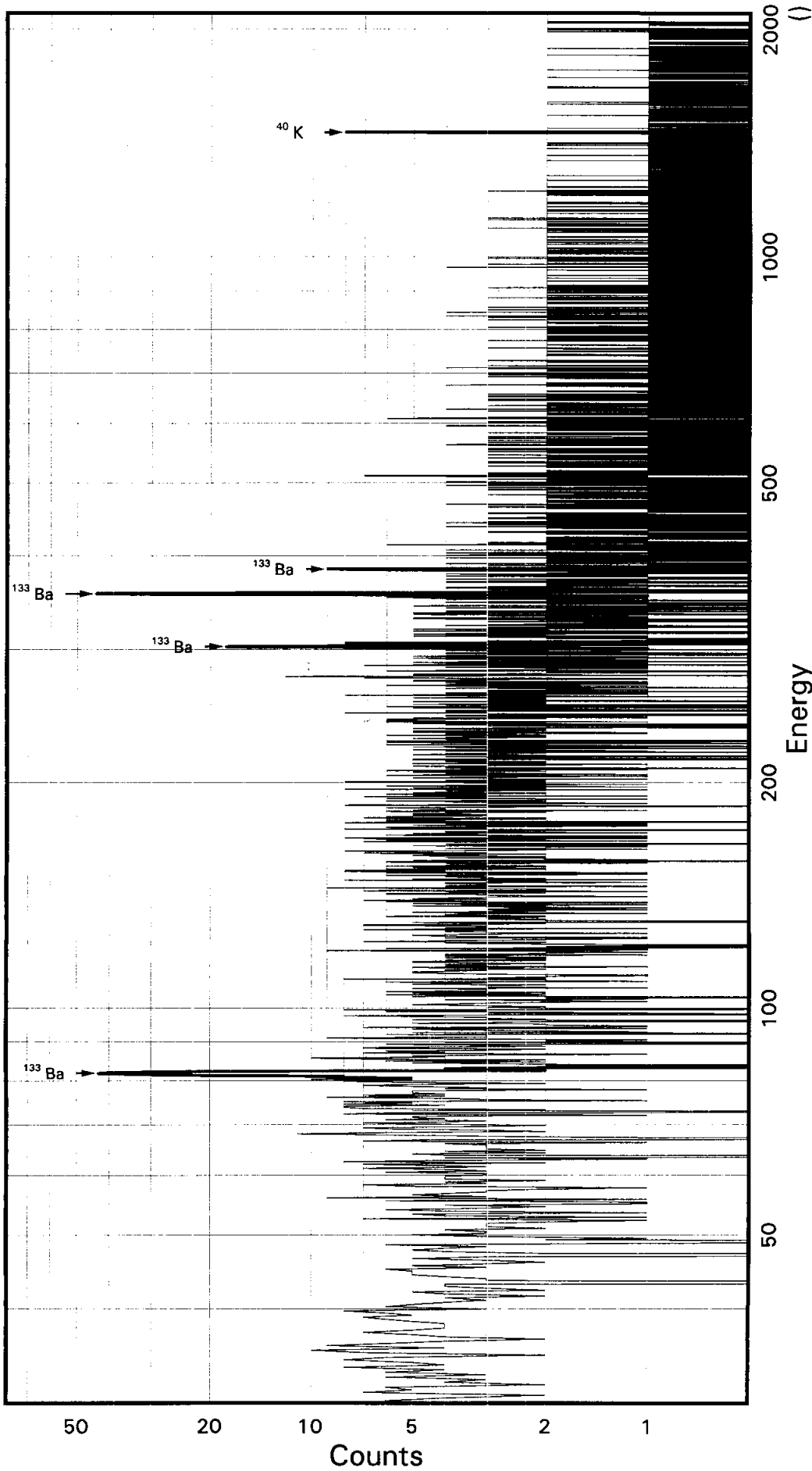
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	-2.009E+01		1.529E+01	5.148E+01	1.031E+00	-0.390
SN-126DA	-1.801E+00		4.702E+00	1.765E+01	3.569E-01	-0.102
I-131	-5.941E+01		1.136E+02	4.282E+02	8.565E+00	-0.139
CS-134	3.386E-01		4.490E+00	1.866E+01	3.800E-01	0.018
CS-137DA	-7.350E+00		4.541E+00	1.433E+01	2.897E-01	-0.513
LA-138	-3.602E+00		4.681E+00	1.778E+01	3.754E-01	-0.203
CE-139	-2.118E+01		1.215E+01	3.850E+01	7.828E-01	-0.550
BA-140	-1.298E+02		9.868E+01	3.404E+02	6.840E+00	-0.381
BALA-140	1.558E+01		2.769E+01	1.474E+02	3.139E+00	0.106
CE-141	5.717E+01		3.613E+01	1.429E+02	2.923E+00	0.400
CE-144	-1.696E+01		6.482E+01	2.390E+02	4.910E+00	-0.071
CEPR-144	-3.212E+01		1.298E+02	4.791E+02	9.842E+00	-0.067
PM-144	-2.215E+00		4.018E+00	1.533E+01	3.091E-01	-0.145
PM-146	6.005E+00		5.749E+00	2.605E+01	5.218E-01	0.231
EU-152	1.173E+01		2.144E+01	8.390E+01	1.678E+00	0.140
EU-154	6.388E+00		4.530E+00	2.964E+01	6.203E-01	0.216
EU-155	-1.098E+01		3.200E+01	1.189E+02	2.479E+00	-0.092
HF-181	1.468E+01		8.240E+00	3.919E+01	7.858E-01	0.375
BI-207	-1.441E+00		4.378E+00	1.696E+01	3.412E-01	-0.085
TL-208	1.993E+00		4.273E+00	1.857E+01	3.740E-01	0.107
BI-210M	1.349E+01		1.226E+01	4.980E+01	9.984E-01	0.271
BI-212	1.471E+02		6.534E+01	3.119E+02	9.517E+00	0.472
PB-212	1.578E+01		1.436E+01	5.818E+01	1.169E+00	0.271
BI-214	5.888E+00		9.399E+00	3.966E+01	7.997E-01	0.148
PB-214	3.693E+01		2.084E+01	7.827E+01	1.565E+00	0.472
RA-223	3.880E+00		4.677E+01	1.762E+02	3.533E+00	0.022
RA-224DA	1.634E+01		1.487E+01	6.023E+01	1.210E+00	0.271
RA-226DA	6.078E+00		9.423E+00	3.981E+01	8.026E-01	0.153
AC-227DA	-7.051E+01		5.907E+01	2.022E+02	4.063E+00	-0.349
AC-228	-4.094E+00		1.198E+01	4.776E+01	9.791E-01	-0.086
RA-228DA	-4.141E+00		1.212E+01	4.832E+01	9.905E-01	-0.086
TH-228DA	5.744E+00		1.231E+01	5.352E+01	1.078E+00	0.107
TH-232DA	-2.374E+00		4.997E+01	1.840E+02	3.681E+00	-0.013
TH-234DA	6.748E+02		4.221E+02	2.233E+03	4.602E+01	0.302
U-234DA	6.713E+01		3.236E+01	1.382E+02	2.767E+00	0.486
U-235HP	9.750E+00		8.228E+01	3.004E+02	6.148E+00	0.032
NP-237DA	-1.156E+01		1.531E+01	5.377E+01	1.076E+00	-0.215
U-238DA	3.693E+01		2.084E+01	7.827E+01	1.565E+00	0.472
U-238DHP	2.161E+02		2.341E+02	8.913E+02	1.938E+01	0.242
AM-241HP	2.046E+01		2.060E+01	8.133E+01	1.779E+00	0.252

STL Richland WA.

BA133

Batch ID: 7172084

Sample ID: JWP2G3AC
Detector ID: GER13 1



Acquisition Start: 21-JUN-2007 08:49:32.47
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -6.28680E-01
Slope: 2.50769E-01
Quadrature: -9.57293E-08

SAMPLE IDENTIFICATION: JWP2G3AC

CONFIGURATION ID: GER13:JWP2G3AC_210670849
TITLE : BA133
SAMPLE ID : JWP2G3AC

REPORT DATE: 21-JUN-07	SAMPLE DATE: 17-MAY-2007 12:00:00.00
ACQUIRE DATE: 21-JUN-07 08:49:32	CALIB DATE: 21-JUN-2007 05:14:01.99
ELAPSED LIVE TIME: 1800.0 Sec	ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00	ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00	UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15	SAMPLE TYPE:

ENERGY OFFSET: -.6287E+00 keV	FWHM OFFSET: 5.4864E-01 keV
ENERGY SLOPE: 2.5077E-01 keV/C	FWHM SLOPE: 3.6475E-02 sqr keV
ENERGY Q COEFF: -.9573E-07 keV/C ²	ITERATIONS: 10
PEAK SENSITIVITY: 5.000	GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %	HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 1.500 keV	ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00	LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 09:19:49

```

Configuration      : $DISK1:[GER13.SAMPLE]JWP2G3AC_210670849.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:49:32
Sample ID         : JWP2G3AC Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 0.0%
Start energy     : 19.43 End energy : 2047.25
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.96	147	45	0.91	329.38	324	13	8.19E-02	13.1	
2	0	302.69	63	55	0.58	1210.11	1200	23	3.52E-02	32.2	
3	0	355.90	214	33	1.31	1422.51	1411	22	1.19E-01	9.7	
4	0	383.71	39	13	1.42	1533.54	1526	13	2.17E-02	24.9	
5	0	1460.81*	1	0	1.93	5840.84	5830	21	6.05E-04	749.0	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER13.SAMPLE]JWP2G3AC_210670849.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:49:32
Sample ID        : JWP2G3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 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 DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
K-40	1460.81	1	10.67*	2.692E+00	1.263E+01	1.263E+01	749.00

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	147	33.00	2.678E+00	5.560E+02	5.595E+02	14.17
	276.40	-----	6.90	2.869E+00	-----	Line Not Found	-----
	302.84	63	17.80	2.872E+00	4.126E+02	4.152E+02	32.66
	356.00	214	62.05*	2.875E+00	4.005E+02	4.030E+02	11.06
	383.85	39	8.70	2.874E+00	5.199E+02	5.232E+02	25.47

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2G3AC

Page : 2
Acquisition date : 21-JUN-2007 08:49:32

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2G3AC

Page : 3
Acquisition date : 21-JUN-2007 08:49:32

Flag: "*" = Keyline

Configuration : \$DISK1:[GER13.SAMPLE]JWP2G3AC_210670849.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 : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 08:49:32
 Sample ID : JWP2G3AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
K-40	1.263E+01	9.458E+01	1.376E+02	2.938E+00	0.092
BA-133	4.030E+02	4.457E+01	5.594E+01	1.119E+00	7.205

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-5.530E+01	9.476E+01	3.410E+02	6.839E+00	-0.162
NA-22	3.281E+00	3.702E+00	1.725E+01	3.640E-01	0.190
SC-46	-5.716E-01	7.585E+00	3.145E+01	6.569E-01	-0.018
CR-51	-5.649E+01	2.118E+02	7.555E+02	1.512E+01	-0.075
MN-54	-3.159E+00	6.014E+00	2.234E+01	4.576E-01	-0.141
CO-57	-1.467E+02	1.024E+02	3.416E+02	7.041E+00	-0.430
CO-58	-7.635E+00	6.958E+00	2.365E+01	4.837E-01	-0.323
FE-59	1.508E+01	1.608E+01	6.857E+01	1.430E+00	0.220
CO-60	1.104E+00	4.167E+00	1.752E+01	3.712E-01	0.063
ZN-65	-6.033E+00	1.293E+01	4.802E+01	1.003E+00	-0.126
SE-75	-3.029E+01	1.945E+01	6.423E+01	1.288E+00	-0.472
SR-85	-4.156E+01	1.458E+01	4.252E+01	8.542E-01	-0.977
Y-88	1.645E+00	2.746E+00	1.484E+01	3.243E-01	0.111
NB-94	4.098E-01	5.259E+00	2.078E+01	4.267E-01	0.020
NB-95	-8.749E+00	9.233E+00	3.238E+01	6.603E-01	-0.270
TC-95M	9.023E+00	2.361E+01	8.519E+01	1.721E+00	0.106
ZR-95	1.998E+01	1.285E+01	5.771E+01	1.176E+00	0.346
ZRNB-95	-1.319E+01	1.344E+01	4.690E+01	9.563E-01	-0.281
RH-101	-1.627E+01	1.483E+01	4.922E+01	9.956E-01	-0.331
RH-102M	6.382E-03	6.408E+00	2.443E+01	4.900E-01	0.000
RU-103	1.064E+01	1.350E+01	5.374E+01	1.079E+00	0.198
RU-106DA	6.870E+01	6.325E+01	2.650E+02	5.354E+00	0.259
AG-108M	-1.742E+01	7.479E+00	2.249E+01	4.504E-01	-0.774
AG-110M	-9.372E+00	7.688E+00	2.639E+01	5.424E-01	-0.355
SN-113DA	1.412E+01	1.326E+01	5.362E+01	1.073E+00	0.263
SB-124	-5.974E+00	9.874E+00	3.584E+01	7.233E-01	-0.167

---- Non-Identified Nuclides ----

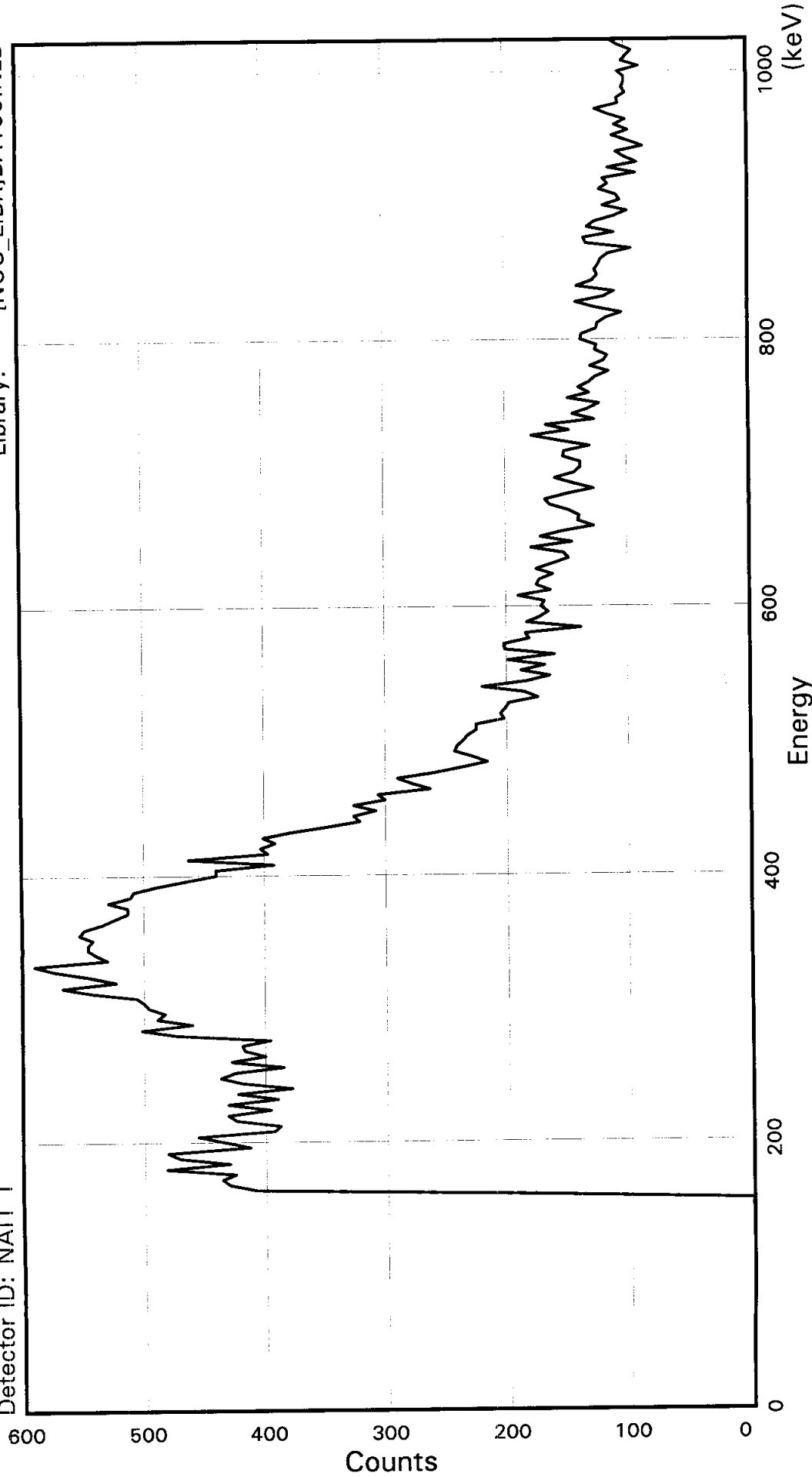
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	8.211E+00		2.389E+01	9.223E+01	1.847E+00	0.089
SN-126DA	-3.682E+00		4.790E+00	1.740E+01	3.525E-01	-0.212
I-131	-2.029E+01		2.126E+02	7.615E+02	1.523E+01	-0.027
CS-134	-6.563E+00		6.603E+00	2.271E+01	4.640E-01	-0.289
CS-137DA	1.546E+00		6.303E+00	2.507E+01	5.077E-01	0.062
LA-138	1.993E+00		4.084E+00	1.994E+01	4.251E-01	0.100
CE-139	-1.311E+01		1.576E+01	5.382E+01	1.097E+00	-0.244
BA-140	-3.359E+02		1.628E+02	4.867E+02	9.788E+00	-0.690
BALA-140	-5.193E+01		5.750E+01	2.078E+02	4.477E+00	-0.250
CE-141	2.711E+01		4.563E+01	1.694E+02	3.479E+00	0.160
CE-144	1.942E+02		9.245E+01	3.756E+02	7.754E+00	0.517
CEPR-144	3.895E+02		1.850E+02	7.516E+02	1.552E+01	0.518
PM-144	1.377E+00		6.180E+00	2.435E+01	4.918E-01	0.057
PM-146	9.347E+00		1.066E+01	4.248E+01	8.513E-01	0.220
EU-152	-2.175E+01		3.069E+01	1.061E+02	2.122E+00	-0.205
EU-154	1.032E+01		1.045E+01	4.891E+01	1.032E+00	0.211
EU-155	2.130E+01		4.951E+01	1.861E+02	3.909E+00	0.114
HF-181	-6.412E-01		1.409E+01	5.276E+01	1.058E+00	-0.012
BI-207	-7.526E+00		7.552E+00	2.551E+01	5.140E-01	-0.295
TL-208	-1.515E+01		6.823E+00	2.532E+01	5.105E-01	-0.598
BI-210M	-1.792E+01		1.888E+01	6.495E+01	1.303E+00	-0.276
BI-212	2.883E+01		8.439E+01	3.346E+02	1.022E+01	0.086
PB-212	-8.460E+01		2.394E+01	7.240E+01	1.456E+00	-1.168
BI-214	1.935E+01		1.768E+01	7.649E+01	1.544E+00	0.253
PB-214	7.656E+00		2.999E+01	1.024E+02	2.047E+00	0.075
RA-223	-1.671E+01		7.268E+01	2.601E+02	5.215E+00	-0.064
RA-224DA	-8.758E+01		2.479E+01	7.496E+01	1.507E+00	-1.168
RA-226DA	1.966E+01		1.771E+01	7.661E+01	1.547E+00	0.257
AC-227DA	-4.349E+01		8.138E+01	2.901E+02	5.834E+00	-0.150
AC-228	-3.870E+01		2.284E+01	8.117E+01	1.671E+00	-0.477
RA-228DA	-3.915E+01		2.311E+01	8.211E+01	1.691E+00	-0.477
TH-228DA	-4.365E+01		1.966E+01	7.297E+01	1.471E+00	-0.598
TH-232DA	7.777E+00		6.738E+01	2.463E+02	4.927E+00	0.032
TH-234DA	3.457E+02		7.454E+02	3.077E+03	6.375E+01	0.112
U-234DA	-4.963E+01		5.437E+01	1.909E+02	3.822E+00	-0.260
U-235HP	8.818E+01		1.003E+02	3.773E+02	7.753E+00	0.234
NP-237DA	1.643E+01		2.336E+01	8.877E+01	1.776E+00	0.185
U-238DA	7.656E+00		2.999E+01	1.024E+02	2.047E+00	0.075
U-238DHP	3.175E+01		2.843E+02	1.031E+03	2.275E+01	0.031
AM-241HP	-3.268E+00		3.135E+01	1.123E+02	2.496E+00	-0.029

STL Richland WA.

BA133

BatchID: 7172084
Library: [NUC_LIBR]BA133.NLB

Sample ID: JWP2H3AC
Detector ID: NAI1 1



Acquisition Start: 21-JUN-2007 09:27:53.69
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: JWP2H3AC

CONFIGURATION ID: NAI1:JWP2H3AC_210670927
TITLE : BA133
SAMPLE ID : JWP2H3AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 09:27:53
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-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/C²
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]JWP2H3AC_210670927.CNF;1
Analyses by       : NAI V3.0
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:27:53
Sample ID         : JWP2H3AC Sample quantity : 1.0000 sampl
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.61 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:	3.6	3.6	4.6	4.2	1.6	1.8	2.1	0.4
88:	0.8	2.0	0.8	0.2	-0.9	-2.1	-0.2	0.7
96:	-0.5	-1.0	-0.9	-2.3	-4.4	-2.7	-4.2	-0.2
104:	-4.1	-2.9	-2.9	-1.8	-2.0	-4.1	-5.3	-3.3
112:	-4.0	-2.9						

List of Suspicious Channels

81 82

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	8.83E+00	0.00E+00	1.01E+00
2	6.46E+00	0.00E+00	1.03E+00
3	3.26E+00	0.00E+00	1.05E+00
4	1.61E+00	0.00E+00	1.07E+00
5	6.94E-01	0.00E+00	1.08E+00

Brief Report

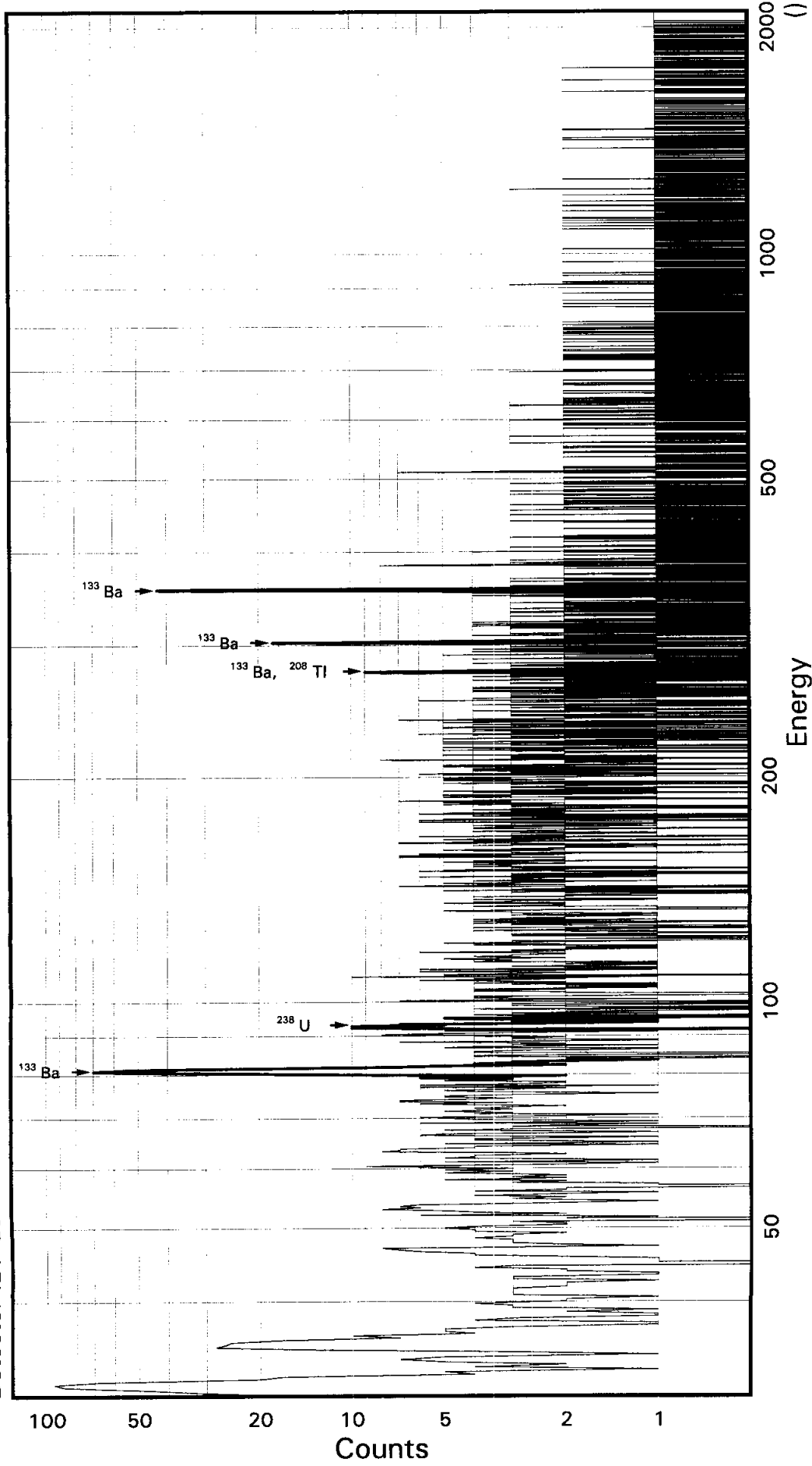
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	440.	6.81

Total Activity :	440.	

STL Richland WA.
BA133

Batch ID: 7172084

Sample ID: JWP2J3AC
Detector ID: GER5 1



Energy Coefficients:
Offset: -3.67530E-01
Slope: 2.49339E-01
Quadrature: 4.35552E-10

Acquisition Start: 21-JUN-2007 09:28:22.28
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JWP2J3AC

CONFIGURATION ID: GER5:JWP2J3AC_210670928
TITLE : BA133
SAMPLE ID : JWP2J3AC

REPORT DATE: 21-JUN-07 SAMPLE DATE: 17-MAY-2007 12:00:00.00
ACQUIRE DATE: 21-JUN-07 09:28:22 CALIB DATE: 21-JUN-2007 05:40:06.67
ELAPSED LIVE TIME: 1800.0 Sec ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00 ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00 UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15 SAMPLE TYPE:

ENERGY OFFSET: -.3675E+00 keV FWHM OFFSET: 7.5467E-01 keV
ENERGY SLOPE: 2.4934E-01 keV/C FWHM SLOPE: 2.8730E-02 sqr keV
ENERGY Q COEFF: 4.3555E-10 keV/C² ITERATIONS: 10
PEAK SENSITIVITY: 5.000 GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 % HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 1.500 keV ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 09:58:38

Configuration : RDND06\$DKA100:[GER5.SAMPLE]JWP2J3AC_210670928.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:28:22
 Sample ID : JWP2J3AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
 Start energy : 19.58 End energy : 2042.25
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	31.00	337	76	0.82	125.79	120	13	1.87E-01	7.8	
2	0	35.34	124	24	1.00	143.20	138	14	6.87E-02	12.7	
3	0	81.07	286	55	0.98	326.63	317	21	1.59E-01	8.9	
4	0	93.31*	10	30	1.23	375.71	369	16	5.65E-03	138.9	
5	0	277.24	21	24	1.18	1113.37	1100	15	1.17E-02	54.0	
6	0	302.96	64	9	0.50	1216.53	1210	17	3.55E-02	17.7	
7	0	355.94	217	4	1.19	1428.99	1420	16	1.20E-01	7.1	

Flag: "*" = Peak area was modified by background subtraction

Configuration : RDND06\$DKA100:[GER5.SAMPLE]JWP2J3AC_210670928.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:28:22
 Sample ID : JWP2J3AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagatd: 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 DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	286	33.00	1.919E+00	1.507E+03	1.517E+03	10.40
	276.40	21	6.90	2.072E+00	4.910E+02	4.941E+02	54.29
	302.84	64	17.80	2.074E+00	5.761E+02	5.798E+02	18.48
	356.00	217	62.05*	2.076E+00	5.603E+02	5.638E+02	8.92
	383.85	-----	8.70	2.076E+00	-----	Line Not Found	-----

Flag: "*" = Keyline

Sample ID : JWP2J3AC

Acquisition date : 21-JUN-2007 09:28:22

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	31.00	337	76	0.82	125.79	120	13	1.87E-01	7.8	1.68E+00	
0	35.34	124	24	1.00	143.20	138	14	6.87E-02	12.7	1.71E+00	
0	93.31	10	30	1.23	375.71	369	16	5.65E-03	****	1.95E+00	T

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma (DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	4.982E+02	54.29	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
		% Abundances Found =		5.44			
U-238DHP	4.47E+09Y	0.00	63.28*	3.80	---	Not Found	---
			92.59	5.41	3.220E+02	138.99	Abun.
		% Abundances Found =		58.74			

Flag: "*" = Keyline

```

Configuration      : RDND06$DKA100:[GER5.SAMPLE]JWP2J3AC_210670928.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:28:22
Sample ID        : JWP2J3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagatd: 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.638E+02	5.029E+01	5.213E+01	1.043E+00	10.817

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.421E+02	1.189E+02	3.992E+02	8.010E+00	-0.356
NA-22	9.197E-02	3.448E+00	1.621E+01	3.437E-01	0.006
NA-24	5.006E+10	5.014E+10	Half-Life too short		
K-40	-1.647E+02	5.867E+01	2.814E+02	6.045E+00	-0.585
SC-46	-4.505E+00	7.313E+00	2.745E+01	5.756E-01	-0.164
CR-51	3.050E+02	2.406E+02	9.796E+02	1.960E+01	0.311
MN-54	-7.224E+00	4.767E+00	1.549E+01	3.181E-01	-0.466
CO-57	2.358E+02	1.240E+02	5.066E+02	1.047E+01	0.465
CO-58	4.193E+00	8.265E+00	3.507E+01	7.186E-01	0.120
FE-59	4.700E+00	1.369E+01	6.139E+01	1.285E+00	0.077
CO-60	-5.121E+00	2.970E+00	4.678E+00	9.960E-02	-1.095
ZN-65	3.803E+00	1.123E+01	4.857E+01	1.018E+00	0.078
SE-75	-6.560E+00	2.273E+01	8.107E+01	1.626E+00	-0.081
SR-85	-5.115E+01	1.657E+01	4.465E+01	8.973E-01	-1.146
Y-88	1.008E-02	3.151E+00	1.642E+01	3.617E-01	0.001
NB-94	-4.542E+00	5.361E+00	1.983E+01	4.082E-01	-0.229
NB-95	-9.275E+00	1.479E+01	5.342E+01	1.091E+00	-0.174
TC-95M	-7.419E+00	3.223E+01	1.144E+02	2.313E+00	-0.065
ZR-95	-1.814E+01	1.257E+01	4.012E+01	8.190E-01	-0.452
ZRNB-95	-8.014E+00	2.108E+01	7.848E+01	1.603E+00	-0.102
MO-99	-6.866E-02	4.110E-02	Half-Life too short		
RH-101	4.925E+01	1.944E+01	7.911E+01	1.602E+00	0.623
RH-102M	6.404E+00	7.883E+00	3.262E+01	6.544E-01	0.196
RU-103	-1.231E+01	1.132E+01	3.888E+01	7.807E-01	-0.317
RU-106DA	5.455E+01	6.345E+01	2.805E+02	5.673E+00	0.194
AG-108M	-1.632E+00	8.330E+00	3.151E+01	6.311E-01	-0.052
AG-110M	4.004E-01	7.811E+00	3.288E+01	6.775E-01	0.012

---- Non-Identified Nuclides ----

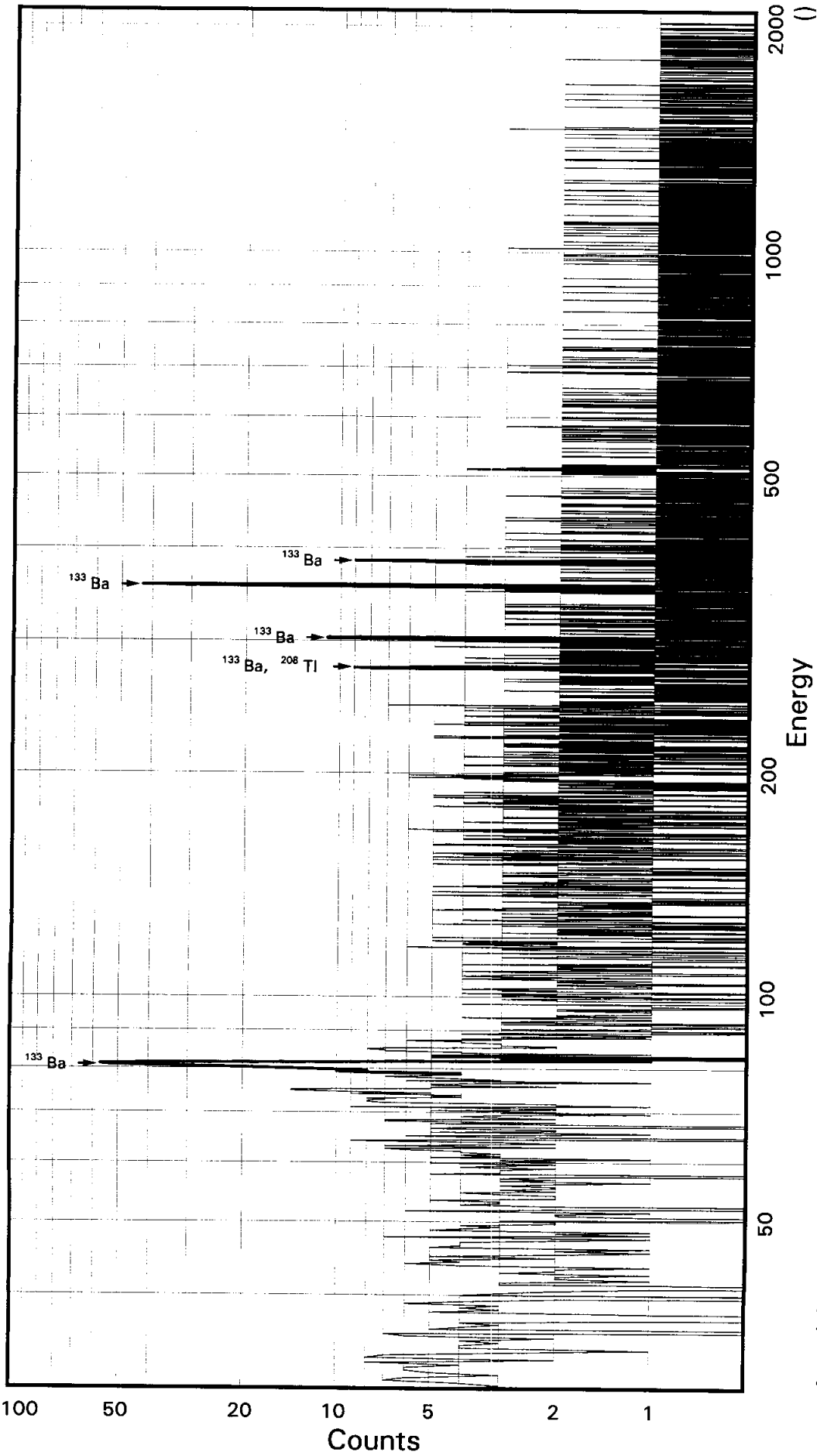
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	8.500E-01		1.370E+01	5.366E+01	1.074E+00	0.016
SB-124	-1.880E+00		1.066E+01	4.124E+01	8.330E-01	-0.046
SB-125	1.082E+01		1.957E+01	8.423E+01	1.687E+00	0.128
SN-126DA	8.144E+00		6.325E+00	2.836E+01	5.752E-01	0.287
I-131	7.441E+01		2.086E+02	8.204E+02	1.641E+01	0.091
CS-134	2.156E+00		6.823E+00	2.859E+01	5.853E-01	0.075
CS-137DA	1.935E+00		6.907E+00	2.876E+01	5.833E-01	0.067
LA-138	-5.204E+00		3.691E+00	6.976E+00	1.496E-01	-0.746
CE-139	-1.063E+01		2.034E+01	7.192E+01	1.469E+00	-0.148
BA-140	-3.168E+02		1.658E+02	5.142E+02	1.035E+01	-0.616
BALA-140	-2.711E+01		5.540E+01	2.243E+02	4.864E+00	-0.121
LA-140	-1.239E-01		3.121E+00	Half-Life too short		
CE-141	2.536E+01		6.008E+01	2.244E+02	4.618E+00	0.113
CE-144	-2.818E+01		1.275E+02	4.658E+02	9.644E+00	-0.061
CEPR-144	-2.373E+01		2.532E+02	9.323E+02	1.930E+01	-0.025
PM-144	-1.256E+00		6.289E+00	2.493E+01	5.041E-01	-0.050
PM-146	-7.225E+00		1.177E+01	4.250E+01	8.518E-01	-0.170
EU-152	-7.237E+01		3.253E+01	9.874E+01	1.975E+00	-0.733
EU-154	2.543E-01		9.535E+00	4.482E+01	9.504E-01	0.006
EU-155	-3.299E+01		6.911E+01	2.398E+02	5.059E+00	-0.138
HF-181	2.714E+01		1.571E+01	6.949E+01	1.394E+00	0.391
BI-207	3.085E-01		5.150E+00	2.174E+01	4.382E-01	0.014
TL-208	1.191E+01		8.100E+00	3.618E+01	7.300E-01	0.329
BI-210M	-8.148E+00		2.309E+01	8.170E+01	1.639E+00	-0.100
BI-212	-9.607E+01		1.139E+02	4.021E+02	1.229E+01	-0.239
PB-212	-8.460E+00		3.022E+01	1.135E+02	2.284E+00	-0.075
BI-214	-2.012E+01		1.469E+01	4.938E+01	9.978E-01	-0.407
PB-214	-9.746E-02		3.247E+01	1.030E+02	2.061E+00	-0.001
RA-223	-1.409E+02		8.506E+01	2.708E+02	5.432E+00	-0.520
RA-224DA	-8.758E+00		3.129E+01	1.175E+02	2.364E+00	-0.075
RA-226DA	-2.012E+01		1.469E+01	4.938E+01	9.979E-01	-0.407
AC-227DA	-1.641E+02		1.249E+02	4.125E+02	8.301E+00	-0.398
AC-228	1.958E+01		2.341E+01	1.084E+02	2.239E+00	0.181
RA-228DA	1.981E+01		2.368E+01	1.097E+02	2.265E+00	0.181
TH-228DA	3.431E+01		2.334E+01	1.043E+02	2.104E+00	0.329
TH-232DA	-5.721E+01		7.501E+01	2.673E+02	5.346E+00	-0.214
TH-234DA	-5.146E+02		8.125E+02	3.081E+03	6.403E+01	-0.167
U-234DA	1.017E+02		5.637E+01	2.324E+02	4.654E+00	0.437
U-235HP	1.333E+02		1.276E+02	4.925E+02	1.015E+01	0.271
NP-237DA	-3.701E+01		2.548E+01	8.568E+01	1.715E+00	-0.432
U-238DA	-9.746E-02		3.247E+01	1.030E+02	2.061E+00	-0.001
U-238DHP	-1.570E+02		4.510E+02	1.715E+03	3.818E+01	-0.092
AM-241HP	6.930E+01		4.272E+01	1.669E+02	3.744E+00	0.415

STL Richland WA.

BA133

Batch ID: 7172084

Sample ID: JWP2K3AC
Detector ID: GER6 1



Acquisition Start: 21-JUN-2007 09:30:54.34
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 7.81966E-02
Slope: 2.49285E-01
Quadrature: 1.26250E-08

SAMPLE IDENTIFICATION: JWP2K3AC

CONFIGURATION ID: GER6:JWP2K3AC_210670930
TITLE : BA133
SAMPLE ID : JWP2K3AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 09:30:54
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 21-JUN-2007 05:12:57.91
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 7.8197E-02 keV
ENERGY SLOPE: 2.4929E-01 keV/C
ENERGY Q COEFF: 1.2625E-08 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.8071E-02 keV
FWHM SLOPE: 6.8000E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 10:01:11

```

Configuration      : $DISK1:[GER6.SAMPLE]JWP2K3AC_210670930.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:30:54
Sample ID         : JWP2K3AC Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Start energy      : 20.02 End energy : 2043.07
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.83	232	54	0.92	323.92	316	17	1.29E-01	9.8	
2	0	276.90	37	16	1.65	1110.41	1101	19	2.07E-02	32.1	
3	0	302.80	69	9	1.39	1214.30	1205	16	3.85E-02	15.1	
4	0	355.94	228	9	1.17	1427.42	1418	17	1.27E-01	7.3	
5	0	384.24	37	14	0.95	1540.94	1533	14	2.06E-02	27.0	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER6.SAMPLE]JWP2K3AC_210670930.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:30:54
Sample ID        : JWP2K3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagatd: 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 DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	232	33.00	2.090E+00	1.122E+03	1.129E+03	11.24
	276.40	37	6.90	2.253E+00	8.007E+02	8.057E+02	32.50
	302.84	69	17.80	2.256E+00	5.748E+02	5.785E+02	16.08
	356.00	228	62.05*	2.258E+00	5.419E+02	5.454E+02	9.04
	383.85	37	8.70	2.257E+00	6.280E+02	6.320E+02	27.56

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2K3AC

Page : 2
Acquisition date : 21-JUN-2007 09:30:54

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2K3AC

Page : 3
Acquisition date : 21-JUN-2007 09:30:54

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	8.125E+02	32.50	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER6.SAMPLE]JWP2K3AC_210670930.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:30:54
Sample ID        : JWP2K3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00 WTM error limit : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.454E+02	4.928E+01	3.673E+01	7.346E-01	14.848

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-9.920E+01	9.471E+01	3.354E+02	6.728E+00	-0.296
NA-22	-4.898E+00	3.635E+00	1.180E+01	2.498E-01	-0.415
K-40	-3.403E+00	6.764E+01	3.409E+02	7.313E+00	-0.010
SC-46	-1.267E-01	5.107E+00	2.220E+01	4.649E-01	-0.006
CR-51	-1.007E+02	1.993E+02	7.237E+02	1.448E+01	-0.139
MN-54	-2.031E+00	6.012E+00	2.307E+01	4.732E-01	-0.088
CO-57	2.447E+01	9.594E+01	3.591E+02	7.419E+00	0.068
CO-58	-1.718E-01	6.116E+00	2.569E+01	5.263E-01	-0.007
FE-59	1.373E+01	1.948E+01	8.179E+01	1.711E+00	0.168
CO-60	7.259E+00	4.621E+00	2.315E+01	4.922E-01	0.314
ZN-65	-1.847E-01	8.312E+00	3.617E+01	7.573E-01	-0.005
SE-75	1.066E+01	1.742E+01	6.800E+01	1.364E+00	0.157
SR-85	-1.206E+01	1.585E+01	5.534E+01	1.112E+00	-0.218
Y-88	-1.395E-02	2.908E+00	1.507E+01	3.312E-01	-0.001
NB-94	-2.803E+00	4.731E+00	1.823E+01	3.749E-01	-0.154
NB-95	9.119E+00	9.971E+00	4.518E+01	9.224E-01	0.202
TC-95M	2.566E+01	2.151E+01	8.501E+01	1.719E+00	0.302
ZR-95	8.204E+00	1.370E+01	5.964E+01	1.217E+00	0.138
ZRNB-95	1.332E+01	1.456E+01	6.598E+01	1.347E+00	0.202
RH-101	3.945E+01	1.664E+01	6.710E+01	1.358E+00	0.588
RH-102M	-2.952E+00	6.518E+00	2.483E+01	4.980E-01	-0.119
RU-103	-1.478E+01	9.069E+00	2.858E+01	5.738E-01	-0.517
RU-106DA	3.782E+01	7.244E+01	2.966E+02	5.997E+00	0.128
AG-108M	-2.970E+00	8.826E+00	3.244E+01	6.496E-01	-0.092
AG-110M	4.911E+00	9.156E+00	3.841E+01	7.909E-01	0.128
SN-113DA	-1.519E+01	1.457E+01	5.089E+01	1.018E+00	-0.298
SB-124	-7.402E+00	1.056E+01	3.847E+01	7.769E-01	-0.192

---- Non-Identified Nuclides ----

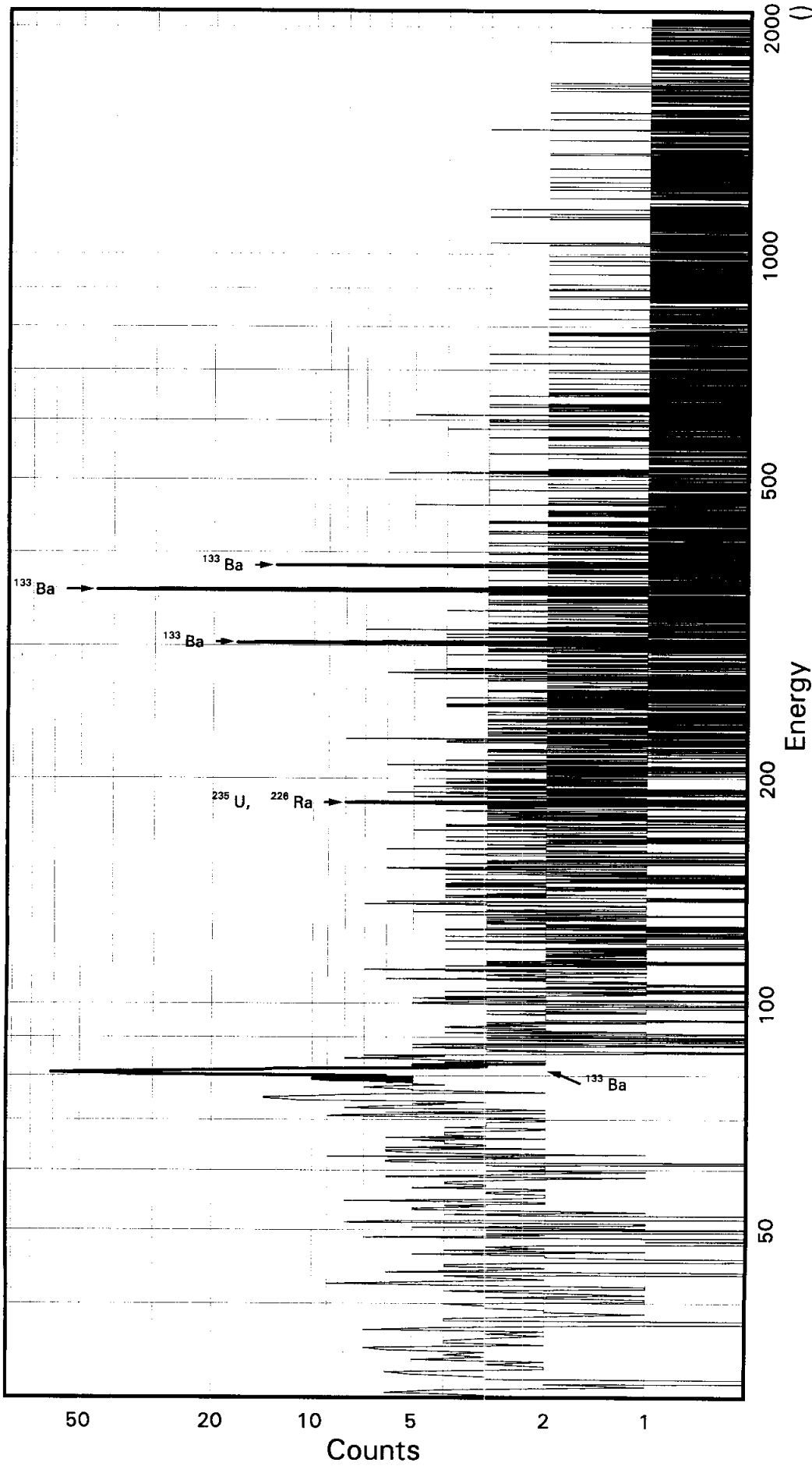
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	-1.299E+01		2.291E+01	8.413E+01	1.685E+00	-0.154
SN-126DA	-4.131E+00		5.922E+00	2.162E+01	4.384E-01	-0.191
I-131	2.277E+02		1.788E+02	7.542E+02	1.508E+01	0.302
CS-134	-1.928E+00		5.514E+00	2.192E+01	4.485E-01	-0.088
CS-137DA	3.396E+00		7.084E+00	2.935E+01	5.949E-01	0.116
LA-138	2.342E+00		5.313E+00	2.549E+01	5.459E-01	0.092
CE-139	-7.911E+00		1.560E+01	5.575E+01	1.138E+00	-0.142
BA-140	-4.285E+00		1.366E+02	5.527E+02	1.112E+01	-0.008
BALA-140	2.578E+01		5.033E+01	2.433E+02	5.266E+00	0.106
CE-141	-3.746E+00		3.797E+01	1.442E+02	2.967E+00	-0.026
CE-144	-2.643E+01		9.187E+01	3.312E+02	6.852E+00	-0.080
CEPR-144	-4.916E+01		1.840E+02	6.646E+02	1.375E+01	-0.074
PM-144	2.822E+00		7.050E+00	2.867E+01	5.796E-01	0.098
PM-146	-1.312E+01		1.019E+01	3.391E+01	6.796E-01	-0.387
EU-152	6.602E-01		2.286E+01	9.013E+01	1.803E+00	0.007
EU-154	-1.354E+01		1.005E+01	3.262E+01	6.908E-01	-0.415
EU-155	4.789E+01		4.475E+01	1.815E+02	3.825E+00	0.264
HF-181	-1.393E+00		1.208E+01	4.810E+01	9.652E-01	-0.029
BI-207	-3.594E+00		6.604E+00	2.419E+01	4.875E-01	-0.149
TL-208	1.235E+01		8.319E+00	3.589E+01	7.240E-01	0.344
BI-210M	5.449E+00		1.821E+01	6.879E+01	1.380E+00	0.079
BI-212	-6.353E+01		7.436E+01	2.742E+02	8.380E+00	-0.232
PB-212	3.118E+01		2.241E+01	9.323E+01	1.875E+00	0.334
BI-214	1.674E+01		1.393E+01	6.059E+01	1.224E+00	0.276
PB-214	5.148E+01		2.678E+01	1.068E+02	2.137E+00	0.482
RA-223	4.152E+01		6.135E+01	2.411E+02	4.835E+00	0.172
RA-224DA	3.228E+01		2.320E+01	9.652E+01	1.941E+00	0.334
RA-226DA	1.674E+01		1.393E+01	6.059E+01	1.224E+00	0.276
AC-227DA	-1.734E+02		8.690E+01	2.743E+02	5.518E+00	-0.632
AC-228	2.756E+01		1.827E+01	8.717E+01	1.798E+00	0.316
RA-228DA	2.788E+01		1.848E+01	8.818E+01	1.819E+00	0.316
TH-228DA	3.559E+01		2.397E+01	1.034E+02	2.086E+00	0.344
TH-232DA	-4.582E+01		6.170E+01	2.189E+02	4.378E+00	-0.209
TH-234DA	-7.732E+01		7.145E+02	2.965E+03	6.157E+01	-0.026
U-234DA	4.510E+01		4.226E+01	1.737E+02	3.478E+00	0.260
U-235HP	-9.864E+01		9.354E+01	3.105E+02	6.393E+00	-0.318
NP-237DA	2.670E+00		1.834E+01	7.269E+01	1.455E+00	0.037
U-238DA	5.148E+01		2.678E+01	1.068E+02	2.137E+00	0.482
U-238DHP	2.087E+02		3.493E+02	1.350E+03	2.998E+01	0.155
AM-241HP	0.000E+00		0.000E+00	1.139E+02	2.550E+00	0.000

STL Richland WA.

BA133

Sample ID: JWP2L3AC
Detector ID: GER7 1

Batch ID: 7172084



Acquisition Start: 21-JUN-2007 09:31:11.83
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 5.44113E-01
Slope: 2.49335E-01
Quadrature: 1.39234E-07

SAMPLE IDENTIFICATION: JWP2L3AC

CONFIGURATION ID: GER7:JWP2L3AC_210670931
TITLE : BA133
SAMPLE ID : JWP2L3AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 09:31:11
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 21-JUN-2007 05:13:29.65
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 5.4411E-01 keV
ENERGY SLOPE: 2.4934E-01 keV/C
ENERGY Q COEFF: 1.3923E-07 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.6668E-01 keV
FWHM SLOPE: 3.1775E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 10:01:28

```

Configuration      : $DISK1:[GER7.SAMPLE]JWP2L3AC_210670931.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:31:11
Sample ID         : JWP2L3AC Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.19 0.0%
Start energy      : 20.49 End energy : 2052.44
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.40*	4	58	1.24	300.18	291	13	2.25E-03	420.6	
2	0	80.88	207	80	0.77	322.15	313	18	1.15E-01	12.3	
3	0	185.76*	18	3	0.67	742.53	739	9	1.00E-02	32.2	
4	0	225.93	10	10	0.29	903.50	897	10	5.56E-03	67.1	
5	0	303.32	61	21	0.97	1213.50	1203	16	3.36E-02	21.0	
6	0	356.08	197	18	1.10	1424.80	1417	17	1.10E-01	8.6	
7	0	383.94	34	13	0.73	1536.36	1530	14	1.90E-02	28.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 21-JUN-2007 10:01:29

```

Configuration      : $DISK1:[GER7.SAMPLE]JWP2L3AC_210670931.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:31:11
Sample ID        : JWP2L3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.19 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00
    
```

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	207	33.00	1.909E+00	1.094E+03	1.101E+03	13.50
	276.40	-----	6.90	2.061E+00	-----	Line Not Found	-----
	302.84	61	17.80	2.064E+00	5.491E+02	5.526E+02	21.71
	356.00	197	62.05*	2.065E+00	5.132E+02	5.165E+02	10.14
	383.85	34	8.70	2.065E+00	6.344E+02	6.384E+02	29.16

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2L3AC

Page : 2
Acquisition date : 21-JUN-2007 09:31:11

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.40	4	58	1.24	300.18	291	13	2.25E-03	****	1.89E+00	
0	185.76	18	3	0.67	742.53	739	9	1.00E-02	32.2	2.03E+00	T
0	225.93	10	10	0.29	903.50	897	10	5.56E-03	67.1	2.05E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
RA-226DA	1600.00Y	0.00	186.21	3.50	8.429E+02	32.65	Abun.
			241.98	7.49	---	Not Found	---
			295.22	19.20	---	Not Found	---
			351.92	37.20	---	Not Found	---
			609.32*	46.30	---	Not Found	---
			1120.28	15.10	---	Not Found	---
			1238.11	5.94	---	Not Found	---
			1764.49	15.80	---	Not Found	---
		% Abundances Found =		2.33			
U-235HP	7.04E+08Y	0.00	143.76*	10.50	---	Not Found	---
			185.71	54.00	5.463E+01	32.65	Abun.
			205.31	4.70	---	Not Found	---
		% Abundances Found =		78.03			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 21-JUN-2007 10:01:30

```

Configuration      : $DISK1:[GER7.SAMPLE]JWP2L3AC_210670931.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:31:11
Sample ID        : JWP2L3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.19 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00 WTM error limit : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.165E+02	5.236E+01	6.018E+01	1.204E+00	8.582

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-4.369E+01	8.714E+01	3.295E+02	6.610E+00	-0.133
NA-22	-3.434E+00	3.478E+00	1.291E+01	2.738E-01	-0.266
K-40	9.560E+01	7.044E+01	3.555E+02	7.638E+00	0.269
SC-46	1.562E+01	7.594E+00	3.761E+01	7.885E-01	0.415
CR-51	-4.489E+02	2.095E+02	6.138E+02	1.228E+01	-0.731
MN-54	-3.247E+00	4.253E+00	1.661E+01	3.410E-01	-0.195
CO-57	2.002E+02	1.295E+02	5.095E+02	1.053E+01	0.393
CO-58	-1.181E-01	3.396E+00	1.722E+01	3.528E-01	-0.007
FE-59	-4.550E+00	1.199E+01	4.952E+01	1.037E+00	-0.092
CO-60	-1.735E+00	3.889E+00	1.614E+01	3.438E-01	-0.107
ZN-65	-8.669E+00	1.506E+01	5.521E+01	1.157E+00	-0.157
SE-75	-9.997E+00	1.747E+01	6.286E+01	1.261E+00	-0.159
SR-85	-2.806E+01	1.648E+01	5.240E+01	1.053E+00	-0.535
Y-88	2.207E+00	3.912E+00	2.083E+01	4.589E-01	0.106
NB-94	1.949E+00	5.424E+00	2.341E+01	4.819E-01	0.083
NB-95	-7.703E-01	1.253E+01	4.941E+01	1.009E+00	-0.016
TC-95M	2.783E+01	2.315E+01	9.334E+01	1.888E+00	0.298
ZR-95	-1.303E+01	1.009E+01	3.316E+01	6.768E-01	-0.393
ZRNB-95	-1.125E+00	1.830E+01	7.216E+01	1.474E+00	-0.016
RH-101	5.661E+00	1.693E+01	6.363E+01	1.289E+00	0.089
RH-102M	-7.421E+00	6.615E+00	2.273E+01	4.560E-01	-0.326
RU-103	-2.820E+01	1.303E+01	3.622E+01	7.273E-01	-0.779
RU-106DA	-6.762E+01	6.070E+01	2.135E+02	4.317E+00	-0.317
AG-108M	-1.078E+01	6.750E+00	2.159E+01	4.324E-01	-0.499
AG-110M	3.591E+00	4.610E+00	2.497E+01	5.145E-01	0.144
SN-113DA	-6.534E+00	1.339E+01	5.012E+01	1.003E+00	-0.130
SB-124	6.553E-01	9.795E+00	3.947E+01	7.973E-01	0.017

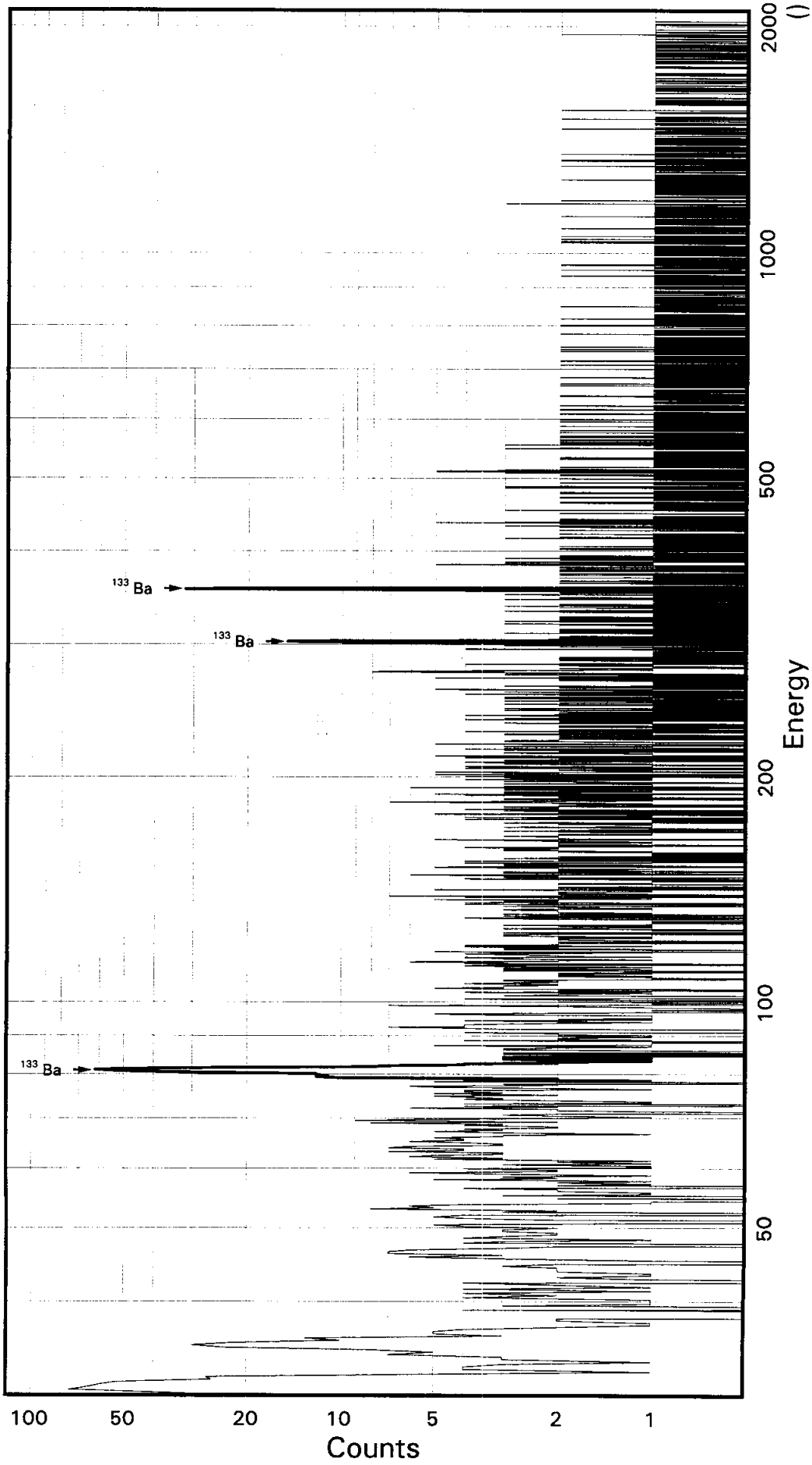
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	1.715E+01		2.582E+01	1.061E+02	2.125E+00	0.162
SN-126DA	-1.588E+00		4.897E+00	1.966E+01	3.987E-01	-0.081
I-131	7.803E+01		1.659E+02	6.894E+02	1.379E+01	0.113
CS-134	-2.177E+00		3.566E+00	1.469E+01	3.007E-01	-0.148
CS-137DA	5.817E+00		6.376E+00	2.889E+01	5.859E-01	0.201
LA-138	-2.715E+00		4.566E+00	1.908E+01	4.093E-01	-0.142
CE-139	-1.783E+01		1.672E+01	5.568E+01	1.137E+00	-0.320
BA-140	-3.603E+02		1.584E+02	4.126E+02	8.302E+00	-0.873
BALA-140	5.464E+01		4.967E+01	2.685E+02	5.822E+00	0.204
CE-141	6.399E+01		4.891E+01	1.933E+02	3.979E+00	0.331
CE-144	-1.902E+02		1.291E+02	4.204E+02	8.705E+00	-0.452
CEPR-144	-3.790E+02		2.583E+02	8.416E+02	1.742E+01	-0.450
PM-144	3.735E+00		6.031E+00	2.639E+01	5.337E-01	0.142
PM-146	3.399E-01		9.526E+00	3.818E+01	7.653E-01	0.009
EU-152	4.216E+01		3.502E+01	1.442E+02	2.884E+00	0.292
EU-154	-9.494E+00		9.618E+00	3.571E+01	7.572E-01	-0.266
EU-155	-1.027E+02		5.385E+01	1.704E+02	3.594E+00	-0.603
HF-181	2.514E+00		1.041E+01	4.472E+01	8.974E-01	0.056
BI-207	7.582E+00		5.323E+00	2.561E+01	5.163E-01	0.296
TL-208	5.610E-01		7.086E+00	2.901E+01	5.854E-01	0.019
BI-210M	-1.207E+01		1.554E+01	5.518E+01	1.107E+00	-0.219
BI-212	-5.605E+01		6.117E+01	2.247E+02	6.868E+00	-0.249
PB-212	-2.323E+01		2.054E+01	7.791E+01	1.567E+00	-0.298
BI-214	4.177E+01		1.807E+01	8.359E+01	1.689E+00	0.500
PB-214	6.931E+00		2.618E+01	9.036E+01	1.807E+00	0.077
RA-223	2.535E-01		6.185E+01	2.346E+02	4.706E+00	0.001
RA-224DA	-2.405E+01		2.127E+01	8.066E+01	1.622E+00	-0.298
RA-226DA	4.163E+01		1.805E+01	8.352E+01	1.688E+00	0.499
AC-227DA	-1.331E+02		8.433E+01	2.755E+02	5.545E+00	-0.483
AC-228	-1.178E+01		1.642E+01	7.219E+01	1.490E+00	-0.163
RA-228DA	-1.192E+01		1.661E+01	7.302E+01	1.508E+00	-0.163
TH-228DA	1.617E+00		2.042E+01	8.361E+01	1.687E+00	0.019
TH-232DA	-1.904E+01		6.391E+01	2.423E+02	4.846E+00	-0.079
TH-234DA	-1.040E+03		6.376E+02	1.897E+03	3.943E+01	-0.548
U-234DA	1.035E+01		4.846E+01	1.834E+02	3.674E+00	0.056
U-235HP	1.643E+02		1.161E+02	4.552E+02	9.377E+00	0.361
NP-237DA	-3.713E+01		2.582E+01	8.370E+01	1.675E+00	-0.444
U-238DA	6.931E+00		2.618E+01	9.036E+01	1.807E+00	0.077
U-238DHP	2.399E+02		4.303E+02	1.644E+03	3.661E+01	0.146
AM-241HP	-7.454E+01		4.319E+01	1.353E+02	3.037E+00	-0.551

STL Richland WA.
BA133

Batch ID: 7172084

Sample ID: JWP2N3AC
Detector ID: GER8 1



Acquisition Start: 21-JUN-2007 09:31:28.78
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 2.85676E-01
Slope: 2.49652E-01
Quadrature: 1.98082E-08

SAMPLE IDENTIFICATION: JWP2N3AC

CONFIGURATION ID: GER8:JWP2N3AC_210670931
TITLE : BA133
SAMPLE ID : JWP2N3AC

REPORT DATE: 21-JUN-07	SAMPLE DATE: 17-MAY-2007 12:00:00.00
ACQUIRE DATE: 21-JUN-07 09:31:28	CALIB DATE: 21-JUN-2007 05:13:46.12
ELAPSED LIVE TIME: 1800.0 Sec	ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00	ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00	UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15	SAMPLE TYPE:

ENERGY OFFSET: 2.8568E-01 keV	FWHM OFFSET: 8.9990E-01 keV
ENERGY SLOPE: 2.4965E-01 keV/C	FWHM SLOPE: 2.5808E-02 sqr keV
ENERGY Q COEFF: 1.9808E-08 keV/C ²	ITERATIONS: 10
PEAK SENSITIVITY: 5.000	GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %	HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 1.500 keV	ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00	LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 10:01:45

```

Configuration      : $DISK1:[GER8.SAMPLE]JWP2N3AC_210670931.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:31:28
Sample ID        : JWP2N3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.18 0.0%
Start energy     : 20.26 End energy : 2046.76
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.79	358	76	1.09	122.20	111	18	1.99E-01	7.7	
2	0	35.13	117	28	0.75	139.59	132	16	6.51E-02	13.7	
3	5	79.41	42	20	1.11	316.93	313	28	2.31E-02	21.4	2.62E+00
4	5	81.02	300	35	1.30	323.36	313	28	1.67E-01	7.3	
5	0	302.71	78	6	1.42	1211.27	1201	22	4.35E-02	13.7	
6	0	355.99	158	11	1.23	1424.62	1416	15	8.79E-02	9.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 21-JUN-2007 10:01:45

Configuration : \$DISK1:[GER8.SAMPLE]JWP2N3AC_210670931.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:31:28
 Sample ID : JWP2N3AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.18 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma %Error
					DPM/SAMPL	DPM/SAMPL	
BA-133	81.00	300	33.00	2.140E+00	1.416E+03	1.424E+03	9.11
	276.40	-----	6.90	2.306E+00	-----	Line Not Found	-----
	302.84	78	17.80	2.309E+00	6.346E+02	6.386E+02	14.69
	356.00	158	62.05*	2.311E+00	3.679E+02	3.702E+02	10.65
	383.85	-----	8.70	2.310E+00	-----	Line Not Found	-----

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2N3AC

Page : 2
Acquisition date : 21-JUN-2007 09:31:28

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.79	358	76	1.09	122.20	111	18	1.99E-01	7.7	1.87E+00	
0	35.13	117	28	0.75	139.59	132	16	6.51E-02	13.7	1.92E+00	
5	79.41	42	20	1.11	316.93	313	28	2.31E-02	21.4	2.14E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2N3AC

Page : 3
Acquisition date : 21-JUN-2007 09:31:28

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 21-JUN-2007 10:01:47

```

Configuration      : $DISK1:[GER8.SAMPLE]JWP2N3AC_210670931.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:31:28
Sample ID        : JWP2N3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.18 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	3.702E+02	3.941E+01	3.963E+01	7.926E-01	9.342

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.271E+02	8.619E+01	3.913E+02	7.849E+00	0.325
NA-22	-4.677E+00	2.712E+00	4.236E+00	8.968E-02	-1.104
K-40	3.430E+01	4.939E+01	2.414E+02	5.176E+00	0.142
SC-46	6.195E+00	5.289E+00	2.641E+01	5.530E-01	0.235
CR-51	1.679E+02	1.847E+02	7.496E+02	1.500E+01	0.224
MN-54	3.216E+00	3.194E+00	1.720E+01	3.528E-01	0.187
CO-57	1.076E+01	1.163E+02	4.233E+02	8.742E+00	0.025
CO-58	-4.034E+00	5.067E+00	1.941E+01	3.974E-01	-0.208
FE-59	-3.835E+00	1.186E+01	4.938E+01	1.032E+00	-0.078
CO-60	-1.581E+00	3.485E+00	1.441E+01	3.062E-01	-0.110
ZN-65	-9.359E+00	7.142E+00	2.415E+01	5.056E-01	-0.388
SE-75	-1.727E+01	1.669E+01	5.765E+01	1.157E+00	-0.300
SR-85	-2.015E+01	1.275E+01	4.169E+01	8.377E-01	-0.483
Y-88	-6.029E+00	3.496E+00	5.408E+00	1.188E-01	-1.115
NB-94	1.491E+00	3.923E+00	1.781E+01	3.662E-01	0.084
NB-95	9.091E+00	8.751E+00	4.146E+01	8.463E-01	0.219
TC-95M	-5.675E+00	2.325E+01	8.492E+01	1.717E+00	-0.067
ZR-95	4.265E+00	1.013E+01	4.661E+01	9.509E-01	0.092
ZRNB-95	1.328E+01	1.278E+01	6.054E+01	1.236E+00	0.219
RH-101	5.811E+00	1.402E+01	5.354E+01	1.084E+00	0.109
RH-102M	-1.659E+01	6.725E+00	1.870E+01	3.751E-01	-0.887
RU-103	-6.561E+00	9.306E+00	3.516E+01	7.059E-01	-0.187
RU-106DA	-1.073E+02	6.434E+01	2.011E+02	4.066E+00	-0.534
AG-108M	-1.484E+01	8.314E+00	2.677E+01	5.362E-01	-0.554
AG-110M	6.750E+00	3.917E+00	2.423E+01	4.987E-01	0.279
SN-113DA	1.137E+01	1.399E+01	5.640E+01	1.128E+00	0.202
SB-124	-1.615E+01	8.809E+00	2.670E+01	5.392E-01	-0.605

---- Non-Identified Nuclides ----

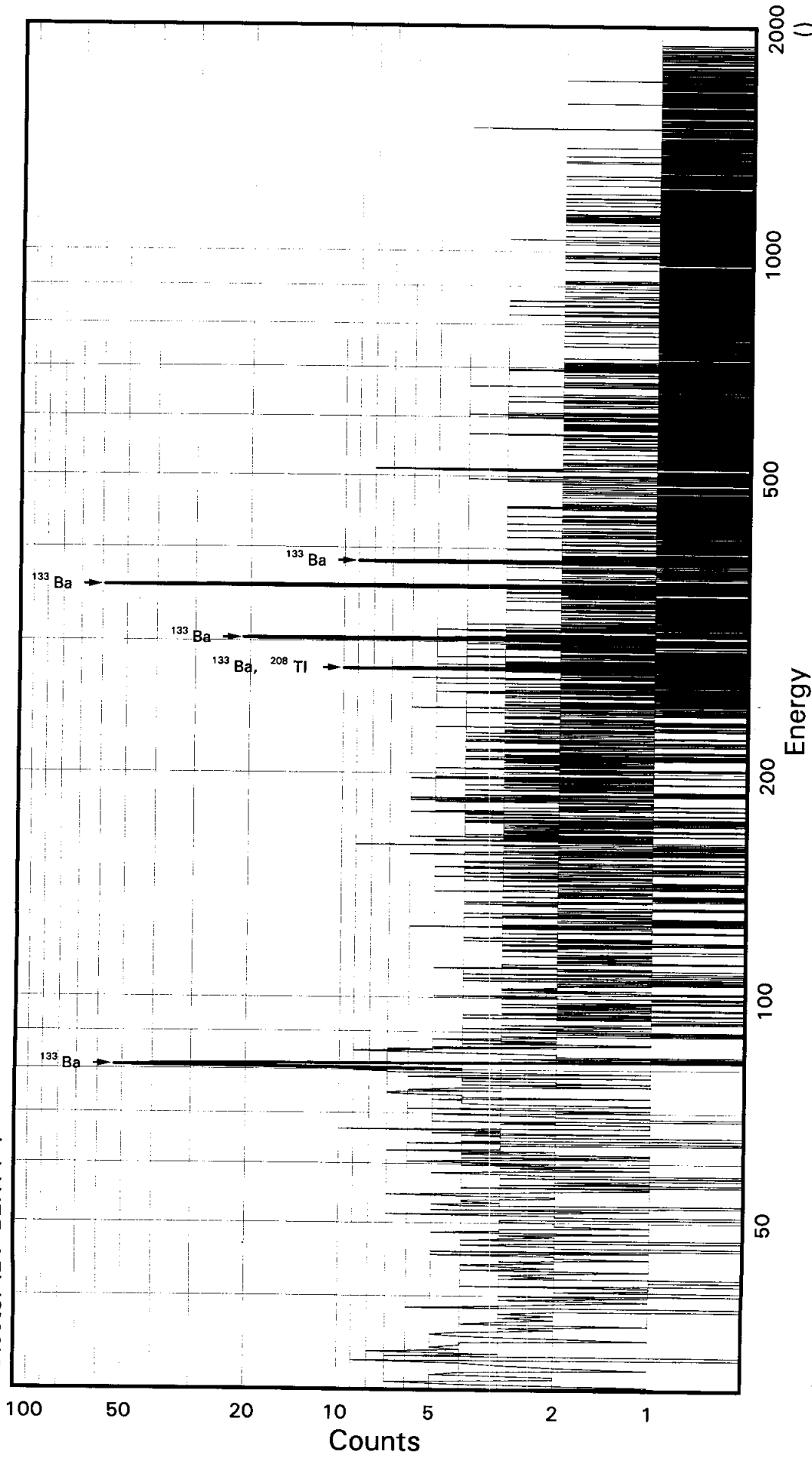
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	2.312E+01		1.888E+01	8.542E+01	1.710E+00	0.271
SN-126DA	3.491E+00		3.782E+00	1.835E+01	3.721E-01	0.190
I-131	1.472E+02		1.661E+02	6.885E+02	1.377E+01	0.214
CS-134	-5.197E+00		3.930E+00	1.312E+01	2.684E-01	-0.396
CS-137DA	-7.266E+00		4.390E+00	1.266E+01	2.566E-01	-0.574
LA-138	-1.187E+01		5.348E+00	6.257E+00	1.339E-01	-1.897
CE-139	2.121E+01		1.599E+01	6.237E+01	1.273E+00	0.340
BA-140	-3.852E+01		1.155E+02	4.620E+02	9.295E+00	-0.083
BALA-140	7.188E-01		3.015E+01	1.594E+02	3.448E+00	0.005
CE-141	-4.230E+01		4.199E+01	1.425E+02	2.930E+00	-0.297
CE-144	1.544E+01		1.075E+02	3.953E+02	8.175E+00	0.039
CEPR-144	-6.553E+01		2.214E+02	7.889E+02	1.632E+01	-0.083
PM-144	7.680E+00		5.736E+00	2.619E+01	5.294E-01	0.293
PM-146	9.206E+00		7.056E+00	3.372E+01	6.758E-01	0.273
EU-152	2.033E+01		2.484E+01	1.029E+02	2.058E+00	0.198
EU-154	-1.293E+01		7.500E+00	1.171E+01	2.480E-01	-1.104
EU-155	1.054E+02		5.892E+01	2.338E+02	4.925E+00	0.451
HF-181	-2.816E+01		1.250E+01	3.573E+01	7.170E-01	-0.788
BI-207	5.332E+00		4.648E+00	2.185E+01	4.405E-01	0.244
TL-208	-7.395E+00		6.972E+00	2.417E+01	4.875E-01	-0.306
BI-210M	-1.483E+01		1.435E+01	4.985E+01	1.000E+00	-0.297
BI-212	6.787E+01		4.966E+01	2.679E+02	8.188E+00	0.253
PB-212	-1.067E+01		2.102E+01	7.734E+01	1.555E+00	-0.138
BI-214	9.032E+00		1.147E+01	4.990E+01	1.008E+00	0.181
PB-214	2.277E+01		2.016E+01	7.615E+01	1.523E+00	0.299
RA-223	6.484E+01		6.030E+01	2.451E+02	4.915E+00	0.265
RA-224DA	-1.104E+01		2.177E+01	8.007E+01	1.610E+00	-0.138
RA-226DA	9.032E+00		1.147E+01	4.990E+01	1.008E+00	0.181
AC-227DA	6.432E+00		7.808E+01	2.948E+02	5.931E+00	0.022
AC-228	-1.408E-01		1.321E+01	5.778E+01	1.192E+00	-0.002
RA-228DA	-1.425E-01		1.337E+01	5.844E+01	1.206E+00	-0.002
TH-228DA	-2.131E+01		2.009E+01	6.964E+01	1.405E+00	-0.306
TH-232DA	2.515E+01		5.847E+01	2.304E+02	4.608E+00	0.109
TH-234DA	-5.894E+00		6.659E+02	2.792E+03	5.796E+01	-0.002
U-234DA	-1.696E+01		3.369E+01	1.244E+02	2.490E+00	-0.136
U-235HP	-1.690E+02		9.093E+01	2.842E+02	5.850E+00	-0.595
NP-237DA	3.441E+00		2.026E+01	7.826E+01	1.566E+00	0.044
U-238DA	2.277E+01		2.016E+01	7.615E+01	1.523E+00	0.299
U-238DHP	3.960E+02		4.145E+02	1.631E+03	3.620E+01	0.243
AM-241HP	-9.678E+00		3.693E+01	1.334E+02	2.985E+00	-0.073

STL Richland WA.

BA133

Sample ID: JWP2P3AC
Detector ID: GER11 1

Batch ID: 7172084



Acquisition Start: 21-JUN-2007 09:31:55.67
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -1.02504E+00
Slope: 2.31778E-01
Quadrature: 3.60814E-08

SAMPLE IDENTIFICATION: JWP2P3AC

CONFIGURATION ID: GER11:JWP2P3AC_210670931
TITLE : BA133
SAMPLE ID : JWP2P3AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 09:31:55
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 21-JUN-2007 05:33:54.03
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.1025E+01 keV
ENERGY SLOPE: 2.3178E-01 keV/C
ENERGY Q COEFF: 3.6081E-08 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.9312E-01 keV
FWHM SLOPE: 4.2604E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 10:02:14

Configuration : \$DISK1:[GER11.SAMPLE]JWP2P3AC_210670931.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:31:55
 Sample ID : JWP2P3AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.96 0.1%
 Start energy : 1.29 End energy : 1900.12
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.15	142	30	0.68	354.50	350	10	7.92E-02	11.3	
2	0	160.51	16	1	0.32	696.85	694	6	8.69E-03	28.0	
3	0	276.35	34	10	0.89	1196.48	1189	13	1.90E-02	25.5	
4	0	302.75	92	13	1.11	1310.35	1304	13	5.11E-02	13.2	
5	0	355.84	268	8	1.01	1539.34	1531	16	1.49E-01	6.6	
6	0	384.19	38	18	1.53	1661.57	1650	15	2.11E-02	27.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 21-JUN-2007 10:02:14

Configuration : \$DISK1:[GER11.SAMPLE]JWP2P3AC 210670931.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:31:55
 Sample ID : JWP2P3AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.96 0.1%
 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected	Decay Corr	1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	142	33.00	2.880E+00	4.997E+02	5.029E+02	12.55
	276.40	34	6.90	3.084E+00	5.346E+02	5.379E+02	26.06
	302.84	92	17.80	3.088E+00	5.580E+02	5.615E+02	14.25
	356.00	268	62.05*	3.090E+00	4.655E+02	4.685E+02	8.48
	383.85	38	8.70	3.090E+00	4.712E+02	4.742E+02	28.40

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2P3AC

Page : 2
Acquisition date : 21-JUN-2007 09:31:55

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	160.51	16	1	0.32	696.85	694	6	8.69E-03	28.0	3.03E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2P3AC

Page : 3
Acquisition date : 21-JUN-2007 09:31:55

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma (DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	5.424E+02	26.06	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER11.SAMPLE]JWP2P3AC_210670931.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:31:55
Sample ID        : JWP2P3AC Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.96 0.1%
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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	4.685E+02	3.974E+01	2.859E+01	5.717E-01	16.387

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-3.854E+00	5.768E+01	2.301E+02	4.614E+00	-0.017
NA-22	-3.530E+00	2.047E+00	3.154E+00	6.647E-02	-1.119
K-40	1.933E+01	5.558E+01	2.643E+02	5.636E+00	0.073
SC-46	-1.819E+00	6.001E+00	2.276E+01	4.750E-01	-0.080
CR-51	-4.000E+01	1.158E+02	4.334E+02	8.671E+00	-0.092
MN-54	9.367E-01	4.339E+00	1.783E+01	3.651E-01	0.053
CO-57	-4.785E+01	5.917E+01	2.025E+02	4.172E+00	-0.236
CO-58	-4.622E+00	5.248E+00	1.895E+01	3.873E-01	-0.244
FE-59	7.289E+00	1.318E+01	5.525E+01	1.151E+00	0.132
CO-60	1.122E+00	2.021E+00	1.072E+01	2.268E-01	0.105
ZN-65	-6.018E+00	1.066E+01	3.880E+01	8.094E-01	-0.155
SE-75	1.035E+01	1.114E+01	4.611E+01	9.248E-01	0.225
SR-85	-4.032E+01	1.131E+01	3.086E+01	6.198E-01	-1.307
Y-88	1.478E+00	2.578E+00	1.378E+01	3.006E-01	0.107
NB-94	-4.809E+00	3.954E+00	1.329E+01	2.727E-01	-0.362
NB-95	4.451E+00	5.361E+00	2.636E+01	5.372E-01	0.169
TC-95M	1.783E+01	1.531E+01	6.101E+01	1.232E+00	0.292
ZR-95	-2.686E+00	7.591E+00	3.118E+01	6.352E-01	-0.086
ZRNB-95	6.500E+00	7.829E+00	3.850E+01	7.846E-01	0.169
RH-101	-9.964E-01	9.923E+00	3.831E+01	7.747E-01	-0.026
RH-102M	-4.575E+00	3.847E+00	1.303E+01	2.614E-01	-0.351
RU-103	3.478E+00	9.790E+00	3.916E+01	7.860E-01	0.089
RU-106DA	-2.736E+01	4.769E+01	1.764E+02	3.564E+00	-0.155
AG-108M	-2.536E+00	5.621E+00	2.082E+01	4.168E-01	-0.122
AG-110M	6.328E+00	5.386E+00	2.510E+01	5.156E-01	0.252
SN-113DA	2.825E+00	8.768E+00	3.571E+01	7.144E-01	0.079
SB-124	8.287E+00	6.873E+00	3.013E+01	6.079E-01	0.275

---- Non-Identified Nuclides ----

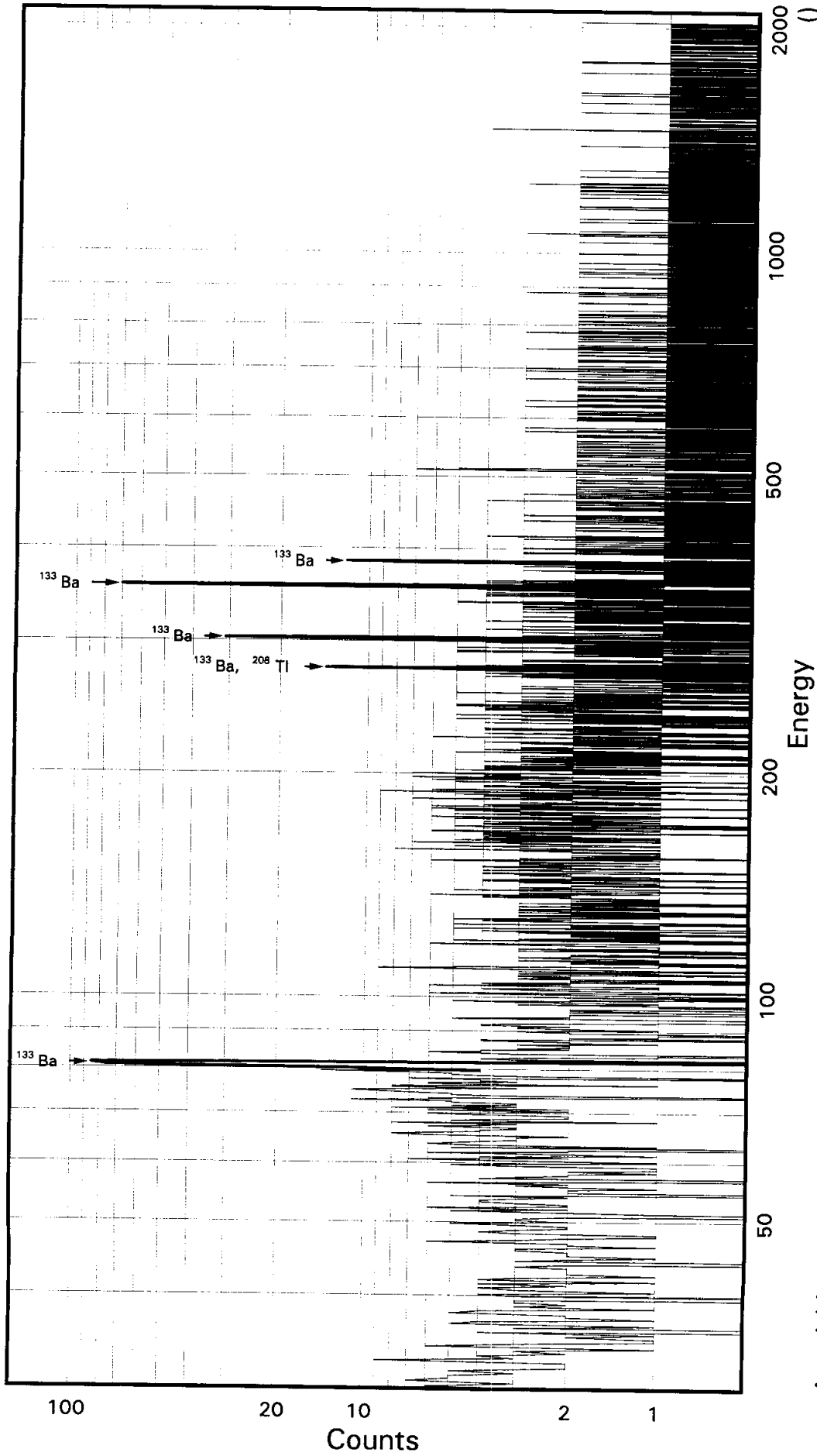
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	3.871E+00		1.128E+01	4.940E+01	9.890E-01	0.078
SN-126DA	4.606E-01		4.289E+00	1.710E+01	3.463E-01	0.027
I-131	1.334E+02		1.130E+02	4.969E+02	9.939E+00	0.268
CS-134	7.979E+00		4.637E+00	2.218E+01	4.529E-01	0.360
CS-137DA	2.268E+00		4.906E+00	2.041E+01	4.133E-01	0.111
LA-138	4.337E-02		2.405E+00	1.266E+01	2.696E-01	0.003
CE-139	5.767E+00		9.985E+00	3.903E+01	7.954E-01	0.148
BA-140	-4.850E+01		9.711E+01	3.769E+02	7.579E+00	-0.129
BALA-140	-7.132E-01		3.258E+01	1.495E+02	3.215E+00	-0.005
CE-141	5.224E+00		2.964E+01	1.139E+02	2.337E+00	0.046
CE-144	1.043E+02		6.206E+01	2.594E+02	5.351E+00	0.402
CEPR-144	2.097E+02		1.242E+02	5.193E+02	1.071E+01	0.404
PM-144	3.082E+00		4.210E+00	1.832E+01	3.701E-01	0.168
PM-146	-1.531E+00		6.618E+00	2.555E+01	5.119E-01	-0.060
EU-152	7.480E-01		1.823E+01	7.039E+01	1.408E+00	0.011
EU-154	-9.760E+00		5.660E+00	8.720E+00	1.838E-01	-1.119
EU-155	2.665E+01		2.560E+01	1.077E+02	2.260E+00	0.247
HF-181	2.402E+00		7.910E+00	3.314E+01	6.648E-01	0.072
BI-207	5.711E+00		4.569E+00	2.019E+01	4.067E-01	0.283
TL-208	2.505E+00		5.428E+00	2.233E+01	4.501E-01	0.112
BI-210M	-2.449E+01		1.191E+01	3.726E+01	7.472E-01	-0.657
BI-212	-2.787E+01		5.195E+01	2.023E+02	6.179E+00	-0.138
PB-212	1.390E+01		1.342E+01	5.528E+01	1.111E+00	0.251
BI-214	1.651E+00		9.062E+00	3.680E+01	7.428E-01	0.045
PB-214	-4.066E+01		2.234E+01	5.389E+01	1.078E+00	-0.754
RA-223	6.291E+01		3.993E+01	1.724E+02	3.457E+00	0.365
RA-224DA	1.439E+01		1.389E+01	5.724E+01	1.151E+00	0.251
RA-226DA	1.753E+00		9.075E+00	3.688E+01	7.446E-01	0.048
AC-227DA	-7.096E-01		5.629E+01	2.065E+02	4.152E+00	-0.003
AC-228	-1.048E+01		1.513E+01	5.646E+01	1.162E+00	-0.186
RA-228DA	-1.060E+01		1.531E+01	5.712E+01	1.175E+00	-0.186
TH-228DA	7.219E+00		1.564E+01	6.435E+01	1.297E+00	0.112
TH-232DA	9.317E-01		4.056E+01	1.555E+02	3.110E+00	0.006
TH-234DA	-8.547E+02		6.199E+02	2.062E+03	4.268E+01	-0.415
U-234DA	1.131E+01		3.371E+01	1.291E+02	2.585E+00	0.088
U-235HP	-3.541E+01		6.082E+01	2.234E+02	4.587E+00	-0.159
NP-237DA	1.257E+01		1.670E+01	6.634E+01	1.328E+00	0.189
U-238DA	-4.066E+01		2.234E+01	5.389E+01	1.078E+00	-0.754
U-238DHP	2.076E+02		2.008E+02	7.770E+02	1.711E+01	0.267
AM-241HP	-1.964E+01		2.161E+01	7.216E+01	1.600E+00	-0.272

STL Richland WA.

BA133

Sample ID: JWW983AA
Detector ID: GER12 1

Batch ID: 7172084



Acquisition Start: 21-JUN-2007 09:32:17.52
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.14240E+01
Slope: 2.47571E-01
Quadrature: 6.87926E-09

SAMPLE IDENTIFICATION: JWW983AA

CONFIGURATION ID: GER12:JWW983AA_210670932
TITLE : BA133
SAMPLE ID : JWW983AA

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 09:32:17
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 21-JUN-2007 05:34:08.34
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 1.1424E+01 keV
ENERGY SLOPE: 2.4757E-01 keV/C
ENERGY Q COEFF: 6.8793E-09 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.9535E-01 keV
FWHM SLOPE: 3.6397E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 10:02:35

```

Configuration      : $DISK1:[GER12.SAMPLE]JWW983AA_210670932.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:32:17
Sample ID         : JWW983AA Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.32 0.0%
Start energy      : 11.67 End energy : 2039.99
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.02	287	50	0.84	281.11	276	10	1.59E-01	7.6	
2	0	109.92*	12	14	0.66	397.84	392	10	6.75E-03	67.7	
3	0	276.18	46	7	0.42	1069.37	1064	13	2.53E-02	18.9	
4	0	302.83	142	4	0.95	1177.01	1169	17	7.89E-02	9.0	
5	0	356.03	331	10	0.91	1391.90	1382	20	1.84E-01	6.0	
6	0	383.76	61	0	1.29	1503.89	1496	14	3.39E-02	12.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 21-JUN-2007 10:02:35

Configuration : \$DISK1:[GER12.SAMPLE]JWW983AA_210670932.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:32:17
 Sample ID : JWW983AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.32 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	Decay Corr	1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	287	33.00	2.915E+00	9.928E+02	9.991E+02	9.30
	276.40	46	6.90	3.094E+00	7.115E+02	7.160E+02	19.65
	302.84	142	17.80	3.097E+00	8.588E+02	8.643E+02	10.50
	356.00	331	62.05*	3.100E+00	5.737E+02	5.773E+02	8.04
	383.85	61	8.70	3.099E+00	7.541E+02	7.589E+02	13.89

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWW983AA

Page : 2
Acquisition date : 21-JUN-2007 09:32:17

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	109.92	12	14	0.66	397.84	392	10	6.75E-03	67.7	2.98E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWW983AA

Page : 3
Acquisition date : 21-JUN-2007 09:32:17

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	7.219E+02	19.65	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 21-JUN-2007 10:02:37

```

Configuration      : $DISK1:[GER12.SAMPLE]JWW983AA 210670932.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:32:17
Sample ID        : JWW983AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.32 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.773E+02	4.643E+01	3.190E+01	6.381E-01	18.097

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.139E+02	7.708E+01	2.502E+02	5.016E+00	-0.455
NA-22	1.190E+00	2.633E+00	1.256E+01	2.628E-01	0.095
K-40	6.844E+01	5.722E+01	2.748E+02	5.811E+00	0.249
SC-46	6.631E-02	2.945E+00	1.382E+01	2.867E-01	0.005
CR-51	3.346E+02	1.451E+02	6.323E+02	1.265E+01	0.529
MN-54	1.842E-01	4.056E+00	1.671E+01	3.411E-01	0.011
CO-57	7.989E+01	7.098E+01	2.842E+02	5.832E+00	0.281
CO-58	-8.750E+00	5.677E+00	1.863E+01	3.796E-01	-0.470
FE-59	1.027E+01	7.561E+00	4.071E+01	8.436E-01	0.252
CO-60	2.236E+00	2.316E+00	1.230E+01	2.583E-01	0.182
ZN-65	5.317E+00	7.643E+00	3.442E+01	7.139E-01	0.155
SE-75	-1.184E+01	1.094E+01	3.774E+01	7.566E-01	-0.314
SR-85	-3.138E+01	1.196E+01	3.464E+01	6.954E-01	-0.906
Y-88	-2.890E+00	2.050E+00	3.957E+00	8.532E-02	-0.730
NB-94	4.200E+00	2.655E+00	1.419E+01	2.901E-01	0.296
NB-95	1.270E+01	7.716E+00	3.637E+01	7.394E-01	0.349
TC-95M	2.137E+01	1.659E+01	6.673E+01	1.346E+00	0.320
ZR-95	1.744E+00	7.702E+00	3.385E+01	6.879E-01	0.052
ZRNB-95	1.854E+01	1.127E+01	5.311E+01	1.080E+00	0.349
RH-101	6.370E-01	1.301E+01	4.702E+01	9.495E-01	0.014
RH-102M	7.889E+00	4.538E+00	2.097E+01	4.204E-01	0.376
RU-103	8.667E+00	7.200E+00	3.364E+01	6.749E-01	0.258
RU-106DA	3.655E+01	4.852E+01	2.058E+02	4.151E+00	0.178
AG-108M	-2.340E+00	5.359E+00	1.998E+01	4.000E-01	-0.117
AG-110M	3.986E+00	5.371E+00	2.411E+01	4.935E-01	0.165
SN-113DA	-1.250E+00	6.715E+00	2.718E+01	5.437E-01	-0.046
SB-124	5.694E-01	6.574E+00	2.645E+01	5.331E-01	0.022

---- Non-Identified Nuclides ----

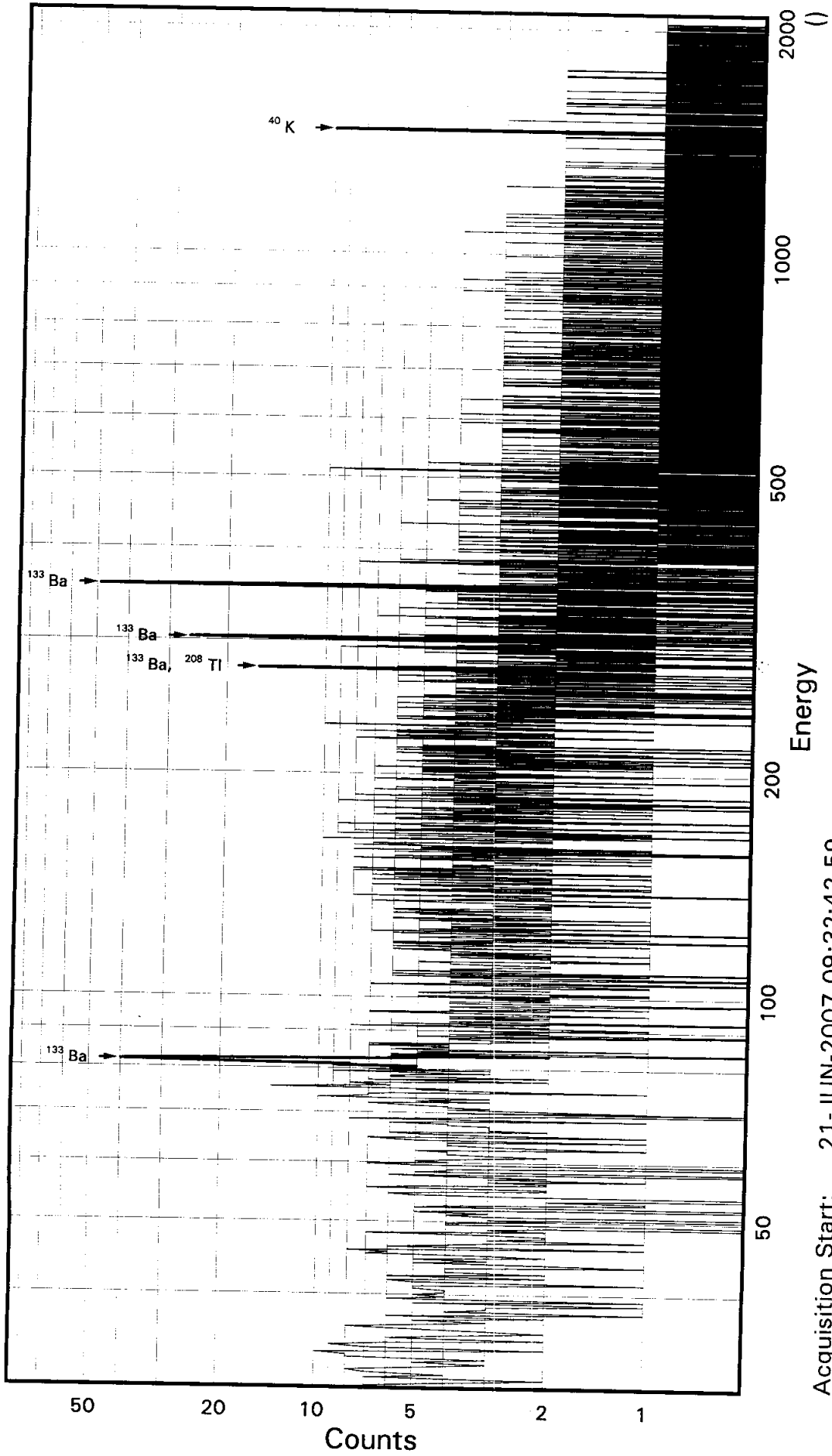
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	-2.303E+00		1.647E+01	6.354E+01	1.272E+00	-0.036
SN-126DA	-2.259E+00		3.795E+00	1.425E+01	2.882E-01	-0.159
I-131	-8.692E+00		1.251E+02	4.868E+02	9.735E+00	-0.018
CS-134	-2.423E+00		3.155E+00	1.229E+01	2.502E-01	-0.197
CS-137DA	4.634E+00		5.090E+00	2.197E+01	4.442E-01	0.211
LA-138	3.443E+00		3.391E+00	1.831E+01	3.867E-01	0.188
CE-139	-1.315E+01		1.286E+01	4.319E+01	8.781E-01	-0.304
BA-140	-9.609E+01		1.233E+02	4.522E+02	9.088E+00	-0.212
BALA-140	3.122E+01		3.924E+01	1.909E+02	4.067E+00	0.164
CE-141	-1.518E+01		3.232E+01	1.151E+02	2.354E+00	-0.132
CE-144	-2.468E+01		6.417E+01	2.345E+02	4.818E+00	-0.105
CEPR-144	-5.026E+01		1.283E+02	4.685E+02	9.626E+00	-0.107
PM-144	-7.993E+00		4.501E+00	1.404E+01	2.832E-01	-0.569
PM-146	3.820E+00		6.818E+00	2.837E+01	5.683E-01	0.135
EU-152	-1.581E+01		2.056E+01	7.152E+01	1.431E+00	-0.221
EU-154	-2.569E-01		7.930E+00	3.436E+01	7.192E-01	-0.007
EU-155	-1.058E+01		3.448E+01	1.275E+02	2.659E+00	-0.083
HF-181	1.315E+00		1.122E+01	4.326E+01	8.674E-01	0.030
BI-207	5.781E+00		4.760E+00	2.081E+01	4.187E-01	0.278
TL-208	2.751E+00		4.013E+00	1.812E+01	3.649E-01	0.152
BI-210M	1.081E+01		1.121E+01	4.593E+01	9.207E-01	0.235
BI-212	3.583E+01		5.423E+01	2.388E+02	7.287E+00	0.150
PB-212	4.427E+00		1.530E+01	5.836E+01	1.172E+00	0.076
BI-214	2.136E+01		1.073E+01	4.850E+01	9.778E-01	0.440
PB-214	-6.473E-01		1.793E+01	5.896E+01	1.179E+00	-0.011
RA-223	-2.588E+01		4.830E+01	1.730E+02	3.467E+00	-0.150
RA-224DA	4.583E+00		1.583E+01	6.042E+01	1.214E+00	0.076
RA-226DA	2.136E+01		1.073E+01	4.850E+01	9.779E-01	0.440
AC-227DA	3.184E+01		5.544E+01	2.183E+02	4.386E+00	0.146
AC-228	4.223E+00		1.062E+01	4.812E+01	9.865E-01	0.088
RA-228DA	4.271E+00		1.074E+01	4.868E+01	9.980E-01	0.088
TH-228DA	7.929E+00		1.156E+01	5.222E+01	1.052E+00	0.152
TH-232DA	7.335E+01		5.630E+01	2.234E+02	4.469E+00	0.328
TH-234DA	-2.269E+02		6.750E+02	2.558E+03	5.271E+01	-0.089
U-234DA	3.010E+01		3.100E+01	1.250E+02	2.502E+00	0.241
U-235HP	4.126E+01		6.662E+01	2.573E+02	5.266E+00	0.160
NP-237DA	6.687E+00		1.520E+01	5.965E+01	1.194E+00	0.112
U-238DA	-6.473E-01		1.793E+01	5.896E+01	1.179E+00	-0.011
U-238DHP	-9.339E+00		2.318E+02	8.361E+02	1.818E+01	-0.011
AM-241HP	-1.703E+01		2.085E+01	7.229E+01	1.581E+00	-0.236

STL Richland WA.

BA133

Sample ID: JWW983AC
Detector ID: GER13 1

Batch ID: 7172084



Energy Coefficients:
Offset: -6.28680E-01
Slope: 2.50769E-01
Quadrature: -9.57293E-08

Acquisition Start: 21-JUN-2007 09:32:42.59
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JWW983AC

CONFIGURATION ID: GER13:JWW983AC_210670932
TITLE : BA133
SAMPLE ID : JWW983AC

REPORT DATE: 21-JUN-07
ACQUIRE DATE: 21-JUN-07 09:32:42
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 9-MAY-2007 12:00:00.00
CALIB DATE: 21-JUN-2007 05:14:01.99
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.6287E+00 keV
ENERGY SLOPE: 2.5077E-01 keV/C
ENERGY Q COEFF: -.9573E-07 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 5.4864E-01 keV
FWHM SLOPE: 3.6475E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 21-JUN-2007 10:02:58

Configuration : \$DISK1:[GER13.SAMPLE]JWW983AC_210670932.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 9-MAY-2007 12:00:00 Acquisition date : 21-JUN-2007 09:32:42
 Sample ID : JWW983AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.36 0.0%
 Start energy : 19.43 End energy : 2047.25
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.94	118	69	0.76	329.30	322	14	6.54E-02	17.7	
2	0	276.58	35	40	0.36	1105.90	1096	16	1.97E-02	43.2	
3	0	302.80	95	21	0.84	1210.53	1202	17	5.26E-02	15.2	
4	0	356.00	230	26	1.08	1422.91	1412	21	1.28E-01	8.6	
5	8	1462.11	17	0	0.91	5846.06	5828	22	9.59E-03	26.8	7.70E-01

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 21-JUN-2007 10:02:59

```

Configuration      : $DISK1:[GER13.SAMPLE]JWW983AC_210670932.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 9-MAY-2007 12:00:00   Acquisition date : 21-JUN-2007 09:32:42
Sample ID        : JWW983AC               Sample quantity  : 1.0000 SAMPL
Sample type      :                        Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.36   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 DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
K-40	1460.81	17	10.67*	2.692E+00	2.003E+02	2.003E+02	27.32

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	118	33.00	2.678E+00	4.442E+02	4.476E+02	18.47
	276.40	35	6.90	2.869E+00	5.975E+02	6.022E+02	43.54
	302.84	95	17.80	2.872E+00	6.170E+02	6.218E+02	16.11
	356.00	230	62.05*	2.875E+00	4.303E+02	4.336E+02	10.16
	383.85	-----		8.70	2.874E+00	-----	Line Not Found

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWW983AC

Page : 2
Acquisition date : 21-JUN-2007 09:32:42

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWW983AC

Page : 3
Acquisition date : 21-JUN-2007 09:32:42

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma (DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	6.063E+02	43.54	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 21-JUN-2007 10:03:00

```

Configuration      : $DISK1:[GER13.SAMPLE]JWW983AC_210670932.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      : BA133
Sample date       : 9-MAY-2007 12:00:00   Acquisition date : 21-JUN-2007 09:32:42
Sample ID        : JWW983AC               Sample quantity  : 1.0000 SAMPL
Sample type      :                        Sample geometry  : BA133T15
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.36   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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
K-40	2.003E+02	5.473E+01	1.334E+02	2.849E+00	1.502
BA-133	4.336E+02	4.407E+01	5.011E+01	1.002E+00	8.654

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.960E+02	1.210E+02	4.976E+02	9.979E+00	0.394
NA-22	-1.328E+00	4.909E+00	1.895E+01	3.999E-01	-0.070
SC-46	6.035E+00	7.400E+00	3.361E+01	7.020E-01	0.180
CR-51	-3.533E+01	2.564E+02	9.229E+02	1.846E+01	-0.038
MN-54	4.244E+00	4.982E+00	2.175E+01	4.456E-01	0.195
CO-57	1.400E+02	1.059E+02	4.098E+02	8.448E+00	0.342
CO-58	-8.259E+00	7.527E+00	2.559E+01	5.233E-01	-0.323
FE-59	-2.204E+00	1.776E+01	6.949E+01	1.449E+00	-0.032
CO-60	4.905E+00	3.979E+00	1.871E+01	3.964E-01	0.262
ZN-65	-7.131E+00	1.020E+01	3.796E+01	7.926E-01	-0.188
SE-75	-1.114E+01	2.010E+01	7.092E+01	1.423E+00	-0.157
SR-85	-7.135E+01	1.751E+01	4.572E+01	9.185E-01	-1.560
Y-88	-3.226E+00	3.303E+00	1.239E+01	2.708E-01	-0.260
NB-94	4.385E+00	5.930E+00	2.421E+01	4.971E-01	0.181
NB-95	1.489E+01	1.307E+01	5.503E+01	1.122E+00	0.270
TC-95M	-1.476E+00	2.663E+01	9.366E+01	1.892E+00	-0.016
ZR-95	3.138E-01	1.480E+01	5.760E+01	1.174E+00	0.005
ZRNB-95	2.068E+01	1.781E+01	7.506E+01	1.531E+00	0.275
RH-101	2.515E+01	1.505E+01	5.755E+01	1.164E+00	0.437
RH-102M	-2.435E+00	7.375E+00	2.692E+01	5.400E-01	-0.090
RU-103	2.041E+01	1.677E+01	6.768E+01	1.359E+00	0.302
RU-106DA	3.087E+01	6.007E+01	2.444E+02	4.939E+00	0.126
AG-108M	3.485E+00	7.920E+00	3.057E+01	6.122E-01	0.114
AG-110M	-4.389E+00	8.036E+00	2.988E+01	6.140E-01	-0.147
SN-113DA	-4.513E+00	1.258E+01	4.680E+01	9.364E-01	-0.096
SB-124	-1.296E+01	1.060E+01	3.636E+01	7.338E-01	-0.357

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	-1.859E+01		2.307E+01	8.181E+01	1.638E+00	-0.227
SN-126DA	1.333E+01		4.935E+00	2.385E+01	4.832E-01	0.559
I-131	-2.928E+02		3.391E+02	1.163E+03	2.326E+01	-0.252
CS-134	6.679E-01		6.420E+00	2.501E+01	5.110E-01	0.027
CS-137DA	-1.226E+01		5.349E+00	1.488E+01	3.015E-01	-0.824
LA-138	-2.435E+00		6.397E+00	2.508E+01	5.347E-01	-0.097
CE-139	-4.320E+01		1.719E+01	5.239E+01	1.068E+00	-0.825
BA-140	-2.250E+02		2.181E+02	7.484E+02	1.505E+01	-0.301
BALA-140	-1.070E+02		9.287E+01	3.212E+02	6.918E+00	-0.333
CE-141	4.314E+01		5.742E+01	2.133E+02	4.380E+00	0.202
CE-144	-1.732E+02		1.059E+02	3.488E+02	7.200E+00	-0.496
CEPR-144	-3.512E+02		2.115E+02	6.955E+02	1.436E+01	-0.505
PM-144	-6.236E+00		5.729E+00	2.003E+01	4.047E-01	-0.311
PM-146	-5.322E+00		1.180E+01	4.243E+01	8.502E-01	-0.125
EU-152	-8.361E+00		3.099E+01	1.106E+02	2.211E+00	-0.076
EU-154	-3.657E+00		1.352E+01	5.219E+01	1.101E+00	-0.070
EU-155	4.271E+01		4.643E+01	1.801E+02	3.781E+00	0.237
HF-181	1.128E+01		1.803E+01	6.965E+01	1.397E+00	0.162
BI-207	2.763E+00		6.154E+00	2.407E+01	4.849E-01	0.115
TL-208	-2.814E+00		7.711E+00	3.196E+01	6.444E-01	-0.088
BI-210M	3.335E+01		1.878E+01	7.446E+01	1.493E+00	0.448
BI-212	1.107E+02		9.637E+01	3.958E+02	1.209E+01	0.280
PB-212	-3.810E+00		2.369E+01	8.824E+01	1.774E+00	-0.043
BI-214	-2.407E+01		1.733E+01	6.636E+01	1.340E+00	-0.363
PB-214	-4.027E+01		3.095E+01	9.294E+01	1.859E+00	-0.433
RA-223	-2.379E+01		6.719E+01	2.402E+02	4.816E+00	-0.099
RA-224DA	-3.976E+00		2.472E+01	9.208E+01	1.851E+00	-0.043
RA-226DA	-2.417E+01		1.732E+01	6.632E+01	1.339E+00	-0.364
AC-227DA	-3.650E+01		9.622E+01	3.422E+02	6.882E+00	-0.107
AC-228	1.725E+01		2.478E+01	1.036E+02	2.134E+00	0.166
RA-228DA	1.749E+01		2.513E+01	1.051E+02	2.164E+00	0.166
TH-228DA	-8.173E+00		2.240E+01	9.285E+01	1.872E+00	-0.088
TH-232DA	1.103E+02		6.784E+01	2.697E+02	5.394E+00	0.409
TH-234DA	1.653E+03		7.239E+02	3.476E+03	7.201E+01	0.475
U-234DA	1.320E+02		5.538E+01	2.240E+02	4.484E+00	0.590
U-235HP	-1.238E+02		1.009E+02	3.397E+02	6.981E+00	-0.364
NP-237DA	9.980E+00		2.290E+01	8.592E+01	1.719E+00	0.116
U-238DA	-4.027E+01		3.095E+01	9.294E+01	1.859E+00	-0.433
U-238DHP	-1.416E+02		2.861E+02	1.003E+03	2.212E+01	-0.141
AM-241HP	2.163E+01		2.992E+01	1.123E+02	2.496E+00	0.193

6/11/2007 11:13:13 AM
 456833, ENSR International Corporation
 ENSR International Corporation
 AnalyzeDate: 06/06/2007
 Batch: 7159396
 SEQ Batch, Test: 7134319, BUTE 7159393, BUTE 7159393, BUTE

Sample Preparation/Analysis
 BU Ra-226/228 Prp/SepRC5005
 TF Radium-228 by GPC
 01 STANDARD TEST SET
 PM, Quote: JAE, 75203
 pCi/L
 Balance Id: 1120403183
 Pipet #: _____
 Sep1 DT/Tm Tech: AL 6/11/07 11:15
 Sep2 DT/Tm Tech: 6/19/07 09:50 GF
 Prep Tech: Longa

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 JWP17-2-AC F7E100384-1-SAMP	1000.80g,in	rata26766 05/17/07					31.2 3X50	7A	Alpha: 1.60E-04 uCi/Sa	Beta: 4.20E-04 uCi/Sa	
2 JWP17-2-AE-X F7E100384-1-DUP							0.8325 1" 31.2 3X50	7A			
3 JWP18-2-AC F7E100384-2-SAMP	1002.00g,in	rata26766 05/17/07					17.1	7B	Alpha: 1.60E-04 uCi/Sa	Beta: 4.20E-04 uCi/Sa	
4 JWP19-2-AC F7E100384-3-SAMP	1001.40g,in	rata26767 05/17/07					30.5	7C	Alpha: 1.57E-04 uCi/Sa	Beta: 3.38E-04 uCi/Sa	
05/09/2007 07:30								7C	Alpha: 4.04E-04 uCi/Sa	Beta: 3.65E-04 uCi/Sa	

V
V

6/11/2007 11:13:13 AM
 456833, ENSR International Corporation
 ENSR International Corporation
Sample Preparation/Analysis
 Balance Id: 1120403183
 Pipet #:
 Sep1 DT/Tm Tech:
 Sep2 DT/Tm Tech:
 Prep Tech: ,LongA

BU Ra-226/228 Pp/SepRC5005
 TF Radium-228 by GPC
 01 STANDARD TEST SET
 PM, Quote: JAE, 75203
 pCi/L
 SEQ Batch, Test: 7134319, BUTE 7159393, 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:
5 JWP2A-2-AC F7E100384-4-SAMP	1000.50g,in	1000.50g,in	05/17/07	0.8114	1"	29.4 3X50	16 1546	16	1546	6/19/07	
							16 0554	16	0554	6/20/07	
05/09/2007 08:35	AmtRec: 2XLP	#Containers: 2						Scr:	Alpha: 2.12E-04 uCi/Sa	Beta: 2.93E-04 uCi/Sa	
6 JWP2C-2-AC F7E100384-5-SAMP	1000.80g,in	1000.80g,in	05/17/07	0.7857		30.8	16 1546	16	1546	6/19/07	
							2A 0554	2A	0554	6/20/07	
05/09/2007 09:30	AmtRec: 2XLP	#Containers: 2						Scr:	Alpha: 1.95E-04 uCi/Sa	Beta: 3.47E-04 uCi/Sa	
7 JWP2D-2-AC F7E100384-6-SAMP	1001.70g,in	1001.70g,in	05/17/07	0.7378		30.7	16 1546	16	1546	6/19/07	
							2B 0554	2B	0554	6/20/07	
05/09/2007 09:10	AmtRec: 2XLP	#Containers: 2						Scr:	Alpha: 1.54E-04 uCi/Sa	Beta: 5.11E-04 uCi/Sa	1.8E-01L
8 JWP2E-2-AC F7E100384-7-SAMP	1000.70g,in	1000.70g,in	05/17/07	0.7435		31.4	2A 1546	2A	1546	6/19/07	
							2C 0554	2C	0554	6/20/07	
05/09/2007 10:35	AmtRec: 2XLP	#Containers: 2						Scr:	Alpha: -5.63E-05 uCi/Sa	Beta: 2.68E-04 uCi/Sa	

6/11/2007 11:13:14 AM
 456833, ENSR International Corporation
 ENSR International Corporation
Analyte Due Date: 06/06/2007
Batch: 7159396
 SEQ Batch, Test: 7134319, BUTE 7159393, BUTE
Sample Preparation/Analysis
 BU Ra-226/228 Pp/SepRC5005
 TF Radium-228 by GPC
 01 STANDARD TEST SET
 PM, Quote: JAE, 75203
 Balance Id: 1120403183
 Pipet #: _____
 Sep1 DT/Tm Tech: _____
 Sep2 DT/Tm Tech: _____

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:
9 JWP2F-2-AC F7E100384-8-SAMP	1001.50g.in	1001.50g.in	rata26772 05/17/07	0.82642	1"	27.5 3X50	25 1546	20 0554	2B 1546	6/19/07	
05/09/2007 11:30 10 JWP2H-2-AC F7E100384-9-SAMP	1002.80g.in	1002.80g.in	rata26773 05/17/07	0.6549		31.0	2C 1546	3A 0554		6/19/07	Beta: 8.40E-05 uCi/Sa
05/09/2007 11:15 11 JWP2H-2-AC F7E100384-10-SAMP	1000.10g.in	1000.10g.in	rata26774 05/17/07	0.7611		30.4	2D 1546	3B 0554		6/19/07	Beta: 1.71E-04 uCi/Sa
05/09/2007 12:45 12 JWP2J-2-AC F7E100384-11-SAMP	1001.70g.in	1001.70g.in	rata26775 05/17/07	0.7866		29.8	3C 1546	3L 0554		6/19/07	Beta: 1.93E-04 uCi/Sa
05/09/2007 13:05											Beta: 3.24E-04 uCi/Sa

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:
13 JWP2K-2-AC F7E100384-12-SAMP	1001.40g.in	1001.40g.in	05/17/07	0.1853	1"	27.1 3X50	36	3D	1546	6/19/07	
05/09/2007 13:35 14 JWP2L-2-AC F7E100384-13-SAMP	1000.00g.in	1000.00g.in	05/17/07	0.7683		31.2		3C	1546	6/19/07	Alpha: 2.68E-04 uCi/Sa Beta: 3.02E-04 uCi/Sa
05/09/2007 14:35 15 JWP2N-2-AC F7E100384-14-SAMP	1000.90g.in	1000.90g.in	05/17/07	0.7224		31.3		3D	1546	6/19/07	Alpha: 2.74E-04 uCi/Sa Beta: 3.67E-04 uCi/Sa
05/09/2007 14:15 16 JWP2P-2-AC F7E100384-15-SAMP	1001.10g.in	1001.10g.in	05/17/07	0.8634		30.8		4A	1546	6/19/07	Alpha: 4.84E-04 uCi/Sa Beta: 2.57E-04 uCi/Sa
05/09/2007 15:30								4C	1554	6/20/07	Alpha: 2.68E-04 uCi/Sa Beta: 1.47E-04 uCi/Sa

Sample Preparation/Analysis

Balance Id: 1120403183

BU Ra-226/228 Prp/SepRC5005
TF Radium-228 by GPC
01 STANDARD TEST SET

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

Batch: 7159396

SEQ Batch, Test: None

pCi/L

Prep Tech: FABREM, Longa

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:
-----------------------------------	----------------	--------------------------	---------------------	--------------	-----------	-----------------	----------------	-------------	------------------------------	-----------------------	-----------

17 JWW98-2-AA-B 1003.50g.in rata26780 05/17/07 0.7790 31.6 3x50 4B 1546 6/19/07
 J7E140000-321-BLK 0.7790 31.6 3x50 4D 0554 6/20/07

05/09/2007 06:45 AmtRec: #Containers: 1
 18 JWW98-2-AC-C 1000.60g.in rasc4433 05/09/07 0.7052 31.4
 J7E140000-321-LCS 0.7052 31.4 6/19/07
 1B 057 6/20/07

05/09/2007 06:45 AmtRec: #Containers: 1
 Scr: Alpha: Beta:

Comments: JWP17-SAMP "Comments: ISV - INSUFFICIENT VOLUME FOR DUP SAMPLE. ALL TRACERS USED HAVE NOT BEEN VERIFIED FOR BARIUM VERIFICATION"
 JWP2L-SAMP "Comments: "
 JWP2N-SAMP "Comments: No DUP aliquot due to insufficient sample amount. JB 05/24/07"
 JWW98-BLK "Comments ALL TRACERS USED HAVE NOT BEEN VERIFIED FOR BARIUM PURIFICATION"
 JWP18-SAMP POINT - LOSS DUE TO FLAW IN FILTER SYRINGE \$ 26/19/07

All Clients for Batch:
 456833, ENSR International Corporation
 ENSR International Corporation, JAE, 75203

JWP172AC-SAMP Constituent List:

RDL:	RA-228DA	RDL: 3	pCi/L	LCL: 20	UCL: 115	RPD: 20	RA-228	RDL: 3	pCi/L	LCL: 70	UCL: 130	RPD: 20
Ba-133	RA-228DA	RDL: 3	pCi/L	LCL: 20	UCL: 115	RPD: 20	RA-228	RDL: 3	pCi/L	LCL: 70	UCL: 130	RPD: 20
Ba-133	RA-228	RDL: 3	pCi/L	LCL: 20	UCL: 115	RPD: 20	RA-226	RDL: 3	pCi/L	LCL: 70	UCL: 130	RPD: 20
RA-228			pCi/L	LCL: 70	UCL: 130	RPD: 20	RA-228DA	RDL: 3	pCi/L	LCL: 70	UCL: 130	RPD: 20

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2
 Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktalled Added

ISV - Insufficient Volume for Analysis

Page 5

WO Cnt: 18

Prep_SamplePrep v4.8.26

6/11/2007 11:13:15 AM

Sample Preparation/Analysis

Balance Id: 1120403183

BU Ra-226/228 Prp/SepRC5005
TF Radium-228 by GPC
01 STANDARD TEST SET

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

AnalytDueDate: 06/06/2007

Batch: 7159396
SEQ Batch, Test: None

Prep Tech: FABREM, LongA

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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JWP172AC-SAMP Calc Info:
 Uncert Level (#s): 4 Decay to SaDt: N Blk Subt.: N Sci.Not.: N ODRs: B
 JWW982AA-BLK:
 Uncert Level (#s): 4 Decay to SaDt: N Blk Subt.: N Sci.Not.: N ODRs: B
 JWW982AC-LCS:
 Uncert Level (#s): 4 Decay to SaDt: N Blk Subt.: N Sci.Not.: N ODRs: B

Approved By _____ Date: _____

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Ra-228 by GPC				Ra-226/Ra-228 Deem With Out Blk Subt. CRDL										
Calc	TF	WATER	JWP172AC	RA-228	4.41E-01	(2.72E-01)	U4	pCi/L	R	5.23E-01	1.14E+00		76%	
Calc	TF	WATER	JWP172AC	RA-228	4.12E-01	(2.96E-01)	U4	pCi/L	R	5.80E-01	1.26E+00		76%	
Calc	TF	WATER	JWP172AC	RA-228	1.13E-01	(3.02E-01)	U4	pCi/L	R	6.44E-01	1.40E+00		76%	
Calc	TF	WATER	JWP172AC	RA-228	3.22E-01	(1.68E-01)		pCi/L	A	3.36E-01	7.33E-01		76%	
Calc	TF	WATER	JWP172AC	RA-228	1.46E+00	(1.48E+00)	U4	pCi/L	R	3.00E+00	6.55E+00		76%	
Calc	TF	WATER	JWP182AC	RA-228	5.60E-01	(5.21E-01)	U4	pCi/L	R	1.05E+00	2.29E+00		36%	
Calc	TF	WATER	JWP182AC	RA-228	-2.75E-01	(5.08E-01)	U4	pCi/L	R	1.16E+00	2.54E+00		36%	
Calc	TF	WATER	JWP182AC	RA-228	8.71E-01	(6.56E-01)	U4	pCi/L	R	1.29E+00	2.82E+00		36%	
Calc	TF	WATER	JWP182AC	RA-228	3.85E-01	(3.27E-01)	U4	pCi/L	A	6.72E-01	1.47E+00		36%	
Calc	TF	WATER	JWP182AC	RA-228	-6.04E-01	(2.80E+00)	U4	pCi/L	R	6.25E+00	1.37E+01		36%	
Calc	TF	WATER	JWP192AC	RA-228	4.63E-01	(3.45E-01)	U4	pCi/L	R	6.85E-01	1.48E+00		66%	
Calc	TF	WATER	JWP192AC	RA-228	-4.67E-02	(3.43E-01)	U4	pCi/L	R	7.60E-01	1.65E+00		66%	
Calc	TF	WATER	JWP192AC	RA-228	5.18E-02	(3.88E-01)	U4	pCi/L	R	8.44E-01	1.83E+00		66%	
Calc	TF	WATER	JWP192AC	RA-228	1.56E-01	(2.08E-01)	U4	pCi/L	A	4.40E-01	9.54E-01		66%	
Calc	TF	WATER	JWP192AC	RA-228	-4.40E-01	(1.85E+00)	U4	pCi/L	R	4.13E+00	8.93E+00		66%	
Calc	TF	WATER	JWP2A2AC	RA-228	4.00E-01	(2.98E-01)	U4	pCi/L	R	5.86E-01	1.28E+00		69%	
Calc	TF	WATER	JWP2A2AC	RA-228	6.60E-01	(3.47E-01)		pCi/L	R	6.50E-01	1.42E+00		69%	
Calc	TF	WATER	JWP2A2AC	RA-228	-1.80E-01	(3.16E-01)	U4	pCi/L	R	7.22E-01	1.57E+00		69%	
Calc	TF	WATER	JWP2A2AC	RA-228	2.93E-01	(1.85E-01)	U4	pCi/L	A	3.77E-01	8.21E-01		69%	
Calc	TF	WATER	JWP2A2AC	RA-228	-1.08E+00	(1.48E+00)	U4	pCi/L	R	3.41E+00	7.46E+00		69%	
Calc	TF	WATER	JWP2C2AC	RA-228	1.08E-01	(2.59E-01)	U4	pCi/L	R	5.50E-01	1.20E+00		70%	
Calc	TF	WATER	JWP2C2AC	RA-228	2.07E-01	(2.95E-01)	U4	pCi/L	R	6.10E-01	1.34E+00		70%	
Calc	TF	WATER	JWP2C2AC	RA-228	1.81E-01	(3.23E-01)	U4	pCi/L	R	6.77E-01	1.48E+00		70%	
Calc	TF	WATER	JWP2C2AC	RA-228	1.65E-01	(1.69E-01)	U4	pCi/L	A	3.53E-01	7.75E-01		70%	
Calc	TF	WATER	JWP2C2AC	RA-228	2.06E-01	(1.04E+00)	U4	pCi/L	R	2.23E+00	5.20E+00		70%	
Calc	TF	WATER	JWP2D2AC	RA-228	1.04E+00	(3.54E-01)		pCi/L	R	5.88E-01	1.29E+00		66%	
Calc	TF	WATER	JWP2D2AC	RA-228	2.40E-01	(3.16E-01)	U4	pCi/L	R	6.52E-01	1.43E+00		66%	
Calc	TF	WATER	JWP2D2AC	RA-228	7.72E-01	(3.93E-01)		pCi/L	R	7.24E-01	1.58E+00		66%	
Calc	TF	WATER	JWP2D2AC	RA-228	6.83E-01	(2.05E-01)		pCi/L	A	3.78E-01	8.27E-01		66%	
Calc	TF	WATER	JWP2D2AC	RA-228	2.02E+00	(1.30E+00)	U4	pCi/L	R	2.27E+00	5.30E+00		66%	
Calc	TF	WATER	JWP2E2AC	RA-228	6.72E-01	(2.58E-01)		pCi/L	R	3.81E-01	8.92E-01		68%	
Calc	TF	WATER	JWP2E2AC	RA-228	4.29E-01	(2.48E-01)		pCi/L	R	4.23E-01	9.89E-01		68%	
Calc	TF	WATER	JWP2E2AC	RA-228	3.00E-01	(2.54E-01)	U4	pCi/L	R	4.70E-01	1.10E+00		68%	
Calc	TF	WATER	JWP2E2AC	RA-228	4.67E-01	(1.46E-01)		pCi/L	A	2.45E-01	5.73E-01		68%	
Calc	TF	WATER	JWP2E2AC	RA-228	2.08E+00	(1.31E+00)	U4	pCi/L	R	2.29E+00	5.35E+00		68%	
Calc	TF	WATER	JWP2F2AC	RA-228	1.04E+00	(3.00E-01)		pCi/L	R	3.87E-01	9.01E-01		66%	
Calc	TF	WATER	JWP2F2AC	RA-228	6.34E-01	(2.74E-01)		pCi/L	R	4.30E-01	9.99E-01		66%	
Calc	TF	WATER	JWP2F2AC	RA-228	7.18E-02	(2.27E-01)	U4	pCi/L	R	4.77E-01	1.11E+00		66%	

() - (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	Yield	RYld
Calc	TF	WATER	JWP2F2AC	RA-228	5.81E-01	(1.55E-01)		pCi/L	A	2.49E-01	5.79E-01		66%	
Calc	TF	WATER	JWP2F2AC	RA-228	3.31E+00	(1.46E+00)		pCi/L	R	2.27E+00	5.32E+00		66%	
Calc	TF	WATER	JWP2G2AC	RA-228	8.45E-01	(3.05E-01)		pCi/L	R	4.36E-01	1.02E+00		59%	
Calc	TF	WATER	JWP2G2AC	RA-228	3.89E-01	(2.72E-01)	U4	pCi/L	R	4.84E-01	1.13E+00		59%	
Calc	TF	WATER	JWP2G2AC	RA-228	2.54E-02	(2.48E-01)	U4	pCi/L	R	5.37E-01	1.26E+00		59%	
Calc	TF	WATER	JWP2G2AC	RA-228	4.20E-01	(1.59E-01)		pCi/L	A	2.80E-01	6.56E-01		59%	
Calc	TF	WATER	JWP2G2AC	RA-228	6.93E-01	(1.07E+00)	U4	pCi/L	R	2.12E+00	5.07E+00		59%	
Calc	TF	WATER	JWP2H2AC	RA-228	8.67E-01	(2.90E-01)		pCi/L	R	4.14E-01	9.58E-01		67%	
Calc	TF	WATER	JWP2H2AC	RA-228	4.31E-01	(2.62E-01)		pCi/L	R	4.60E-01	1.06E+00		67%	
Calc	TF	WATER	JWP2H2AC	RA-228	-1.10E-01	(2.19E-01)	U4	pCi/L	R	5.10E-01	1.18E+00		67%	
Calc	TF	WATER	JWP2H2AC	RA-228	3.96E-01	(1.49E-01)		pCi/L	A	2.66E-01	6.16E-01		67%	
Calc	TF	WATER	JWP2H2AC	RA-228	1.34E+00	(1.10E+00)	U4	pCi/L	R	2.00E+00	4.70E+00		67%	
Calc	TF	WATER	JWP2J2AC	RA-228	6.03E-01	(2.49E-01)		pCi/L	R	3.73E-01	8.67E-01		68%	
Calc	TF	WATER	JWP2J2AC	RA-228	6.81E-02	(1.96E-01)	U4	pCi/L	R	4.10E-01	9.53E-01		68%	
Calc	TF	WATER	JWP2J2AC	RA-228	7.56E-02	(2.17E-01)	U4	pCi/L	R	4.55E-01	1.06E+00		68%	
Calc	TF	WATER	JWP2J2AC	RA-228	2.49E-01	(1.28E-01)		pCi/L	A	2.38E-01	5.54E-01		68%	
Calc	TF	WATER	JWP2J2AC	RA-228	3.01E+00	(1.36E+00)		pCi/L	R	2.04E+00	4.80E+00		68%	
Calc	TF	WATER	JWP2K2AC	RA-228	4.31E-01	(2.50E-01)		pCi/L	R	4.24E-01	9.79E-01		62%	
Calc	TF	WATER	JWP2K2AC	RA-228	2.07E-01	(2.39E-01)	U4	pCi/L	R	4.66E-01	1.08E+00		62%	
Calc	TF	WATER	JWP2K2AC	RA-228	4.66E-01	(2.97E-01)	U4	pCi/L	R	5.18E-01	1.19E+00		62%	
Calc	TF	WATER	JWP2K2AC	RA-228	3.68E-01	(1.52E-01)		pCi/L	A	2.71E-01	6.26E-01		62%	
Calc	TF	WATER	JWP2K2AC	RA-228	2.54E-01	(1.19E+00)	U4	pCi/L	R	2.54E+00	5.85E+00		62%	
Calc	TF	WATER	JWP2L2AC	RA-228	8.37E-01	(2.83E-01)		pCi/L	R	3.84E-01	8.85E-01		70%	
Calc	TF	WATER	JWP2L2AC	RA-228	5.40E-01	(2.61E-01)		pCi/L	R	4.22E-01	9.73E-01		70%	
Calc	TF	WATER	JWP2L2AC	RA-228	6.52E-01	(2.97E-01)		pCi/L	R	4.69E-01	1.08E+00		70%	
Calc	TF	WATER	JWP2L2AC	RA-228	6.76E-01	(1.62E-01)		pCi/L	A	2.45E-01	5.65E-01		70%	
Calc	TF	WATER	JWP2L2AC	RA-228	5.02E-01	(1.09E+00)	U4	pCi/L	R	2.26E+00	5.20E+00		70%	
Calc	TF	WATER	JWP2N2AC	RA-228	1.46E+00	(3.62E-01)		pCi/L	R	3.64E-01	8.48E-01		66%	
Calc	TF	WATER	JWP2N2AC	RA-228	2.82E-01	(2.20E-01)	U4	pCi/L	R	4.00E-01	9.32E-01		66%	
Calc	TF	WATER	JWP2N2AC	RA-228	4.22E-01	(2.59E-01)	U4	pCi/L	R	4.44E-01	1.03E+00		66%	
Calc	TF	WATER	JWP2N2AC	RA-228	7.22E-01	(1.66E-01)		pCi/L	A	2.32E-01	5.42E-01		66%	
Calc	TF	WATER	JWP2N2AC	RA-228	1.36E+00	(1.25E+00)	U4	pCi/L	R	2.37E+00	5.48E+00		66%	
Calc	TF	WATER	JWP2P2AC	RA-228	6.23E-01	(2.28E-01)		pCi/L	R	3.42E-01	7.85E-01		77%	
Calc	TF	WATER	JWP2P2AC	RA-228	1.09E-01	(1.86E-01)	U4	pCi/L	R	3.79E-01	8.71E-01		77%	
Calc	TF	WATER	JWP2P2AC	RA-228	1.67E-01	(2.12E-01)	U4	pCi/L	R	4.21E-01	9.67E-01		77%	
Calc	TF	WATER	JWP2P2AC	RA-228	3.00E-01	(1.21E-01)		pCi/L	A	2.20E-01	5.05E-01		77%	
Calc	TF	WATER	JWP2P2AC	RA-228	1.71E+00	(1.12E+00)	U4	pCi/L	R	2.01E+00	4.64E+00		77%	
Calc	TF	WATER	JWW982AA	RA-228	2.53E-01	(1.99E-01)	U4	pCi/L	R	3.71E-01	8.54E-01	B	72%	
Calc	TF	WATER	JWW982AA	RA-228	-4.02E-02	(1.83E-01)	U4	pCi/L	R	4.12E-01	9.48E-01	B	72%	

() - (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

Page 2

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

RecCnt:78

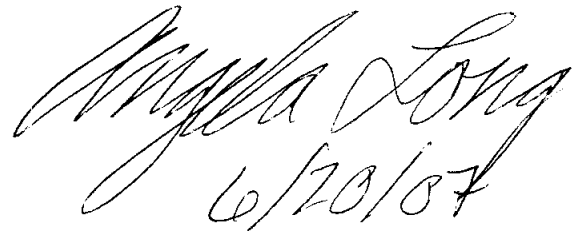
RADCALC v4.8.26

STL Richland

Alpha Beta, Ra-228 by GPC , Results

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYid
Calc	TF	WATER	JWW982AA	RA-228	1.59E-01	(2.28E-01)	U4	pCi/L	R	4.57E-01	1.05E+00	B	72%	
Calc	TF	WATER	JWW982AA	RA-228	1.24E-01	(1.18E-01)	U4	pCi/L	A	2.39E-01	5.49E-01	B	72%	
Calc	TF	WATER	JWW982AA	RA-228	1.75E+00	(1.20E+00)	U4	pCi/L	R	2.15E+00	4.99E+00	B	72%	
Calc	TF	WATER	JWW982AC	RA-228	1.71E+00	(3.66E-01)		pCi/L	R	3.69E-01	8.60E-01	S	64%	34%
Calc	TF	WATER	JWW982AC	RA-228	1.35E+00	(3.46E-01)		pCi/L	R	4.10E-01	9.55E-01	S	64%	27%
Calc	TF	WATER	JWW982AC	RA-228	1.72E+00	(4.09E-01)		pCi/L	R	4.54E-01	1.06E+00	S	64%	35%
Calc	TF	WATER	JWW982AC	RA-228	1.59E+00	(2.16E-01)		pCi/L	A	2.37E-01	5.53E-01	S	64%	32%
Calc	TF	WATER	JWW982AC	RA-228	1.21E+00	(1.95E+00)	U4	pCi/L	R	4.07E+00	8.88E+00	S	64%	24%


 6/20/07

() - (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 Significants
 Date/Time - mm/dd/yy hh:mm, 24hr Time

Batch Nbr: 7159396

Alpha Beta, Ra-228 by GPC , Calculated Results Detailed Report

6/20/2007 7:17:31 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	Analysis Date/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol		
1	Calc	TF	WATER	*STLE	Ra228WoBS	JWP172AC	pci/l	05/09/07	06:45	06/20/07	05:58	06/11/07	11:15	1	1000.80	g		
456833	M100-L									31.2		06/19/07	09:50	1	1000.80	g		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/19/07 14:09	RA-228	54	331	GPC7A	1	N	N	5.3665E-01	1.0000E+00	N	76%	N	1.5549E+00	4.5045E+02	1.0110E+00		
			50	400			Y		(1.607E-02)	(0.000E+00)		6%		(0.000E+00)	0.000999			
1	06/19/07 15:04	RA-228	52	331	GPC7A	1	N	N	5.3665E-01	1.0000E+00	N	76%	N	1.7256E+00	4.5045E+02	1.0110E+00		
			50	400			Y		(1.607E-02)	(0.000E+00)		6%		(0.000E+00)	0.000999			
2	06/19/07 15:59	RA-228	44	331	GPC7A	1	N	N	5.3665E-01	1.0000E+00	N	76%	N	1.9150E+00	4.5045E+02	1.0110E+00		
			50	400			Y		(1.607E-02)	(0.000E+00)		6%		(0.000E+00)	0.000999			
3	06/20/07 05:58	RA-228	45	304	GPC7A	1	N	N	5.3665E-01	1.0000E+00	N	76%	N	9.2984E+00	4.5045E+02	1.0110E+00		
			50	400			N		(1.607E-02)	(0.000E+00)		6%		(0.000E+00)	0.000999			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BIK,LC/MDC	StdDvMdc/LcC				
06/20/07	RA-228	R	0.44091	0.272165	U4	2.52500E-01	0.968934	0.968934	1.0008 L	76%		1.139221						
						(1.5385E-01)	(0.596138)	(0.596138)	(0.173205)			0.522599						
06/20/07	RA-228	R	0.411795	0.295872	U4	2.12500E-01	0.904951	0.904951	1.0008 L	76%		1.264275						
						(1.5122E-01)	(0.648625)	(0.648625)	(0.173205)			0.579966						
06/20/07	RA-228	R	0.112906	0.301816	U4	5.25000E-02	0.248119	0.248119	1.0008 L	76%		1.403056						
						(1.4025E-01)	(0.663148)	(0.663148)	(0.173205)			0.64363						
06/20/07	RA-228	A	0.32187	0.167567		1.72500E-01	0.707334	0.707334	1.0008 L	76%		0.732571						
						(8.5769E-02)	(0.367554)	(0.367554)	(0.10)			0.336055						
06/20/07	RA-228	R	1.461917	1.480153	U4	1.40000E-01	3.212674	3.212674	1.0008 L	76%		6.552424						
						(1.4107E-01)	(3.248779)	(3.248779)	(0.173205)			2.995005						
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	Analysis Date/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol		
2	Calc	TF	WATER	*STLE	Ra228WoBS	JWP182AC	pci/l	05/09/07	07:15	06/20/07	05:58	06/11/07	11:15	1	1002.00	g		
456833	M100-F									17.1		06/19/07	09:50	1	1002.00	g		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/19/07 14:09	RA-228	45	299	GPC7B	1	N	N	5.4041E-01	1.0000E+00	N	36%	N	1.5549E+00	4.5045E+02	1.0110E+00		
			50	400			Y		(1.553E-02)	(0.000E+00)		3%		(0.000E+00)	0.000999			
1	06/19/07 15:04	RA-228	34	299	GPC7B	1	N	N	5.4041E-01	1.0000E+00	N	36%	N	1.7256E+00	4.5045E+02	1.0110E+00		
			50	400			Y		(1.553E-02)	(0.000E+00)		3%		(0.000E+00)	0.000999			
2	06/19/07 15:59	RA-228	47	299	GPC7B	1	N	N	5.4041E-01	1.0000E+00	N	36%	N	1.9150E+00	4.5045E+02	1.0110E+00		
			50	400			Y		(1.553E-02)	(0.000E+00)		3%		(0.000E+00)	0.000999			

() - (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-228 by GPC, Calculated Results

Batch Nbr: 7159396

6/20/2007 05:58 RA-228 36 299 GPC7B 1 N N 5.4041E-01 1.0000E+00 N 36% N 9.2984E+00 4.5045E+02 1.0110E+00
 50 400 N N (1.553E-02) (0.000E+00) 3% (0.000E+00) 0.000998

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BIKl.cC/MDC	StdDvMdc/LcC
06/20/07	RA-228	R	0.560314	0.520841	U4	1.52500E-01 (1.4096E-01)	1.232818 (1.144309)	1.232818 (1.144309)	1.002 L (0.173205)	36%			2.288127	
06/20/07	RA-228	R	-0.275232	0.50786	U4	-6.75000E-02 (1.2437E-01)	-0.605573 (1.116997)	-0.605573 (1.116997)	1.002 L (0.173205)	36%			1.045113	
06/20/07	RA-228	R	0.871084	0.656206	U4	1.92500E-01 (1.4377E-01)	1.91658 (1.440617)	1.91658 (1.440617)	1.002 L (0.173205)	36%			2.539298	
06/20/07	RA-228	A	0.385389	0.326565	U4	9.25000E-02 (7.8885E-02)	0.847942 (0.717442)	0.847942 (0.717442)	1.002 L (0.10)	36%			1.159837	
06/20/07	RA-228	R	-0.604228	2.803129	U4	-2.75000E-02 (1.2755E-01)	-1.329437 (6.167157)	-1.329437 (6.167157)	1.002 L (0.173205)	36%			2.818041	
													1.287154	
													1.47137	
													0.672056	
													13.683147	
													6.249846	

Sq	Method	Matrix	Protocol	Equation	Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sept1/Sept2 Date	QC/Tracer	Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
3	Calc	TF	WATER	*STLE	Ra228WoBS	JWP192AC	pcI/L		05/09/07 07:30	06/20/07 05:58	06/11/07 11:15					
456883	M100-Z									30.5	06/19/07 09:50	rate26767	Alq	74%	1001.40 g	g

Sq	Calc Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/19/07 14:09	RA-228	60	392	GPC7C	1	N	N	5.1223E-01 (1.640E-02)	1.0000E+00 (0.000E+00)	N	66%	N		1.5549E+00 (0.000E+00)	4.5045E+02 0.000999	1.0110E+00	
1	06/19/07 15:04	RA-228	50	400	GPC7C	1	Y	N	5.1223E-01 (1.640E-02)	1.0000E+00 (0.000E+00)	N	5%	N		1.7256E+00 (0.000E+00)	4.5045E+02 0.000999	1.0110E+00	
2	06/19/07 15:59	RA-228	50	400	GPC7C	1	Y	N	5.1223E-01 (1.640E-02)	1.0000E+00 (0.000E+00)	N	5%	N		1.9150E+00 (0.000E+00)	4.5045E+02 0.000999	1.0110E+00	
3	06/20/07 05:58	RA-228	48	398	GPC7C	1	N	N	5.1223E-01 (1.640E-02)	1.0000E+00 (0.000E+00)	N	66%	N		9.2984E+00 (0.000E+00)	4.5045E+02 0.000999	1.0110E+00	

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BIKl.cC/MDC	StdDvMdc/LcC
06/20/07	RA-228	R	0.462638	0.345096	U4	2.20000E-01 (1.6263E-01)	1.017302 (0.75713)	1.017302 (0.75713)	1.0014 L (0.173205)	66%			1.482965	
06/20/07	RA-228	R	-0.046675	0.343416	U4	-2.00000E-02 (1.4714E-01)	-0.102634 (0.755126)	-0.102634 (0.755126)	1.0014 L (0.173205)	66%			0.684901	
06/20/07	RA-228	R	0.051798	0.38809	U4	2.00000E-02 (1.4983E-01)	0.1139 (0.853358)	0.1139 (0.853358)	1.0014 L (0.173205)	66%			1.645753	
06/20/07	RA-228	A	0.155921	0.207536	U4	7.33333E-02 (8.8537E-02)	0.342856 (0.456031)	0.342856 (0.456031)	1.0014 L (0.10)	66%			0.760083	
06/20/07	RA-228	R	-0.440142	1.852469	U4	-3.50000E-02 (1.4727E-01)	-0.967835 (4.073136)	-0.967835 (4.073136)	1.0014 L (0.173205)	66%			1.82641	
													0.843519	
													0.953615	
													0.440423	
													8.930644	
													4.126977	

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

Sq	Calc	TF	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	06/19/07	14:09	WATER	*STLE Ra228WoBS JWP2A2AC	JFE100384-4 v4.8.26	334	GPC1B	1	N	5.2370E-01	06/20/07 05:58	06/11/07 11:15	1	81%	1000.50 g		
						50			Y	(1.539E-02)	29.4	06/19/07 09:50	1				
Sq	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Bik Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	RA-228	52	400	GPC1B	1	N	N	1.0000E+00	1.0000E+00	N	69%	N	1.5554E+00	4.5045E+02	1.0110E+00		
		50	400					(0.000E+00)	(0.000E+00)		6%		(0.000E+00)	0.001			
1	RA-228	57	334	GPC1B	1	N	N	1.0000E+00	1.0000E+00	N	69%	N	1.7261E+00	4.5045E+02	1.0110E+00		
		50	400					(0.000E+00)	(0.000E+00)		6%		(0.000E+00)	0.001			
2	RA-228	38	334	GPC1B	1	N	N	1.0000E+00	1.0000E+00	N	69%	N	1.9156E+00	4.5045E+02	1.0110E+00		
		50	400					(0.000E+00)	(0.000E+00)		6%		(0.000E+00)	0.001			
3	RA-228	35	317	GPC1B	1	N	N	1.0000E+00	1.0000E+00	N	69%	N	9.3001E+00	4.5045E+02	1.0110E+00		
		50	400					(0.000E+00)	(0.000E+00)		6%		(0.000E+00)	0.001			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt	Rt	Dpm	Wo	Bik	Dpm-Bik	Vol Used	Yield,EntFct	Chem Yld,EFctU	IDC/ILcC	BikLcC/MDC	StdDv/Mdc/LcC
06/20/07	RA-228	R	0.399631	U4	2.05000E-01	0.877977		0.877977			0.877977	1.0005 L	69%				1.277088
			(0.297552)		(1.5129E-01)	(0.652237)		(0.652237)			(0.652237)	(0.173205)					0.586063
06/20/07	RA-228	R	0.65984	U4	3.05000E-01	1.449649		1.449649			1.449649	1.0005 L	69%				1.417276
			(0.347466)		(1.5776E-01)	(0.759924)		(0.759924)			(0.759924)	(0.173205)					0.650396
06/20/07	RA-228	R	-0.180067	U4	-7.50000E-02	-0.395602		-0.395602			-0.395602	1.0005 L	69%				1.572853
			(0.316175)		(1.3148E-01)	(0.694345)		(0.694345)			(0.694345)	(0.173205)					0.721791
06/20/07	RA-228	A	0.293135	U4	1.45000E-01	0.644008		0.644008			0.644008	1.0005 L	69%				0.821226
			(0.185363)		(8.5025E-02)	(0.406204)		(0.406204)			(0.406204)	(0.10)					0.376865
06/20/07	RA-228	R	-1.078197	U4	-9.25000E-02	-2.368769		-2.368769			-2.368769	1.0005 L	69%				7.455529
			(1.477386)		(1.2642E-01)	(3.243613)		(3.243613)			(3.243613)	(0.173205)					3.413909
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt	Rt	Dpm	Wo	Bik	Dpm-Bik	Vol Used	Yield,EntFct	Chem Yld,EFctU	IDC/ILcC	BikLcC/MDC	StdDv/Mdc/LcC
06/20/07	RA-228	R	0.399631	U4	2.05000E-01	0.877977		0.877977			0.877977	1.0005 L	69%				1.277088
			(0.297552)		(1.5129E-01)	(0.652237)		(0.652237)			(0.652237)	(0.173205)					0.586063
06/20/07	RA-228	R	0.65984	U4	3.05000E-01	1.449649		1.449649			1.449649	1.0005 L	69%				1.417276
			(0.347466)		(1.5776E-01)	(0.759924)		(0.759924)			(0.759924)	(0.173205)					0.650396
06/20/07	RA-228	R	-0.180067	U4	-7.50000E-02	-0.395602		-0.395602			-0.395602	1.0005 L	69%				1.572853
			(0.316175)		(1.3148E-01)	(0.694345)		(0.694345)			(0.694345)	(0.173205)					0.721791
06/20/07	RA-228	A	0.293135	U4	1.45000E-01	0.644008		0.644008			0.644008	1.0005 L	69%				0.821226
			(0.185363)		(8.5025E-02)	(0.406204)		(0.406204)			(0.406204)	(0.10)					0.376865
06/20/07	RA-228	R	-1.078197	U4	-9.25000E-02	-2.368769		-2.368769			-2.368769	1.0005 L	69%				7.455529
			(1.477386)		(1.2642E-01)	(3.243613)		(3.243613)			(3.243613)	(0.173205)					3.413909

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BIK/LcC/MDC	StdDv/MdC/LcC
06/20/07	RA-228	R	0.107913 (0.259136)	U4	5.50000E-02 (1.3196E-01)	0.237157 (0.569369)	0.237157 (0.569369)	1.0008 L (0.173205)	70%		1.204969			
06/20/07	RA-228	R	0.206857 (0.294595)	U4	9.50000E-02 (1.3495E-01)	0.454601 (0.647021)	0.454601 (0.647021)	1.0008 L (0.173205)	70%		1.33724			
06/20/07	RA-228	R	0.181235 (0.323028)	U4	7.50000E-02 (1.3346E-01)	0.398292 (0.709627)	0.398292 (0.709627)	1.0008 L (0.173205)	70%		1.484032			
06/20/07	RA-228	A	0.165335 (0.169406)	U4	7.50000E-02 (7.7055E-02)	0.36335 (0.372139)	0.36335 (0.372139)	1.0008 L (0.10)	70%		0.676932			
06/20/07	RA-228	R	0.205554 (1.044952)	U4	1.50000E-02 (7.6240E-02)	0.451738 (2.296335)	0.451738 (2.296335)	1.0008 L (0.173205)	70%		5.203258			2.231586

Sq Status Method Matrix Protocol Equation Set Wrk Ord Units/Matrix QC/BBSa/On Date AnalysisDate/PptWt Sept1/Sept2 Date QC/Tracer Vial Multi/EntYld Total/Analy Vol Final/Count Vol

Sq	Calc TF	Matrix	Method	WATER	WATER	STLE Ra228WoBS	JWP2D2AC	pC/L	WATER	456833.M2A-Z	06/11/07 11:15	06/19/07 09:50	rate26770 Alq	74%	1001.70 g
0	06/19/07 14:09	RA-228	63	302	GPC1D 1	N	N	5.2228E-01	1.0000E+00	N	66%	N	1.5554E+00	4.5045E+02	1.0110E+00
1	06/19/07 15:04	RA-228	43	302	GPC1D 1	N	N	5.2228E-01	1.0000E+00	N	66%	N	1.7261E+00	4.5045E+02	1.0110E+00
2	06/19/07 16:00	RA-228	53	302	GPC1D 1	N	N	5.2228E-01	1.0000E+00	N	66%	N	1.9150E+00	4.5045E+02	1.0110E+00
3	06/20/07 05:58	RA-228	19	95	GPC2B 1	N	N	4.5405E-01	1.0000E+00	N	66%	N	9.3030E+00	4.5045E+02	1.0110E+00

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BIK/LcC/MDC	StdDv/MdC/LcC
06/20/07	RA-228	R	1.038381 (0.354093)	U4	5.05000E-01 (1.6458E-01)	2.284048 (0.770453)	2.284048 (0.770453)	1.0017 L (0.173205)	66%		1.286362			
06/20/07	RA-228	R	0.239601 (0.316179)	U4	1.05000E-01 (1.3816E-01)	0.527032 (0.694975)	0.527032 (0.694975)	1.0017 L (0.173205)	66%		1.427568			
06/20/07	RA-228	R	0.772382 (0.392515)	U4	3.05000E-01 (1.5195E-01)	1.698951 (0.859197)	1.698951 (0.859197)	1.0017 L (0.173205)	66%		1.584274			
06/20/07	RA-228	A	0.683455 (0.205323)	U4	3.05000E-01 (8.7726E-02)	1.503344 (0.449049)	1.503344 (0.449049)	1.0017 L (0.10)	66%		0.82719			
06/20/07	RA-228	R	2.015916 (1.295931)	U4	1.42500E-01 (9.0519E-02)	4.434259 (2.841926)	4.434259 (2.841926)	1.0017 L (0.173205)	66%		5.300504			2.268221

0 - (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
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 RecCnt:7
 RADCALC v4.8.26
 STL Richland

Sq	Calc	TF	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		
7	456833	M13-L	WATER	*STLE	Ra228WobS	JWP2F2AC	pCi/L		05/09/07 10:35	06/20/07 05:58	06/11/07 11:15		1	74%	1000.70 g			
										31.4	06/19/07 09:50		rata26771	Alq		g		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/19/07 14:10	RA-228	26	95	GPC2A	1	N	N	4.3867E-01	1.0000E+00	N	68%	N	1.5566E+00	4.5045E+02	1.0110E+00		
			50	400			Y		(1.078E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
1	06/19/07 15:05	RA-228	20	95	GPC2A	1	N	N	4.3867E-01	1.0000E+00	N	68%	N	1.7275E+00	4.5045E+02	1.0110E+00		
			50	400			Y		(1.078E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
2	06/19/07 16:00	RA-228	17	95	GPC2A	1	N	N	4.3867E-01	1.0000E+00	N	68%	N	1.9172E+00	4.5045E+02	1.0110E+00		
			50	400			Y		(1.078E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
3	06/20/07 05:58	RA-228	19	94	GPC2C	1	N	N	4.3523E-01	1.0000E+00	N	68%	N	9.3030E+00	4.5045E+02	1.0110E+00		
			50	400			N		(1.143E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rtt	Dpm	Wo	Blk	Dpm-Blk	Vol Used	Yield,EntFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC		
06/20/07	RA-228	R	0.672178			2.82500E-01	1.477093		1.477093	1.477093	1.0007 L	68%		0.891509				
			(0.257945)			(1.0485E-01)	(0.561994)		(0.561994)	(0.561994)	(0.173205)			0.381499				
06/20/07	RA-228	R	0.429095			1.62500E-01	0.942923		0.942923	0.942923	1.0007 L	68%		0.989371				
			(0.248337)			(9.2702E-02)	(0.543674)		(0.543674)	(0.543674)	(0.173205)			0.423377				
06/20/07	RA-228	R	0.30038		U4	1.02500E-01	0.660076		0.660076	0.660076	1.0007 L	68%		1.098011				
			(0.253684)			(8.5987E-02)	(0.556485)		(0.556485)	(0.556485)	(0.173205)			0.469867				
06/20/07	RA-228	A	0.467218			1.82500E-01	1.026698		1.026698	1.026698	1.0007 L	68%		0.573288				
			(0.146273)			(5.4753E-02)	(0.319912)		(0.319912)	(0.319912)	(0.10)			0.245324				
06/20/07	RA-228	R	2.078271		U4	1.45000E-01	4.566942		4.566942	4.566942	1.0007 L	68%		5.346				
			(1.312781)			(9.0485E-02)	(2.875748)		(2.875748)	(2.875748)	(0.173205)			2.285936				

Sq	Calc	TF	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol		
8	456833	M13-F	WATER	*STLE	Ra228WobS	JWP2F2AC	pCi/L		05/09/07 11:30	06/20/07 05:58	06/11/07 11:15		1	83%	1001.50 g			
										27.5	06/19/07 09:50		rata26772	Alq		g		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/19/07 14:10	RA-228	35	102	GPC2B	1	N	N	4.5962E-01	1.0000E+00	N	66%	N	1.5566E+00	4.5045E+02	1.0109E+00		
			50	400			Y		(1.337E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
1	06/19/07 15:05	RA-228	25	102	GPC2B	1	N	N	4.5962E-01	1.0000E+00	N	66%	N	1.7275E+00	4.5045E+02	1.0109E+00		
			50	400			Y		(1.337E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
2	06/19/07 16:00	RA-228	14	102	GPC2B	1	N	N	4.5962E-01	1.0000E+00	N	66%	N	1.9172E+00	4.5045E+02	1.0109E+00		
			50	400			Y		(1.337E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
3	06/20/07 05:58	RA-228	23	92	GPC2D	1	N	N	4.4531E-01	1.0000E+00	N	66%	N	9.3030E+00	4.5045E+02	1.0109E+00		
			50	400			N		(1.180E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			

Batch Nbr: 7159396

Alpha Beta, Ra-228 by GPC

Calculated Results

6/20/2007 7:17:31 AM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BklcC/MDC	StdDvMdc/LcC
06/20/07	RA-228	R	1.037538	(0.300105)	4.45000E-01	2.281811	2.281811	(0.650073)	1.0015 L	66%		0.900621		
06/20/07	RA-228	R	0.633933	(0.274109)	2.45000E-01	1.394182	1.394182	(0.598792)	1.0015 L	66%		0.387356		
06/20/07	RA-228	R	0.07179	(0.226904)	2.50000E-02	0.157885	0.157885	(0.498957)	1.0015 L	66%		0.999484		
06/20/07	RA-228	A	0.581087	(0.155165)	7.8978E-02	1.277959	1.277959	(0.338314)	(0.10)	66%		0.429876		
06/20/07	RA-228	R	3.30789	(1.458417)	2.30000E-01	7.274898	7.274898	(3.18674)	1.0015 L	66%		1.109233		
					9.8869E-02	(3.18674)			(0.173205)			0.477079		
												0.579147		
												0.24909		
												5.315325		
												2.269254		

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

Sq	Calc	TF	WATER	*STLE	Ra228WoBS	JWP2G2AC	PC/L	WATER	05/09/07 11:15	06/20/07 05:58	06/11/07 11:15	1	g		
456833	M13-Z								31.0				1002.80 g		
0	06/19/07 14:10	RA-228	27	93	GPC2C 1	N	N	4.3579E-01	1.0000E+00	N	59%	N	1.5666E+00	4.5045E+02	1.0110E+00
1	06/19/07 15:05	RA-228	50	400	GPC2C 1	Y	Y	(1.144E-02)	(0.000E+00)	N	5%	N	(0.000E+00)	0.000997	
2	06/19/07 16:00	RA-228	18	93	GPC2C 1	N	N	4.3579E-01	1.0000E+00	N	59%	N	1.7275E+00	4.5045E+02	1.0110E+00
3	06/20/07 05:58	RA-228	50	400	GPC2C 1	Y	Y	(1.144E-02)	(0.000E+00)	N	5%	N	(0.000E+00)	0.000997	
			11	70	GPC3A 1	N	N	4.6533E-01	1.0000E+00	N	59%	N	1.9172E+00	4.5045E+02	1.0110E+00
			50	400		N	N	(4.137E-02)	(0.000E+00)	N	5%	N	(0.000E+00)	0.000997	
													9.3065E+00	4.5045E+02	1.0110E+00
													(0.000E+00)	0.000997	

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BklcC/MDC	StdDvMdc/LcC
06/20/07	RA-228	R	0.845149	(0.304669)	3.07500E-01	1.861105	1.861105	(0.664429)	1.0028 L	59%		1.020466		
06/20/07	RA-228	R	0.388895	(0.27174)	1.27500E-01	0.856386	0.856386	(0.596866)	1.0028 L	59%		0.436009		
06/20/07	RA-228	R	0.025388	(0.248332)	7.50000E-03	0.055907	0.055907	(0.546845)	1.0028 L	59%		1.132485		
06/20/07	RA-228	A	0.419811	(0.159281)	1.47500E-01	0.924466	0.924466	(0.349087)	(0.10)	59%		0.483871		
06/20/07	RA-228	R	0.692511	(1.074106)	4.50000E-02	1.524981	1.524981	(2.364062)	1.0028 L	59%		1.256839		
					(6.9552E-02)	(2.364062)			(0.173205)			0.537003		
												0.656214		
												0.280377		
												5.067608		
												2.118016		

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

Batch Nbr: 7159396

Alpha Beta, Ra-228 by GPC , Calculated Results

6/20/2007 7:17:31 AM

Sq	Calc	TF	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	
10	456833	M76-L	WATER		*STLE	Ra228WobS	JWP2H2AC	pCi/L		05/09/07 12:45	06/20/07 05:58	06/11/07 11:15			1			
											30.4	06/19/07 09:50	rata26774	Alq	76%	1000.10 g		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/19/07 14:10	RA-228	32	111	GPC2D	1	N	N	4.4074E-01	1.0000E+00	N	67%	N	1.5566E+00	4.5045E+02	1.0109E+00		
			50	400			Y		(1.168E-02)	(0.000E+00)		5%		(0.000E+00)	0.001			
1	06/19/07 15:05	RA-228	22	111	GPC2D	1	N	N	4.4074E-01	1.0000E+00	N	67%	N	1.7275E+00	4.5045E+02	1.0109E+00		
			50	400			Y		(1.168E-02)	(0.000E+00)		5%		(0.000E+00)	0.001			
2	06/19/07 16:00	RA-228	12	111	GPC2D	1	N	N	4.4074E-01	1.0000E+00	N	67%	N	1.9172E+00	4.5045E+02	1.0109E+00		
			50	400			Y		(1.168E-02)	(0.000E+00)		5%		(0.000E+00)	0.001			
3	06/20/07 05:58	RA-228	16	87	GPC3B	1	N	N	4.8339E-01	1.0000E+00	N	67%	N	9.3065E+00	4.5045E+02	1.0109E+00		
			50	400			N		(5.399E-02)	(0.000E+00)		5%		(0.000E+00)	0.001			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EntFct	Chem Yld,EFctU	IDC/LcC	BIK/LcC	StdDvMdc/LcC				
06/20/07	RA-228	R	0.866701			3.62500E-01	1.903465	1.903465	1.0001 L	67%			0.957835					
			(0.290428)			(1.1616E-01)	(0.630702)	(0.630702)	(0.173205)				0.41437					
06/20/07	RA-228	R	0.43117			1.62500E-01	0.946943	0.946943	1.0001 L	67%			1.062978					
			(0.261961)			(9.7436E-02)	(0.573373)	(0.573373)	(0.173205)				0.459856					
06/20/07	RA-228	R	-0.110427		U4	-3.75000E-02	-0.242521	-0.242521	1.0001 L	67%			1.1797					
			(0.218529)			(7.4120E-02)	(0.479785)	(0.479785)	(0.173205)				0.510352					
06/20/07	RA-228	A	0.395815			1.62500E-01	0.869296	0.869296	1.0001 L	67%			0.615939					
			(0.149342)			(5.6255E-02)	(0.326043)	(0.326043)	(0.10)				0.266462					
06/20/07	RA-228	R	1.335922		U4	1.02500E-01	2.933977	2.933977	1.0001 L	67%			4.703598					
			(1.103485)			(8.3329E-02)	(2.419051)	(2.419051)	(0.173205)				1.999782					

11 Calc TF WATER *STLE Ra228WobS JWP2J2AC pCi/L 05/09/07 13:05 06/20/07 05:58 06/11/07 11:15
 456833,M76-F ,F7E100384-11 v4.8.26 WATER 29.8 06/19/07 09:50 rata26775 Alq 79% 1001.70 g

Sq Cnt Date Parameter Sample Cnt Bkgrnd Cnt Instr Geom Trc/Av Ent Efficiency1 Efficiency2 Ent Yld Fct Ent Blk Value Ingr Fct Conv Fct/VolAdj Decay Abn
 0 06/19/07 14:10 RA-228 26 101 GPC3A 1 N N 4.6103E-01 1.0000E+00 N 68% N 1.5574E+00 4.5045E+02 1.0109E+00
 50 400 Y (4.099E-02) (0.000E+00) 5%
 1 06/19/07 15:00 RA-228 14 101 GPC3A 1 N N 4.6103E-01 1.0000E+00 N 68% N 1.7121E+00 4.5045E+02 1.0109E+00
 50 400 Y (4.099E-02) (0.000E+00) 5%
 2 06/19/07 15:55 RA-228 14 101 GPC3A 1 N N 4.6103E-01 1.0000E+00 N 68% N 1.9001E+00 4.5045E+02 1.0109E+00
 50 400 Y (4.099E-02) (0.000E+00) 5%
 3 06/20/07 05:58 RA-228 22 86 GPC3C 1 N N 4.6422E-01 1.0000E+00 N 68% N 9.3065E+00 4.5045E+02 1.0109E+00
 50 400 N (4.565E-02) (0.000E+00) 5%

Batch Nbr: 7159396 **Alpha Beta, Ra-228 by GPC** **Calculated Results** 6/20/2007 7:17:32 AM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIK/LcC/MDC	StdDvMdc/LcC
06/20/07	RA-228	R	0.602861	2.67500E-01	1.32614	1.32614	1.0017 L	0.866868	68%					
			(0.249272)	(1.0503E-01)	(0.54431)	(0.54431)	(0.173205)	0.37258						
06/20/07	RA-228	R	0.068132	2.75000E-02	0.149874	0.149874	1.0017 L	0.952973	68%					
			(0.195772)	(7.8938E-02)	(0.430583)	(0.430583)	(0.173205)	0.409588						
06/20/07	RA-228	R	0.075611	2.75000E-02	0.166326	0.166326	1.0017 L	1.057583	68%					
			(0.217262)	(7.8938E-02)	(0.477849)	(0.477849)	(0.173205)	0.45455						
06/20/07	RA-228	A	0.248868	1.07500E-01	0.547446	0.547446	1.0017 L	0.553761	68%					
			(0.128091)	(5.1092E-02)	(0.280875)	(0.280875)	(0.10)	0.238007						
06/20/07	RA-228	R	3.009259	2.25000E-01	6.619596	6.619596	1.0017 L	4.803056	68%					
			(1.355888)	(9.6631E-02)	(2.964184)	(2.964184)	(0.173205)	2.040291						

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
12	Calc TF WATER	*STLE Ra228WoBS JWP2K2AC	pC/L	06/20/07 05:58	06/11/07 11:15	06/19/07 09:50	27.1	06/11/07 11:15	1	79%	1001.40 g	
456833,M76-Z		.F7E100384-12 v4.8.26	WATER									

Sq	Calc Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv FctV/Adj	Decay	Abn
0	06/19/07 14:10	RA-228	23	113	GPC3B	1	N	N	4.7190E-01	1.0000E+00	N	62%	N	1.5574E+00	4.5045E+02	1.0109E+00		
			50	400			Y	(5.271E-02)	(0.000E+00)		5%			(0.000E+00)	0.0000999			
1	06/19/07 15:00	RA-228	18	113	GPC3B	1	N	N	4.7190E-01	1.0000E+00	N	62%	N	1.7121E+00	4.5045E+02	1.0109E+00		
			50	400			Y	(5.271E-02)	(0.000E+00)		5%			(0.000E+00)	0.0000999			
2	06/19/07 15:55	RA-228	22	113	GPC3B	1	N	N	4.7190E-01	1.0000E+00	N	62%	N	1.9001E+00	4.5045E+02	1.0109E+00		
			50	400			Y	(5.271E-02)	(0.000E+00)		5%			(0.000E+00)	0.0000999			
3	06/20/07 05:58	RA-228	15	113	GPC3D	1	N	N	4.7172E-01	1.0000E+00	N	62%	N	9.3065E+00	4.5045E+02	1.0109E+00		
			50	400			N	(4.461E-02)	(0.000E+00)		5%			(0.000E+00)	0.0000999			

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIK/LcC/MDC	StdDvMdc/LcC
06/20/07	RA-228	R	0.430597	1.77500E-01	0.946925	0.946925	1.0014 L	0.979393	62%					
			(0.249523)	(9.9530E-02)	(0.546679)	(0.546679)	(0.173205)	0.424207						
06/20/07	RA-228	R	0.206682	7.75000E-02	0.454513	0.454513	1.0014 L	1.076675	62%					
			(0.239047)	(8.8917E-02)	(0.525197)	(0.525197)	(0.173205)	0.466343						
06/20/07	RA-228	R	0.466138	1.57500E-01	1.025083	1.025083	1.0014 L	1.194864	62%					
			(0.296501)	(9.7500E-02)	(0.650017)	(0.650017)	(0.173205)	0.517534						
06/20/07	RA-228	A	0.367805	1.37500E-01	0.808841	0.808841	1.0014 L	0.625642	62%					
			(0.151774)	(5.5095E-02)	(0.332868)	(0.332868)	(0.10)	0.270986						
06/20/07	RA-228	R	0.253776	1.75000E-02	0.558078	0.558078	1.0014 L	5.854596	62%					
			(1.188034)	(8.1892E-02)	(2.612456)	(2.612456)	(0.173205)	2.535814						

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

Page 8 RecCnt:13 RADCALC v4.8.26
 STL Richland

Alpha Beta, Ra-228 by GPC , Calculated Results

Batch Nbr: 7159396 6/20/2007 7:17:32 AM

Sq		Calc	TF	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
13	06/19/07 14:10	RA-228	34	117	GPC3C 1	N	N	N	4.7131E-01	1.0000E+00	N	70%	N	1.5574E+00	4.5045E+02	1.0109E+00			
456833,M31A-F			50	400		Y			(4.635E-02)	(0.000E+00)		6%		(0.000E+00)	0.001				
	06/19/07 15:00	RA-228	26	117	GPC3C 1	N	N	N	4.7131E-01	1.0000E+00	N	70%	N	1.7121E+00	4.5045E+02	1.0109E+00			
			50	400		Y			(4.635E-02)	(0.000E+00)		6%		(0.000E+00)	0.001				
2	06/19/07 15:55	RA-228	27	117	GPC3C 1	N	N	N	4.7131E-01	1.0000E+00	N	70%	N	1.9001E+00	4.5045E+02	1.0109E+00			
			50	400		Y			(4.635E-02)	(0.000E+00)		6%		(0.000E+00)	0.001				
3	06/20/07 05:59	RA-228	17	120	GPC4A 1	N	N	N	4.8471E-01	1.0000E+00	N	70%	N	9.3103E+00	4.5045E+02	1.0109E+00			
			50	400		N			(2.056E-02)	(0.000E+00)		6%		(0.000E+00)	0.001				
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EntFct	Chem Yld,EFctU	IDC/ILcC	BIK/CC/MDC	StdDevMdc/LcC					
06/20/07	RA-228	R	0.836774	3.87500E-01	1.837602	1.837602	1.837602	1.00 L	70%	0.885051									
			(0.282544)	(1.1971E-01)	(0.613641)	(0.613641)	(0.613641)	(0.173205)		0.384234									
06/20/07	RA-228	R	0.540064	2.27500E-01	1.186011	1.186011	1.00 L	70%	0.972962										
			(0.261048)	(1.0550E-01)	(0.570201)	(0.570201)	(0.173205)		0.422399										
06/20/07	RA-228	R	0.652038	2.47500E-01	1.431911	1.431911	1.00 L	70%	1.079766										
			(0.296528)	(1.0738E-01)	(0.647244)	(0.647244)	(0.173205)		0.468766										
06/20/07	RA-228	A	0.676292	2.87500E-01	1.485175	1.485175	1.00 L	70%	0.565376										
			(0.1619)	(6.4113E-02)	(0.352863)	(0.352863)	(0.10)		0.245451										
06/20/07	RA-228	R	0.502078	4.00000E-02	1.102591	1.102591	1.00 L	70%	5.201372										
			(1.091884)	(8.6891E-02)	(2.397204)	(2.397204)	(0.173205)		2.261871										

14 Calc TF 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

456833,M31A-Z WATER *STLE Ra228WoBS JWP2N2AC pCi/L 05/09/07 14:15 06/20/07 05:59 06/11/07 11:15

_,7FE100384-14.v4.8.26 WATER 31.3 06/19/07 09:50 rata26778 Alq 72% 1000.90 g

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	06/19/07 14:10	RA-228	45	98	GPC3D 1	N	N	N	4.8274E-01	1.0000E+00	N	66%	N	1.5574E+00	4.5045E+02	1.0109E+00		
			50	400		Y			(4.565E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
1	06/19/07 15:00	RA-228	18	98	GPC3D 1	N	N	N	4.8274E-01	1.0000E+00	N	66%	N	1.7121E+00	4.5045E+02	1.0109E+00		
			50	400		Y			(4.565E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
2	06/19/07 15:55	RA-228	20	98	GPC3D 1	N	N	N	4.8274E-01	1.0000E+00	N	66%	N	1.9001E+00	4.5045E+02	1.0109E+00		
			50	400		Y			(4.565E-02)	(0.000E+00)		5%		(0.000E+00)	0.000999			
3	06/20/07 05:59	RA-228	19	112	GPC4B 1	N	N	N	4.7297E-01	1.0000E+00	N	66%	N	9.3103E+00	4.5045E+02	1.0109E+00		
			50	400		N			(9.024E-03)	(0.000E+00)		5%		(0.000E+00)	0.000999			

06/11/07 11:15 06/19/07 09:50 rata26778 Alq 77% 1000.00 g

RecCnt:14 RADCALC v4.8.26 STL Richland

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

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rtt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
06/20/07	RA-228	R	1.462642 (0.361911)	6.55000E-01 (1.3643E-01)	U4	3.214918 (0.779078)	3.214918 (0.779078)	1.0009L (0.173205)	66%	0.847886	0.847886			
06/20/07	RA-228	R	0.282307 (0.220232)	1.15000E-01 (8.8388E-02)	U4	0.620518 (0.48308)	0.620518 (0.48308)	1.0009L (0.173205)	66%	0.932105	0.932105			
06/20/07	RA-228	R	0.422269 (0.259042)	1.55000E-01 (9.2804E-02)	U4	0.928157 (0.567485)	0.928157 (0.567485)	1.0009L (0.173205)	66%	1.034424	1.034424			
06/20/07	RA-228	A	0.722406 (0.165524)	3.08333E-01 (6.2394E-02)		1.587864 (0.359377)	1.587864 (0.359377)	1.0009L (0.10)	66%	0.443646	0.443646			
06/20/07	RA-228	R	1.362497 (1.248202)	1.00000E-01 (9.1104E-02)	U4	2.994799 (2.739487)	2.994799 (2.739487)	1.0009L (0.173205)	66%	5.479612	5.479612			

Sq Status Method 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

Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv FctVoiAdj	Decay	Abn	
15	Calc TF	WATER				PCV/L													
456833	EB050709-Z					WATER													
0	06/19/07 14:05	RA-228	32	123	GPC4A	1	N	N	4.8463E-01 (2.055E-02)	1.0000E+00 (0.000E+00)	N	77%	N	1.5437E+00 (0.000E+00)	4.5045E+02 (0.000E+00)	1.0109E+00 (0.000E+00)			
1	06/19/07 15:00	RA-228	18	123	GPC4A	1	N	N	4.8463E-01 (2.055E-02)	1.0000E+00 (0.000E+00)	N	77%	N	1.7131E+00 (0.000E+00)	4.5045E+02 (0.000E+00)	1.0109E+00 (0.000E+00)			
2	06/19/07 15:56	RA-228	19	123	GPC4A	1	N	N	4.8463E-01 (2.055E-02)	1.0000E+00 (0.000E+00)	N	77%	N	1.9012E+00 (0.000E+00)	4.5045E+02 (0.000E+00)	1.0109E+00 (0.000E+00)			
3	06/20/07 05:59	RA-228	22	116	GPC4C	1	N	N	4.8160E-01 (1.241E-02)	1.0000E+00 (0.000E+00)	N	77%	N	9.3103E+00 (0.000E+00)	4.5045E+02 (0.000E+00)	1.0109E+00 (0.000E+00)			

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rtt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BikLcC/MDC	StdDvMdc/LcC
06/20/07	RA-228	R	0.623021 (0.227578)	3.32500E-01 (1.1648E-01)	U4	1.369712 (0.49562)	1.369712 (0.49562)	1.0011L (0.173205)	77%	0.784842	0.784842			
06/20/07	RA-228	R	0.10917 (0.18597)	5.25000E-02 (8.9268E-02)	U4	0.240011 (0.408678)	0.240011 (0.408678)	1.0011L (0.173205)	77%	0.870995	0.870995			
06/20/07	RA-228	R	0.167308 (0.211818)	7.25000E-02 (9.1481E-02)	U4	0.367826 (0.465318)	0.367826 (0.465318)	1.0011L (0.173205)	77%	0.37937	0.37937			
06/20/07	RA-228	A	0.299833 (0.120758)	1.52500E-01 (5.7645E-02)		0.659183 (0.264403)	0.659183 (0.264403)	1.0011L (0.10)	77%	0.966606	0.966606			
06/20/07	RA-228	R	1.705845 (1.122359)	1.50000E-01 (9.7596E-02)	U4	3.750298 (2.460369)	3.750298 (2.460369)	1.0011L (0.173205)	77%	0.421014	0.421014			

Sq	Calc	TF	Matrix	Protocol	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	TF	WATER	*STLE	Ra228WoBS	JW982AA	pCi/L	B	05/09/07 06:45	06/20/07 05:59	06/11/07 11:15	rata26780	Alq	78%	1003.50	g		
0	INTRA-LAB BLANK																	
Sq <th>Cnt Date</th> <th>Parameter</th> <th>Sample Cnt</th> <th>Bkgrnd Cnt</th> <th>Instr</th> <th>Geom</th> <th>Trc/Av</th> <th>Ent</th> <th>Efficiency1</th> <th>Efficiency2</th> <th>Ent</th> <th>Yld Fct</th> <th>Ent</th> <th>Blk Value</th> <th>Ingr Fct</th> <th>Conv Fct/Vol/Adj</th> <th>Decay</th> <th>Abn</th>	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/Vol/Adj	Decay	Abn
0	06/19/07 14:05	RA-228	21	119	GPC4B 1	N	N	4.7321E-01	1.0000E+00	N	72%	N		1.5437E+00	4.5045E+02	1.0110E+00		
			50	400		Y		(9.029E-03)	(0.000E+00)		6%			(0.000E+00)	0.000997			
1	06/19/07 15:00	RA-228	14	119	GPC4B 1	N	N	4.7321E-01	1.0000E+00	N	72%	N		1.7131E+00	4.5045E+02	1.0110E+00		
			50	400		Y		(9.029E-03)	(0.000E+00)		6%			(0.000E+00)	0.000997			
2	06/19/07 15:56	RA-228	18	119	GPC4B 1	N	N	4.7321E-01	1.0000E+00	N	72%	N		1.9012E+00	4.5045E+02	1.0110E+00		
			50	400		Y		(9.029E-03)	(0.000E+00)		6%			(0.000E+00)	0.000997			
3	06/20/07 05:59	RA-228	20	105	GPC4D 1	N	N	4.6301E-01	1.0000E+00	N	72%	N		9.3103E+00	4.5045E+02	1.0110E+00		
			50	400		N		(2.144E-02)	(0.000E+00)		6%			(0.000E+00)	0.000997			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt	Rt	Dpm	Wo	Blk	Dpm-Blk	Vol Used	Yield,EntFct	Chem	Yld,EntFctU	IDC/ILcC	BIkLcC/MDC	StdDvMdc/LcC
06/20/07	RA-228	R	0.253427		U4	1.22500E-01		0.558428		0.558428		1.0035 L	72%					0.854171
			(0.199322)			(9.5623E-02)		(0.438319)		(0.438319)		(0.173205)						0.371242
06/20/07	RA-228	R	-0.040178		U4	-1.75000E-02		-0.088533		-0.088533		1.0035 L	72%					0.947935
			(0.182903)			(7.9648E-02)		(0.403003)		(0.403003)		(0.173205)						0.411993
06/20/07	RA-228	R	0.159245		U4	6.25000E-02		0.350896		0.350896		1.0035 L	72%					1.051991
			(0.227606)			(8.9128E-02)		(0.501224)		(0.501224)		(0.173205)						0.457219
06/20/07	RA-228	A	0.124165		U4	5.58333E-02		0.273597		0.273597		1.0035 L	72%					0.549271
			(0.117845)			(5.1024E-02)		(0.259436)		(0.259436)		(0.10)						0.238725
06/20/07	RA-228	R	1.75345		U4	1.37500E-01		3.863734		3.863734		1.0035 L	72%					4.987761
			(1.200691)			(9.3039E-02)		(2.638664)		(2.638664)		(0.173205)						2.149568

Sq	Calc	TF	Matrix	Protocol	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	TF	WATER	*STLE	Ra228WoBS	JW982AC	pCi/L	S	05/09/07 06:45	06/20/07 06:51	06/11/07 11:15	rasc4433	Alq	71%	1000.60	g		
0	INTRA-LAB CHECK																	
Sq <th>Cnt Date</th> <th>Parameter</th> <th>Sample Cnt</th> <th>Bkgrnd Cnt</th> <th>Instr</th> <th>Geom</th> <th>Trc/Av</th> <th>Ent</th> <th>Efficiency1</th> <th>Efficiency2</th> <th>Ent</th> <th>Yld Fct</th> <th>Ent</th> <th>Blk Value</th> <th>Ingr Fct</th> <th>Conv Fct/Vol/Adj</th> <th>Decay</th> <th>Abn</th>	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/Vol/Adj	Decay	Abn
0	06/19/07 14:05	RA-228	50	98	GPC4C 1	N	N	4.8165E-01	1.0000E+00	N	64%	N		1.5437E+00	4.5045E+02	1.0110E+00		
			50	400		Y		(1.241E-02)	(0.000E+00)		5%			(0.000E+00)	0.000999			
1	06/19/07 15:00	RA-228	39	98	GPC4C 1	N	N	4.8165E-01	1.0000E+00	N	64%	N		1.7131E+00	4.5045E+02	1.0110E+00		
			50	400		Y		(1.241E-02)	(0.000E+00)		5%			(0.000E+00)	0.000999			
2	06/19/07 15:56	RA-228	43	98	GPC4C 1	N	N	4.8165E-01	1.0000E+00	N	64%	N		1.9012E+00	4.5045E+02	1.0110E+00		
			50	400		Y		(1.241E-02)	(0.000E+00)		5%			(0.000E+00)	0.000999			
3	06/20/07 06:51	RA-228	44	317	GPC1B 1	N	N	5.2325E-01	1.0000E+00	N	64%	N		1.0273E+01	4.5045E+02	1.0110E+00		
			50	400		N		(1.537E-02)	(0.000E+00)		5%			(0.000E+00)	0.000999			

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BIKLC/MDC	StdDvMdc/LcC
06/20/07	RA-228	R	1.710883 (0.365842)	7.55000E-01 (1.4357E-01)	3.759043 (0.781522)	3.759043 (0.781522)	1.0006 L (0.173205)	64%	34%	0.860427	0.369022			
06/20/07	RA-228	R	1.345429 (0.346186)	5.35000E-01 (1.2733E-01)	2.956091 (0.746119)	2.956091 (0.746119)	1.0006 L (0.173205)	64%	27%	0.954877	0.40953			
06/20/07	RA-228	R	1.716389 (0.408553)	6.15000E-01 (1.3346E-01)	3.77114 (0.877619)	3.77114 (0.877619)	1.0006 L (0.173205)	64%	35%	1.059696	0.454485			
06/20/07	RA-228	A	1.5909 (0.216179)	6.35000E-01 (7.7918E-02)	3.495425 (0.464003)	3.495425 (0.464003)	1.0006 L (0.10)	64%	32%	0.553294	0.237298			
06/20/07	RA-228	R	1.214638 (1.946195)	8.75000E-02 (1.3993E-01)	2.668726 (4.273974)	2.668726 (4.273974)	1.0006 L (0.173205)	64%	24%	8.878936	4.065691			

UST Number: JWP172AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-A File: [quad7.sample.A]JWP172AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD7.BKGRND]CURRENT.A_1;3295

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00054	0050	01156	1700	19-JUN-2007 14:09:25.74
2	00000	00052	0050	01161	1700	19-JUN-2007 15:04:41.41
3	00000	00044	0050	01177	1700	19-JUN-2007 15:59:57.07

Bkg File: [quad7.bkgrnd]2007-06-19_0431.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00331	0400	0.83	09244	1700	19-JUN-2007 04:31:43.53

OK
AL 6/20/07

UST Number: JWP172AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-A File: [quad7.sample.A]JWP172AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD7.BKGRND]CURRENT.A_1;3296

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00045	0050	01153	1700	20-JUN-2007 05:58:24.03

Bkg File: [quad7.bkgrnd]2007-06-20_0227.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00304	0400	0.76	09230	1700	20-JUN-2007 02:27:56.52

UST Number: JWP182AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-B File: [quad7.sample.B]JWP182AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD7.BKGRND]CURRENT.B_1;3282

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00045	0050	01156	1700	19-JUN-2007 14:09:25.74
2	00000	00034	0050	01161	1700	19-JUN-2007 15:04:41.41
3	00000	00047	0050	01177	1700	19-JUN-2007 15:59:57.07

Bkg File: [quad7.bkgrnd]2007-06-19_0431.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00299	0400	0.75	09244	1700	19-JUN-2007 04:31:43.53

UST Number: JWP182AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-B File: [quad7.sample.B]JWP182AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD7.BKGRND]CURRENT.B_1;3283

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00036	0050	01153	1700	20-JUN-2007 05:58:24.03

Bkg File: [quad7.bkgrnd]2007-06-20_0227.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00299	0400	0.75	09230	1700	20-JUN-2007 02:27:56.52

UST Number: JWP192AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-C File: [quad7.sample.C]JWP192AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD7.BKGRND]CURRENT.C_1;3287

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00060	0050	01156	1700	19-JUN-2007 14:09:25.74
2	00000	00048	0050	01161	1700	19-JUN-2007 15:04:41.41
3	00000	00050	0050	01177	1700	19-JUN-2007 15:59:57.07

Bkg File: [quad7.bkgrnd]2007-06-19_0431.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00392	0400	0.98	09244	1700	19-JUN-2007 04:31:43.53

UST Number: JWP192AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-C File: [quad7.sample.C]JWP192AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD7.BKGRND]CURRENT.C_1;3288

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00048	0050	01153	1700	20-JUN-2007 05:58:24.03

Bkg File: [quad7.bkgrnd]2007-06-20_0227.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00398	0400	1.00	09230	1700	20-JUN-2007 02:27:56.52

UST Number: JWP2A2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-B File: [quad1.sample.B]JWP2A2AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD1.BKGRND]CURRENT.B_1;3344

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00052	0050	01164	1650	19-JUN-2007 14:09:35.84
2	00000	00057	0050	01152	1650	19-JUN-2007 15:04:51.41
3	00000	00038	0050	01178	1650	19-JUN-2007 16:00:07.17

Bkg File: [quad1.bkgrnd]2007-06-19_0430.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00334	0400	0.84	09263	1650	19-JUN-2007 04:30:22.45

UST Number: JWP2A2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-B File: [quad1.sample.B]JWP2A2AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD1.BKGRND]CURRENT.B_1;3345

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00035	0050	01162	1650	20-JUN-2007 05:58:30.60

Bkg File: [quad1.bkgrnd]2007-06-20_0226.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00317	0400	0.79	09320	1650	20-JUN-2007 02:26:51.45

UST Number: JWP2C2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-C File: [quad1.sample.C]JWP2C2AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD1.BKGRND]CURRENT.C_1;3341

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00039	0050	01164	1650	19-JUN-2007 14:09:35.84
2	00000	00041	0050	01152	1650	19-JUN-2007 15:04:51.41
3	00000	00040	0050	01178	1650	19-JUN-2007 16:00:07.17

Bkg File: [quad1.bkgrnd]2007-06-19_0430.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00290	0400	0.73	09263	1650	19-JUN-2007 04:30:22.45

UST Number: JWP2C2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-A File: [quad2.sample.A]JWP2C2AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.A_1;3884

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00013	0050	01170	1810	20-JUN-2007 05:58:40.30

Bkg File: [quad2.bkgrnd]2007-06-20_0226.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00098	0400	0.25	09400	1810	20-JUN-2007 02:26:55.73

UST Number: JWP2D2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-D File: [quad1.sample.D]JWP2D2AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD1.BKGRND]CURRENT.D_1;3344

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00063	0050	01164	1650	19-JUN-2007 14:09:35.84
2	00000	00043	0050	01152	1650	19-JUN-2007 15:04:51.41
3	00000	00053	0050	01178	1650	19-JUN-2007 16:00:07.17

Bkg File: [quad1.bkgrnd]2007-06-19_0430.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00302	0400	0.76	09263	1650	19-JUN-2007 04:30:22.45

UST Number: JWP2D2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-B File: [quad2.sample.B]JWP2D2AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.B_1;3881

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01170	1810	20-JUN-2007 05:58:40.30

Bkg File: [quad2.bkgrnd]2007-06-20_0226.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00095	0400	0.24	09400	1810	20-JUN-2007 02:26:55.73

UST Number: JWP2E2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-A File: [quad2.sample.A]JWP2E2AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.A_1;3883

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00026	0050	01181	1810	19-JUN-2007 14:10:00.21
2	00000	00020	0050	01164	1810	19-JUN-2007 15:05:16.21
3	00000	00017	0050	01175	1810	19-JUN-2007 16:00:33.47

Bkg File: [quad2.bkgrnd]2007-06-19_0430.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00095	0400	0.24	09372	1810	19-JUN-2007 04:30:31.33

UST Number: JWP2E2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-C File: [quad2.sample.C]JWP2E2AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.C_1;3882

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01170	1810	20-JUN-2007 05:58:40.30

Bkg File: [quad2.bkgrnd]2007-06-20_0226.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00094	0400	0.24	09400	1810	20-JUN-2007 02:26:55.73

UST Number: JWP2F2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-B File: [quad2.sample.B]JWP2F2AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.B_1;3880

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00035	0050	01181	1810	19-JUN-2007 14:10:00.21
2	00000	00025	0050	01164	1810	19-JUN-2007 15:05:16.21
3	00000	00014	0050	01175	1810	19-JUN-2007 16:00:33.47

Bkg File: [quad2.bkgrnd]2007-06-19_0430.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00102	0400	0.26	09372	1810	19-JUN-2007 04:30:31.33

UST Number: JWP2F2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-D File: [quad2.sample.D]JWP2F2AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.D_1;3881

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00023	0050	01170	1810	20-JUN-2007 05:58:40.30

Bkg File: [quad2.bkgrnd]2007-06-20_0226.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00092	0400	0.23	09400	1810	20-JUN-2007 02:26:55.73

UST Number: JWP2G2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-C File: [quad2.sample.C]JWP2G2AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.C_1;3881

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00027	0050	01181	1810	19-JUN-2007 14:10:00.21
2	00000	00018	0050	01164	1810	19-JUN-2007 15:05:16.21
3	00000	00012	0050	01175	1810	19-JUN-2007 16:00:33.47

Bkg File: [quad2.bkgrnd]2007-06-19_0430.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00093	0400	0.23	09372	1810	19-JUN-2007 04:30:31.33

UST Number: JWP2G2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JWP2G2AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.A_1;5801

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00011	0050	01264	1920	20-JUN-2007 05:58:52.71

Bkg File: [quad3.bkgrnd]2007-06-20_0221.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00070	0400	0.18	10079	1920	20-JUN-2007 02:21:58.38

UST Number: JWP2H2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-D File: [quad2.sample.D]JWP2H2AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.D_1;3880

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00032	0050	01181	1810	19-JUN-2007 14:10:00.21
2	00000	00022	0050	01164	1810	19-JUN-2007 15:05:16.21
3	00000	00012	0050	01175	1810	19-JUN-2007 16:00:33.47

Bkg File: [quad2.bkgrnd]2007-06-19_0430.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00111	0400	0.28	09372	1810	19-JUN-2007 04:30:31.33

UST Number: JWP2H2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JWP2H2AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.B_1;5809

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00016	0050	01264	1920	20-JUN-2007 05:58:52.71

Bkg File: [quad3.bkgrnd]2007-06-20_0221.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00087	0400	0.22	10079	1920	20-JUN-2007 02:21:58.38

UST Number: JWP2J2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JWP2J2AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.A_1;5800

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00026	0050	01272	1920	19-JUN-2007 14:10:17.31
2	00000	00014	0050	01260	1920	19-JUN-2007 15:00:32.98
3	00000	00014	0050	01268	1920	19-JUN-2007 15:55:48.65

Bkg File: [quad3.bkgrnd]2007-06-19_0425.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00101	0400	0.25	10114	1920	19-JUN-2007 04:25:41.69

UST Number: JWP2J2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JWP2J2AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.C_1;5814

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00022	0050	01264	1920	20-JUN-2007 05:58:52.71

Bkg File: [quad3.bkgrnd]2007-06-20_0221.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00086	0400	0.22	10079	1920	20-JUN-2007 02:21:58.38

UST Number: JWP2K2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JWP2K2AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.B_1;5808

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00023	0050	01272	1920	19-JUN-2007 14:10:17.31
2	00000	00018	0050	01260	1920	19-JUN-2007 15:00:32.98
3	00000	00022	0050	01268	1920	19-JUN-2007 15:55:48.65

Bkg File: [quad3.bkgrnd]2007-06-19_0425.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00113	0400	0.28	10114	1920	19-JUN-2007 04:25:41.69

UST Number: JWP2K2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JWP2K2AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.D_1;5799

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01264	1920	20-JUN-2007 05:58:52.71

Bkg File: [quad3.bkgrnd]2007-06-20_0221.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00113	0400	0.28	10079	1920	20-JUN-2007 02:21:58.38

UST Number: JWP2L2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JWP2L2AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.C_1;5813

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00034	0050	01272	1920	19-JUN-2007 14:10:17.31
2	00000	00026	0050	01260	1920	19-JUN-2007 15:00:32.98
3	00000	00027	0050	01268	1920	19-JUN-2007 15:55:48.65

Bkg File: [quad3.bkgrnd]2007-06-19_0425.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00117	0400	0.29	10114	1920	19-JUN-2007 04:25:41.69

UST Number: JWP2L2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JWP2L2AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.A_1;5814

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00017	0050	01222	1850	20-JUN-2007 05:59:05.86

Bkg File: [quad4.bkgrnd]2007-06-20_0222.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00120	0400	0.30	09642	1850	20-JUN-2007 02:22:05.69

UST Number: JWP2N2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JWP2N2AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.D_1;5798

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00045	0050	01272	1920	19-JUN-2007 14:10:17.31
2	00000	00018	0050	01260	1920	19-JUN-2007 15:00:32.98
3	00000	00020	0050	01268	1920	19-JUN-2007 15:55:48.65

Bkg File: [quad3.bkgrnd]2007-06-19_0425.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00098	0400	0.25	10114	1920	19-JUN-2007 04:25:41.69

UST Number: JWP2N2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JWP2N2AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.B_1;5813

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01222	1850	20-JUN-2007 05:59:05.86

Bkg File: [quad4.bkgrnd]2007-06-20_0222.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00112	0400	0.28	09642	1850	20-JUN-2007 02:22:05.69

UST Number: JWP2P2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JWP2P2AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.A_1;5813

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00032	0050	01209	1850	19-JUN-2007 14:05:34.50
2	00000	00018	0050	01213	1850	19-JUN-2007 15:00:50.34
3	00000	00019	0050	01217	1850	19-JUN-2007 15:56:06.00

Bkg File: [quad4.bkgrnd]2007-06-19_0430.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00123	0400	0.31	09664	1850	19-JUN-2007 04:30:36.81

UST Number: JWP2P2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JWP2P2AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.C_1;5816

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00022	0050	01222	1850	20-JUN-2007 05:59:05.86

Bkg File: [quad4.bkgrnd]2007-06-20_0222.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00116	0400	0.29	09642	1850	20-JUN-2007 02:22:05.69

UST Number: JWW982AA Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JWW982AA.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.B_1;5812

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00021	0050	01209	1850	19-JUN-2007 14:05:34.50
2	00000	00014	0050	01213	1850	19-JUN-2007 15:00:50.34
3	00000	00018	0050	01217	1850	19-JUN-2007 15:56:06.00

Bkg File: [quad4.bkgrnd]2007-06-19_0430.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00119	0400	0.30	09664	1850	19-JUN-2007 04:30:36.81

UST Number: JWW982AA Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-D File: [quad4.sample.D]JWW982AA.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.D_1;5830

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00020	0050	01222	1850	20-JUN-2007 05:59:05.86

Bkg File: [quad4.bkgrnd]2007-06-20_0222.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00105	0400	0.26	09642	1850	20-JUN-2007 02:22:05.69

UST Number: JWW982AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JWW982AC.180
Dish Size: 1 Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.C_1;5815

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00050	0050	01209	1850	19-JUN-2007 14:05:34.50
2	00000	00039	0050	01213	1850	19-JUN-2007 15:00:50.34
3	00000	00043	0050	01217	1850	19-JUN-2007 15:56:06.00

Bkg File: [quad4.bkgrnd]2007-06-19_0430.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00098	0400	0.25	09664	1850	19-JUN-2007 04:30:36.81

UST Number: JWW982AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-B File: [quad1.sample.B]JWW982AC.430
Dish Size: 1 Bkg File: \$DISK1:[QUAD1.BKGRND]CURRENT.B_1;3345

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00044	0050	01162	1650	20-JUN-2007 06:51:17.44

Bkg File: [quad1.bkgrnd]2007-06-20_0226.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00317	0400	0.79	09320	1650	20-JUN-2007 02:26:51.45

RADIUM 226

SAMPLE AND QC DATA

Lot No., Due Date: **F7E100384; 06/07/2007**
 Client, Site: **456833; PHASE A WELLS Henderson, NV Source Area Inv.**
 QC Batch No., Method Test: **7159393; RRA2267 Ra-226 by ASC-7**
 SDG, Matrix: **ENSR0510RD; ,,,,,,,,,,,,,,**

- 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:
 See NCM 10-10161.

First Level Review *Angela Long* Date 6/20/07



STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 7159393

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
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. QC Samples			
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 with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?		✓	
C. Other			
1. Are all Nonconformances 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

Second Level Review: Erika Jordan Date: 4/21/17

Clouseau Nonconformance Memo

STL

NCM #: 10-10161	Classification: Deficiency
NCM Initiated By: angela long	Status: GLREVIEW
Date Opened: 06/20/2007	Production Area: Environmental - Prep
Date Closed:	Tests: Ra-226 by ASC-7
Nonconformance: Other (describe in detail)	Lot #'s (Sample #'s): J7E140000 (319),
Subcategory: Other (explanation required)	QC Batches: 7134319, 7159393,

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
angela long	06/20/2007	There was not enough sample for a duplicate. The original batch had a low LCS recovery due to the addition of an incorrect reagent. The barium sulfide from the Ra-228 procedure was poured into a beaker and taken through the pour-up, chemistry, Ra-226 and Ra-228 procedures again to ensure that the addition of an extra reagent was cleaned out. The QC in the rerun is within acceptable limits for the Ra-226 so the batch will be accepted.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
angela long	06/20/2007	The analysts were asked to triple check the bottles before adding the reagent to the secondary bottles. All primary and secondary bottles were emptied and rinsed with reagent water. All reagents were re-made and all bottles were re-labeled.

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>
----------------------	--------------------	-----------------

6/11/2007 11:13:09 AM Balance Id:1120403183
 456833, ENSR International Corporation Pipet #:
 ENSR International Corporation Sep1 DT/Tm Tech: AL 6/11/07 11:15
 AnalyzeDate: 06/06/2007

Sample Preparation/Analysis
 BU Ra-226/228 Prp/SepRC5005
 TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
 01 STANDARD TEST SET

Batch: 7159393 PM, Quote: JAE, 75203
 SEQ Batch, Test: 7134321, BUTF 7159396, BUTF 7159396, BUTF 7134312 9NS1, 7134317 7YSR, 7134319 BUTE,
 7134321 BUTF, 7159393 BUTE, 7159396 BUTF,

Work Order, Lot, Sample Date	Initial Aliquot Amt/Unit	Total 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 JWP17-2-AA F7E100384-1-SAMP	1000.80g, in		rata26766 05/17/07								
			7.4508	1.2012						68 1338	6/11/07
			6.203								6/15/07 0934 p
			7.4508								JWB 6/18/07 1010 p

05/09/2007 06:45 AmtRec: 2XLP #Containers: 2 Scr: Alpha: 1.60E-04 uCi/Sa Beta: 4.20E-04 uCi/Sa
 2 JWP17-2-AD-X
 F7E100384-1-DUP

05/09/2007 06:45 AmtRec: 2XLP #Containers: 2 Scr: Alpha: 1.60E-04 uCi/Sa Beta: 4.20E-04 uCi/Sa
 3 JWP18-2-AA
 F7E100384-2-SAMP

05/09/2007 07:15 AmtRec: 2XLP #Containers: 2 Scr: Alpha: 1.57E-04 uCi/Sa Beta: 3.33E-04 uCi/Sa
 4 JWP19-2-AA
 F7E100384-3-SAMP

05/09/2007 07:30 AmtRec: 2XLP #Containers: 2 Scr: Alpha: 4.04E-04 uCi/Sa Beta: 3.65E-04 uCi/Sa

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 1
 Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added
 ISV - Insufficient Volume for Analysis
 WO Cnt: 4
 Prep_SamplePrep v4.8.26

6/11/2007 11:13:10 AM Balance Id:1120403183
 456833, ENSR International Corporation BU Ra-226/228 Prp/SepRC5005
 ENSR International Corporation TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
 AnalyzeDate: 06/06/2007 01 STANDARD TEST SET

Batch: 7159393 PM, Quote: JAE, 75203
 SEQ Batch, Test: 7134321, BUTF 7159396, BUTF

Work Order, Lot, Sample Date	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 JWP2A-2-AA	1000.50g.in	1000.50g.in	05/17/07	1.2325	9"	1414	6/15/07	0934P	6/11/07		
F7E100384-4-SAMP			7.3749	6.00							
05/09/2007 08:35			7.3749								
6 JWP2C-2-AA	1000.80g.in	1000.80g.in	05/17/07	1.2727	65	1414	6/15/07	0934P	6/11/07		
F7E100384-5-SAMP			7.4136	5.825							
05/09/2007 09:30			7.4136								
7 JWP2D-2-AA	1001.70g.in	1001.70g.in	05/17/07	1.3554	612	1416	6/15/07	0934P	6/11/07		
F7E100384-6-SAMP			7.4601	5.504							
05/09/2007 09:10			7.4601								
8 JWP2E-2-AA	1000.70g.in	1000.70g.in	05/17/07	1.3449	611	1414	6/15/07	0934P	6/11/07		
F7E100384-7-SAMP			7.5626	5.623							
05/09/2007 10:35			7.5626								

6/11/2007 11:13:11 AM Balance Id:1120403183
 456833, ENSR International Corporation Pipet #:
 ENSR International Corporation
 BU Ra-226/228 Prp/SepRC5005
 TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
 01 STANDARD TEST SET
 AnlyDueDate: 06/06/2007
 Batch: 7159393 PM, Quote: JAE, 75203
 SEQ Batch, Test: 7134321, BUTF 7159396, BUTF

Sep1 DT/Tm Tech: Sep2 DT/Tm Tech: Prep Tech: ,LongA
 Sep1 DT/Tm Tech: Sep2 DT/Tm Tech: Prep Tech: ,LongA

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:
9 JWP2F-2-AA		1001.50g.in	rate26772								
F7E100384-8-SAMP			05/17/07	1.2104							
				6.302							
				7.5067							
				8.2012.07							
05/09/2007 11:30			AmtRec: 2XLP	#Containers: 2					Alpha: 2.60E-04 uCi/Sa		Beta: 8.40E-05 uCi/Sa
10 JWP2G-2-AA		1002.80g.in	rate26773								
F7E100384-9-SAMP			05/17/07	1.5269							
				4.953							
				7.5026							
				8.12.01							
05/09/2007 11:15			AmtRec: 2XLP	#Containers: 2					Alpha: 7.84E-05 uCi/Sa		Beta: 1.71E-04 uCi/Sa
11 JWP2H-2-AA		1000.10g.in	rate26774								
F7E100384-10-SAMP			05/17/07	1.3139							
				5.777							
				7.5905							
				8.12.07							
05/09/2007 12:45			AmtRec: 2XLP	#Containers: 2					Alpha: 1.39E-04 uCi/Sa		Beta: 1.93E-04 uCi/Sa
12 JWP2J-2-AA		1001.70g.in	rate26775								
F7E100384-11-SAMP			05/17/07	1.2713							
				5.956							
				7.5719							
				8.12.07							
05/09/2007 13:05			AmtRec: 2XLP	#Containers: 2					Alpha: -8.43E-06 uCi/Sa		Beta: 3.24E-04 uCi/Sa

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:
13 JWP2K-2-AA F7E100384-12-SAMP	1001.40g.in	1001.40g.in	05/17/07 7.5067	1.2734				6B	1417	6/11/07	
			5.895							6/15/07 1000P	
			7.5067							ASB 6/18/07 1101P	
			06.12.07								
05/09/2007 13:35			AmtRec: 2XLP	#Containers: 2				Scr:	Alpha: 2.68E-04 uCi/Sa	Beta: 3.02E-04 uCi/Sa	
14 JWP2L-2-AA F7E100384-13-SAMP	1000.00g.in	1000.00g.in	05/17/07 7.4974	1.3016				9u	1451	6/11/07	
			576.							6/15/07 1000P	
			7.4974							LMB 6/18/07 1138P	
			06.12.07								
05/09/2007 14:35			AmtRec: 2XLP	#Containers: 2				Scr:	Alpha: 2.74E-04 uCi/Sa	Beta: 3.67E-04 uCi/Sa	
15 JWP2N-2-AA F7E100384-14-SAMP	1000.90g.in	1000.90g.in	05/17/07 7.6650	1.3843				65	1457	6/11/07	
			5.537							6/15/07 1000P	
			7.6650							MKA 6/18/07 1143P	
			06.12.07								
05/09/2007 14:15			AmtRec: 2XLP	#Containers: 2				Scr:	Alpha: 4.84E-04 uCi/Sa	Beta: 2.57E-04 uCi/Sa	
16 JWP2P-2-AA F7E100384-15-SAMP	1001.10g.in	1001.10g.in	05/17/07 7.5532	1.1579				6R	1453	6/11/07	
			6.523							6/15/07 1000P	
			7.5532							PMC 6/18/07 1143P	
			06.12.07								
05/09/2007 15:30			AmtRec: 2XLP	#Containers: 2				Scr:	Alpha: 2.68E-04 uCi/Sa	Beta: 1.47E-04 uCi/Sa	

6/11/2007 11:13:11 AM Balance Id:1120403183
 Sample Preparation/Analysis
 BU Ra-226/228 Prp/SepRC5005
 TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
 01 STANDARD TEST SET
 AnalytDueDate: 06/06/2007
 Batch: 7159393
 SEQ Batch, Test: None
 pCi/L
 Prep Tech: FABREM, Longa

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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17 JWW95-2-AA-B 1000.60g.in rata26780
 J7E140000-319-BLK 05/17/07 7.5439 1.2836 611 1453 6/11/07
 5.877 6/15/07 1029p
 7.5439 6/10/07 1137p
 26.12.07
 AmtRec #Containers: 1

05/09/2007 06:45 1000.60g.in rasc4433
 18 JWW95-2-AC-C 05/09/07 7.4244 1.4180 614 1453 6/11/07
 5.234 6/15/07 1029p
 7.4244 6/10/07 1142p
 7.4244
 AmtRec #Containers: 1

05/09/2007 06:45
 Comments: JWP17-SAMP "Comments:ISV - INSUFFICIENT VOLUME FOR DUP SAMPLE. ALL TRACERS USED HAVE NOT BEEN VERIFIED FOR BARIUM VERIFICATION"
 JWP2L-SAMP "Comments."
 JWP2N-SAMP "Comments No DUP aliquot due to insufficient sample amount. JB 05/24/07"

All Clients for Batch:
 456833, ENSR International Corporation
 ENSR International Corporation, JAE, 75203

JWP172AA-SAMP Constituent List:	RDL:	pCi/L	LCL:20	UCL:115	RPD:20	Ra-226	RDL:1	pCi/L	LCL:	UCL:	RPD:
JWW952AA-BLK:											
Ba-133											
JWW952AC-LCS:											
Ba-133											

JWP172AA-SAMP Calc Info:
 Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2
 Page 5
 ISV - Insufficient Volume for Analysis
 WO Cnt: 18
 Prep_SamplePrep v4.8.26

6/11/2007 11:13:12 AM **Sample Preparation/Analysis** Balance Id:1120403183
 BU Ra-226/228 Prp/SepRC5005 Pipet #:
 TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
 01 STANDARD TEST SET Sep1 DT/Tm Tech:
 Sep2 DT/Tm Tech:
 Prep Tech: FABREM, LongA

AnalyDueDate: 06/06/2007
 Batch: 7159393
 SEO Batch, Test: None

pCi/L

Work Order, Lot, Sample Date	Time	Total Amt/Unit	Initial Allquot 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:
Uncert Level (#s): 4		Decay to Sabt: N	Blk Subt.: N	Blk Subt.: N	Sci. Not.: N	ODRs: B						
JWW952AA-BLK:												
Uncert Level (#s): 4		Decay to Sabt: N	Blk Subt.: N	Blk Subt.: N	Sci. Not.: N	ODRs: B						
JWW952AC-LCS:												
Uncert Level (#s): 4		Decay to Sabt: N	Blk Subt.: N	Blk Subt.: N	Sci. Not.: N	ODRs: B						

Approved By _____ Date: _____

ICOC Fraction Transfer/Status Report

ByDate: 6/20/2006, 6/25/2007, Batch: '7159393', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
7159393				
AC	CalcC	LongA	6/11/2007 9:55:03	
SC		longa	IsBatched	6/8/2007 12:05:56 PM
SC		LongA	InPrep	6/11/2007 9:55:03 AM
SC		LongA	InPrep	6/11/2007 9:55:25 AM
SC		LongA	Sep1C	6/11/2007 11:44:22 AM
SC		BlackCL	InCnt1	6/11/2007 12:26:45 PM
SC		DAWKINSO	Cnt1C	6/11/2007 3:02:25 PM
SC		PetersonJ	InSep2	6/15/2007 10:30:41 AM
SC		PetersonJ	CalcC	6/18/2007 4:48:19 PM
AC		LongA	6/11/2007 9:55:25	ICOC_RADCALC v4.8.26
AC		LongA	6/11/2007 11:44:22	RICH-RC-5005 REVISION 6
AC		BlackCL	6/11/2007 12:26:45	RICH-RC-5005 REVISION 6
AC		DAWKINSO	6/11/2007 3:02:25 PM	RICH-RC-5005 REVISION 6
AC		PetersonJ	6/15/2007 10:30:41	RICH-RC-5005 REVISION 6
AC		PetersonJ	6/18/2007 4:48:19 PM	RICH-RC-5005 REVISION 6

AC: Accepting Entry; SC: Status Change

Rpt DB Transfer log (Batch Results)

SDG or Batch Isotope	Rpt Db Id Method	RTst Qc	LotSample Analysis Date	Client Id Result	Matrix Cnt Uncert	Received Date Tot uncert	Sample Date mga	Units	Expected Yield	Volumes
ENSR0510RD	9JWP1720		F7E1003841	M100-L	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 2:10:03 PM	2.3956E-01	5.541E-02	6.077E-02	1.071E-01	PCi/L	0.833	1.001E+0
ENSR0510RD	9JWP1820		F7E1003842	M100-F	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 2:14:00 PM	3.8146E-01	1.116E-01	1.18E-01	3.1E-01	PCi/L	0.716	1.002E+0
ENSR0510RD	9JWP1920		F7E1003843	M100-Z	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 2:15:01 PM	1.5126E-01	8.245E-02	8.397E-02	2.722E-01	PCi/L	0.74	1.001E+0
ENSR0510RD	9JWP2A20		F7E1003844	M2A-L	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 2:10:01 PM	1.9183E-01	6.512E-02	6.789E-02	1.902E-01	PCi/L	0.811	1.0E+0
ENSR0510RD	9JWP2C20		F7E1003845	M2A-F	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 2:56:00 PM	3.6613E-01	7.452E-02	8.268E-02	1.587E-01	PCi/L	0.786	1.001E+0
ENSR0510RD	9JWP2D20		F7E1003846	M2A-Z	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 2:49:00 PM	4.3964E-02	9.65E-02	9.661E-02	3.544E-01	PCi/L	0.738	1.002E+0
ENSR0510RD	9JWP2E20		F7E1003847	M13-L	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 2:54:00 PM	6.4235E-02	7.376E-02	7.404E-02	2.686E-01	PCi/L	0.744	1.001E+0
ENSR0510RD	9JWP2F20		F7E1003848	M13-F	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 3:01:00 PM	1.7524E-01	7.455E-02	7.66E-02	2.378E-01	PCi/L	0.826	1.002E+0
ENSR0510RD	9JWP2G20		F7E1003849	M13-Z	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 2:57:00 PM	-7.2805E-02	1.068E-01	1.071E-01	4.212E-01	PCi/L	0.655	1.003E+0
ENSR0510RD	9JWP2H20		F7E10038410	M76-L	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 3:08:00 PM	2.5552E-01	9.723E-02	1.004E-01	2.966E-01	PCi/L	0.761	1.0E+0
ENSR0510RD	9JWP2J20		F7E10038411	M76-F	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 3:02:00 PM	2.0332E-01	9.743E-02	9.97E-02	3.186E-01	PCi/L	0.787	1.002E+0
ENSR0510RD	9JWP2K20		F7E10038412	M76-Z	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 3:01:01 PM	1.842E-01	7.585E-02	7.819E-02	2.342E-01	PCi/L	0.785	1.001E+0
ENSR0510RD	9JWP2L20		F7E10038413	M31A-F	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 3:38:00 PM	5.7225E-01	1.019E-01	1.154E-01	2.364E-01	PCi/L	0.768	1.0E+0
ENSR0510RD	9JWP2N20		F7E10038414	M31A-Z	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 3:43:01 PM	3.1163E-01	8.854E-02	9.428E-02	2.488E-01	PCi/L	0.722	1.001E+0
ENSR0510RD	9JWP2P20		F7E10038415	EB050709-Z	WATER	5/10/2007 9:10:00	6/18/2007			
RA-226	BUTE 1		6/18/2007 3:43:01 PM	1.5772E-01	7.019E-02	7.194E-02	2.255E-01	PCi/L	0.864	1.001E+0
ENSR0510RD	JWW952AB		J7E140000319	INTRA-LAB BLANK	WATER	5/10/2007 9:10:00	5/9/2007 6:45:00 AM			
RA-226	BUTE 1 B		6/18/2007 3:37:00 PM	-2.3231E-02	4.102E-02	4.109E-02	1.8E-01	pCi/L	0.779	1.004E+0
ENSR0510RD	JWW952CS		J7E140000319	INTRA-LAB CHECK	WATER	5/10/2007 9:10:00	5/9/2007 6:45:00 AM			
RA-226	BUTE 1 S		6/18/2007 3:42:00 PM	1.3092E+00	1.408E-01	1.971E-01	2.235E-01	pCi/L	1.4007E+00	0.705

7159393, **Samples Inserted | Updated | NotUpdated => 17 | 0 | 0,
 **Results Inserted | ReTestInserted | Updated | NotInserted => 17 | 0 | 0 | 0.
 **Diff RptDb | Qtims => .

Alpha Beta, Ra-226 by ASC-7 , Results Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Ra-226 by ASC-7				Richland Standard Ra-226/Ra-228 Deem Wo Blk Subt. <i>CPDL</i>										
Calc	TE	WATER	JWP172AA	RA-226	2.40E-01	(6.08E-02)		PCI/L	R	3.92E-02	1.07E-01		83%	
Calc	TE	WATER	JWP182AA	RA-226	3.81E-01	(1.18E-01)		PCI/L	R	1.32E-01	3.10E-01		72%	
Calc	TE	WATER	JWP192AA	RA-226	1.51E-01	(8.40E-02)		PCI/L	R	1.16E-01	2.72E-01		74%	
Calc	TE	WATER	JWP2A2AA	RA-226	1.92E-01	(6.79E-02)		PCI/L	R	8.09E-02	1.90E-01		81%	
Calc	TE	WATER	JWP2C2AA	RA-226	3.66E-01	(8.27E-02)		PCI/L	R	6.40E-02	1.59E-01		79%	
Calc	TE	WATER	JWP2D2AA	RA-226	4.40E-02	(9.66E-02)	U4	PCI/L	R	1.61E-01	3.54E-01		74%	
Calc	TE	WATER	JWP2E2AA	RA-226	6.42E-02	(7.40E-02)	U4	PCI/L	R	1.16E-01	2.69E-01		74%	
Calc	TE	WATER	JWP2F2AA	RA-226	1.75E-01	(7.66E-02)		PCI/L	R	1.05E-01	2.38E-01		83%	
Calc	TE	WATER	JWP2G2AA	RA-226	-7.28E-02	(1.07E-01)	U4	PCI/L	R	1.92E-01	4.21E-01		65%	
Calc	TE	WATER	JWP2H2AA	RA-226	2.56E-01	(1.00E-01)		PCI/L	R	1.27E-01	2.97E-01		76%	
Calc	TE	WATER	JWP2J2AA	RA-226	2.03E-01	(9.97E-02)		PCI/L	R	1.41E-01	3.19E-01		79%	
Calc	TE	WATER	JWP2K2AA	RA-226	1.84E-01	(7.82E-02)		PCI/L	R	9.96E-02	2.34E-01		79%	
Calc	TE	WATER	JWP2L2AA	RA-226	5.72E-01	(1.15E-01)		PCI/L	R	1.02E-01	2.36E-01		77%	
Calc	TE	WATER	JWP2N2AA	RA-226	3.12E-01	(9.43E-02)		PCI/L	R	1.07E-01	2.49E-01		72%	
Calc	TE	WATER	JWP2P2AA	RA-226	1.58E-01	(7.19E-02)		PCI/L	R	9.90E-02	2.26E-01		86%	
Calc	TE	WATER	JWW952AA	RA-226	-2.32E-02	(4.11E-02)	U4	pCi/L	R	7.55E-02	1.80E-01	B	78%	
Calc	TE	WATER	JWW952AC	RA-226	1.31E+00	(1.97E-01)		pCi/L	R	9.44E-02	2.24E-01	S	71%	93%

Angela Long
 6/19/07

() - (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	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	JWP172AA	PC/I/L		06/18/07 00:00	06/18/07 14:10	06/15/07 09:34	rate26765	1	83%	1000.80 g				
						WATER				06/18/07 10:10	rate26765	Alq	83%	1000.80 g				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/18/07 14:10	RA-226	25	3	ASCJMB	ASC	N	2.4836E+00	1.0000E+00	1.0000E+00	N	83%	N	2.4455E+00	4.5045E+02	1.0000E+00		
			50	60			Y	(1.095E-01)	(0.000E+00)	(0.000E+00)		7%		(0.000E+00)	0.000999			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC				
	06/18/07	RA-226	R	0.239558		4.50000E-01	0.532246	0.532246	1.0008 L	83%		0.107133						
				(0.060766)		(1.0408E-01)	(0.13236)	(0.13236)	(0.173205)			0.039163						

Sq	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol			
2	Calc	TE	WATER	*STLE Ra226WoBS	JWP182AA	PC/I/L		06/18/07 00:00	06/18/07 14:14	06/15/07 09:34	rate26766	1	72%	1002.00 g				
						WATER				06/18/07 10:14	rate26766	Alq	72%	1002.00 g				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/18/07 14:14	RA-226	33	13	ASC5UC	ASC	N	1.7833E+00	1.0000E+00	1.0000E+00	N	72%	N	2.4438E+00	4.5045E+02	1.0000E+00		
			50	60			Y	(6.438E-02)	(0.000E+00)	(0.000E+00)		6%		(0.000E+00)	0.000998			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC				
	06/18/07	RA-226	R	0.381458		4.43333E-01	0.848534	0.848534	1.002 L	72%		0.310014						
				(0.118028)		(1.2966E-01)	(0.259097)	(0.259097)	(0.173205)			0.131768						

Sq	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol			
3	Calc	TE	WATER	*STLE Ra226WoBS	JWP192AA	PC/I/L		06/18/07 00:00	06/18/07 14:15	06/15/07 09:34	rate26767	1	74%	1001.40 g				
						WATER				06/18/07 10:15	rate26767	Alq	74%	1001.40 g				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/18/07 14:15	RA-226	22	14	ASCHSB	ASC	N	2.0281E+00	1.0000E+00	1.0000E+00	N	74%	N	2.4434E+00	4.5045E+02	1.0000E+00		
			50	60			Y	(9.471E-02)	(0.000E+00)	(0.000E+00)		6%		(0.000E+00)	0.000999			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC				
	06/18/07	RA-226	R	0.151264		2.06667E-01	0.336278	0.336278	1.0014 L	74%		0.272169						
				(0.083971)		(1.1264E-01)	(0.185918)	(0.185918)	(0.173205)			0.116319						

Sq	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol			
4	Calc	TE	WATER	*STLE Ra226WoBS	JWP2A2AA	PC/I/L		06/18/07 00:00	06/18/07 14:10	06/15/07 09:34	rate26768	1	81%	1000.50 g				
						WATER				06/18/07 10:10	rate26768	Alq	81%	1000.50 g				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/18/07 14:10	RA-226	29	13	ASCKMD	ASC	N	2.5702E+00	1.0000E+00	1.0000E+00	N	81%	N	2.4455E+00	4.5045E+02	1.0000E+00		
			50	60			Y	(8.636E-02)	(0.000E+00)	(0.000E+00)		6%		(0.000E+00)	0.001			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdc/LcC				
	06/18/07	RA-226	R	0.151264		2.06667E-01	0.336278	0.336278	1.0014 L	74%		0.272169						
				(0.083971)		(1.1264E-01)	(0.185918)	(0.185918)	(0.173205)			0.116319						

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

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIkLc/MDC	StdVwMdc/LcC					
06/18/07	RA-226	R	0.191834	(0.067893)	3.63333E-01	0.426086	0.426086	1.0005 L	(0.173205)	81%			0.190233						
Protocol Equation Set: *STLE Ra226WoBS JWP2C2AA Wk Ord: 1,2333E-01 (0.149285) (0.173205) Units/Matrix: QC/BB Sa/On Date: 06/18/07 00:00 PCI/L: WATER QC/Tracer Vial: rata26769 1 79% 1000.80 g Multi/EntYld: 0.190233 Total/Analy Vol: Final/Count Vol: 0.080856																			
5	06/18/07	TE	WATER																
Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency 1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
1	06/18/07 14:56	RA-226	38	7	ASC3MA	ASC	N	2.4421E+00	1.0000E+00	N	79%	N	2.4263E+00	4.5045E+02	1.0000E+00				
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIkLc/MDC	StdVwMdc/LcC					
06/18/07	RA-226	R	0.366133	(0.082684)	6.43333E-01	0.813469	0.813469	1.0008 L	(0.173205)	79%			0.15868						
Protocol Equation Set: *STLE Ra226WoBS JWP2D2AA Wk Ord: 1.3094E-01 (0.179148) (0.173205) Units/Matrix: QC/BB Sa/On Date: 06/18/07 00:00 PCI/L: WATER QC/Tracer Vial: rata26770 1 74% 1001.70 g Multi/EntYld: 0.063955 Total/Analy Vol: Final/Count Vol: 0.063955																			
6	06/18/07	TE	WATER																
Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency 1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
1	06/18/07 14:49	RA-226	37	40	ASC1RH	ASC	N	2.4697E+00	1.0000E+00	N	74%	N	2.4292E+00	4.5045E+02	1.0000E+00				
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIkLc/MDC	StdVwMdc/LcC					
06/18/07	RA-226	R	0.043964	(0.096606)	7.33333E-02	0.097767	0.097767	1.0017 L	(0.173205)	74%			0.354392						
Protocol Equation Set: *STLE Ra226WoBS JWP2E2AA Wk Ord: 1.6097E-01 (0.214774) (0.173205) Units/Matrix: QC/BB Sa/On Date: 06/18/07 00:00 PCI/L: WATER QC/Tracer Vial: rata26771 1 74% 1000.70 g Multi/EntYld: 0.161045 Total/Analy Vol: Final/Count Vol: 0.161045																			
7	06/18/07	TE	WATER																
Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency 1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
1	06/18/07 14:54	RA-226	19	17	ASC4UA	ASC	N	2.2112E+00	1.0000E+00	N	74%	N	2.4271E+00	4.5045E+02	1.0000E+00				
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIkLc/MDC	StdVwMdc/LcC					
06/18/07	RA-226	R	0.064235	(0.074035)	9.66667E-02	0.142702	0.142702	1.0007 L	(0.173205)	74%			0.268617						
Protocol Equation Set: *STLE Ra226WoBS JWP2F2AA Wk Ord: 1.1101E-01 (0.164319) (0.164319) Units/Matrix: QC/BB Sa/On Date: 06/18/07 00:00 PCI/L: WATER QC/Tracer Vial: rata26772 1 83% 1001.50 g Multi/EntYld: 0.116369 Total/Analy Vol: Final/Count Vol: 0.116369																			
8	06/18/07	TE	WATER																
Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency 1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn	
1	06/18/07 11:01	RA-226	8	8	ASC1RH	ASC	N	2.4271E+00	1.0000E+00	N	83%	N	2.4271E+00	4.5045E+02	1.0000E+00				
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIkLc/MDC	StdVwMdc/LcC					
06/18/07	RA-226	R	0.064235	(0.074035)	9.66667E-02	0.142702	0.142702	1.0007 L	(0.173205)	74%			0.268617						

() - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU
 IDC - Instrument Detection Level in Conc Units, MDC - Method Decision Level in Conc Units, MLC - Method Decision Level in Conc Units, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time
 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:8 RADCALC v4.8.26
 STL Richland

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlCcMDC	StdDvMdc/LcC				
1	06/18/07 15:01	RA-226	35	22		ASC6RA ASC	N 2.5216E+00	1.0000E+00	N	83%	N	83%	2.4350E+00	4.5045E+02	1.0000E+00			
			50	60			Y (8.674E-02)	(0.000E+00)		7%		(0.000E+00)	0.000999					
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlCcMDC	StdDvMdc/LcC				
	06/18/07	RA-226	R	0.175241		3.33333E-01	0.389619	0.389619	1.0015 L	83%			0.237838					
				(0.076603)		(1.4181E-01)	(0.169197)	(0.169197)	(0.173205)				0.104734					
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol		
9	Calc	TE	WATER	*STLE	Ra226WoBS	JWP2G2AA	PCI/L		06/18/07 00:00	06/18/07 14:57	06/15/07 10:00	rata26773	1	65%	1002.80 g			
							WATER				06/18/07 10:57	rata26773	Alq	65%	1002.80 g			
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/18/07 14:57	RA-226	29	41	ASC7HA	ASC	N	2.3720E+00	1.0000E+00	N	65%	N	2.4367E+00	4.5045E+02	1.0000E+00			
			50	60			Y	(1.165E-01)	(0.000E+00)		5%			(0.000E+00)	0.000997			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlCcMDC	StdDvMdc/LcC				
	06/18/07	RA-226	R	-0.072805		-1.03333E-01	-0.16208	-0.16208	1.0028 L	65%			0.421193					
				(0.107107)		(1.5162E-01)	(0.238306)	(0.238306)	(0.173205)				0.191616					
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		
10	Calc	TE	WATER	*STLE	Ra226WoBS	JWP2H2AA	PCI/L		06/18/07 00:00	06/18/07 15:08	06/15/07 10:00	rata26774	1	76%	1000.10 g			
							WATER				06/18/07 11:08	rata26774	Alq	76%	1000.10 g			
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/18/07 15:08	RA-226	29	15	ASC8RD	ASC	N	1.8588E+00	1.0000E+00	N	76%	N	2.4321E+00	4.5045E+02	1.0000E+00			
			50	60			Y	(4.851E-02)	(0.000E+00)		6%			(0.000E+00)	0.001			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlCcMDC	StdDvMdc/LcC				
	06/18/07	RA-226	R	0.255521		3.30000E-01	0.567315	0.567315	1.0001 L	76%			0.296563					
				(0.100392)		(1.2557E-01)	(0.22108)	(0.22108)	(0.173205)				0.127373					
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		
11	Calc	TE	WATER	*STLE	Ra226WoBS	JWP2J2AA	PCI/L		06/18/07 00:00	06/18/07 15:02	06/15/07 10:00	rata26775	1	79%	1001.70 g			
							WATER				06/18/07 11:02	rata26775	Alq	79%	1001.70 g			
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/18/07 15:02	RA-226	35	24	ASC9RA	ASC	N	2.0536E+00	1.0000E+00	N	79%	N	2.4346E+00	4.5045E+02	1.0000E+00			
			50	60			Y	(8.974E-02)	(0.000E+00)		6%			(0.000E+00)	0.000998			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlCcMDC	StdDvMdc/LcC				
	06/18/07	RA-226	R	0.20332		3.00000E-01	0.452139	0.452139	1.0017 L	79%			0.318608					
				(0.099697)		(1.4376E-01)	(0.220549)	(0.220549)	(0.173205)				0.141021					

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

Batch Nbr: 7159393

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

6/18/2007 4:47:03 PM

Sq	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol			
12	Calc	TE	WATER	*STLE Ra226WoBS	JWP2K2AA	PCI/L		06/18/07 00:00	06/18/07 15:01	06/15/07 10:00	06/18/07 11:01	rata26776	1	1001.40 g				
						WATER							79%					
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/18/07 15:01	RA-226	25	13	ASCASB	ASC	N	2.1454E+00	1.0000E+00	1.0000E+00	N	79%	N	2.4350E+00	4.5045E+02	1.0000E+00		
			50	60			Y	(8.882E-02)	(0.000E+00)			6%		(0.000E+00)	0.000999			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC		BIKlC/MDC	StdDvMdc/LcC			
	06/18/07	RA-226	R	0.1842		2.83333E-01	0.409499	0.409499	1.0014 L	79%				0.234238				
				(0.078185)		(1.1667E-01)	(0.172605)	(0.172605)						0.09956				

Sq	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol			
13	Calc	TE	WATER	*STLE Ra226WoBS	JWP2L2AA	PCI/L		06/18/07 00:00	06/18/07 15:38	06/15/07 10:00	06/18/07 11:38	rata26777	1	1000.00 g				
						WATER							77%					
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/18/07 15:38	RA-226	61	16	ASCLMB	ASC	N	2.3635E+00	1.0000E+00	1.0000E+00	N	77%	N	2.4197E+00	4.5045E+02	1.0000E+00		
			50	60			Y	(1.593E-02)	(0.000E+00)			6%		(0.000E+00)	0.001			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC		BIKlC/MDC	StdDvMdc/LcC			
	06/18/07	RA-226	R	0.572254		9.53333E-01	1.270409	1.270409	1.00 L	77%				0.236378				
				(0.115424)		(1.6984E-01)	(0.248244)	(0.248244)						0.101982				

Sq	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol			
14	Calc	TE	WATER	*STLE Ra226WoBS	JWP2N2AA	PCI/L		06/18/07 00:00	06/18/07 15:43	06/15/07 10:00	06/18/07 11:43	rata26778	1	1000.90 g				
						WATER							72%					
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/18/07 15:43	RA-226	38	16	ASCMPA	ASC	N	2.3844E+00	1.0000E+00	1.0000E+00	N	72%	N	2.4177E+00	4.5045E+02	1.0000E+00		
			50	60			Y	(1.044E-01)	(0.000E+00)			6%		(0.000E+00)	0.000999			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC		BIKlC/MDC	StdDvMdc/LcC			
	06/18/07	RA-226	R	0.311634		4.93333E-01	0.692452	0.692452	1.0009 L	72%				0.248752				
				(0.094284)		(1.4016E-01)	(0.206618)	(0.206618)						0.107321				

Sq	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol			
15	Calc	TE	WATER	*STLE Ra226WoBS	JWP2P2AA	PCI/L		06/18/07 00:00	06/18/07 15:43	06/15/07 10:00	06/18/07 11:43	rata26779	1	1001.10 g				
						WATER							86%					
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/18/07 15:43	RA-226	33	21	ASCMPA	ASC	N	2.4757E+00	1.0000E+00	1.0000E+00	N	86%	N	2.4177E+00	4.5045E+02	1.0000E+00		
			50	60			Y	(8.195E-02)	(0.000E+00)			7%		(0.000E+00)	0.000999			

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

Page 4

RecCnt:15

RADGALC v4.8.26

STL Richland

Batch Nbr: 7159393

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

6/18/2007 4:47:03 PM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC			
06/18/07	RA-226		R	0.157724 (0.071942)	3.10000E-01 (1.3796E-01)	0.350533 (0.158925)	0.350533 (0.158925)	1.0011L (0.173205)	86%			0.225518 0.09903					
Sq Status Method Matrix Protocol Equation Set Wrk Ord Units/Matrix QC/BB Sa/On Date AnalysisDate/PptWt Sep1/Sep2 Date QC/Tracer Vial MultiEntYld Total/Analy Vol Final/Count Vol																	
16	Calc	TE	WATER	*STLE Ra226WoBS	JWW952AA	pCi/L	B	05/09/07 06:45	06/18/07 15:37	06/15/07 10:29	06/18/07 11:37	1	78%	1003.60 g			
CID:INTRA-LAB BLANKLOT:J7E140000319 v4.8.26																	
1	06/18/07 15:37	RA-226	7	11	ASCQMB ASC	Geom	Trc/Av	Ent	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
			50	60		Y	(1.085E-01)	(0.000E+00)	6%	N	2.4321E+00	(0.000E+00)	0.000996	2.4321E+00	4.5045E+02	1.0000E+00	
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC			
06/18/07	RA-226		R	-0.023231 (0.041092)	-4.33333E-02 (7.6522E-02)	-0.051755 (0.091513)	-0.051755 (0.091513)	1.0036L (0.173205)	78%			0.180004 0.075519					
Sq Status Method Matrix Protocol Equation Set Wrk Ord Units/Matrix QC/BB Sa/On Date AnalysisDate/PptWt Sep1/Sep2 Date QC/Tracer Vial MultiEntYld Total/Analy Vol Final/Count Vol																	
17	Calc	TE	WATER	*STLE Ra226WoBS	JWW952AC	pCi/L	S	05/09/07 06:45	06/18/07 15:42	06/15/07 10:29	06/18/07 11:42	1	71%	1000.60 g			
CID:INTRA-LAB CHECKLOT:J7E140000319 v4.8.26																	
1	06/18/07 15:42	RA-226	112	12	ASCNMA ASC	Geom	Trc/Av	Ent	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
			50	60		Y	(1.136E-01)	(0.000E+00)	6%	N	2.4300E+00	(0.000E+00)	0.000999	2.4300E+00	4.5045E+02	1.0000E+00	
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BkLcC/MDC	StdDvMdc/LcC			
06/18/07	RA-226		R	1.309209 (0.197144)	2.04000E+00 (2.1939E-01)	2.908062 (0.413058)	2.908062 (0.413058)	1.0006L (0.173205)	71%	93%	0.223523 0.094426						

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

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP172AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.2012
Technician: JP

Analysis Size: 1000.8 Analysis Unit: G

Report Date: 18-JUN-2007 15:00:02.93
First Separation Date: 15-JUN-2007 09:34
Second Separation Date: 18-JUN-2007 10:10:00.00

Detector ID: 18 Cell ID: JMB

Bkg Date: 15-JUN-2007 10:18:07.78
Bkg Counts: 000003 Bkg Duration: 000060.0

Count Date: 18-JUN-2007 14:10:02.56
Counts: 000025 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP182AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.3967
Technician: JP

Analysis Size: 1002.0 Analysis Unit: G

 Report Date: 18-JUN-2007 15:04:00.65
 First Separation Date: 15-JUN-2007 09:34:00.00
 Second Separation Date: 18-JUN-2007 10:14:00.00

Detector ID: 5 Cell ID: 5UC

Bkg Date: 15-JUN-2007 10:15:04.44
 Bkg Counts: 000013 Bkg Duration: 000060.0

Count Date: 18-JUN-2007 14:14:00.29
 Counts: 000033 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP192AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.3506
Technician: JP

Analysis Size: 1001.4 Analysis Unit: G

Report Date: 18-JUN-2007 15:05:01.13
First Separation Date: 15-JUN-2007 09:34:00.00
Second Separation Date: 18-JUN-2007 10:15:00.00

Detector ID: 17 Cell ID: HSB

Bkg Date: 15-JUN-2007 10:17:45.60
Bkg Counts: 000014 Bkg Duration: 000060.0

Count Date: 18-JUN-2007 14:15:00.51
Counts: 000022 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2A2AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.2325
Technician: JP

Analysis Size: 1000.5 Analysis Unit: G

Report Date: 18-JUN-2007 15:00:00.88
First Separation Date: 15-JUN-2007 09:34:00.00
Second Separation Date: 18-JUN-2007 10:10:00.00

Detector ID: 19 Cell ID: KMD

Bkg Date: 15-JUN-2007 10:18:30.80
Bkg Counts: 000013 Bkg Duration: 000060.0

Count Date: 18-JUN-2007 14:10:00.54
Counts: 000029 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2C2AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.2727
Technician: JP

Analysis Size: 1000.8 Analysis Unit: G

Report Date: 18-JUN-2007 15:46:00.65
First Separation Date: 15-JUN-2007 09:34:00.00
Second Separation Date: 18-JUN-2007 10:56:00.00

Detector ID: 3 Cell ID: 3MA

Bkg Date: 18-JUN-2007 08:59:49.20
Bkg Counts: 000007 Bkg Duration: 000060.0

Count Date: 18-JUN-2007 14:56:00.29
Counts: 000038 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2E2AA

Isotope: RA-226

Client: STL

Matrix Code: 103

Batch Nbr: 7159393
Technician: JP

Activity Unit: PCI/L

Multiplier: 1.3449 ✓

Analysis Size: 1000.7

Analysis Unit: G

Report Date: 18-JUN-2007 15:44:00.71

First Separation Date: 15-JUN-2007 09:34:00.00

Second Separation Date: 18-JUN-2007 10:54:00.00

Detector ID: 4

Cell ID: 4UA

Bkg Date: 18-JUN-2007 09:00:11.74

Bkg Counts: 000017

Bkg Duration: 000060.0

Count Date: 18-JUN-2007 14:54:00.34

Counts: 000019

Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2F2AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.2104 ✓
Technician: JP

Analysis Size: 1001.5 Analysis Unit: G

Report Date: 18-JUN-2007 15:51:01.11
First Separation Date: 15-JUN-2007 10:00:00.00
Second Separation Date: 18-JUN-2007 11:01:00.00

Detector ID: 6 Cell ID: 6RA

Bkg Date: 18-JUN-2007 09:00:35.26
Bkg Counts: 000022 Bkg Duration: 000060.0

Count Date: 18-JUN-2007 15:01:00.44
Counts: 000035 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2G2AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.5269
Technician: JP

Analysis Size: 1002.8 Analysis Unit: G

Report Date: 18-JUN-2007 15:47:00.67
First Separation Date: 15-JUN-2007 10:00:00.00
Second Separation Date: 18-JUN-2007 10:57:00.00

Detector ID: 7 Cell ID: 7HA

Bkg Date: 18-JUN-2007 09:01:02.64
Bkg Counts: 000041 Bkg Duration: 000060.0

Count Date: 18-JUN-2007 14:57:00.31
Counts: 000029 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2H2AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.3139
Technician: JP

Analysis Size: 1000.1 Analysis Unit: G

Report Date: 18-JUN-2007 15:58:00.74
First Separation Date: 15-JUN-2007 10:00:00.00
Second Separation Date: 18-JUN-2007 11:08:00.00

Detector ID: 8 Cell ID: 8RD

Bkg Date: 18-JUN-2007 09:01:33.60
Bkg Counts: 000015 Bkg Duration: 000060.0

Count Date: 18-JUN-2007 15:08:00.35
Counts: 000029 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2J2AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.2713
Technician: JP
Analysis Size: 1001.7 Analysis Unit: G
 Report Date: 18-JUN-2007 15:52:00.68
 First Separation Date: 15-JUN-2007 10:00:00.00
 Second Separation Date: 18-JUN-2007 11:02:00.00
Detector ID: 9 Cell ID: 9RA
Bkg Date: 18-JUN-2007 09:01:48.82
 Bkg Counts: 000024 Bkg Duration: 000060.0
Count Date: 18-JUN-2007 15:02:00.32
 Counts: 000035 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2K2AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.2734 ✓
Technician: JP

Analysis Size: 1001.4 Analysis Unit: G

 Report Date: 18-JUN-2007 15:51:01.18
 First Separation Date: 15-JUN-2007 10:00:00.00
 Second Separation Date: 18-JUN-2007 11:01:00.00

Detector ID: 10 Cell ID: ASB

Bkg Date: 18-JUN-2007 09:02:12.65
 Bkg Counts: 000013 Bkg Duration: 000060.0

Count Date: 18-JUN-2007 15:01:00.52
 Counts: 000025 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2L2AA

Isotope: RA-226

Client: STL

Matrix Code: 103

Batch Nbr: 7159393
Technician: JP

Activity Unit: PCI/L

Multiplier: 1.3016 ✓

Analysis Size: 1000.0

Analysis Unit: G

Report Date: 18-JUN-2007 16:28:00.90

First Separation Date: 15-JUN-2007 10:00:00.00

Second Separation Date: 18-JUN-2007 11:38:00.00

Detector ID: 20

Cell ID: LMB

Bkg Date: 15-JUN-2007 10:18:50.75

Bkg Counts: 000016

Bkg Duration: 000060.0

Count Date: 18-JUN-2007 15:38:00.35

Counts: 000061

Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2N2AA

Isotope: RA-226

Client: STL

Matrix Code: 103

Batch Nbr: 7159393

Activity Unit: PCI/L

Multiplier: 1.3843

Technician: JP

Analysis Size: 1000.9

Analysis Unit: G

Report Date: 18-JUN-2007 16:33:01.11

First Separation Date: 15-JUN-2007 10:00:00.00

Second Separation Date: 18-JUN-2007 11:43:00.00

Detector ID: 21

Cell ID: MRA

Bkg Date: 15-JUN-2007 10:19:05.18

Bkg Counts: 000016

Bkg Duration: 000060.0

Count Date: 18-JUN-2007 15:43:00.56

Counts: 000038

Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2P2AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.1579 ✓
Technician: JP

Analysis Size: 1001.1 Analysis Unit: G

Report Date: 18-JUN-2007 16:33:01.27
First Separation Date: 15-JUN-2007 10:00:00.00
Second Separation Date: 18-JUN-2007 11:43:00.00

Detector ID: 23 Cell ID: PMC

Bkg Date: 15-JUN-2007 10:19:23.57
Bkg Counts: 000021 Bkg Duration: 000060.0

Count Date: 18-JUN-2007 15:43:00.69
Counts: 000033 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWW952AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.2836 ✓
Technician: JP

Analysis Size: 1003.6 Analysis Unit: G

Report Date: 18-JUN-2007 16:27:00.78
First Separation Date: 15-JUN-2007 10:29:00.00
Second Separation Date: 18-JUN-2007 11:37:00.00

Detector ID: 24 Cell ID: QMB

Bkg Date: 18-JUN-2007 09:04:35.16
Bkg Counts: 000011 Bkg Duration: 000060.0

Count Date: 18-JUN-2007 15:37:00.35
Counts: 000007 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWW952AC Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7159393 Activity Unit: PCI/L Multiplier: 1.4180
Technician: JP

Analysis Size: 1000.6 Analysis Unit: G

Report Date: 18-JUN-2007 16:32:00.74
First Separation Date: 15-JUN-2007 10:29:00.00
Second Separation Date: 18-JUN-2007 11:42:00.00

Detector ID: 22 Cell ID: NMA

Bkg Date: 12-JUN-2007 08:40:07.21
Bkg Counts: 000012 Bkg Duration: 000060.0

Count Date: 18-JUN-2007 15:42:00.39
Counts: 000112 Count Duration: 000050.0

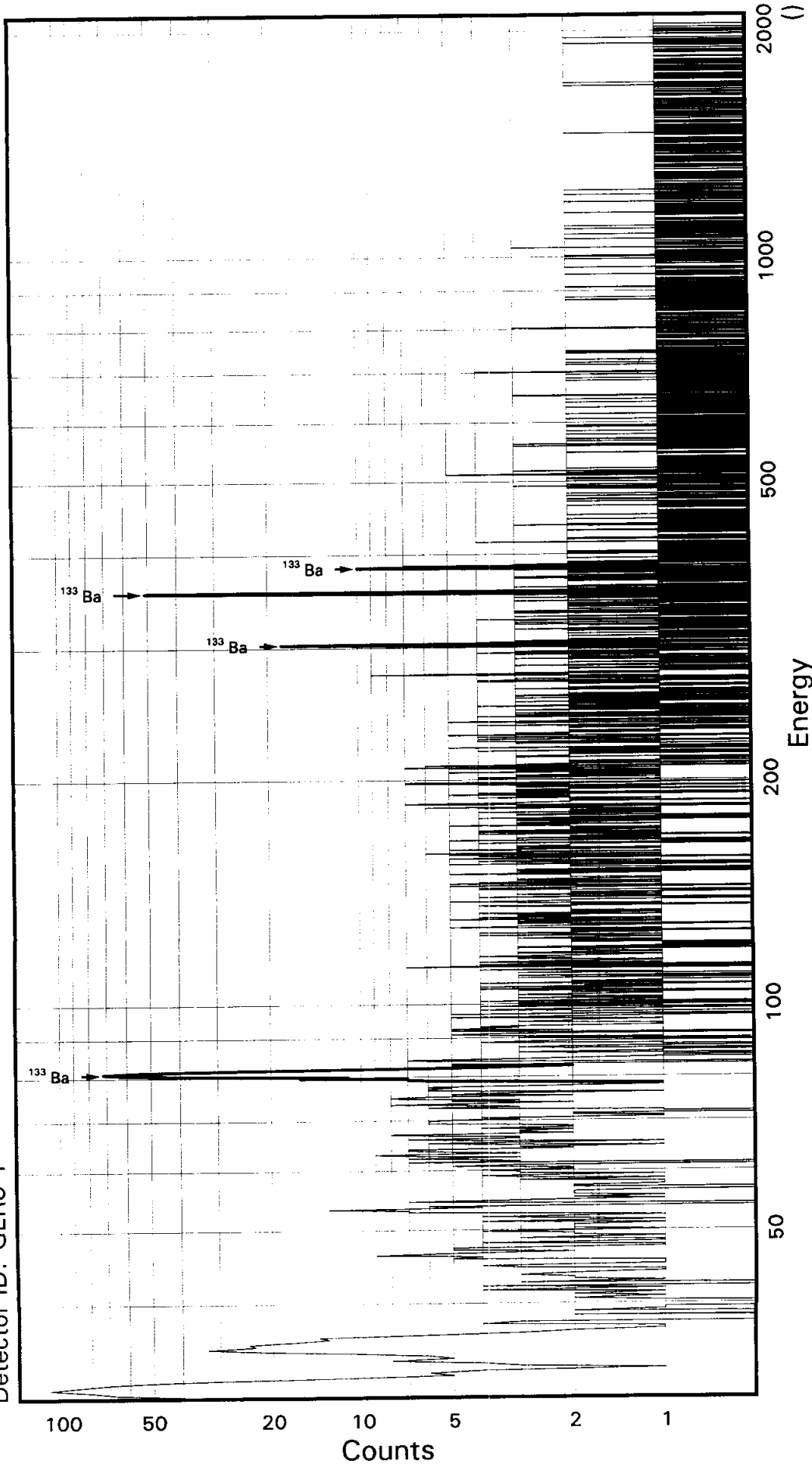
End of Report

STL Richland WA.

BA133

Batch ID: 7159393

Sample ID: JWP172AA
Detector ID: GER8 1



Energy Coefficients:
Offset: 3.59911E-01
Slope: 2.49674E-01
Quadrature: 1.85831E-08

Acquisition Start: 11-JUN-2007 13:08:44.48
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JWP172AA

CONFIGURATION ID: GER8:JWP172AA_110671308
TITLE : BA133
SAMPLE ID : JWP172AA

REPORT DATE: 11-JUN-07
ACQUIRE DATE: 11-JUN-07 13:08:44
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 11-JUN-2007 05:35:30.53
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 3.5991E-01 keV
ENERGY SLOPE: 2.4967E-01 keV/C
ENERGY Q COEFF: 1.8583E-08 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.7094E-01 keV
FWHM SLOPE: 2.0033E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 13:39:12

```

Configuration      : $DISK1:[GER8.SAMPLE]JWP172AA_110671308.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:08:44
Sample ID         : JWP172AA Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Start energy      : 20.33 End energy : 2046.94
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.74	540	59	1.17	121.68	110	21	3.00E-01	5.6	
2	0	35.06	153	41	1.05	138.98	131	18	8.50E-02	12.7	
3	0	53.47	27	20	0.39	212.70	205	11	1.51E-02	36.7	
4	0	80.87	369	40	1.19	322.45	312	19	2.05E-01	6.7	
5	0	302.85	81	4	0.98	1211.42	1203	17	4.49E-02	12.6	
6	0	356.00	266	3	1.15	1424.26	1412	19	1.48E-01	6.4	
7	0	383.74	39	8	0.87	1535.34	1527	17	2.16E-02	23.4	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER8.SAMPLE]JWP172AA_110671308.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:08:44
Sample ID        : JWP172AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	369	33.00	2.140E+00	1.740E+03	1.748E+03	8.64
	276.40	-----	6.90	2.306E+00	-----	Line Not Found	-----
	302.84	81	17.80	2.309E+00	6.550E+02	6.580E+02	13.68
	356.00	266	62.05*	2.311E+00	6.175E+02	6.203E+02	8.39
	383.85	39	8.70	2.310E+00	6.461E+02	6.490E+02	24.01

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP172AA

Page : 2
Acquisition date : 11-JUN-2007 13:08:44

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.74	540	59	1.17	121.68	110	21	3.00E-01	5.6	1.87E+00	
0	35.06	153	41	1.05	138.98	131	18	8.50E-02	12.7	1.92E+00	
0	53.47	27	20	0.39	212.70	205	11	1.51E-02	36.7	2.04E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP172AA

Page : 3
Acquisition date : 11-JUN-2007 13:08:44

Flag: "*" = Keyline


```

Configuration      : $DISK1:[GER8.SAMPLE]JWP172AA_110671308.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:08:44
Sample ID        : JWP172AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.203E+02	5.202E+01	4.201E+01	8.402E-01	14.767

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	6.888E+00	8.103E+01	3.174E+02	6.367E+00	0.022
NA-22	3.092E+00	3.127E+00	1.674E+01	3.543E-01	0.185
K-40	-3.677E+01	3.676E+01	1.740E+02	3.731E+00	-0.211
SC-46	3.768E+00	4.535E+00	2.230E+01	4.670E-01	0.169
CR-51	-1.092E+02	1.505E+02	5.351E+02	1.071E+01	-0.204
MN-54	6.150E+00	4.476E+00	2.205E+01	4.523E-01	0.279
CO-57	1.839E+02	1.109E+02	4.405E+02	9.097E+00	0.417
CO-58	-7.156E-01	4.608E+00	1.967E+01	4.028E-01	-0.036
FE-59	8.269E+00	9.654E+00	4.757E+01	9.946E-01	0.174
CO-60	3.094E+00	2.194E+00	1.435E+01	3.051E-01	0.216
ZN-65	-1.259E+01	6.331E+00	8.633E+00	1.807E-01	-1.458
SE-75	9.341E+00	1.490E+01	5.959E+01	1.195E+00	0.157
SR-85	-4.083E+01	1.225E+01	3.322E+01	6.676E-01	-1.229
Y-88	-1.875E+00	1.878E+00	5.073E+00	1.115E-01	-0.370
NB-94	1.166E+00	5.017E+00	2.091E+01	4.300E-01	0.056
NB-95	1.479E+00	7.195E+00	3.091E+01	6.310E-01	0.048
TC-95M	-4.163E+01	2.527E+01	8.386E+01	1.695E+00	-0.496
ZR-95	-1.424E+01	8.698E+00	2.566E+01	5.236E-01	-0.555
ZRNB-95	2.825E+00	1.156E+01	4.982E+01	1.017E+00	0.057
RH-101	5.474E+00	1.656E+01	6.180E+01	1.251E+00	0.089
RH-102M	3.647E+00	6.079E+00	2.542E+01	5.098E-01	0.144
RU-103	3.980E+00	9.625E+00	4.052E+01	8.136E-01	0.098
RU-106DA	-2.948E+01	4.881E+01	1.872E+02	3.786E+00	-0.157
AG-108M	-1.838E+01	6.962E+00	1.763E+01	3.532E-01	-1.042
AG-110M	-4.625E-01	6.335E+00	2.625E+01	5.404E-01	-0.018
SN-113DA	-1.504E+01	1.194E+01	3.999E+01	8.000E-01	-0.376
SB-124	4.537E-01	5.599E+00	2.415E+01	4.876E-01	0.019

---- Non-Identified Nuclides ----

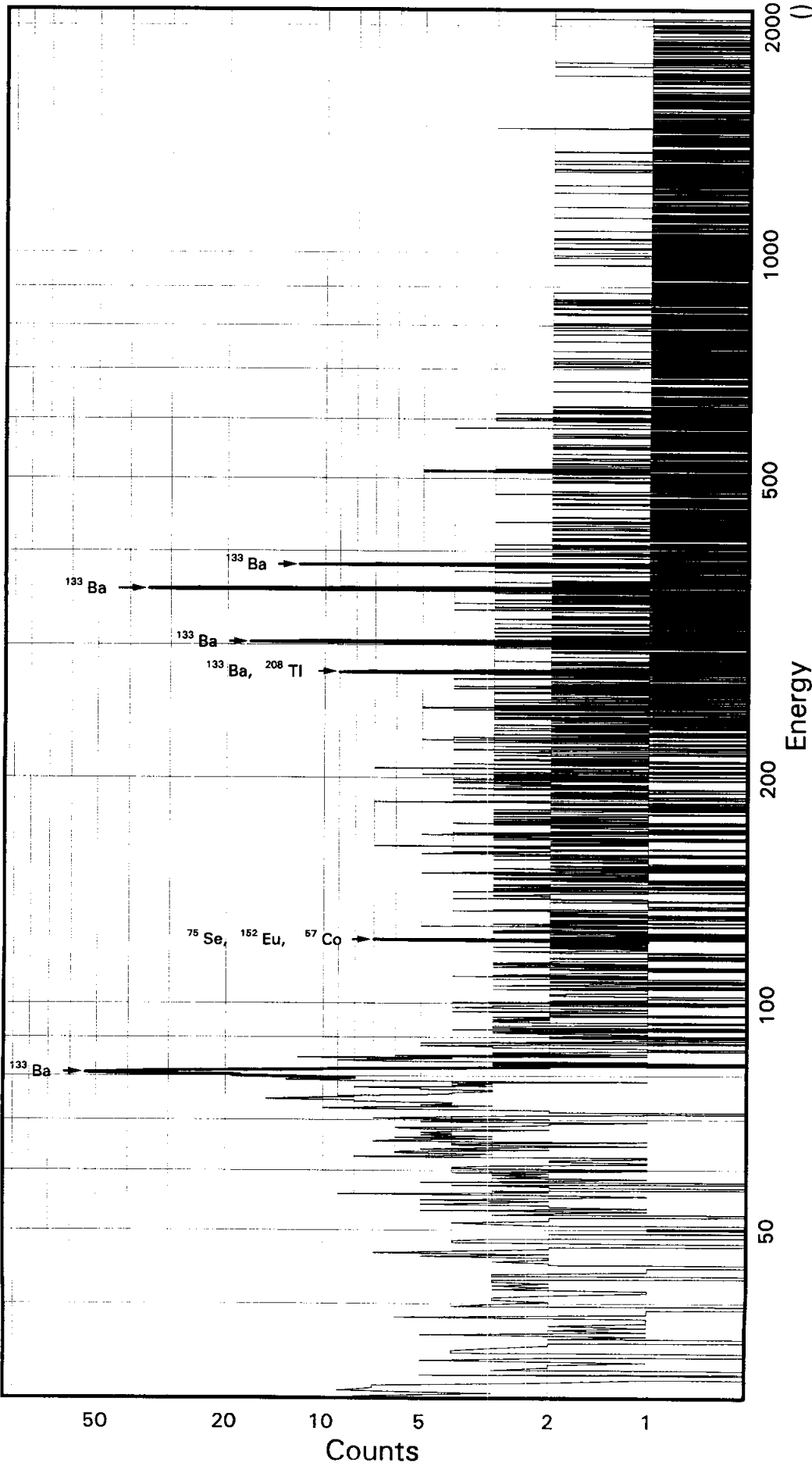
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	1.381E+01		1.833E+01	7.925E+01	1.587E+00	0.174
SN-126DA	-2.888E+00		3.572E+00	1.358E+01	2.753E-01	-0.213
I-131	-3.030E+00		7.611E+01	2.899E+02	5.798E+00	-0.010
CS-134	-7.342E+00		5.112E+00	1.641E+01	3.356E-01	-0.448
CS-137DA	-2.462E+00		5.558E+00	2.167E+01	4.392E-01	-0.114
LA-138	2.224E+00		4.065E+00	2.148E+01	4.598E-01	0.104
CE-139	-1.738E+00		1.519E+01	5.448E+01	1.112E+00	-0.032
BA-140	2.044E+01		4.873E+01	2.373E+02	4.774E+00	0.086
BALA-140	4.136E-01		1.768E+01	9.346E+01	2.022E+00	0.004
CE-141	3.760E+01		4.137E+01	1.565E+02	3.218E+00	0.240
CE-144	-5.887E+01		1.167E+02	4.075E+02	8.428E+00	-0.144
CEPR-144	-1.189E+02		2.333E+02	8.145E+02	1.685E+01	-0.146
PM-144	3.801E+00		4.448E+00	2.086E+01	4.216E-01	0.182
PM-146	4.146E+00		6.458E+00	2.934E+01	5.880E-01	0.141
EU-152	2.750E+01		2.962E+01	1.199E+02	2.398E+00	0.229
EU-154	8.593E+00		8.690E+00	4.652E+01	9.848E-01	0.185
EU-155	4.575E+01		5.074E+01	1.970E+02	4.149E+00	0.232
HF-181	-1.721E+01		9.576E+00	2.832E+01	5.683E-01	-0.608
BI-207	4.957E+00		6.743E+00	2.806E+01	5.655E-01	0.177
TL-208	3.656E+00		5.405E+00	2.435E+01	4.912E-01	0.150
BI-210M	-2.842E+01		1.705E+01	5.557E+01	1.115E+00	-0.511
BI-212	1.112E+02		6.740E+01	3.349E+02	1.024E+01	0.332
PB-212	-2.124E-02		2.214E+01	8.576E+01	1.725E+00	0.000
BI-214	1.279E+01		9.912E+00	4.723E+01	9.541E-01	0.271
PB-214	1.845E+01		2.294E+01	8.158E+01	1.632E+00	0.226
RA-223	1.525E+02		6.740E+01	2.864E+02	5.743E+00	0.533
RA-224DA	-2.178E-02		2.270E+01	8.792E+01	1.768E+00	0.000
RA-226DA	1.279E+01		9.912E+00	4.723E+01	9.541E-01	0.271
AC-227DA	-5.206E+01		8.595E+01	3.073E+02	6.183E+00	-0.169
AC-228	9.908E+00		1.550E+01	7.036E+01	1.451E+00	0.141
RA-228DA	9.990E+00		1.563E+01	7.095E+01	1.463E+00	0.141
TH-228DA	1.043E+01		1.542E+01	6.949E+01	1.402E+00	0.150
TH-232DA	-3.600E+01		6.289E+01	2.265E+02	4.531E+00	-0.159
TH-234DA	2.479E+01		5.543E+02	2.478E+03	5.145E+01	0.010
U-234DA	5.075E+01		4.888E+01	1.936E+02	3.876E+00	0.262
U-235HP	8.243E+01		1.105E+02	4.151E+02	8.544E+00	0.199
NP-237DA	-6.004E+00		1.718E+01	6.504E+01	1.302E+00	-0.092
U-238DA	1.845E+01		2.294E+01	8.158E+01	1.632E+00	0.226
U-238DHP	2.092E+02		4.475E+02	1.684E+03	3.737E+01	0.124
AM-241HP	-5.870E+01		4.079E+01	1.362E+02	3.046E+00	-0.431

STL Richland WA.

BA133

Batch ID: 7159393

Sample ID: JWP182AA
Detector ID: GER6 1



Acquisition Start: 11-JUN-2007 13:08:52.83
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 2.99733E-02
Slope: 2.49386E-01
Quadrature: 4.39077E-09

SAMPLE IDENTIFICATION: JWP182AA

CONFIGURATION ID: GER6:JWP182AA_110671308
TITLE : BA133
SAMPLE ID : JWP182AA

REPORT DATE: 11-JUN-07
ACQUIRE DATE: 11-JUN-07 13:08:52
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 11-JUN-2007 05:49:03.49
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 2.9973E-02 keV
ENERGY SLOPE: 2.4939E-01 keV/C
ENERGY Q COEFF: 4.3908E-09 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.3133E-01 keV
FWHM SLOPE: 6.8675E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 13:39:27

```

Configuration      : $DISK1:[GER6.SAMPLE]JWP182AA_110671308.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:08:52
Sample ID         : JWP182AA Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.21 0.0%
Start energy      : 19.98 End energy : 2043.30
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.97	188	75	0.92	324.57	318	15	1.05E-01	13.0	
2	0	121.51	9	9	0.40	487.12	482	7	5.12E-03	62.6	
3	0	276.88	29	22	1.13	1110.11	1103	13	1.63E-02	38.0	
4	0	302.92	87	9	1.17	1214.51	1205	17	4.81E-02	13.2	
5	0	355.99	225	11	1.57	1427.33	1418	20	1.25E-01	7.5	
6	0	383.69	50	0	0.98	1538.36	1530	15	2.78E-02	14.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 13:39:27

Configuration : \$DISK1:[GER6.SAMPLE]JWP182AA_110671308.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:08:52
 Sample ID : JWP182AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.21 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	188	33.00	2.090E+00	9.100E+02	9.141E+02	14.11
	276.40	29	6.90	2.253E+00	6.301E+02	6.329E+02	38.42
	302.84	87	17.80	2.256E+00	7.181E+02	7.213E+02	14.29
	356.00	225	62.05*	2.258E+00	5.364E+02	5.388E+02	9.23
	383.85	50	8.70	2.257E+00	8.486E+02	8.525E+02	15.13

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP182AA

Page : 2
Acquisition date : 11-JUN-2007 13:08:52

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	121.51	9	9	0.40	487.12	482	7	5.12E-03	62.6	2.17E+00	T

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma (DPM/SAMPL)	%Error	Rejected by		
CO-57	270.90D	0.09	122.06	85.51	1.768E+01	62.82	Abun.		
			136.48*	10.60	---	Not Found	---		
			% Abundances Found =			88.97	(Abn. Limit = 90.00%)		
SE-75	119.78D	0.21	121.12	16.70	9.816E+01	62.82	Abun.		
			136.00	59.20	---	Not Found	---		
			264.65*	59.80	---	Not Found	---		
			279.53	25.20	---	Not Found	---		
			400.65	11.40	---	Not Found	---		
% Abundances Found =			9.69						
EU-152	13.60Y	0.01	121.78	28.40	5.010E+01	62.82	Abun.		
			244.67	7.49	---	Not Found	---		
			344.27*	26.50	---	Not Found	---		
			778.89	12.74	---	Not Found	---		
			964.01	14.40	---	Not Found	---		
			1085.78	10.00	---	Not Found	---		
			1112.02	13.30	---	Not Found	---		
1407.95	20.70	---	Not Found	---					
% Abundances Found =			21.27						
TL-208	1.41E+10Y	0.00	277.35	6.80	6.393E+02	38.42	Abun.		
			510.84	21.60	---	Not Found	---		
			583.14*	84.20	---	Not Found	---		
			860.37	12.46	---	Not Found	---		
% Abundances Found =			5.44						

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 13:39:29

```

Configuration      : $DISK1:[GER6.SAMPLE]JWP182AA_110671308.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:08:52
Sample ID        : JWP182AA Sample quantity   : 1.0000 SAMPL
Sample type      : Sample geometry    : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.21 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.388E+02	4.976E+01	4.849E+01	9.699E-01	11.111

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	3.050E+01	8.589E+01	3.479E+02	6.979E+00	0.088
NA-22	-9.143E+00	5.422E+00	1.714E+01	3.629E-01	-0.534
K-40	-1.204E+02	6.588E+01	2.983E+02	6.399E+00	-0.404
SC-46	-9.073E+00	6.756E+00	2.283E+01	4.782E-01	-0.397
CR-51	1.432E+02	1.540E+02	6.210E+02	1.242E+01	0.231
MN-54	-7.668E+00	6.129E+00	2.098E+01	4.304E-01	-0.366
CO-57	-9.950E+01	8.383E+01	2.909E+02	6.009E+00	-0.342
CO-58	1.890E+00	6.834E+00	2.877E+01	5.892E-01	0.066
FE-59	-1.397E-01	5.802E+00	2.965E+01	6.201E-01	-0.005
CO-60	-4.686E+00	4.173E+00	1.470E+01	3.125E-01	-0.319
ZN-65	7.171E+00	1.293E+01	5.445E+01	1.140E+00	0.132
SE-75	2.239E+01	1.786E+01	7.265E+01	1.458E+00	0.308
SR-85	-1.404E+01	1.519E+01	5.188E+01	1.042E+00	-0.271
Y-88	-5.224E-02	2.755E+00	1.413E+01	3.107E-01	-0.004
NB-94	-1.745E+00	4.997E+00	1.964E+01	4.040E-01	-0.089
NB-95	-9.510E+00	8.814E+00	3.062E+01	6.251E-01	-0.311
TC-95M	-1.463E+01	2.066E+01	7.330E+01	1.482E+00	-0.200
ZR-95	-1.474E+01	1.443E+01	5.035E+01	1.027E+00	-0.293
ZRNB-95	-1.565E+01	1.400E+01	4.833E+01	9.867E-01	-0.324
RH-101	1.417E+01	1.560E+01	6.048E+01	1.224E+00	0.234
RH-102M	6.861E+00	6.713E+00	2.892E+01	5.801E-01	0.237
RU-103	-3.942E+00	1.172E+01	4.406E+01	8.847E-01	-0.089
RU-106DA	6.294E+01	6.804E+01	2.894E+02	5.851E+00	0.218
AG-108M	-5.391E+00	9.143E+00	3.247E+01	6.504E-01	-0.166
AG-110M	1.343E+01	7.820E+00	3.737E+01	7.696E-01	0.359
SN-113DA	-7.835E+00	1.089E+01	3.971E+01	7.944E-01	-0.197
SB-124	1.231E+01	9.957E+00	4.210E+01	8.503E-01	0.292

---- Non-Identified Nuclides ----

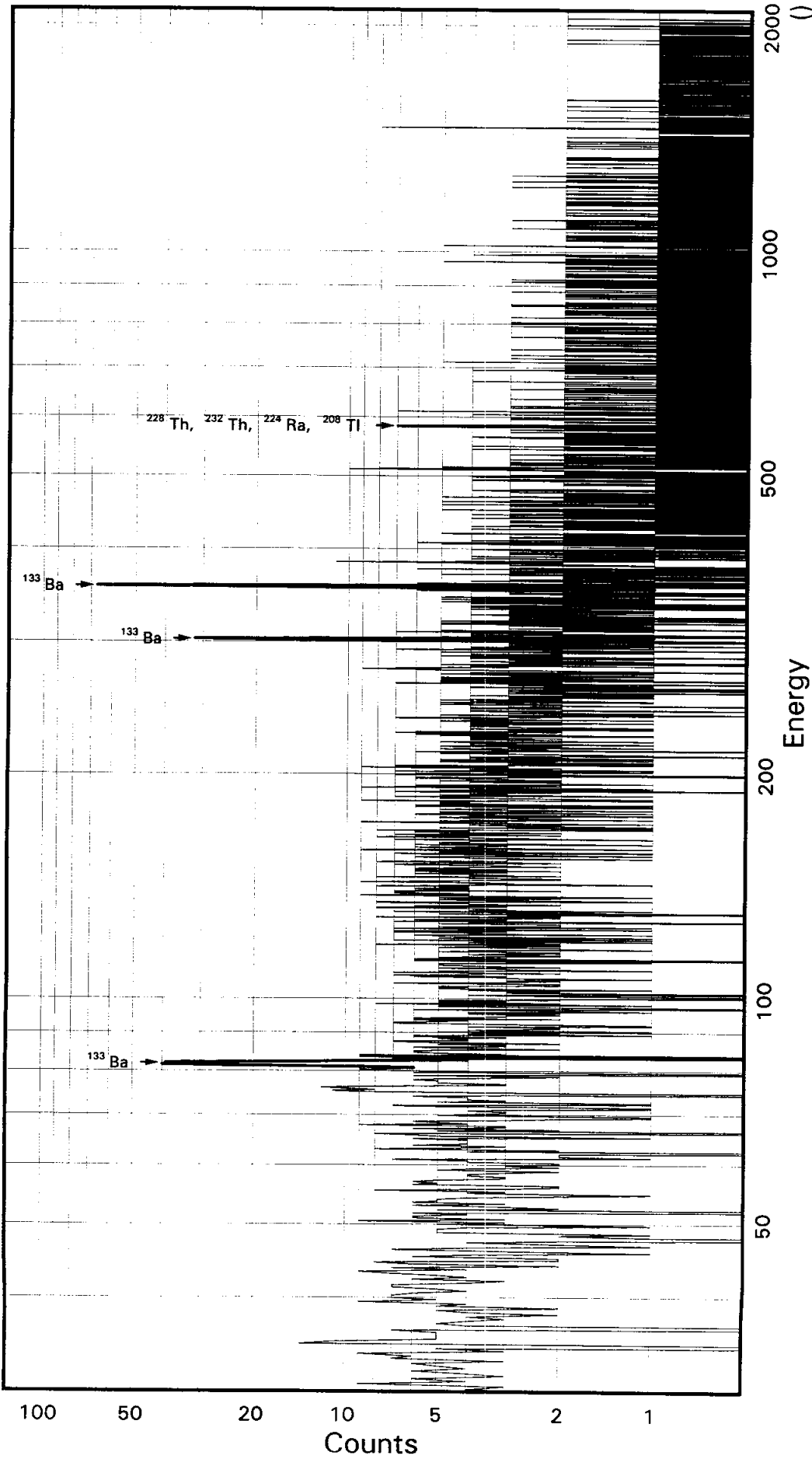
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	-7.412E+00		2.507E+01	9.292E+01	1.861E+00	-0.080
SN-126DA	-8.478E+00		4.014E+00	9.376E+00	1.901E-01	-0.904
I-131	-3.766E+01		8.611E+01	3.170E+02	6.340E+00	-0.119
CS-134	1.543E+00		5.520E+00	2.371E+01	4.851E-01	0.065
CS-137DA	1.429E+00		5.943E+00	2.482E+01	5.031E-01	0.058
LA-138	2.305E+00		4.145E+00	2.199E+01	4.709E-01	0.105
CE-139	-2.901E-01		1.396E+01	5.138E+01	1.049E+00	-0.006
BA-140	5.180E+01		9.533E+01	3.935E+02	7.916E+00	0.132
BALA-140	-1.346E+01		2.281E+01	9.569E+01	2.071E+00	-0.141
CE-141	-1.888E+01		3.046E+01	1.101E+02	2.265E+00	-0.172
CE-144	5.801E+01		8.083E+01	3.274E+02	6.774E+00	0.177
CEPR-144	1.172E+02		1.618E+02	6.556E+02	1.356E+01	0.179
PM-144	-9.398E-01		7.338E+00	2.803E+01	5.666E-01	-0.034
PM-146	1.193E+01		8.781E+00	3.990E+01	7.996E-01	0.299
EU-152	1.495E+01		3.520E+01	1.332E+02	2.664E+00	0.112
EU-154	-2.541E+01		1.507E+01	4.762E+01	1.009E+00	-0.534
EU-155	2.030E+01		3.785E+01	1.513E+02	3.187E+00	0.134
HF-181	1.646E+01		1.078E+01	4.891E+01	9.814E-01	0.337
BI-207	5.507E-01		6.380E+00	2.548E+01	5.135E-01	0.022
TL-208	1.080E+01		7.051E+00	3.205E+01	6.466E-01	0.337
BI-210M	5.479E-01		1.795E+01	6.804E+01	1.365E+00	0.008
BI-212	-7.448E+00		7.770E+01	3.140E+02	9.597E+00	-0.024
PB-212	-1.705E+01		1.875E+01	7.054E+01	1.419E+00	-0.242
BI-214	2.256E+01		1.480E+01	6.474E+01	1.308E+00	0.349
PB-214	1.649E+00		2.427E+01	7.997E+01	1.599E+00	0.021
RA-223	6.393E+01		6.493E+01	2.619E+02	5.253E+00	0.244
RA-224DA	-1.748E+01		1.923E+01	7.231E+01	1.454E+00	-0.242
RA-226DA	2.282E+01		1.483E+01	6.490E+01	1.311E+00	0.352
AC-227DA	-6.714E+01		7.888E+01	2.739E+02	5.512E+00	-0.245
AC-228	-6.542E-01		1.923E+01	7.748E+01	1.598E+00	-0.008
RA-228DA	-6.596E-01		1.939E+01	7.812E+01	1.612E+00	-0.008
TH-228DA	3.082E+01		2.012E+01	9.147E+01	1.845E+00	0.337
TH-232DA	-6.083E+01		7.332E+01	2.527E+02	5.054E+00	-0.241
TH-234DA	-2.216E+02		7.779E+02	3.089E+03	6.415E+01	-0.072
U-234DA	-6.896E+01		3.498E+01	1.072E+02	2.148E+00	-0.643
U-235HP	-3.038E+01		8.833E+01	3.246E+02	6.683E+00	-0.094
NP-237DA	-1.531E+01		2.124E+01	7.560E+01	1.513E+00	-0.203
U-238DA	1.649E+00		2.427E+01	7.997E+01	1.599E+00	0.021
U-238DHP	6.949E+02		3.190E+02	1.313E+03	2.916E+01	0.529
AM-241HP	2.324E+01		2.718E+01	1.081E+02	2.418E+00	0.215

STL Richland WA.

BA133

Batch ID: 7159393

Sample ID: JWP192AA
Detector ID: GER13 1



Acquisition Start: 11-JUN-2007 13:09:03.84
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -6.57127E-01
Slope: 2.50862E-01
Quadrature: -1.16660E-07

SAMPLE IDENTIFICATION: JWP192AA

CONFIGURATION ID: GER13:JWP192AA_110671309
TITLE : BA133
SAMPLE ID : JWP192AA

REPORT DATE: 11-JUN-07
ACQUIRE DATE: 11-JUN-07 13:09:03
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 11-JUN-2007 05:36:27.81
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.6571E+00 keV
ENERGY SLOPE: 2.5086E-01 keV/C
ENERGY Q COEFF: -.1167E-06 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.8475E-01 keV
FWHM SLOPE: 3.9122E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 13:39:42

```

Configuration      : $DISK1:[GER13.SAMPLE]JWP192AA_110671309.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:09:03
Sample ID         : JWP192AA Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.37 0.0%
Start energy      : 19.41 End energy : 2046.58
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.96	123	74	0.92	329.36	324	13	6.86E-02	17.2	
2	0	302.60	110	28	0.70	1209.54	1203	15	6.11E-02	14.0	
3	0	355.81	293	22	0.89	1421.90	1412	17	1.63E-01	6.9	
4	0	583.70*	3	10	0.70	2331.92	2326	10	1.43E-03	275.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 13:39:42

```

Configuration      : $DISK1:[GER13.SAMPLE]JWP192AA_110671309.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:09:03
Sample ID         : JWP192AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.37 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma %Error
					DPM/SAMPL	DPM/SAMPL	
BA-133	81.00	123	33.00	2.678E+00	4.656E+02	4.677E+02	18.04
	276.40	-----	6.90	2.869E+00	-----	Line Not Found	-----
	302.84	110	17.80	2.872E+00	7.172E+02	7.204E+02	14.98
	356.00	293	62.05*	2.875E+00	5.479E+02	5.503E+02	8.73
	383.85	-----	8.70	2.874E+00	-----	Line Not Found	-----

Flag: "*" = Keyline

Unidentified Energy Lines

Sample ID : JWP192AA

Acquisition date : 11-JUN-2007 13:09:03

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	583.70	3	10	0.70	2331.92	2326	10	1.43E-03	****	2.85E+00	T

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma (DPM/SAMPL)%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	--- Not Found ---	Abun.
			510.84	21.60	--- Not Found ---	
			583.14*	84.20	3.564E+00 275.17	
			860.37	12.46	--- Not Found ---	
			% Abundances Found =			
RA-224DA	1.91Y	0.04	238.63*	44.60	--- Not Found ---	Abun.
			240.98	3.95	--- Not Found ---	
			583.14	30.25	1.017E+01 275.17	
			860.37	4.48	--- Not Found ---	
			% Abundances Found =			
TH-228DA	1.91Y	0.04	238.63	44.60	--- Not Found ---	Abun.
			240.98	3.95	--- Not Found ---	
			583.14*	30.25	1.017E+01 275.17	
			860.37	4.48	--- Not Found ---	
			% Abundances Found =			
TH-232DA	1.41E+10Y	0.00	238.63	44.60	--- Not Found ---	Abun.
			338.32*	12.40	--- Not Found ---	
			583.14	30.25	9.919E+00 275.17	
			911.07	27.70	--- Not Found ---	
			964.60	5.20	--- Not Found ---	
			969.11	16.60	--- Not Found ---	
% Abundances Found =			22.12			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 13:39:44

```

Configuration      : $DISK1:[GER13.SAMPLE]JWP192AA_110671309.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:09:03
Sample ID        : JWP192AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.37 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.503E+02	4.803E+01	5.078E+01	1.016E+00	10.837

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	9.490E+00	9.096E+01	3.434E+02	6.887E+00	0.028
NA-22	4.902E+00	3.978E+00	1.871E+01	3.947E-01	0.262
K-40	-1.269E+02	8.869E+01	4.231E+02	9.036E+00	-0.300
SC-46	-4.157E+00	5.495E+00	2.362E+01	4.933E-01	-0.176
CR-51	1.267E+02	1.751E+02	6.593E+02	1.319E+01	0.192
MN-54	1.526E+00	5.903E+00	2.348E+01	4.811E-01	0.065
CO-57	-2.077E+02	1.158E+02	3.818E+02	7.870E+00	-0.544
CO-58	-8.734E-01	5.394E+00	2.166E+01	4.429E-01	-0.040
FE-59	4.151E+00	1.426E+01	5.724E+01	1.194E+00	0.073
CO-60	2.668E+00	4.782E+00	2.004E+01	4.245E-01	0.133
ZN-65	-8.023E+00	9.648E+00	3.518E+01	7.344E-01	-0.228
SE-75	2.946E+01	1.828E+01	7.213E+01	1.447E+00	0.408
SR-85	-4.567E+01	1.481E+01	4.300E+01	8.639E-01	-1.062
Y-88	1.408E+00	2.565E+00	1.375E+01	3.006E-01	0.102
NB-94	7.214E+00	4.122E+00	1.983E+01	4.071E-01	0.364
NB-95	-2.463E+00	9.982E+00	3.692E+01	7.527E-01	-0.067
TC-95M	4.027E+01	2.233E+01	8.560E+01	1.730E+00	0.470
ZR-95	4.442E+00	1.134E+01	4.633E+01	9.441E-01	0.096
ZRNB-95	-4.304E+00	1.589E+01	5.867E+01	1.196E+00	-0.073
RH-101	1.119E+00	1.498E+01	5.349E+01	1.082E+00	0.021
RH-102M	-5.803E+00	6.970E+00	2.449E+01	4.911E-01	-0.237
RU-103	-1.765E+01	1.327E+01	4.410E+01	8.853E-01	-0.400
RU-106DA	1.113E+01	6.117E+01	2.401E+02	4.852E+00	0.046
AG-108M	-4.305E+00	7.432E+00	2.686E+01	5.378E-01	-0.160
AG-110M	-5.026E+00	7.199E+00	2.640E+01	5.427E-01	-0.190
SN-113DA	4.342E+00	1.351E+01	5.175E+01	1.035E+00	0.084
SB-124	-2.096E+00	8.563E+00	3.212E+01	6.483E-01	-0.065

---- Non-Identified Nuclides ----

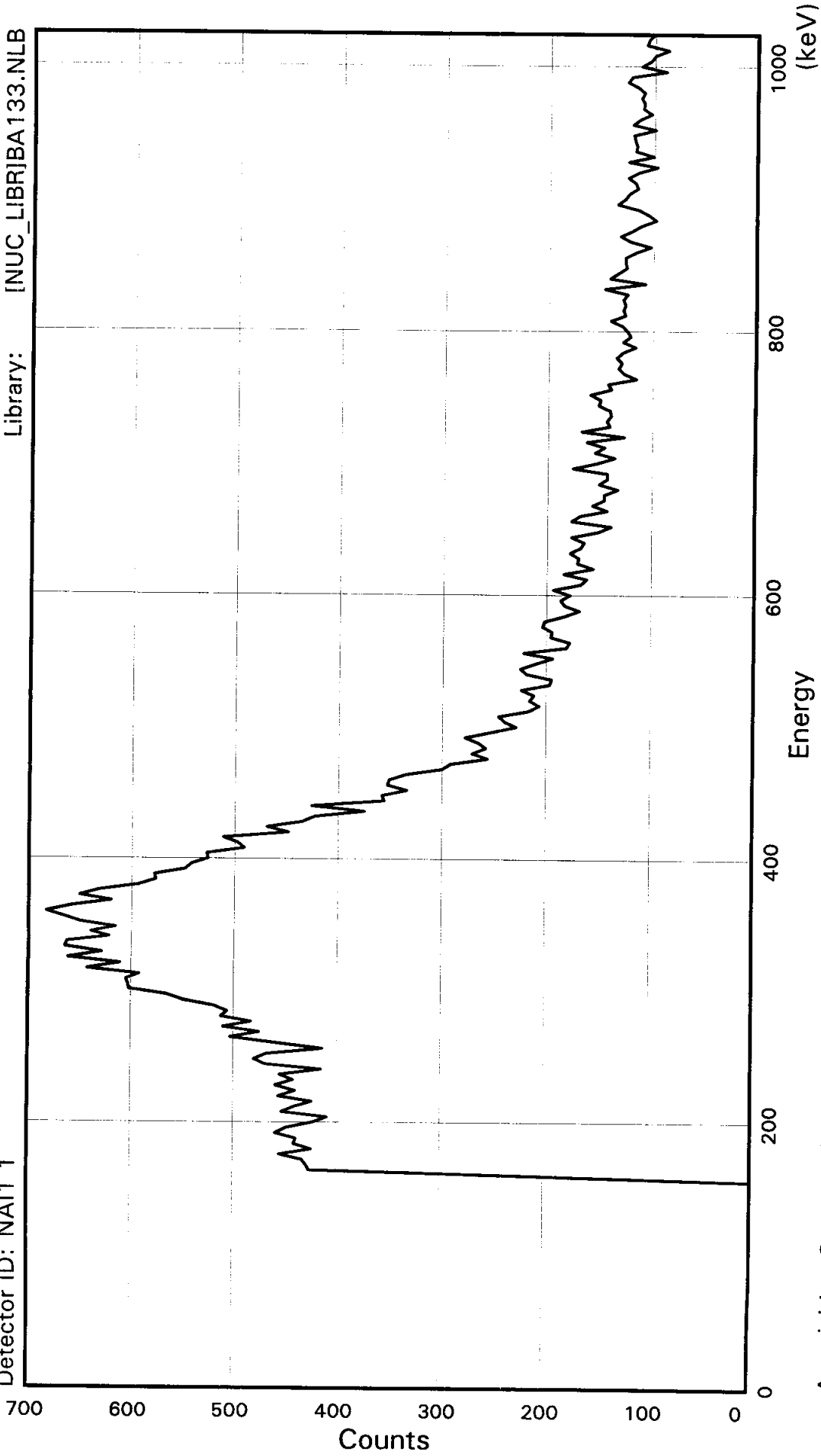
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	-1.749E+01		2.340E+01	8.340E+01	1.670E+00	-0.210
SN-126DA	-3.427E+00		5.367E+00	1.957E+01	3.965E-01	-0.175
I-131	-5.617E+01		7.032E+01	2.439E+02	4.879E+00	-0.230
CS-134	9.253E-01		7.027E+00	2.695E+01	5.505E-01	0.034
CS-137DA	-5.682E+00		5.803E+00	2.048E+01	4.148E-01	-0.277
LA-138	-3.633E+00		2.577E+00	5.009E+00	1.068E-01	-0.725
CE-139	1.040E+01		1.655E+01	6.078E+01	1.239E+00	0.171
BA-140	-1.681E+01		8.171E+01	3.086E+02	6.207E+00	-0.054
BALA-140	-2.158E+01		3.258E+01	1.221E+02	2.629E+00	-0.177
CE-141	-4.111E+01		4.005E+01	1.374E+02	2.821E+00	-0.299
CE-144	2.445E+02		1.076E+02	4.287E+02	8.851E+00	0.570
CEPR-144	4.843E+02		2.149E+02	8.560E+02	1.767E+01	0.566
PM-144	5.350E-01		6.224E+00	2.415E+01	4.879E-01	0.022
PM-146	-5.203E+00		1.054E+01	3.817E+01	7.648E-01	-0.136
EU-152	4.119E+01		3.158E+01	1.238E+02	2.477E+00	0.333
EU-154	1.362E+01		1.106E+01	5.199E+01	1.097E+00	0.262
EU-155	-1.018E+02		5.304E+01	1.660E+02	3.487E+00	-0.613
HF-181	-3.546E+00		1.207E+01	4.433E+01	8.893E-01	-0.080
BI-207	4.042E-01		5.908E+00	2.252E+01	4.536E-01	0.018
TL-208	3.564E+00	+	9.806E+00	3.938E+01	7.940E-01	0.090
BI-210M	2.770E+00		2.007E+01	7.347E+01	1.474E+00	0.038
BI-212	2.045E+02		9.198E+01	4.076E+02	1.245E+01	0.502
PB-212	1.015E+01		2.358E+01	8.966E+01	1.803E+00	0.113
BI-214	6.421E+00		1.647E+01	6.943E+01	1.402E+00	0.092
PB-214	2.392E+01		2.513E+01	9.365E+01	1.873E+00	0.255
RA-223	-1.031E+01		7.101E+01	2.568E+02	5.150E+00	-0.040
RA-224DA	1.041E+01		2.418E+01	9.192E+01	1.848E+00	0.113
RA-226DA	6.422E+00		1.647E+01	6.943E+01	1.402E+00	0.092
AC-227DA	2.544E+01		9.794E+01	3.481E+02	7.000E+00	0.073
AC-228	1.937E+01		2.482E+01	1.056E+02	2.175E+00	0.183
RA-228DA	1.953E+01		2.503E+01	1.065E+02	2.193E+00	0.183
TH-228DA	1.017E+01	+	2.798E+01	1.124E+02	2.266E+00	0.090
TH-232DA	4.246E+01		6.783E+01	2.562E+02	5.125E+00	0.166
TH-234DA	1.571E+02		6.213E+02	2.604E+03	5.395E+01	0.060
U-234DA	6.119E+01		4.665E+01	1.823E+02	3.649E+00	0.336
U-235HP	-8.268E+01		1.105E+02	3.846E+02	7.902E+00	-0.215
NP-237DA	-4.043E+01		2.586E+01	8.456E+01	1.692E+00	-0.478
U-238DA	2.392E+01		2.513E+01	9.365E+01	1.873E+00	0.255
U-238DHP	6.196E+00		2.832E+02	1.035E+03	2.283E+01	0.006
AM-241HP	-1.542E+01		2.772E+01	9.899E+01	2.200E+00	-0.156

STL Richland WA.

BA133

Sample ID: JWP2A2AA
Detector ID: NAI1 1

BatchID: 7159393
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 11-JUN-2007 13:44:34.93
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: JWP2A2AA

CONFIGURATION ID: NAI1:JWP2A2AA_110671344
TITLE : BA133
SAMPLE ID : JWP2A2AA

REPORT DATE: 11-JUN-07
ACQUIRE DATE: 11-JUN-07 13:44:34
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-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/C²
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]JWP2A2AA_110671344.CNF;1
Analyses by : NAI V3.0
Sample title : BA133
Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:44:34
Sample ID : JWP2A2AA Sample quantity : 1.0000 sampl
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.66 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:	4.2	5.7	3.9	4.5	3.9	1.5	1.9	0.4
88:	1.3	1.3	1.6	0.9	-0.1	-0.5	-0.4	-1.0
96:	-2.1	-2.0	-2.4	-2.6	-4.2	-2.0	-2.8	-2.3
104:	-2.7	-4.5	-2.7	-3.5	-3.4	-5.5	-3.4	-5.5
112:	-3.6	-4.5						

List of Suspicious Channels

81 82 83

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	9.33E+00	0.00E+00	1.03E+00
2	3.83E+00	0.00E+00	1.05E+00
3	1.77E+00	0.00E+00	1.07E+00
4	9.28E-01	0.00E+00	1.09E+00

Brief Nuclide Activity Report
Sample ID : JWP2A2AA

Page : 3
Acquisition date : 11-JUN-2007 13:44:34

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	600.	8.29

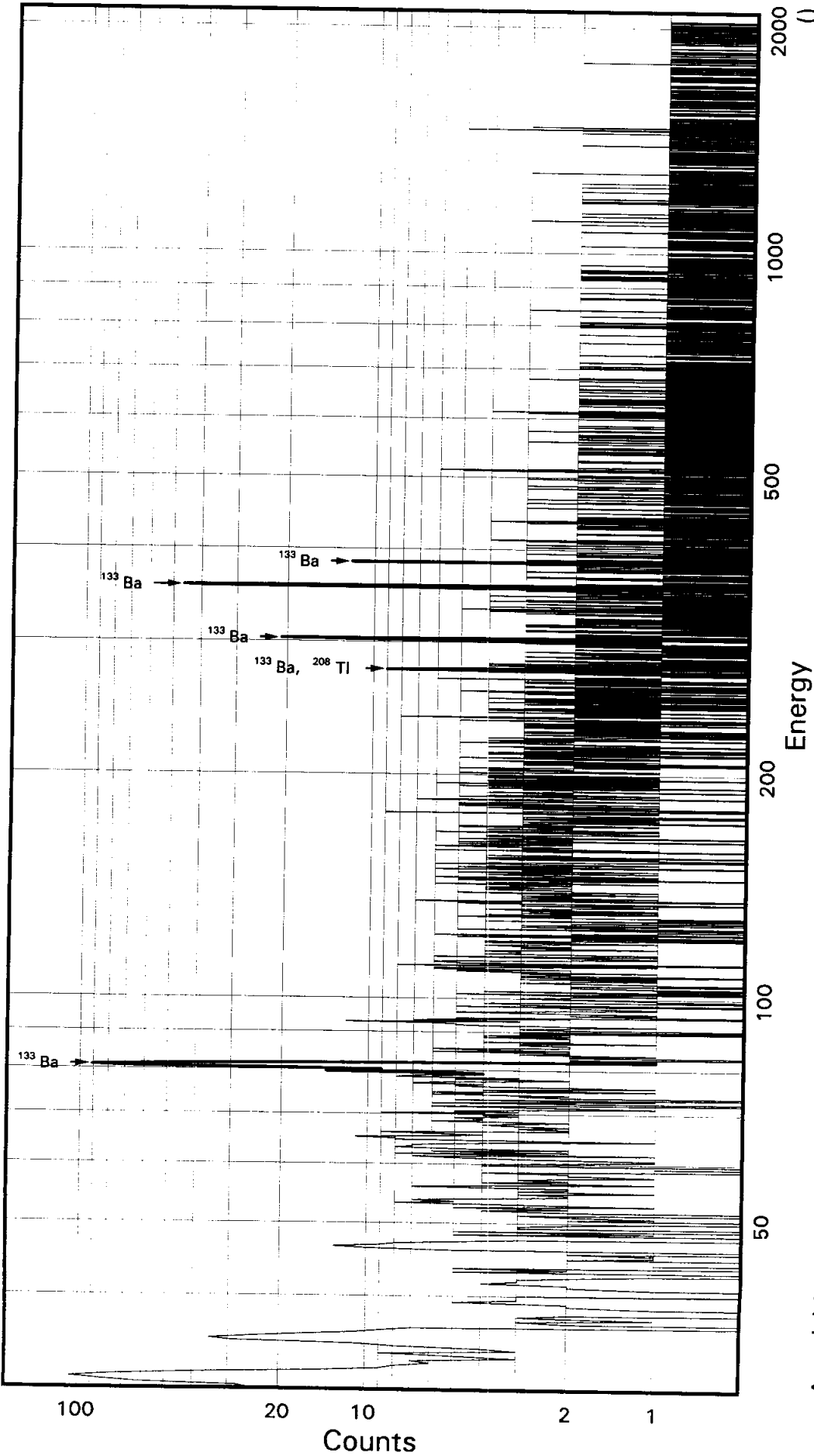
Total Activity :	600.	

STL Richland WA.

BA133

Sample ID: JWP2C2AA
Detector ID: GER5 1

Batch ID: 7159393



Acquisition Start: 11-JUN-2007 13:44:43.97
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -3.70193E-01
Slope: 2.49388E-01
Quadrature: -5.61194E-09

SAMPLE IDENTIFICATION:

JWP2C2AA

CONFIGURATION ID: GER5:JWP2C2AA_110671344

TITLE : BA133

SAMPLE ID : JWP2C2AA

REPORT DATE: 11-JUN-07

ACQUIRE DATE: 11-JUN-07 13:44:43

ELAPSED LIVE TIME: 1800.0 Sec

PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00

CALIB DATE: 11-JUN-2007 05:32:52.65

ELAPSED LIVE TIME: 0 00:30:00

ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00

SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL

SAMPLE TYPE:

ENERGY OFFSET: -.3702E+00 keV

ENERGY SLOPE: 2.4939E-01 keV/C

ENERGY Q COEFF: -.5612E-08 keV/C²

PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.7756E-01 keV

FWHM SLOPE: 3.2835E-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: 2.2200E+06

LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 14:15:01

Configuration : RDND06\$DKA100:[GER5.SAMPLE]JWP2C2AA_110671344.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:44:43
 Sample ID : JWP2C2AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
 Start energy : 19.58 End energy : 2042.24
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	31.03	358	146	0.91	125.92	119	17	1.99E-01	9.5	
2	0	35.31	120	39	0.84	143.06	137	12	6.68E-02	14.0	
3	0	46.68*	29	5	1.03	188.67	183	11	1.62E-02	29.5	
4	0	81.01	296	61	0.79	326.32	318	15	1.64E-01	8.1	
5	0	276.28	43	9	0.95	1109.34	1100	18	2.39E-02	22.4	
6	0	302.95	73	14	0.79	1216.27	1209	14	4.07E-02	15.9	
7	0	356.03	224	21	1.21	1429.16	1421	18	1.25E-01	8.3	
8	0	383.86	26	6	0.41	1540.75	1534	12	1.44E-02	27.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 11-JUN-2007 14:15:01

Configuration : RDND06\$DKA100:[GER5.SAMPLE]JWP2C2AA_110671344.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:44:43
 Sample ID : JWP2C2AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected	Decay Corr	1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	296	33.00	1.919E+00	1.558E+03	1.565E+03	9.80
	276.40	43	6.90	2.071E+00	1.003E+03	1.007E+03	23.01
	302.84	73	17.80	2.074E+00	6.606E+02	6.636E+02	16.82
	356.00	224	62.05*	2.076E+00	5.798E+02	5.825E+02	9.90
	383.85	26	8.70	2.076E+00	4.799E+02	4.821E+02	27.72

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2C2AA

Page : 2
Acquisition date : 11-JUN-2007 13:44:43

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	31.03	358	146	0.91	125.92	119	17	1.99E-01	9.5	1.68E+00	
0	35.31	120	39	0.84	143.06	137	12	6.68E-02	14.0	1.71E+00	
0	46.68	29	5	1.03	188.67	183	11	1.62E-02	29.5	1.79E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2C2AA

Page : 3
Acquisition date : 11-JUN-2007 13:44:43

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.018E+03	23.01	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 11-JUN-2007 14:15:02

```

Configuration      : RDND06$DKA100:[GER5.SAMPLE]JWP2C2AA_110671344.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:44:43
Sample ID        : JWP2C2AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00 WTM error limit : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.825E+02	5.764E+01	6.040E+01	1.208E+00	9.644

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.198E+01	8.144E+01	3.170E+02	6.359E+00	-0.038
NA-22	-6.448E+00	5.638E+00	1.948E+01	4.130E-01	-0.331
NA-24	1.447E+06	1.782E+06	Half-Life too short		
K-40	3.142E+01	8.762E+01	4.038E+02	8.675E+00	0.078
SC-46	2.361E-01	5.775E+00	2.486E+01	5.212E-01	0.009
CR-51	-9.205E+01	1.468E+02	5.396E+02	1.080E+01	-0.171
MN-54	-7.411E+00	6.782E+00	2.376E+01	4.878E-01	-0.312
CO-57	1.391E+02	1.329E+02	5.038E+02	1.042E+01	0.276
CO-58	2.191E+00	6.233E+00	2.753E+01	5.641E-01	0.080
FE-59	7.524E-01	1.365E+01	5.753E+01	1.204E+00	0.013
CO-60	-5.397E+00	4.657E+00	1.600E+01	3.407E-01	-0.337
ZN-65	-1.004E+01	1.048E+01	3.829E+01	8.026E-01	-0.262
SE-75	-9.379E+00	1.849E+01	6.584E+01	1.321E+00	-0.142
SR-85	-2.437E+01	1.388E+01	4.538E+01	9.120E-01	-0.537
Y-88	-2.020E+00	2.023E+00	5.662E+00	1.247E-01	-0.357
NB-94	-1.573E+00	4.931E+00	1.983E+01	4.082E-01	-0.079
NB-95	-2.326E+00	5.868E+00	2.503E+01	5.112E-01	-0.093
TC-95M	2.147E+01	2.557E+01	9.746E+01	1.971E+00	0.220
ZR-95	8.144E-01	1.074E+01	4.672E+01	9.537E-01	0.017
ZRNB-95	-3.711E+00	9.363E+00	3.993E+01	8.157E-01	-0.093
MO-99	1.596E-03	3.941E-03	Half-Life too short		
RH-101	-2.606E+01	1.919E+01	6.418E+01	1.300E+00	-0.406
RH-102M	-5.988E+00	7.312E+00	2.586E+01	5.187E-01	-0.232
RU-103	7.104E+00	1.260E+01	5.106E+01	1.025E+00	0.139
RU-106DA	-3.473E+01	5.495E+01	2.085E+02	4.216E+00	-0.167
AG-108M	-1.438E+01	1.037E+01	3.417E+01	6.844E-01	-0.421
AG-110M	2.479E+00	6.449E+00	2.932E+01	6.040E-01	0.085

---- Non-Identified Nuclides ----

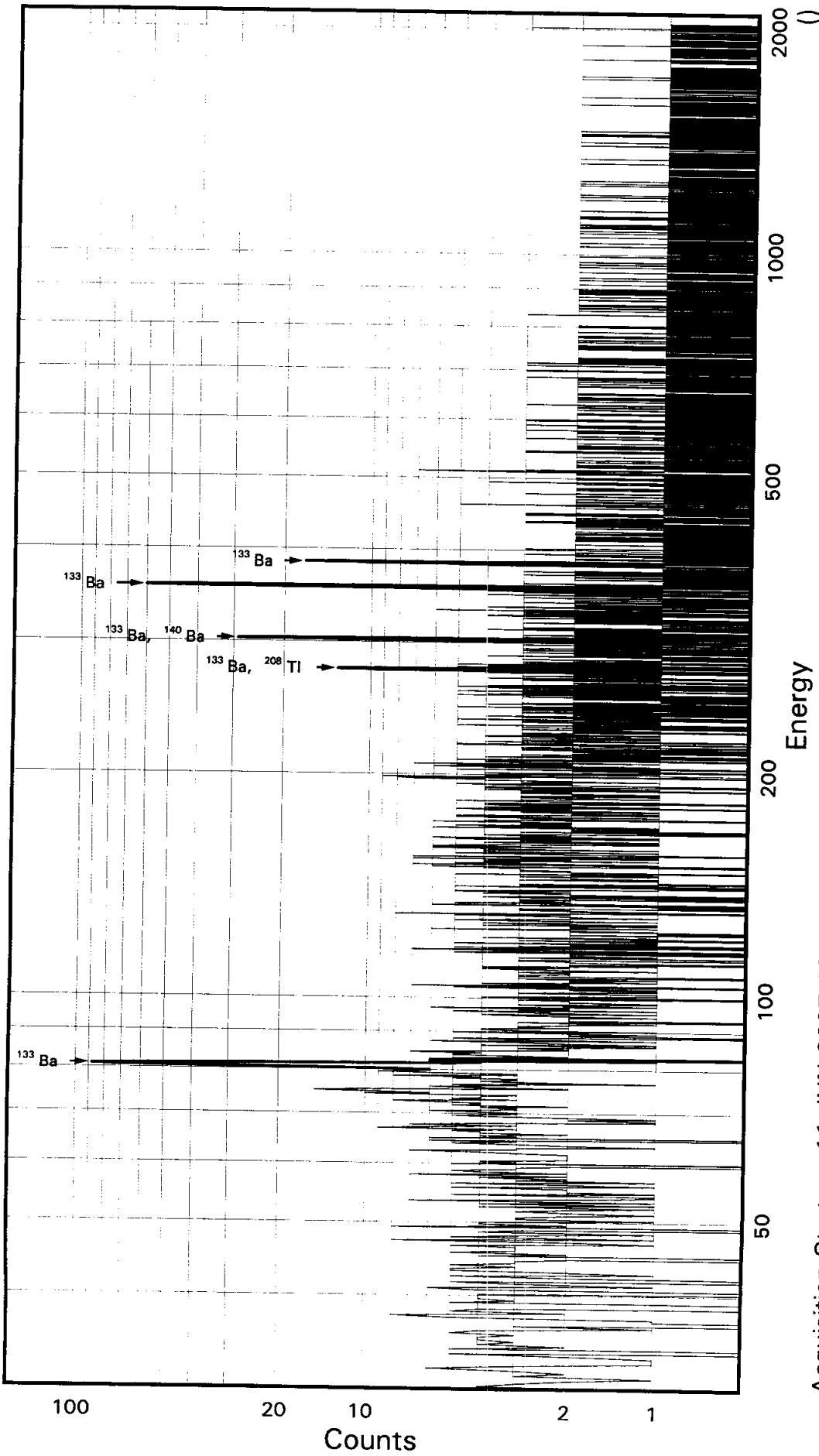
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	-6.836E+00		1.511E+01	5.527E+01	1.106E+00	-0.124
SB-124	1.617E+00		7.844E+00	3.256E+01	6.577E-01	0.050
SB-125	-4.619E+00		2.347E+01	8.999E+01	1.802E+00	-0.051
SN-126DA	4.824E+00		4.342E+00	2.134E+01	4.329E-01	0.226
I-131	-9.915E+01		7.218E+01	2.422E+02	4.844E+00	-0.409
CS-134	4.878E+00		7.333E+00	3.165E+01	6.478E-01	0.154
CS-137DA	-1.003E+01		6.991E+00	2.282E+01	4.627E-01	-0.439
LA-138	-2.391E+00		4.364E+00	1.898E+01	4.071E-01	-0.126
CE-139	-1.140E+00		1.878E+01	6.864E+01	1.402E+00	-0.017
BA-140	3.836E+01		9.017E+01	3.839E+02	7.725E+00	0.100
BALA-140	4.263E+01		3.181E+01	1.704E+02	3.695E+00	0.250
LA-140	6.418E-02		5.549E-02	Half-Life too short		
CE-141	-3.289E+01		5.044E+01	1.717E+02	3.534E+00	-0.192
CE-144	-2.687E+01		1.307E+02	4.618E+02	9.562E+00	-0.058
CEPR-144	-5.374E+01		2.614E+02	9.237E+02	1.912E+01	-0.058
PM-144	6.075E+00		5.840E+00	2.657E+01	5.372E-01	0.229
PM-146	2.466E+01		1.013E+01	4.853E+01	9.727E-01	0.508
EU-152	-6.984E+01		3.475E+01	1.092E+02	2.184E+00	-0.640
EU-154	-2.454E+01		1.618E+01	5.186E+01	1.100E+00	-0.473
EU-155	2.050E+01		5.049E+01	1.931E+02	4.073E+00	0.106
HF-181	1.520E+01		1.251E+01	5.414E+01	1.086E+00	0.281
BI-207	1.005E+00		6.644E+00	2.686E+01	5.414E-01	0.037
TL-208	-9.933E+00		7.491E+00	2.925E+01	5.902E-01	-0.340
BI-210M	-2.490E+00		2.083E+01	7.581E+01	1.521E+00	-0.033
BI-212	-2.847E+01		6.761E+01	2.684E+02	8.206E+00	-0.106
PB-212	1.984E+01		2.780E+01	1.108E+02	2.228E+00	0.179
BI-214	-1.713E+01		1.716E+01	6.591E+01	1.332E+00	-0.260
PB-214	3.809E+01		3.098E+01	1.108E+02	2.215E+00	0.344
RA-223	1.283E+02		7.604E+01	3.104E+02	6.225E+00	0.413
RA-224DA	2.035E+01		2.850E+01	1.136E+02	2.284E+00	0.179
RA-226DA	-1.713E+01		1.716E+01	6.591E+01	1.332E+00	-0.260
AC-227DA	-2.481E+02		1.136E+02	3.515E+02	7.073E+00	-0.706
AC-228	-6.114E+00		1.988E+01	7.838E+01	1.618E+00	-0.078
RA-228DA	-6.165E+00		2.005E+01	7.903E+01	1.632E+00	-0.078
TH-228DA	-2.835E+01		2.138E+01	8.348E+01	1.684E+00	-0.340
TH-232DA	-1.440E+02		7.621E+01	2.436E+02	4.872E+00	-0.591
TH-234DA	2.234E+02		7.813E+02	3.362E+03	6.988E+01	0.066
U-234DA	-4.072E+01		4.433E+01	1.533E+02	3.069E+00	-0.266
U-235HP	1.806E+01		1.381E+02	4.920E+02	1.013E+01	0.037
NP-237DA	1.314E+01		2.467E+01	9.793E+01	1.960E+00	0.134
U-238DA	3.809E+01		3.098E+01	1.108E+02	2.215E+00	0.344
U-238DHP	-9.511E+02		5.028E+02	1.769E+03	3.938E+01	-0.538
AM-241HP	-9.734E+01		3.864E+01	1.198E+02	2.687E+00	-0.813

STL Richland WA.

BA133

Sample ID: JWP2D2AA
Detector ID: GER12 1

Batch ID: 7159393



Energy Coefficients:
Offset: 1.13956E+01
Slope: 2.47612E-01
Quadrature: 1.11747E-09

Acquisition Start: 11-JUN-2007 13:46:49.96
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JWP2D2AA

CONFIGURATION ID: GER12:JWP2D2AA_110671346
TITLE : BA133
SAMPLE ID : JWP2D2AA

REPORT DATE: 11-JUN-07
ACQUIRE DATE: 11-JUN-07 13:46:49
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 11-JUN-2007 05:36:00.36
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 1.1396E+01 keV
ENERGY SLOPE: 2.4761E-01 keV/C
ENERGY Q COEFF: 1.1175E-09 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.8807E-01 keV
FWHM SLOPE: 3.8434E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 14:17:10

Configuration : \$DISK1:[GER12.SAMPLE]JWP2D2AA_110671346.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:46:49
 Sample ID : JWP2D2AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 0.0%
 Start energy : 11.64 End energy : 2039.91
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.09*	5	52	1.02	257.23	250	13	3.03E-03	291.7	
2	0	81.05	237	62	0.68	281.30	276	13	1.32E-01	9.6	
3	0	276.49	76	17	1.20	1070.60	1059	23	4.22E-02	18.2	
4	0	302.99	124	11	0.77	1177.64	1171	16	6.87E-02	10.9	
5	0	356.04	316	14	1.22	1391.85	1383	19	1.76E-01	6.3	
6	0	383.91	69	4	0.97	1504.42	1496	16	3.83E-02	13.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:17:11

Configuration : \$DISK1:[GER12.SAMPLE]JWP2D2AA 110671346.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:46:49
 Sample ID : JWP2D2AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 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	Decay Corr	1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	237	33.00	2.916E+00	8.214E+02	8.251E+02	11.05
	276.40	76	6.90	3.094E+00	1.187E+03	1.192E+03	19.02
	302.84	124	17.80	3.097E+00	7.479E+02	7.513E+02	12.19
	356.00	316	62.05*	3.100E+00	5.479E+02	5.504E+02	8.29
	383.85	69	8.70	3.099E+00	8.519E+02	8.558E+02	14.71

Flag: "*" = Keyline

Unidentified Energy Lines

Sample ID : JWP2D2AA

Page : 2

Acquisition date : 11-JUN-2007 13:46:49

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.09	5	52	1.02	257.23	250	13	3.03E-03	****	2.90E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
BA-140	12.79D	1.96	162.64	6.70	---	Not Found	---
			304.84	4.50	1.152E+04	12.19	Abun.
			423.70	3.20	---	Not Found	---
			537.32*	25.00	---	Not Found	---
% Abundances Found =			11.42				
TL-208	1.41E+10Y	0.00	277.35	6.80	1.204E+03	19.02	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =			5.44				

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:17:14

```

Configuration      : $DISK1:[GER12.SAMPLE]JWP2D2AA_110671346.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      : BA133
Sample date       : 17-MAY-2007 12:00:00
Sample ID         : JWP2D2AA
Sample type       :
Elapsed live time : 0 00:30:00.00
Peak Width (FWHM): 3.00
Energy tolerance  : 2.00
Errors propagated: Yes
Efficiency type   : Empirical
Abundance limit   : 80.00

Acquisition date : 11-JUN-2007 13:46:49
Sample quantity   : 1.0000 SAMPL
Sample geometry   : BA133T15
Elapsed real time : 0 00:30:00.35 0.0%
Confidence level  : 5.00 %
Half life ratio   : 8.00
Systematic Error  : 5.00 %
Efficiencies at   : Peak Energy
WTM error limit   : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.504E+02	4.565E+01	4.024E+01	8.048E-01	13.676

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.746E+00	6.382E+01	2.460E+02	4.932E+00	0.007
NA-22	-2.188E+00	2.244E+00	8.433E+00	1.765E-01	-0.260
K-40	-2.494E+01	4.031E+01	2.028E+02	4.288E+00	-0.123
SC-46	-2.885E+00	4.799E+00	1.799E+01	3.732E-01	-0.160
CR-51	1.231E+02	1.006E+02	4.284E+02	8.571E+00	0.287
MN-54	-5.874E+00	4.827E+00	1.639E+01	3.346E-01	-0.358
CO-57	-5.052E+01	7.739E+01	2.711E+02	5.563E+00	-0.186
CO-58	-6.704E+00	3.801E+00	1.108E+01	2.258E-01	-0.605
FE-59	8.674E+00	8.768E+00	4.103E+01	8.504E-01	0.211
CO-60	1.186E+00	2.998E+00	1.368E+01	2.871E-01	0.087
ZN-65	-7.260E+00	7.150E+00	2.538E+01	5.265E-01	-0.286
SE-75	1.582E+01	1.152E+01	4.771E+01	9.565E-01	0.332
SR-85	-2.712E+01	9.959E+00	2.967E+01	5.956E-01	-0.914
Y-88	-2.822E+00	2.001E+00	3.712E+00	8.004E-02	-0.760
NB-94	-2.177E-01	4.454E+00	1.744E+01	3.566E-01	-0.012
NB-95	-6.823E+00	6.641E+00	2.356E+01	4.790E-01	-0.290
TC-95M	3.604E+00	1.562E+01	5.874E+01	1.185E+00	0.061
ZR-95	5.466E+00	8.115E+00	3.653E+01	7.424E-01	0.150
ZRNB-95	-7.766E+00	1.025E+01	3.792E+01	7.709E-01	-0.205
RH-101	3.224E+01	1.344E+01	5.469E+01	1.104E+00	0.590
RH-102M	1.875E+00	5.591E+00	2.188E+01	4.386E-01	0.086
RU-103	-1.158E+01	8.731E+00	2.990E+01	5.998E-01	-0.387
RU-106DA	1.414E+01	4.589E+01	1.874E+02	3.780E+00	0.075
AG-108M	-7.552E+00	6.004E+00	2.007E+01	4.018E-01	-0.376
AG-110M	-2.992E-01	5.717E+00	2.290E+01	4.688E-01	-0.013
SN-113DA	-5.085E+00	8.444E+00	3.103E+01	6.208E-01	-0.164
SB-124	-1.589E+00	6.122E+00	2.344E+01	4.724E-01	-0.068

---- Non-Identified Nuclides ----

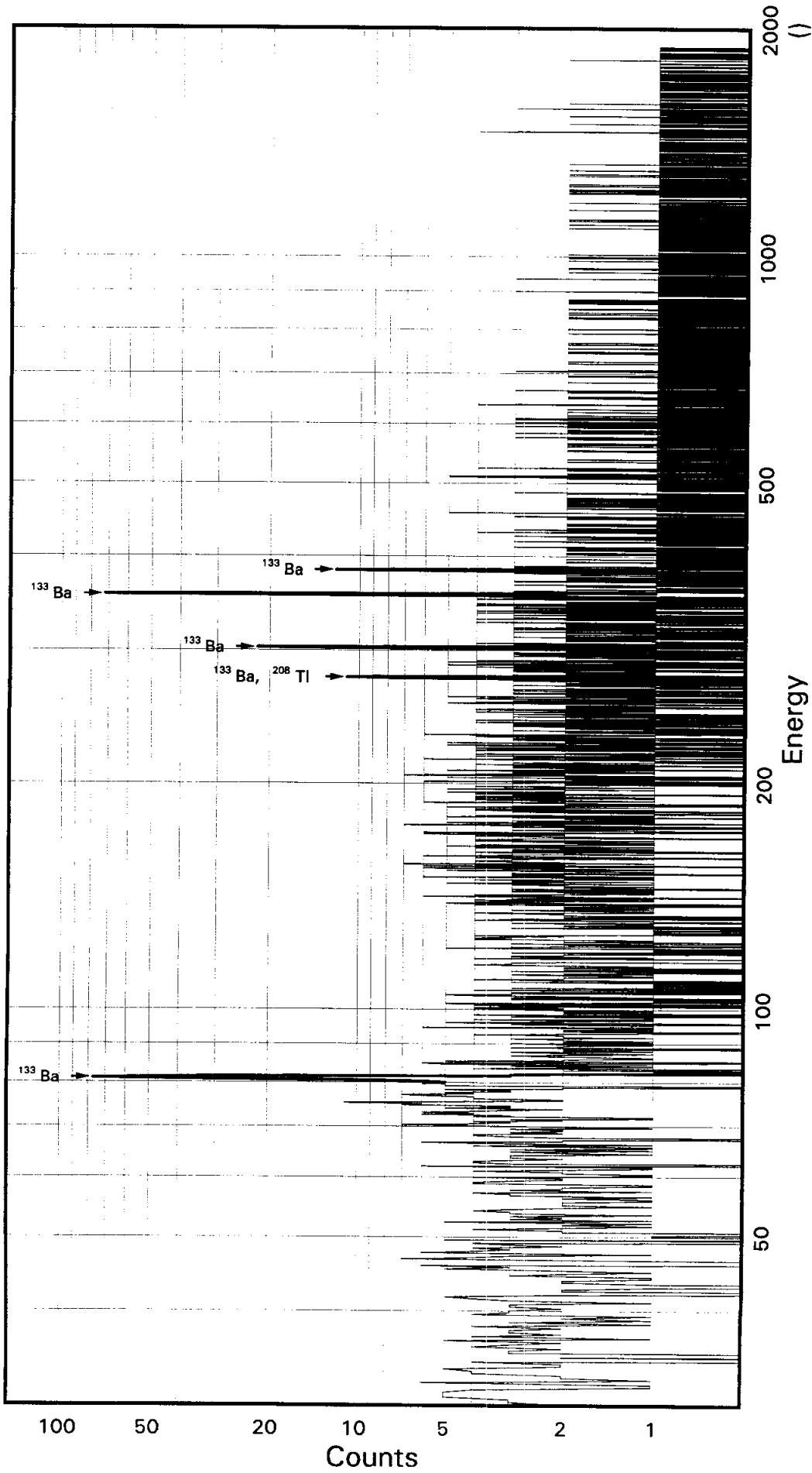
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	1.574E+01		1.428E+01	6.313E+01	1.264E+00	0.249
SN-126DA	5.489E-01		3.972E+00	1.611E+01	3.257E-01	0.034
I-131	3.021E+00		4.814E+01	1.917E+02	3.835E+00	0.016
CS-134	5.891E-02		4.131E+00	1.719E+01	3.501E-01	0.003
CS-137DA	2.230E+00		4.100E+00	1.792E+01	3.623E-01	0.124
LA-138	-1.810E+00		4.546E+00	1.831E+01	3.867E-01	-0.099
CE-139	7.568E+00		1.084E+01	4.100E+01	8.334E-01	0.185
BA-140	1.099E+01		5.372E+01	2.290E+02	4.601E+00	0.048
BALA-140	3.743E+01		2.282E+01	1.222E+02	2.602E+00	0.306
CE-141	1.891E+01		2.272E+01	8.978E+01	1.836E+00	0.211
CE-144	-1.375E+01		6.985E+01	2.550E+02	5.239E+00	-0.054
CEPR-144	-2.927E+01		1.396E+02	5.091E+02	1.046E+01	-0.057
PM-144	2.176E+00		4.330E+00	1.820E+01	3.672E-01	0.120
PM-146	-5.195E-01		6.385E+00	2.504E+01	5.017E-01	-0.021
EU-152	4.633E-01		2.008E+01	7.797E+01	1.559E+00	0.006
EU-154	-6.082E+00		6.237E+00	2.344E+01	4.905E-01	-0.259
EU-155	-3.884E+01		3.658E+01	1.269E+02	2.645E+00	-0.306
HF-181	-1.320E+01		8.241E+00	2.571E+01	5.155E-01	-0.513
BI-207	2.343E+00		4.685E+00	1.932E+01	3.888E-01	0.121
TL-208	-6.430E+00		4.633E+00	1.539E+01	3.099E-01	-0.418
BI-210M	-2.325E+01		1.316E+01	4.168E+01	8.355E-01	-0.558
BI-212	8.630E+01		6.354E+01	2.886E+02	8.807E+00	0.299
PB-212	1.701E+01		1.508E+01	6.042E+01	1.214E+00	0.282
BI-214	2.873E-01		8.227E+00	3.343E+01	6.741E-01	0.009
PB-214	2.085E+01		1.939E+01	7.351E+01	1.470E+00	0.284
RA-223	3.015E+01		4.846E+01	1.877E+02	3.762E+00	0.161
RA-224DA	1.744E+01		1.546E+01	6.195E+01	1.244E+00	0.282
RA-226DA	2.873E-01		8.227E+00	3.343E+01	6.741E-01	0.009
AC-227DA	5.630E+00		6.029E+01	2.261E+02	4.543E+00	0.025
AC-228	9.738E+00		1.032E+01	5.014E+01	1.028E+00	0.194
RA-228DA	9.819E+00		1.040E+01	5.056E+01	1.036E+00	0.194
TH-228DA	-1.835E+01		1.322E+01	4.392E+01	8.843E-01	-0.418
TH-232DA	-8.643E+01		4.965E+01	1.622E+02	3.244E+00	-0.533
TH-234DA	3.554E+02		4.775E+02	2.233E+03	4.602E+01	0.159
U-234DA	1.422E+00		2.997E+01	1.128E+02	2.257E+00	0.013
U-235HP	-6.587E+01		6.249E+01	2.125E+02	4.349E+00	-0.310
NP-237DA	8.150E+00		1.856E+01	7.017E+01	1.404E+00	0.116
U-238DA	2.085E+01		1.939E+01	7.351E+01	1.470E+00	0.284
U-238DHP	1.843E+02		2.250E+02	8.549E+02	1.859E+01	0.216
AM-241HP	7.099E+00		2.334E+01	8.655E+01	1.893E+00	0.082

STL Richland WA.

BA133

Batch ID: 7159393

Sample ID: JWP2E2AA
Detector ID: GER11 1



Acquisition Start: 11-JUN-2007 13:46:56.27
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -9.95443E-01
Slope: 2.31769E-01
Quadrature: 3.52207E-08

SAMPLE IDENTIFICATION: JWP2E2AA

CONFIGURATION ID: GER11:JWP2E2AA_110671346
TITLE : BA133
SAMPLE ID : JWP2E2AA

REPORT DATE: 11-JUN-07
ACQUIRE DATE: 11-JUN-07 13:46:56
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 11-JUN-2007 05:35:46.21
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.9954E+00 keV
ENERGY SLOPE: 2.3177E-01 keV/C
ENERGY Q COEFF: 3.5221E-08 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 2.4136E-01 keV
FWHM SLOPE: 3.8880E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 14:17:28

```

Configuration      : $DISK1:[GER11.SAMPLE]JWP2E2AA_110671346.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:46:56
Sample ID         : JWP2E2AA Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.93 0.1%
Start energy      : 1.32 End energy : 1900.02
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.16	196	31	0.56	354.44	349	12	1.09E-01	9.4	
2	0	276.31	58	0	1.20	1196.26	1189	15	3.22E-02	13.1	
3	0	302.66	79	13	0.78	1309.90	1303	13	4.40E-02	14.6	
4	0	355.73	322	12	1.04	1538.79	1529	22	1.79E-01	6.2	
5	0	383.63	37	22	0.92	1659.09	1652	14	2.08E-02	30.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:17:28

Configuration : \$DISK1:[GER11.SAMPLE]JWP2E2AA_110671346.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:46:56
 Sample ID : JWP2E2AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.93 0.1%
 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	196	33.00	2.880E+00	6.862E+02	6.893E+02	10.82
	276.40	58	6.90	3.084E+00	9.086E+02	9.127E+02	14.19
	302.84	79	17.80	3.088E+00	4.808E+02	4.830E+02	15.58
	356.00	322	62.05*	3.090E+00	5.597E+02	5.623E+02	8.19
	383.85	37	8.70	3.090E+00	4.637E+02	4.658E+02	31.25

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2E2AA

Page : 2
Acquisition date : 11-JUN-2007 13:46:56

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2E2AA

Page : 3
Acquisition date : 11-JUN-2007 13:46:56

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma (DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	9.219E+02	14.19	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:17:31

```

Configuration      : $DISK1:[GER11.SAMPLE]JWP2E2AA 110671346.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:46:56
Sample ID        : JWP2E2AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.93 0.1%
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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.623E+02	4.604E+01	2.827E+01	5.654E-01	19.888

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	5.057E+01	5.317E+01	2.344E+02	4.701E+00	0.216
NA-22	-3.332E+00	1.932E+00	3.131E+00	6.599E-02	-1.064
K-40	1.206E+00	4.831E+01	2.358E+02	5.030E+00	0.005
SC-46	6.932E+00	5.005E+00	2.306E+01	4.812E-01	0.301
CR-51	-8.576E+01	1.096E+02	3.868E+02	7.739E+00	-0.222
MN-54	2.422E+00	3.667E+00	1.645E+01	3.369E-01	0.147
CO-57	-3.246E+01	6.426E+01	2.381E+02	4.906E+00	-0.136
CO-58	-1.070E-01	3.900E+00	1.669E+01	3.412E-01	-0.006
FE-59	-8.670E+00	7.731E+00	2.725E+01	5.677E-01	-0.318
CO-60	1.231E+00	3.017E+00	1.382E+01	2.924E-01	0.089
ZN-65	-7.084E+00	7.887E+00	2.857E+01	5.959E-01	-0.248
SE-75	-5.813E+00	1.114E+01	4.105E+01	8.233E-01	-0.142
SR-85	-1.164E+01	7.832E+00	2.539E+01	5.100E-01	-0.458
Y-88	-7.995E-02	2.827E+00	1.293E+01	2.820E-01	-0.006
NB-94	4.434E+00	4.147E+00	1.843E+01	3.783E-01	0.241
NB-95	-3.241E-01	5.438E+00	2.284E+01	4.655E-01	-0.014
TC-95M	-1.861E+01	1.487E+01	4.947E+01	9.992E-01	-0.376
ZR-95	4.740E+00	7.547E+00	3.415E+01	6.956E-01	0.139
ZRNB-95	-1.264E+00	8.553E+00	3.562E+01	7.259E-01	-0.035
RH-101	7.668E+00	9.965E+00	3.927E+01	7.941E-01	0.195
RH-102M	2.369E+00	4.658E+00	1.936E+01	3.882E-01	0.122
RU-103	1.753E+00	5.060E+00	2.271E+01	4.558E-01	0.077
RU-106DA	1.663E+00	4.317E+01	1.749E+02	3.533E+00	0.010
AG-108M	3.370E-01	5.300E+00	2.092E+01	4.189E-01	0.016
AG-110M	-3.289E+00	2.332E+00	4.422E+00	9.083E-02	-0.744
SN-113DA	-2.982E+00	6.448E+00	2.533E+01	5.068E-01	-0.118
SB-124	9.196E+00	6.250E+00	2.792E+01	5.635E-01	0.329

---- Non-Identified Nuclides ----

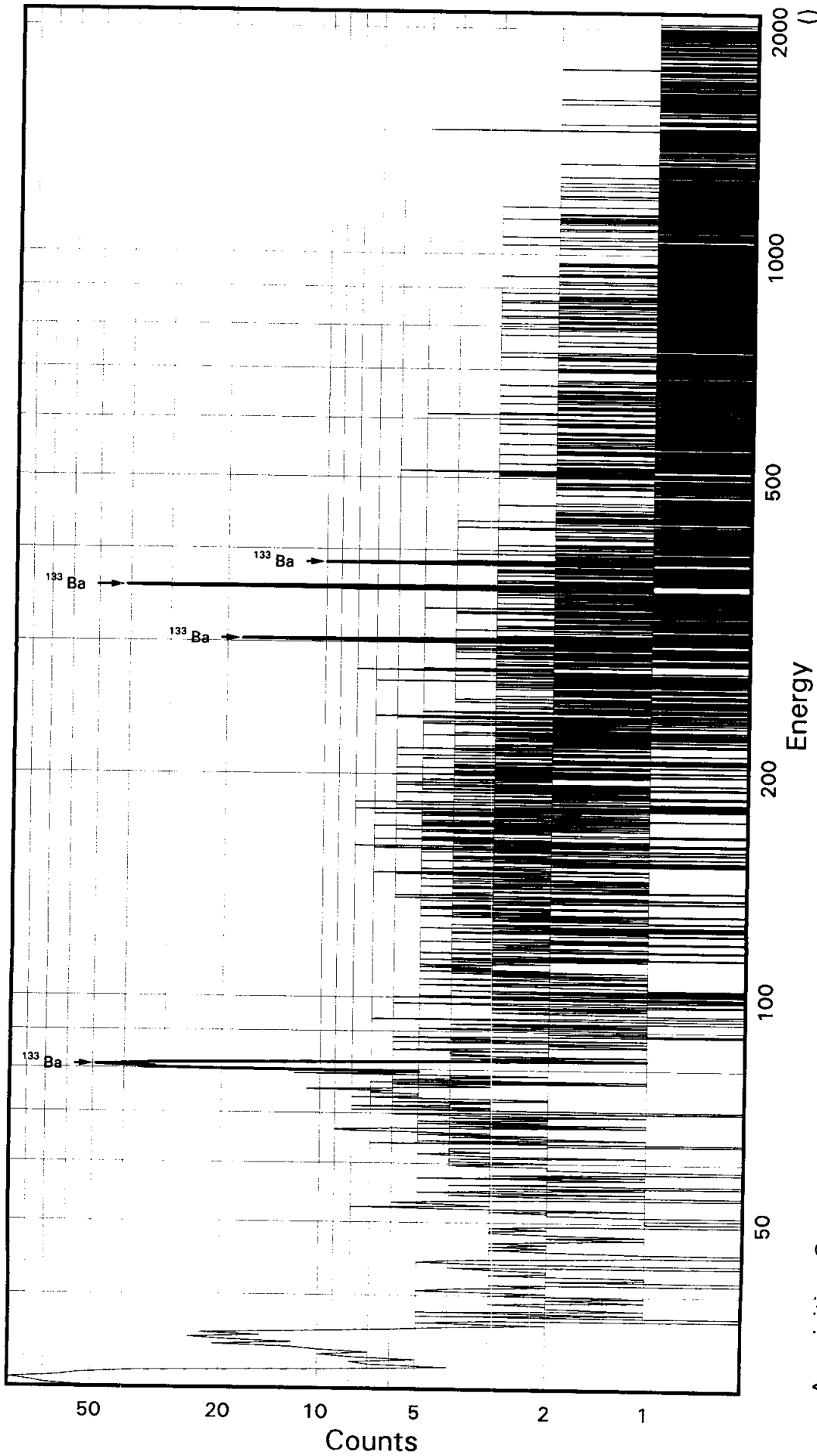
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	-1.624E+01		1.528E+01	5.383E+01	1.078E+00	-0.302
SN-126DA	-3.326E+00		3.299E+00	1.176E+01	2.381E-01	-0.283
I-131	-2.709E+01		5.647E+01	2.043E+02	4.086E+00	-0.133
CS-134	-3.711E+00		3.404E+00	1.225E+01	2.501E-01	-0.303
CS-137DA	-5.203E+00		5.475E+00	1.929E+01	3.905E-01	-0.270
LA-138	-5.211E+00		3.022E+00	4.654E+00	9.910E-02	-1.120
CE-139	-1.590E+00		9.870E+00	3.657E+01	7.454E-01	-0.043
BA-140	-4.524E+01		5.984E+01	2.163E+02	4.349E+00	-0.209
BALA-140	-8.550E+00		2.075E+01	8.778E+01	1.888E+00	-0.097
CE-141	-2.538E+01		2.224E+01	7.783E+01	1.597E+00	-0.326
CE-144	-4.447E+01		6.372E+01	2.189E+02	4.516E+00	-0.203
CEPR-144	-8.894E+01		1.274E+02	4.378E+02	9.032E+00	-0.203
PM-144	-2.767E+00		4.467E+00	1.668E+01	3.368E-01	-0.166
PM-146	-2.175E+01		6.905E+00	1.510E+01	3.027E-01	-1.440
EU-152	2.010E+00		2.538E+01	9.424E+01	1.885E+00	0.021
EU-154	-9.259E+00		5.369E+00	8.701E+00	1.834E-01	-1.064
EU-155	4.937E+01		3.037E+01	1.277E+02	2.679E+00	0.387
HF-181	-3.766E+00		6.326E+00	2.400E+01	4.815E-01	-0.157
BI-207	-5.908E+00		3.957E+00	1.431E+01	2.883E-01	-0.413
TL-208	1.641E+00		4.560E+00	1.937E+01	3.905E-01	0.085
BI-210M	-3.468E-02		1.097E+01	4.240E+01	8.504E-01	-0.001
BI-212	-1.884E+01		3.826E+01	1.546E+02	4.723E+00	-0.122
PB-212	2.979E+00		1.399E+01	5.246E+01	1.055E+00	0.057
BI-214	1.358E+01		1.083E+01	4.660E+01	9.407E-01	0.291
PB-214	3.433E+01		1.369E+01	6.080E+01	1.216E+00	0.565
RA-223	9.060E+00		3.998E+01	1.575E+02	3.159E+00	0.058
RA-224DA	3.054E+00		1.434E+01	5.379E+01	1.081E+00	0.057
RA-226DA	1.358E+01		1.083E+01	4.660E+01	9.408E-01	0.291
AC-227DA	-3.408E+01		5.087E+01	1.780E+02	3.579E+00	-0.192
AC-228	3.587E+00		1.456E+01	6.012E+01	1.237E+00	0.060
RA-228DA	3.616E+00		1.468E+01	6.062E+01	1.247E+00	0.060
TH-228DA	4.684E+00		1.301E+01	5.529E+01	1.114E+00	0.085
TH-232DA	1.952E+01		5.205E+01	1.987E+02	3.974E+00	0.098
TH-234DA	-2.050E+02		5.423E+02	2.162E+03	4.476E+01	-0.095
U-234DA	1.606E+01		2.984E+01	1.185E+02	2.373E+00	0.136
U-235HP	-1.055E+02		6.474E+01	2.168E+02	4.452E+00	-0.487
NP-237DA	-6.137E-01		1.524E+01	5.800E+01	1.161E+00	-0.011
U-238DA	3.433E+01		1.369E+01	6.080E+01	1.216E+00	0.565
U-238DHP	2.818E+02		1.837E+02	7.720E+02	1.700E+01	0.365
AM-241HP	1.821E+01		1.880E+01	7.738E+01	1.716E+00	0.235

STL Richland WA.

BA133

Sample ID: JWP2F2AA
Detector ID: GER14 1

Batch ID: 7159393



Acquisition Start: 11-JUN-2007 13:47:11.86
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -6.82968E-01
Slope: 2.48232E-01
Quadrature: 5.76312E-09

SAMPLE IDENTIFICATION: JWP2F2AA

CONFIGURATION ID: GER14:JWP2F2AA_110671347
TITLE : BA133
SAMPLE ID : JWP2F2AA

REPORT DATE: 11-JUN-07
ACQUIRE DATE: 11-JUN-07 13:47:11
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 11-JUN-2007 05:36:14.30
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.6830E+00 keV
ENERGY SLOPE: 2.4823E-01 keV/C
ENERGY Q COEFF: 5.7631E-09 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.0483E+00 keV
FWHM SLOPE: 2.7362E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 14:17:44

```

Configuration      : $DISK1:[GER14.SAMPLE]JWP2F2AA_110671347.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:11
Sample ID         : JWP2F2AA Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.39 0.0%
Start energy      : 19.18 End energy : 2033.22
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.64	455	143	1.32	126.19	118	15	2.53E-01	7.4	
2	0	35.03	119	79	1.58	143.86	135	19	6.60E-02	20.7	
3	0	80.99	223	69	1.44	329.02	322	14	1.24E-01	10.3	
4	0	302.93	75	24	0.81	1223.05	1212	18	4.17E-02	17.4	
5	0	356.05	224	25	1.18	1437.07	1425	25	1.24E-01	8.4	
6	0	384.07	38	16	1.07	1549.93	1542	14	2.10E-02	25.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:17:44

Configuration : \$DISK1:[GER14.SAMPLE]JWP2F2AA 110671347.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:11
 Sample ID : JWP2F2AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.39 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma %Error
					DPM/SAMPL	DPM/SAMPL	
BA-133	81.00	223	33.00	1.818E+00	1.237E+03	1.242E+03	11.64
	276.40	-----	6.90	1.945E+00	-----	Line Not Found	-----
	302.84	75	17.80	1.948E+00	7.211E+02	7.244E+02	18.25
	356.00	224	62.05*	1.949E+00	6.173E+02	6.202E+02	9.97
	383.85	38	8.70	1.949E+00	7.416E+02	7.450E+02	26.01

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2F2AA

Page : 2
Acquisition date : 11-JUN-2007 13:47:11

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.64	455	143	1.32	126.19	118	15	2.53E-01	7.4	1.61E+00	
0	35.03	119	79	1.58	143.86	135	19	6.60E-02	20.7	1.64E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2F2AA

Page : 3
Acquisition date : 11-JUN-2007 13:47:11

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:17:46

Configuration : \$DISK1:[GER14.SAMPLE]JWP2F2AA_110671347.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 : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:11
 Sample ID : JWP2F2AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.39 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.202E+02	6.182E+01	6.346E+01	1.269E+00	9.772

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.582E+02	8.832E+01	2.735E+02	5.485E+00	-0.578
NA-22	1.762E+00	4.137E+00	1.974E+01	4.156E-01	0.089
K-40	-2.898E+01	9.635E+01	4.586E+02	9.771E+00	-0.063
SC-46	6.441E+00	8.004E+00	3.653E+01	7.618E-01	0.176
CR-51	-2.860E+02	2.000E+02	6.542E+02	1.309E+01	-0.437
MN-54	3.586E+00	7.892E+00	3.224E+01	6.597E-01	0.111
CO-57	9.180E+00	1.669E+02	5.936E+02	1.222E+01	0.015
CO-58	-2.308E+00	8.120E+00	3.167E+01	6.471E-01	-0.073
FE-59	4.982E-01	1.727E+01	6.981E+01	1.454E+00	0.007
CO-60	-3.816E+00	3.738E+00	1.341E+01	2.834E-01	-0.285
ZN-65	-9.022E+00	1.475E+01	5.490E+01	1.144E+00	-0.164
SE-75	3.865E+01	2.253E+01	9.156E+01	1.836E+00	0.422
SR-85	-5.543E+01	1.756E+01	4.928E+01	9.898E-01	-1.125
Y-88	-4.696E+00	5.526E+00	2.047E+01	4.458E-01	-0.229
NB-94	-5.853E+00	7.292E+00	2.610E+01	5.354E-01	-0.224
NB-95	1.960E+01	1.106E+01	5.156E+01	1.051E+00	0.380
TC-95M	8.418E+00	3.253E+01	1.187E+02	2.397E+00	0.071
ZR-95	-4.620E+00	1.351E+01	5.333E+01	1.086E+00	-0.087
ZRNB-95	3.488E+01	1.694E+01	8.160E+01	1.663E+00	0.427
RH-101	-1.289E+01	2.340E+01	8.197E+01	1.657E+00	-0.157
RH-102M	3.715E+00	5.791E+00	2.586E+01	5.185E-01	0.144
RU-103	-1.393E+01	1.324E+01	4.600E+01	9.233E-01	-0.303
RU-106DA	1.431E+01	9.109E+01	3.510E+02	7.089E+00	0.041
AG-108M	-1.652E+01	8.640E+00	2.685E+01	5.377E-01	-0.615
AG-110M	2.415E+00	1.018E+01	4.130E+01	8.480E-01	0.058
SN-113DA	-2.532E+01	1.961E+01	6.657E+01	1.332E+00	-0.380
SB-124	9.266E-01	1.093E+01	4.230E+01	8.534E-01	0.022

---- Non-Identified Nuclides ----

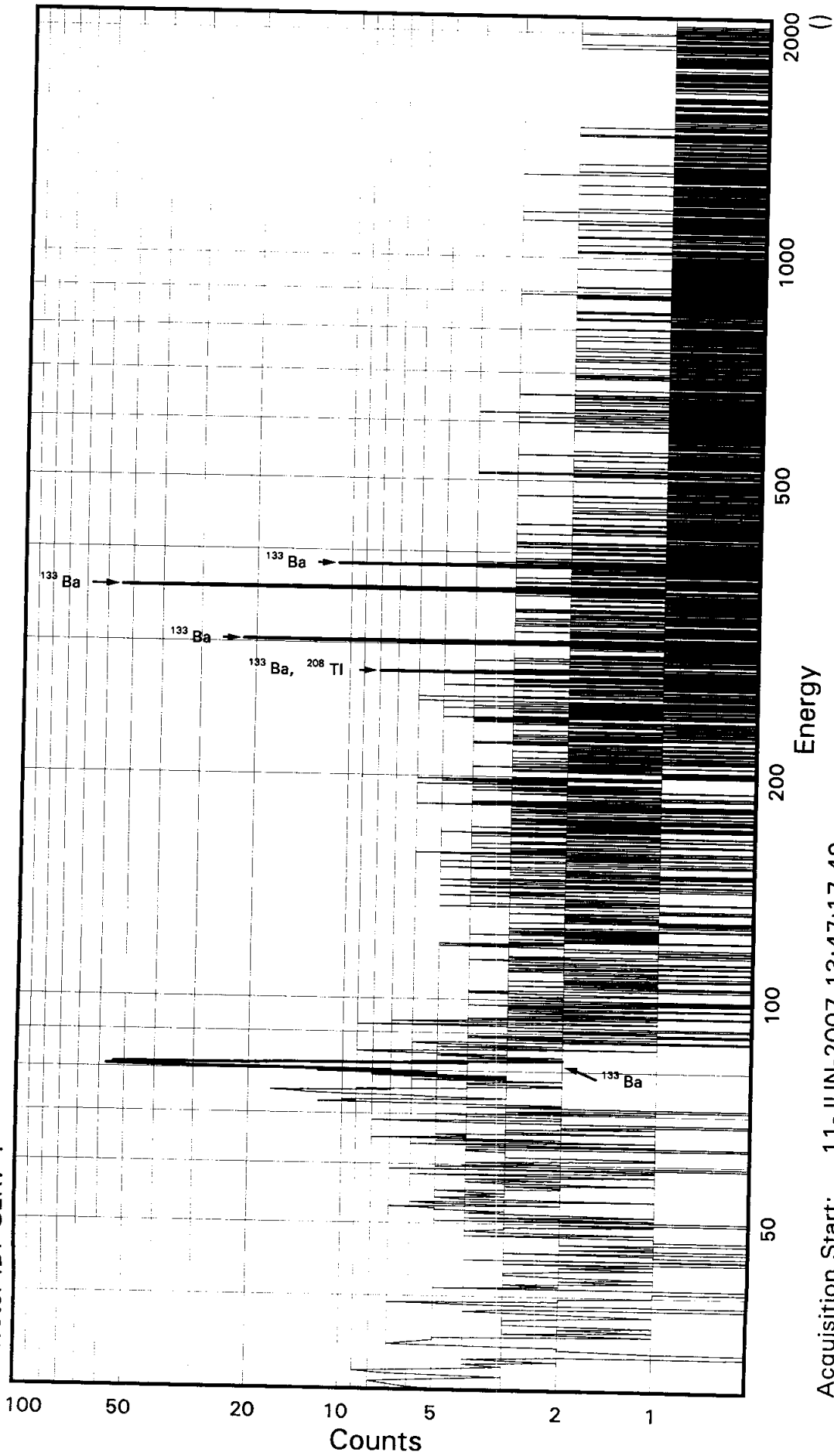
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	5.402E+01		2.452E+01	1.156E+02	2.315E+00	0.467
SN-126DA	1.286E+01		7.539E+00	3.396E+01	6.876E-01	0.379
I-131	-5.337E+01		1.032E+02	3.676E+02	7.352E+00	-0.145
CS-134	1.046E+01		8.643E+00	3.791E+01	7.740E-01	0.276
CS-137DA	-5.196E+00		9.142E+00	3.393E+01	6.869E-01	-0.153
LA-138	8.432E+00		8.110E+00	3.843E+01	8.174E-01	0.219
CE-139	5.537E+00		2.382E+01	8.484E+01	1.728E+00	0.065
BA-140	1.257E+02		1.106E+02	4.815E+02	9.683E+00	0.261
BALA-140	1.518E+01		3.956E+01	1.798E+02	3.862E+00	0.084
CE-141	-6.139E+01		6.082E+01	2.035E+02	4.175E+00	-0.302
CE-144	8.934E+01		1.617E+02	5.903E+02	1.217E+01	0.151
CEPR-144	1.745E+02		3.232E+02	1.179E+03	2.431E+01	0.148
PM-144	-8.135E-01		8.358E+00	3.182E+01	6.425E-01	-0.026
PM-146	4.343E+00		1.104E+01	4.526E+01	9.070E-01	0.096
EU-152	3.547E+00		3.932E+01	1.464E+02	2.927E+00	0.024
EU-154	4.898E+00		1.150E+01	5.485E+01	1.155E+00	0.089
EU-155	3.033E+01		7.516E+01	2.762E+02	5.790E+00	0.110
HF-181	1.257E+01		1.396E+01	5.872E+01	1.178E+00	0.214
BI-207	-5.621E+00		7.849E+00	2.816E+01	5.672E-01	-0.200
TL-208	7.078E+00		8.210E+00	3.510E+01	7.075E-01	0.202
BI-210M	2.822E+01		2.582E+01	9.992E+01	2.004E+00	0.282
BI-212	8.271E+01		1.082E+02	4.598E+02	1.404E+01	0.180
PB-212	-2.433E+01		3.534E+01	1.225E+02	2.462E+00	-0.199
BI-214	1.018E+01		1.905E+01	8.154E+01	1.646E+00	0.125
PB-214	-3.560E+00		3.695E+01	1.124E+02	2.248E+00	-0.032
RA-223	-1.794E+02		9.701E+01	3.097E+02	6.208E+00	-0.579
RA-224DA	-2.494E+01		3.623E+01	1.256E+02	2.525E+00	-0.199
RA-226DA	1.018E+01		1.905E+01	8.154E+01	1.646E+00	0.125
AC-227DA	2.340E+01		1.341E+02	4.879E+02	9.810E+00	0.048
AC-228	3.715E+01		2.571E+01	1.151E+02	2.367E+00	0.323
RA-228DA	3.746E+01		2.592E+01	1.160E+02	2.386E+00	0.323
TH-228DA	2.020E+01		2.343E+01	1.002E+02	2.019E+00	0.202
TH-232DA	-1.454E+02		9.039E+01	2.898E+02	5.796E+00	-0.502
TH-234DA	8.558E+02		8.921E+02	4.084E+03	8.449E+01	0.210
U-234DA	4.888E+00		6.431E+01	2.357E+02	4.718E+00	0.021
U-235HP	-1.618E+02		1.569E+02	5.253E+02	1.078E+01	-0.308
NP-237DA	2.329E+00		2.931E+01	1.092E+02	2.185E+00	0.021
U-238DA	-3.560E+00		3.695E+01	1.124E+02	2.248E+00	-0.032
U-238DHP	-5.204E+02		5.132E+02	1.756E+03	3.859E+01	-0.296
AM-241HP	-4.775E+01		4.669E+01	1.606E+02	3.555E+00	-0.297

STL Richland WA.

BA133

Sample ID: JWP2G2AA
Detector ID: GER7 1

Batch ID: 7159393



Energy Coefficients:
Offset: 5.67661E-01
Slope: 2.49302E-01
Quadrature: 1.34945E-07

Acquisition Start: 11-JUN-2007 13:47:17.49
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JWP2G2AA

CONFIGURATION ID: GER7:JWP2G2AA_110671347
TITLE : BA133
SAMPLE ID : JWP2G2AA

REPORT DATE: 11-JUN-07
ACQUIRE DATE: 11-JUN-07 13:47:17
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 11-JUN-2007 05:34:37.54
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 5.6766E-01 keV
ENERGY SLOPE: 2.4930E-01 keV/C
ENERGY Q COEFF: 1.3495E-07 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.0829E-01 keV
FWHM SLOPE: 4.3476E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 14:17:59

```

Configuration      : $DISK1:[GER7.SAMPLE]JWP2G2AA_110671347.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:17
Sample ID        : JWP2G2AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.19 0.0%
Start energy     : 20.51 End energy : 2051.91
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	72.85*	16	10	1.02	289.89	284	21	8.73E-03	67.2	8.16E-01
2	3	74.88*	16	20	1.04	298.05	284	21	8.96E-03	76.9	
3	0	80.99	255	54	1.00	322.53	313	18	1.42E-01	9.2	
4	0	276.07	13	8	0.38	1104.45	1097	11	6.96E-03	57.2	
5	0	302.98	63	16	0.59	1212.26	1203	15	3.51E-02	18.4	
6	0	356.00	190	22	0.78	1424.60	1417	17	1.05E-01	9.2	
7	0	383.78	31	7	0.42	1535.87	1528	14	1.73E-02	25.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:17:59

Configuration : \$DISK1:[GER7.SAMPLE]JWP2G2AA_110671347.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:17
 Sample ID : JWP2G2AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.19 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	255	33.00	1.909E+00	1.348E+03	1.354E+03	10.71
	276.40	13	6.90	2.061E+00	2.936E+02	2.949E+02	57.42
	302.84	63	17.80	2.064E+00	5.735E+02	5.761E+02	19.17
	356.00	190	62.05*	2.065E+00	4.931E+02	4.953E+02	10.63
	383.85	31	8.70	2.065E+00	5.766E+02	5.792E+02	26.00

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2G2AA

Page : 2
Acquisition date : 11-JUN-2007 13:47:17

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	72.85	16	10	1.02	289.89	284	21	8.73E-03	67.2	1.89E+00	
3	74.88	16	20	1.04	298.05	284	21	8.96E-03	76.9	1.89E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2G2AA

Page : 3
Acquisition date : 11-JUN-2007 13:47:17

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	2.979E+02	57.42	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:18:01

```

Configuration      : $DISK1:[GER7.SAMPLE]JWP2G2AA_110671347.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      : BA133
Sample date       : 17-MAY-2007 12:00:00
Sample ID         : JWP2G2AA
Sample type       :
Elapsed live time : 0 00:30:00.00
Peak Width (FWHM): 3.00
Energy tolerance  : 1.50
Errors propagated: Yes
Efficiency type   : Empirical
Abundance limit   : 80.00

Acquisition date  : 11-JUN-2007 13:47:17
Sample quantity   : 1.0000 SAMPL
Sample geometry    : BA133T15
Elapsed real time : 0 00:30:00.19 0.0%
Confidence level  : 5.00 %
Half life ratio   : 8.00
Systematic Error  : 5.00 %
Efficiencies at   : Peak Energy
WTM error limit   : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	4.953E+02	5.268E+01	5.854E+01	1.171E+00	8.462

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.263E+02	9.217E+01	4.046E+02	8.118E+00	0.312
NA-22	8.919E-02	4.235E+00	1.876E+01	3.978E-01	0.005
K-40	2.179E+01	6.467E+01	3.164E+02	6.798E+00	0.069
SC-46	8.127E+00	7.857E+00	3.467E+01	7.270E-01	0.234
CR-51	3.432E+02	1.503E+02	6.778E+02	1.356E+01	0.506
MN-54	-3.516E+00	4.963E+00	1.884E+01	3.868E-01	-0.187
CO-57	-1.103E+02	1.122E+02	3.949E+02	8.164E+00	-0.279
CO-58	-8.994E-01	4.984E+00	2.154E+01	4.413E-01	-0.042
FE-59	2.633E+01	1.540E+01	7.351E+01	1.539E+00	0.358
CO-60	1.733E+00	3.005E+00	1.609E+01	3.426E-01	0.108
ZN-65	-2.204E+01	1.262E+01	3.849E+01	8.069E-01	-0.572
SE-75	1.398E+01	1.790E+01	7.165E+01	1.438E+00	0.195
SR-85	-3.584E+01	1.349E+01	3.793E+01	7.623E-01	-0.945
Y-88	2.156E+00	3.621E+00	1.954E+01	4.305E-01	0.110
NB-94	-1.153E+00	4.555E+00	1.868E+01	3.846E-01	-0.062
NB-95	2.477E-01	6.542E+00	2.917E+01	5.958E-01	0.008
TC-95M	1.887E+01	1.946E+01	7.739E+01	1.565E+00	0.244
ZR-95	9.257E+00	1.111E+01	5.226E+01	1.067E+00	0.177
ZRNB-95	3.952E-01	1.044E+01	4.654E+01	9.506E-01	0.008
RH-101	3.609E+01	1.730E+01	6.980E+01	1.413E+00	0.517
RH-102M	5.736E+00	6.863E+00	2.941E+01	5.901E-01	0.195
RU-103	-1.133E+01	1.098E+01	3.804E+01	7.638E-01	-0.298
RU-106DA	-8.686E+01	7.203E+01	2.460E+02	4.976E+00	-0.353
AG-108M	-2.095E+01	8.463E+00	2.384E+01	4.774E-01	-0.879
AG-110M	-6.609E+00	8.445E+00	3.078E+01	6.343E-01	-0.215
SN-113DA	3.534E+00	1.406E+01	5.571E+01	1.115E+00	0.063
SB-124	-2.553E+00	7.883E+00	3.081E+01	6.225E-01	-0.083

---- Non-Identified Nuclides ----

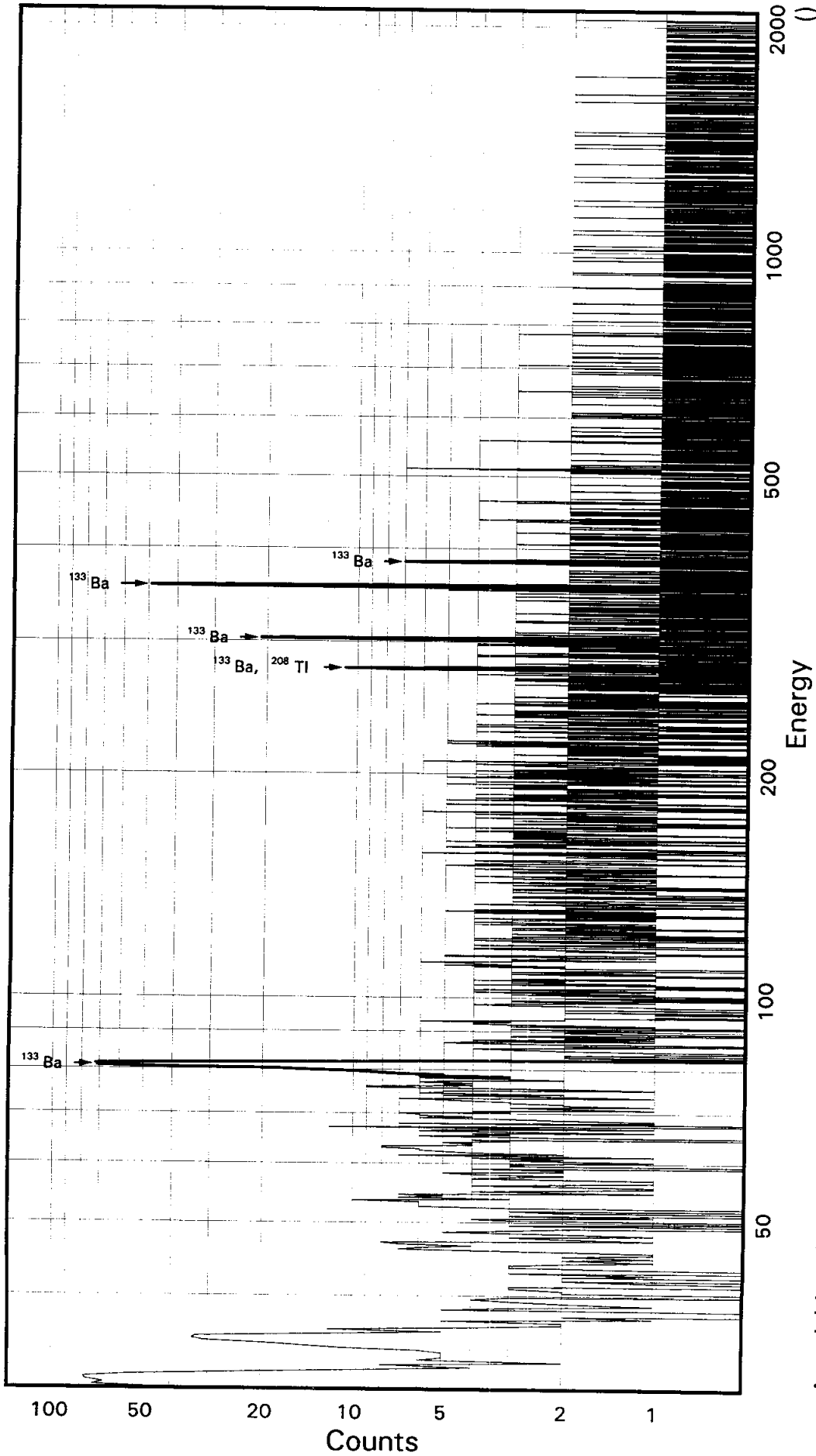
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	1.683E+01		2.543E+01	1.049E+02	2.100E+00	0.160
SN-126DA	5.704E-01		4.194E+00	1.850E+01	3.754E-01	0.031
I-131	2.242E+02		9.280E+01	4.098E+02	8.197E+00	0.547
CS-134	1.761E+00		5.141E+00	2.339E+01	4.788E-01	0.075
CS-137DA	4.968E+00		4.994E+00	2.445E+01	4.959E-01	0.203
LA-138	-2.392E-01		6.455E+00	2.791E+01	5.987E-01	-0.009
CE-139	-2.342E+01		1.607E+01	5.357E+01	1.094E+00	-0.437
BA-140	-4.249E+01		7.748E+01	3.036E+02	6.108E+00	-0.140
BALA-140	-1.407E+01		2.462E+01	1.049E+02	2.276E+00	-0.134
CE-141	7.151E+00		3.836E+01	1.457E+02	3.000E+00	0.049
CE-144	3.238E+01		9.926E+01	3.725E+02	7.713E+00	0.087
CEPR-144	6.213E+01		1.983E+02	7.436E+02	1.540E+01	0.084
PM-144	1.773E+00		6.215E+00	2.592E+01	5.241E-01	0.068
PM-146	4.937E+00		1.065E+01	4.362E+01	8.742E-01	0.113
EU-152	-9.820E+00		2.859E+01	1.058E+02	2.117E+00	-0.093
EU-154	2.485E-01		1.177E+01	5.213E+01	1.105E+00	0.005
EU-155	6.430E+01		4.119E+01	1.767E+02	3.728E+00	0.364
HF-181	-1.835E+01		1.045E+01	3.170E+01	6.361E-01	-0.579
BI-207	-2.613E+00		5.231E+00	2.045E+01	4.123E-01	-0.128
TL-208	4.773E+00		6.896E+00	3.066E+01	6.185E-01	0.156
BI-210M	5.731E+00		1.829E+01	7.107E+01	1.426E+00	0.081
BI-212	-6.640E+01		8.039E+01	2.998E+02	9.167E+00	-0.221
PB-212	1.564E+01		2.649E+01	1.031E+02	2.075E+00	0.152
BI-214	2.130E+01		1.573E+01	6.852E+01	1.385E+00	0.311
PB-214	2.616E+01		2.836E+01	9.946E+01	1.989E+00	0.263
RA-223	9.193E+01		6.995E+01	2.876E+02	5.768E+00	0.320
RA-224DA	1.603E+01		2.716E+01	1.057E+02	2.127E+00	0.152
RA-226DA	2.137E+01		1.574E+01	6.857E+01	1.386E+00	0.312
AC-227DA	-1.006E+02		9.597E+01	3.203E+02	6.446E+00	-0.314
AC-228	2.022E+01		1.764E+01	9.025E+01	1.863E+00	0.224
RA-228DA	2.039E+01		1.778E+01	9.100E+01	1.879E+00	0.224
TH-228DA	1.362E+01		1.968E+01	8.748E+01	1.765E+00	0.156
TH-232DA	8.874E+00		6.372E+01	2.457E+02	4.915E+00	0.036
TH-234DA	1.253E+01		5.098E+02	2.394E+03	4.976E+01	0.005
U-234DA	-2.735E+01		3.876E+01	1.421E+02	2.845E+00	-0.193
U-235HP	2.061E+02		1.030E+02	4.318E+02	8.896E+00	0.477
NP-237DA	7.160E+00		2.375E+01	9.220E+01	1.845E+00	0.078
U-238DA	2.616E+01		2.836E+01	9.946E+01	1.989E+00	0.263
U-238DHP	-3.829E+02		3.570E+02	1.273E+03	2.834E+01	-0.301
AM-241HP	7.093E+00		3.609E+01	1.307E+02	2.932E+00	0.054

STL Richland WA.

BA133

Sample ID: JWP2H2AA
Detector ID: GER8 1

Batch ID: 7159393



Acquisition Start: 11-JUN-2007 13:47:23.31
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 3.59911E-01
Slope: 2.49674E-01
Quadrature: 1.85831E-08

SAMPLE IDENTIFICATION: JWP2H2AA

CONFIGURATION ID: GER8:JWP2H2AA_110671347
TITLE : BA133
SAMPLE ID : JWP2H2AA

REPORT DATE: 11-JUN-07
ACQUIRE DATE: 11-JUN-07 13:47:23
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 11-JUN-2007 05:35:30.53
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 3.5991E-01 keV
ENERGY SLOPE: 2.4967E-01 keV/C
ENERGY Q COEFF: 1.8583E-08 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.7094E-01 keV
FWHM SLOPE: 2.0033E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 14:18:15

```

Configuration      : $DISK1:[GER8.SAMPLE]JWP2H2AA_110671347.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENEACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:23
Sample ID        : JWP2H2AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Start energy     : 20.33 End energy : 2046.94
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.77	406	90	1.32	121.80	114	16	2.25E-01	7.2	
2	0	35.08	132	71	0.93	139.06	131	16	7.35E-02	16.8	
3	0	80.97	362	50	1.17	322.85	312	19	2.01E-01	7.0	
4	0	276.51	44	4	1.20	1105.95	1098	14	2.46E-02	17.6	
5	0	302.95	89	6	0.77	1211.83	1200	21	4.96E-02	12.4	
6	0	356.03	247	12	1.34	1424.40	1416	15	1.37E-01	7.0	
7	0	383.65	36	4	0.98	1534.99	1526	16	1.97E-02	20.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:18:15

```

Configuration      : $DISK1:[GER8.SAMPLE]JWP2H2AA_110671347.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:23
Sample ID        : JWP2H2AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected	Decay Corr	1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	362	33.00	2.140E+00	1.707E+03	1.715E+03	8.86
	276.40	44	6.90	2.306E+00	9.263E+02	9.305E+02	18.37
	302.84	89	17.80	2.309E+00	7.242E+02	7.275E+02	13.52
	356.00	247	62.05*	2.311E+00	5.751E+02	5.777E+02	8.84
	383.85	36	8.70	2.310E+00	5.887E+02	5.914E+02	21.57

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2H2AA

Page : 2
Acquisition date : 11-JUN-2007 13:47:23

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.77	406	90	1.32	121.80	114	16	2.25E-01	7.2	1.87E+00	
0	35.08	132	71	0.93	139.06	131	16	7.35E-02	16.8	1.92E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2H2AA

Page : 3
Acquisition date : 11-JUN-2007 13:47:23

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	9.399E+02	18.37	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER8.SAMPLE]JWP2H2AA_110671347.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      : BA133
Sample date       : 17-MAY-2007 12:00:00
Sample ID         : JWP2H2AA
Sample type       :
Elapsed live time : 0 00:30:00.00
Peak Width (FWHM): 3.00
Energy tolerance  : 1.50
Errors propagated: Yes
Efficiency type   : Empirical
Abundance limit  : 80.00

Acquisition date : 11-JUN-2007 13:47:23
Sample quantity  : 1.0000 SAMPL
Sample geometry  : BA133T15
Elapsed real time: 0 00:30:00.20 0.0%
Confidence level : 5.00 %
Half life ratio  : 8.00
Systematic Error : 5.00 %
Efficiencies at  : Peak Energy
WTM error limit  : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.777E+02	5.109E+01	5.396E+01	1.079E+00	10.707

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-6.683E+00	6.856E+01	2.709E+02	5.435E+00	-0.025
NA-22	-1.576E+00	1.579E+00	4.206E+00	8.904E-02	-0.375
K-40	-5.064E+01	2.657E+01	1.345E+02	2.884E+00	-0.376
SC-46	5.627E+00	4.908E+00	2.435E+01	5.099E-01	0.231
CR-51	5.560E+01	1.454E+02	5.696E+02	1.140E+01	0.098
MN-54	-6.690E+00	5.557E+00	1.878E+01	3.852E-01	-0.356
CO-57	-9.452E+01	9.734E+01	3.318E+02	6.853E+00	-0.285
CO-58	1.790E+00	4.299E+00	2.043E+01	4.185E-01	0.088
FE-59	6.946E-02	5.524E+00	2.898E+01	6.058E-01	0.002
CO-60	-3.164E+00	2.244E+00	4.181E+00	8.887E-02	-0.757
ZN-65	-6.201E+00	7.756E+00	2.964E+01	6.205E-01	-0.209
SE-75	6.522E+00	1.610E+01	6.262E+01	1.256E+00	0.104
SR-85	-2.181E+01	1.221E+01	3.978E+01	7.995E-01	-0.548
Y-88	3.333E-03	3.753E+00	1.742E+01	3.827E-01	0.000
NB-94	-2.141E+00	4.503E+00	1.741E+01	3.580E-01	-0.123
NB-95	9.601E+00	6.903E+00	3.414E+01	6.969E-01	0.281
TC-95M	-2.540E+01	2.152E+01	7.385E+01	1.493E+00	-0.344
ZR-95	-1.779E+01	9.413E+00	2.567E+01	5.237E-01	-0.693
ZRNB-95	1.532E+01	1.101E+01	5.447E+01	1.112E+00	0.281
RH-101	5.752E+00	1.516E+01	5.727E+01	1.159E+00	0.100
RH-102M	-1.552E-01	4.539E+00	1.881E+01	3.773E-01	-0.008
RU-103	-6.914E+00	6.453E+00	2.349E+01	4.716E-01	-0.294
RU-106DA	3.270E+01	4.397E+01	2.050E+02	4.146E+00	0.159
AG-108M	-1.724E+01	8.167E+00	2.412E+01	4.831E-01	-0.715
AG-110M	-2.625E+00	5.951E+00	2.355E+01	4.848E-01	-0.111
SN-113DA	-1.642E+01	1.180E+01	3.881E+01	7.763E-01	-0.423
SB-124	4.474E+00	6.858E+00	3.004E+01	6.067E-01	0.149

---- Non-Identified Nuclides ----

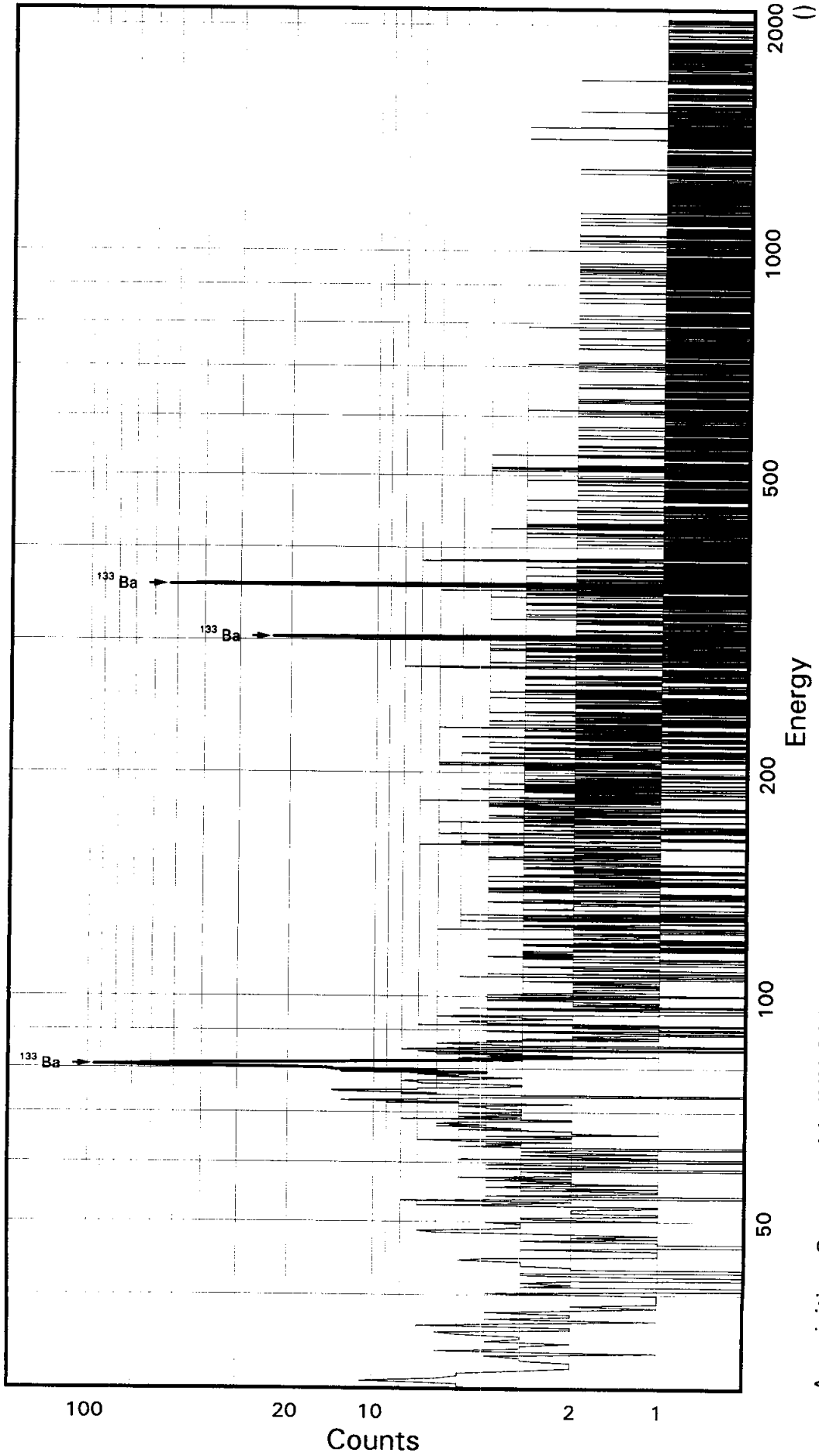
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	5.470E+00		2.001E+01	8.095E+01	1.621E+00	0.068
SN-126DA	1.512E+00		4.839E+00	2.062E+01	4.181E-01	0.073
I-131	1.291E+01		7.134E+01	2.800E+02	5.599E+00	0.046
CS-134	-7.253E+00		3.647E+00	4.779E+00	9.777E-02	-1.518
CS-137DA	1.788E+00		5.688E+00	2.425E+01	4.916E-01	0.074
LA-138	-7.026E+00		7.213E+00	2.552E+01	5.462E-01	-0.275
CE-139	7.045E+00		1.693E+01	6.200E+01	1.265E+00	0.114
BA-140	8.025E+01		6.862E+01	3.275E+02	6.589E+00	0.245
BALA-140	-1.231E+01		1.233E+01	3.440E+01	7.444E-01	-0.358
CE-141	-3.021E+01		3.913E+01	1.344E+02	2.764E+00	-0.225
CE-144	4.186E+01		1.028E+02	3.849E+02	7.961E+00	0.109
CEPR-144	8.607E+01		2.058E+02	7.709E+02	1.594E+01	0.112
PM-144	3.177E+00		4.337E+00	2.022E+01	4.087E-01	0.157
PM-146	1.020E+01		6.688E+00	3.292E+01	6.597E-01	0.310
EU-152	1.751E+01		2.408E+01	1.000E+02	2.001E+00	0.175
EU-154	-4.381E+00		4.387E+00	1.169E+01	2.474E-01	-0.375
EU-155	6.614E+00		5.325E+01	1.962E+02	4.133E+00	0.034
HF-181	-3.417E+00		8.169E+00	3.162E+01	6.344E-01	-0.108
BI-207	4.350E+00		5.259E+00	2.332E+01	4.700E-01	0.187
TL-208	-1.428E+00		5.642E+00	2.264E+01	4.566E-01	-0.063
BI-210M	-6.052E+00		1.699E+01	6.235E+01	1.251E+00	-0.097
BI-212	-1.177E+00		7.765E+01	3.145E+02	9.613E+00	-0.004
PB-212	-1.421E+01		2.290E+01	8.499E+01	1.709E+00	-0.167
BI-214	1.307E+01		1.326E+01	5.704E+01	1.152E+00	0.229
PB-214	2.822E+01		2.678E+01	9.441E+01	1.888E+00	0.299
RA-223	5.396E+01		6.043E+01	2.433E+02	4.879E+00	0.222
RA-224DA	-1.456E+01		2.348E+01	8.714E+01	1.753E+00	-0.167
RA-226DA	1.307E+01		1.326E+01	5.705E+01	1.153E+00	0.229
AC-227DA	-8.297E+01		8.552E+01	2.977E+02	5.989E+00	-0.279
AC-228	-8.344E-01		1.350E+01	5.778E+01	1.192E+00	-0.014
RA-228DA	-8.413E-01		1.361E+01	5.826E+01	1.202E+00	-0.014
TH-228DA	-4.075E+00		1.610E+01	6.460E+01	1.303E+00	-0.063
TH-232DA	1.158E+01		6.292E+01	2.415E+02	4.831E+00	0.048
TH-234DA	-2.221E+02		2.224E+02	6.227E+02	1.293E+01	-0.357
U-234DA	4.031E+01		4.567E+01	1.812E+02	3.629E+00	0.222
U-235HP	5.215E+01		1.003E+02	3.770E+02	7.761E+00	0.138
NP-237DA	6.065E+00		2.018E+01	7.922E+01	1.585E+00	0.077
U-238DA	2.822E+01		2.678E+01	9.441E+01	1.888E+00	0.299
U-238DHP	3.862E+02		4.293E+02	1.652E+03	3.666E+01	0.234
AM-241HP	-7.371E+01		4.191E+01	1.371E+02	3.066E+00	-0.538

STL Richland WA.

BA133

Batch ID: 7159393

Sample ID: JWP2J2AA
Detector ID: GER6 1



Acquisition Start: 11-JUN-2007 13:47:29.14
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 2.99733E-02
Slope: 2.49386E-01
Quadrature: 4.39077E-09

SAMPLE IDENTIFICATION: JWP2J2AA

CONFIGURATION ID: GER6:JWP2J2AA_110671347
TITLE : BA133
SAMPLE ID : JWP2J2AA

REPORT DATE: 11-JUN-07
ACQUIRE DATE: 11-JUN-07 13:47:29
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 11-JUN-2007 05:49:03.49
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 2.9973E-02 keV
ENERGY SLOPE: 2.4939E-01 keV/C
ENERGY Q COEFF: 4.3908E-09 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.3133E-01 keV
FWHM SLOPE: 6.8675E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 14:18:29

Configuration : \$DISK1:[GER6.SAMPLE]JWP2J2AA_110671347.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:29
 Sample ID : JWP2J2AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
 Start energy : 19.98 End energy : 2043.30
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.89	296	76	0.70	324.24	316	16	1.65E-01	8.8	
2	0	302.94	102	7	1.18	1214.58	1207	15	5.65E-02	11.5	
3	0	356.01	249	5	1.08	1427.37	1418	19	1.38E-01	6.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:18:30

Configuration : \$DISK1:[GER6.SAMPLE]JWP2J2AA_110671347.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:29
 Sample ID : JWP2J2AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma %Error
					DPM/SAMPL	DPM/SAMPL	
BA-133	81.00	296	33.00	2.090E+00	1.432E+03	1.439E+03	10.33
	276.40	-----	6.90	2.253E+00	-----	Line Not Found	-----
	302.84	102	17.80	2.256E+00	8.438E+02	8.476E+02	12.72
	356.00	249	62.05*	2.258E+00	5.929E+02	5.956E+02	8.58
	383.85	-----	8.70	2.257E+00	-----	Line Not Found	-----

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2J2AA

Page : 2
Acquisition date : 11-JUN-2007 13:47:29

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2J2AA

Page : 3
Acquisition date : 11-JUN-2007 13:47:29

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:18:32

```

Configuration      : $DISK1:[GER6.SAMPLE]JWP2J2AA_110671347.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:29
Sample ID        : JWP2J2AA Sample quantity   : 1.0000 SAMPL
Sample type      : Sample geometry    : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio  : 8.00
Errors propagated: Yes Systematic Error   : 5.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 80.00 WTM error limit  : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.956E+02	5.107E+01	4.987E+01	9.975E-01	11.942

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	6.047E+01	6.491E+01	2.952E+02	5.923E+00	0.205
NA-22	-1.455E+00	3.501E+00	1.478E+01	3.130E-01	-0.098
K-40	-1.212E+02	5.900E+01	2.792E+02	5.989E+00	-0.434
SC-46	-1.369E+01	7.150E+00	2.175E+01	4.556E-01	-0.629
CR-51	8.570E+01	1.593E+02	6.214E+02	1.243E+01	0.138
MN-54	4.872E+00	4.220E+00	2.098E+01	4.304E-01	0.232
CO-57	-2.300E+02	9.253E+01	2.802E+02	5.789E+00	-0.821
CO-58	4.224E+00	6.644E+00	2.918E+01	5.976E-01	0.145
FE-59	-2.143E+01	1.494E+01	4.842E+01	1.013E+00	-0.443
CO-60	6.525E-02	4.988E+00	2.075E+01	4.412E-01	0.003
ZN-65	1.816E+01	1.007E+01	5.048E+01	1.057E+00	0.360
SE-75	-5.220E+00	1.728E+01	6.405E+01	1.285E+00	-0.081
SR-85	6.128E+00	1.385E+01	5.204E+01	1.046E+00	0.118
Y-88	-4.053E+00	4.799E+00	1.784E+01	3.921E-01	-0.227
NB-94	-4.538E+00	5.475E+00	1.989E+01	4.092E-01	-0.228
NB-95	-5.187E+00	7.099E+00	2.667E+01	5.445E-01	-0.194
TC-95M	2.633E+00	2.225E+01	8.266E+01	1.671E+00	0.032
ZR-95	-2.276E-01	1.137E+01	4.681E+01	9.552E-01	-0.005
ZRNB-95	-8.276E+00	1.133E+01	4.255E+01	8.688E-01	-0.194
RH-101	-6.250E+00	1.205E+01	4.406E+01	8.920E-01	-0.142
RH-102M	-2.304E+00	5.516E+00	2.140E+01	4.293E-01	-0.108
RU-103	5.182E+00	1.037E+01	4.314E+01	8.662E-01	0.120
RU-106DA	-1.413E+01	6.248E+01	2.421E+02	4.895E+00	-0.058
AG-108M	-1.603E+01	8.516E+00	2.608E+01	5.224E-01	-0.615
AG-110M	1.124E+00	7.304E+00	3.061E+01	6.303E-01	0.037
SN-113DA	-5.431E+00	9.855E+00	3.709E+01	7.420E-01	-0.146
SB-124	-1.005E+01	7.319E+00	2.440E+01	4.929E-01	-0.412

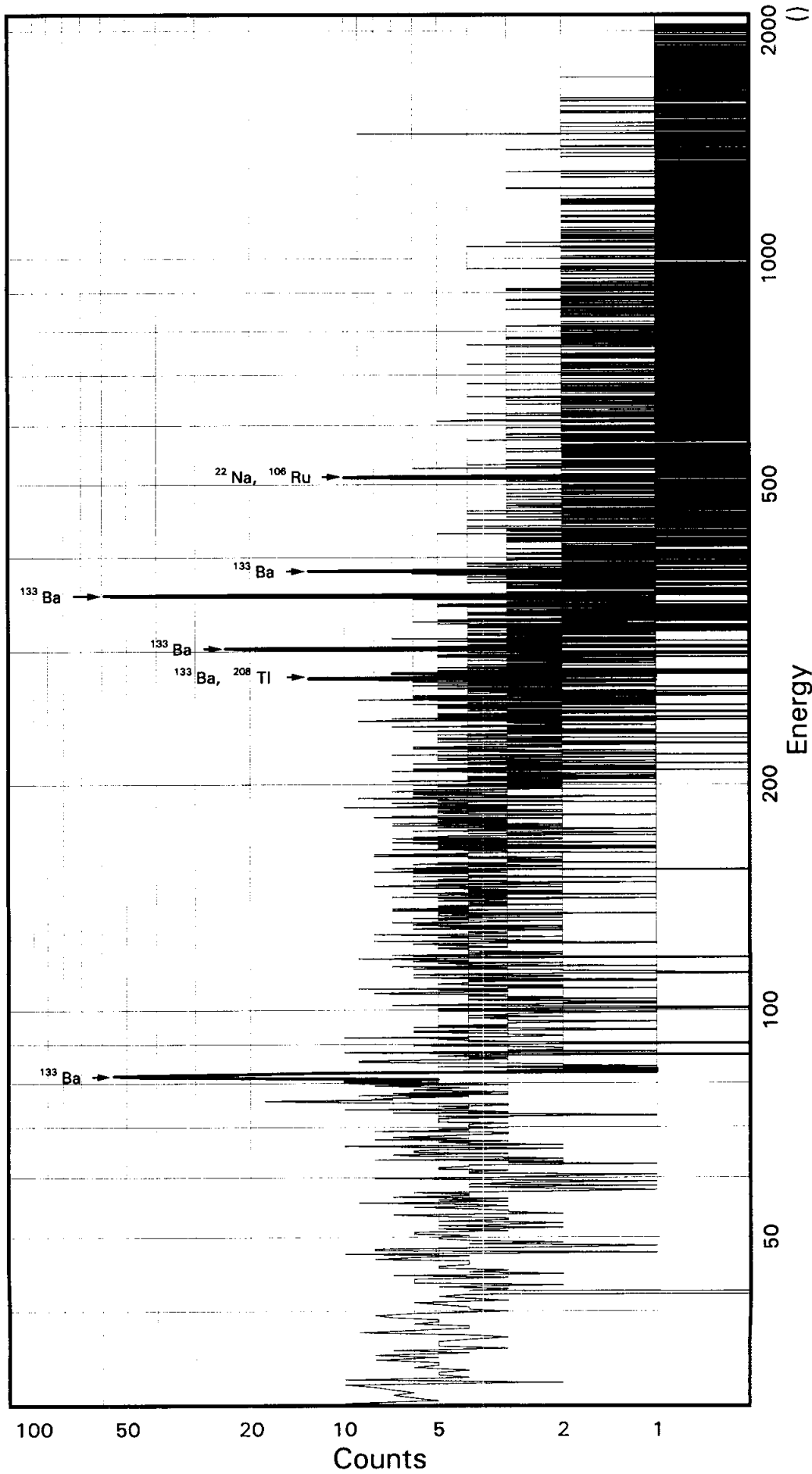
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	-7.007E+00		3.105E+01	1.130E+02	2.263E+00	-0.062
SN-126DA	2.749E+00		4.817E+00	2.111E+01	4.280E-01	0.130
I-131	-6.993E+01		8.048E+01	2.865E+02	5.730E+00	-0.244
CS-134	-1.153E+01		6.979E+00	2.172E+01	4.445E-01	-0.531
CS-137DA	4.951E+00		6.449E+00	2.792E+01	5.661E-01	0.177
LA-138	6.914E+00		7.186E+00	3.340E+01	7.153E-01	0.207
CE-139	1.521E+01		1.349E+01	5.368E+01	1.096E+00	0.283
BA-140	-1.969E+02		1.066E+02	3.260E+02	6.559E+00	-0.604
BALA-140	3.209E+01		2.053E+01	1.303E+02	2.821E+00	0.246
CE-141	5.881E+00		3.172E+01	1.214E+02	2.497E+00	0.048
CE-144	9.027E+01		8.855E+01	3.597E+02	7.442E+00	0.251
CEPR-144	1.817E+02		1.772E+02	7.200E+02	1.490E+01	0.252
PM-144	-5.091E-02		5.487E+00	2.226E+01	4.500E-01	-0.002
PM-146	7.063E-01		9.511E+00	3.806E+01	7.628E-01	0.019
EU-152	-7.661E+00		3.232E+01	1.176E+02	2.352E+00	-0.065
EU-154	-4.042E+00		9.731E+00	4.108E+01	8.699E-01	-0.098
EU-155	2.552E+01		3.986E+01	1.591E+02	3.352E+00	0.160
HF-181	-1.849E+01		9.666E+00	2.900E+01	5.818E-01	-0.638
BI-207	3.357E+00		4.782E+00	2.159E+01	4.353E-01	0.155
TL-208	8.123E+00		5.720E+00	2.734E+01	5.516E-01	0.297
BI-210M	-9.984E+00		1.842E+01	6.687E+01	1.341E+00	-0.149
BI-212	6.068E+01		6.710E+01	3.140E+02	9.597E+00	0.193
PB-212	-2.928E+01		2.123E+01	7.518E+01	1.512E+00	-0.389
BI-214	8.075E+00		1.308E+01	5.487E+01	1.109E+00	0.147
PB-214	1.859E+01		2.702E+01	9.337E+01	1.867E+00	0.199
RA-223	3.990E+01		6.105E+01	2.438E+02	4.889E+00	0.164
RA-224DA	-3.002E+01		2.176E+01	7.707E+01	1.550E+00	-0.389
RA-226DA	8.205E+00		1.310E+01	5.497E+01	1.111E+00	0.149
AC-227DA	9.885E+01		8.151E+01	3.270E+02	6.579E+00	0.302
AC-228	5.210E+01		2.047E+01	1.016E+02	2.096E+00	0.513
RA-228DA	5.253E+01		2.064E+01	1.025E+02	2.114E+00	0.513
TH-228DA	2.318E+01		1.632E+01	7.803E+01	1.574E+00	0.297
TH-232DA	-6.069E+00		6.234E+01	2.327E+02	4.655E+00	-0.026
TH-234DA	7.217E+02		9.105E+02	3.927E+03	8.155E+01	0.184
U-234DA	-1.475E+01		4.699E+01	1.719E+02	3.441E+00	-0.086
U-235HP	-9.943E+01		8.726E+01	3.010E+02	6.197E+00	-0.330
NP-237DA	-2.339E+01		1.778E+01	5.947E+01	1.190E+00	-0.393
U-238DA	1.859E+01		2.702E+01	9.337E+01	1.867E+00	0.199
U-238DHP	1.644E+02		2.919E+02	1.126E+03	2.500E+01	0.146
AM-241HP	2.768E+00		2.617E+01	9.939E+01	2.224E+00	0.028

STL Richland WA.
BA133

Batch ID: 7159393

Sample ID: JWP2K2AA
Detector ID: GER13 1



Energy Coefficients:
Offset: -6.57127E-01
Slope: 2.50862E-01
Quadrature: -1.16660E-07

Acquisition Start: 11-JUN-2007 13:47:48.08
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JWP2K2AA

CONFIGURATION ID: GER13:JWP2K2AA_110671347
TITLE : BA133
SAMPLE ID : JWP2K2AA

REPORT DATE: 11-JUN-07 SAMPLE DATE: 17-MAY-2007 12:00:00.00
ACQUIRE DATE: 11-JUN-07 13:47:48 CALIB DATE: 11-JUN-2007 05:36:27.81
ELAPSED LIVE TIME: 1800.0 Sec ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00 ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00 UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15 SAMPLE TYPE:

ENERGY OFFSET: -.6571E+00 keV FWHM OFFSET: 4.8475E-01 keV
ENERGY SLOPE: 2.5086E-01 keV/C FWHM SLOPE: 3.9122E-02 sqr keV
ENERGY Q COEFF: -.1167E-06 keV/C² ITERATIONS: 10
PEAK SENSITIVITY: 5.000 GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 % HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 1.500 keV ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 14:18:45

```

Configuration      : $DISK1:[GER13.SAMPLE]JWP2K2AA_110671347.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:48
Sample ID        : JWP2K2AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.38 0.0%
Start energy     : 19.41 End energy : 2046.58
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.74	196	42	0.76	328.49	321	16	1.09E-01	10.4	
2	0	277.72	61	59	4.73	1110.27	1098	27	3.40E-02	39.2	
3	0	302.77	99	37	1.03	1210.24	1203	16	5.48E-02	17.4	
4	0	355.82	314	23	1.21	1421.95	1414	16	1.74E-01	6.6	
5	0	383.43	45	29	0.68	1532.16	1521	19	2.47E-02	32.4	
6	2	512.37	48	9	1.37	2047.00	2031	23	2.68E-02	20.1	2.23E+00

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:18:45

```

Configuration      : $DISK1:[GER13.SAMPLE]JWP2K2AA_110671347.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:48
Sample ID        : JWP2K2AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.38 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	196	33.00	2.677E+00	7.404E+02	7.438E+02	11.71
	276.40	61	6.90	2.869E+00	1.030E+03	1.035E+03	39.59
	302.84	99	17.80	2.872E+00	6.431E+02	6.460E+02	18.26
	356.00	314	62.05*	2.875E+00	5.868E+02	5.895E+02	8.54
	383.85	45	8.70	2.874E+00	5.932E+02	5.959E+02	32.88

Flag: "*" = Keyline

Unidentified Energy Lines

Sample ID : JWP2K2AA

Page : 2

Acquisition date : 11-JUN-2007 13:47:48

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	512.37	48	9	1.37	2047.00	2031	23	2.68E-02	20.1	2.86E+00	T

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma (DPM/SAMPL)	%Error	Rejected by
NA-22	2.60Y	0.03	511.00	179.68	3.190E+01	20.85	Abun.
			1274.54*	99.94	---	Not Found	---
		% Abundances	Found =	64.26			
RU-106DA	368.20D	0.07	511.85	20.60	2.864E+02	20.85	Abun.
			621.84*	9.80	---	Not Found	---
		% Abundances	Found =	67.76			
TL-208	1.41E+10Y	0.00	277.35	6.80	1.045E+03	39.59	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
		% Abundances	Found =	5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:18:48

```

Configuration      : $DISK1:[GER13.SAMPLE]JWP2K2AA_110671347.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 13:47:48
Sample ID        : JWP2K2AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.38 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.895E+02	5.033E+01	4.596E+01	9.192E-01	12.826

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-3.123E+01	8.471E+01	3.106E+02	6.230E+00	-0.101
NA-22	-5.241E+00	4.742E+00	1.633E+01	3.446E-01	-0.321
K-40	-1.382E+02	9.095E+01	4.268E+02	9.115E+00	-0.324
SC-46	-6.690E+00	5.150E+00	2.142E+01	4.473E-01	-0.312
CR-51	-8.377E+01	1.674E+02	5.896E+02	1.180E+01	-0.142
MN-54	2.245E+00	4.560E+00	1.947E+01	3.989E-01	0.115
CO-57	1.054E+02	1.123E+02	4.244E+02	8.748E+00	0.248
CO-58	-1.861E-01	7.204E+00	2.801E+01	5.728E-01	-0.007
FE-59	3.107E+00	1.114E+01	4.684E+01	9.767E-01	0.066
CO-60	-4.161E+00	4.920E+00	1.746E+01	3.699E-01	-0.238
ZN-65	5.458E+00	8.780E+00	3.843E+01	8.023E-01	0.142
SE-75	-2.111E+01	1.825E+01	6.230E+01	1.250E+00	-0.339
SR-85	3.977E+01	1.123E+01	4.637E+01	9.316E-01	0.858
Y-88	-2.965E+00	3.665E+00	1.392E+01	3.043E-01	-0.213
NB-94	-1.879E-01	5.727E+00	2.208E+01	4.533E-01	-0.009
NB-95	4.769E+00	1.029E+01	4.022E+01	8.201E-01	0.119
TC-95M	1.251E+00	2.006E+01	7.192E+01	1.453E+00	0.017
ZR-95	7.786E+00	1.103E+01	4.668E+01	9.513E-01	0.167
ZRNB-95	8.353E+00	1.648E+01	6.462E+01	1.318E+00	0.129
RH-101	-1.767E+01	1.547E+01	5.154E+01	1.043E+00	-0.343
RH-102M	-4.552E+00	6.856E+00	2.449E+01	4.911E-01	-0.186
RU-103	5.038E+00	1.134E+01	4.413E+01	8.858E-01	0.114
RU-106DA	-1.064E+02	6.166E+01	1.987E+02	4.015E+00	-0.536
AG-108M	8.325E+00	7.464E+00	3.039E+01	6.086E-01	0.274
AG-110M	-7.646E+00	9.147E+00	3.241E+01	6.662E-01	-0.236
SN-113DA	1.067E+01	1.372E+01	5.385E+01	1.077E+00	0.198
SB-124	-1.020E+01	7.151E+00	2.402E+01	4.848E-01	-0.425

---- Non-Identified Nuclides ----

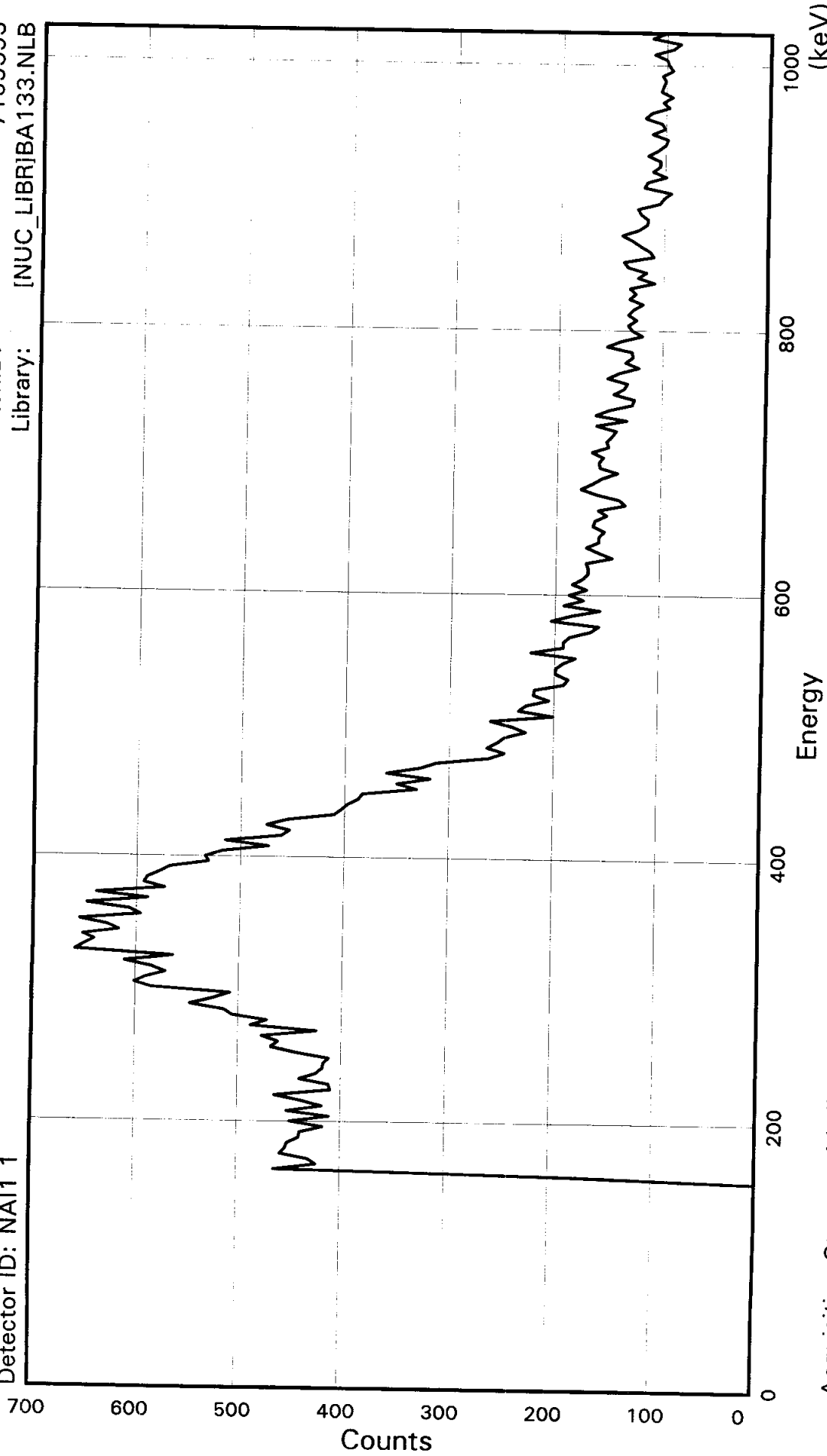
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	1.424E+01		2.282E+01	9.041E+01	1.810E+00	0.157
SN-126DA	-4.865E-01		5.431E+00	2.089E+01	4.233E-01	-0.023
I-131	1.546E+02		7.735E+01	3.227E+02	6.454E+00	0.479
CS-134	7.778E-01		6.006E+00	2.363E+01	4.827E-01	0.033
CS-137DA	1.662E-01		5.510E+00	2.196E+01	4.449E-01	0.008
LA-138	1.006E+01		5.682E+00	2.844E+01	6.064E-01	0.354
CE-139	-1.387E+01		1.581E+01	5.420E+01	1.105E+00	-0.256
BA-140	1.677E+02		8.560E+01	3.813E+02	7.669E+00	0.440
BALA-140	4.074E+01		2.049E+01	1.223E+02	2.633E+00	0.333
CE-141	4.239E+01		3.827E+01	1.456E+02	2.990E+00	0.291
CE-144	-7.288E+01		1.126E+02	3.962E+02	8.178E+00	-0.184
CEPR-144	-1.448E+02		2.253E+02	7.927E+02	1.636E+01	-0.183
PM-144	-2.558E+00		6.612E+00	2.448E+01	4.945E-01	-0.105
PM-146	-8.794E+00		9.924E+00	3.487E+01	6.988E-01	-0.252
EU-152	2.093E+01		3.266E+01	1.229E+02	2.459E+00	0.170
EU-154	-1.555E+01		1.305E+01	4.435E+01	9.358E-01	-0.351
EU-155	1.229E+02		5.269E+01	2.079E+02	4.366E+00	0.591
HF-181	6.405E+00		1.019E+01	4.131E+01	8.287E-01	0.155
BI-207	-1.676E+01		5.552E+00	1.282E+01	2.582E-01	-1.307
TL-208	5.138E+00		7.712E+00	3.314E+01	6.682E-01	0.155
BI-210M	1.363E+01		1.751E+01	6.723E+01	1.348E+00	0.203
BI-212	-2.569E+01		8.671E+01	3.228E+02	9.863E+00	-0.080
PB-212	-8.521E+00		2.252E+01	8.301E+01	1.669E+00	-0.103
BI-214	1.557E+01		1.682E+01	7.229E+01	1.460E+00	0.215
PB-214	-1.601E+01		3.171E+01	1.001E+02	2.001E+00	-0.160
RA-223	1.115E+01		7.418E+01	2.714E+02	5.442E+00	0.041
RA-224DA	-8.736E+00		2.309E+01	8.510E+01	1.711E+00	-0.103
RA-226DA	1.557E+01		1.682E+01	7.230E+01	1.460E+00	0.215
AC-227DA	-8.328E+01		8.951E+01	2.987E+02	6.007E+00	-0.279
AC-228	-4.518E+01		2.297E+01	8.107E+01	1.669E+00	-0.557
RA-228DA	-4.556E+01		2.316E+01	8.174E+01	1.683E+00	-0.557
TH-228DA	1.466E+01		2.201E+01	9.458E+01	1.907E+00	0.155
TH-232DA	4.631E+00		6.787E+01	2.479E+02	4.959E+00	0.019
TH-234DA	7.196E+01		7.163E+02	2.868E+03	5.941E+01	0.025
U-234DA	5.568E+01		5.001E+01	1.916E+02	3.836E+00	0.291
U-235HP	-1.159E+02		1.044E+02	3.570E+02	7.336E+00	-0.325
NP-237DA	-1.175E+01		2.674E+01	9.416E+01	1.884E+00	-0.125
U-238DA	-1.601E+01		3.171E+01	1.001E+02	2.001E+00	-0.160
U-238DHP	-1.976E+02		3.005E+02	1.055E+03	2.328E+01	-0.187
AM-241HP	-2.238E+01		2.771E+01	9.742E+01	2.165E+00	-0.230

STL Richland WA.

BA133

Sample ID: JWP2L2AA
Detector ID: NAI1 1

BatchID: 7159393
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 11-JUN-2007 14:21:03.6
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:

JWP2L2AA

CONFIGURATION ID: NAI1:JWP2L2AA_110671421
TITLE : BA133
SAMPLE ID : JWP2L2AA

REPORT DATE: 11-JUN-07
ACQUIRE DATE: 11-JUN-07 14:21:03
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-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/C²
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]JWP2L2AA_110671421.CNF;1
Analyses by : NAI V3.0
Sample title : BA133
Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 14:21:03
Sample ID : JWP2L2AA Sample quantity : 1.0000 sampl
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.64 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:	4.3	2.4	6.0	4.1	3.8	3.5	0.4	0.4
88:	2.0	-0.5	-0.5	0.9	-1.2	0.1	-1.0	0.1
96:	-1.1	-1.7	-1.2	-2.1	-3.2	-2.3	-3.4	-0.8
104:	-3.8	-3.4	-1.5	-1.6	-3.6	-3.8	-3.3	-3.5
112:	-3.2	-3.6						

List of Suspicious Channels

81 82 83 84

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	8.57E+00	0.00E+00	1.02E+00
2	4.03E+00	0.00E+00	1.04E+00
3	1.99E+00	0.00E+00	1.06E+00
4	9.18E-01	0.00E+00	1.08E+00

Brief Report

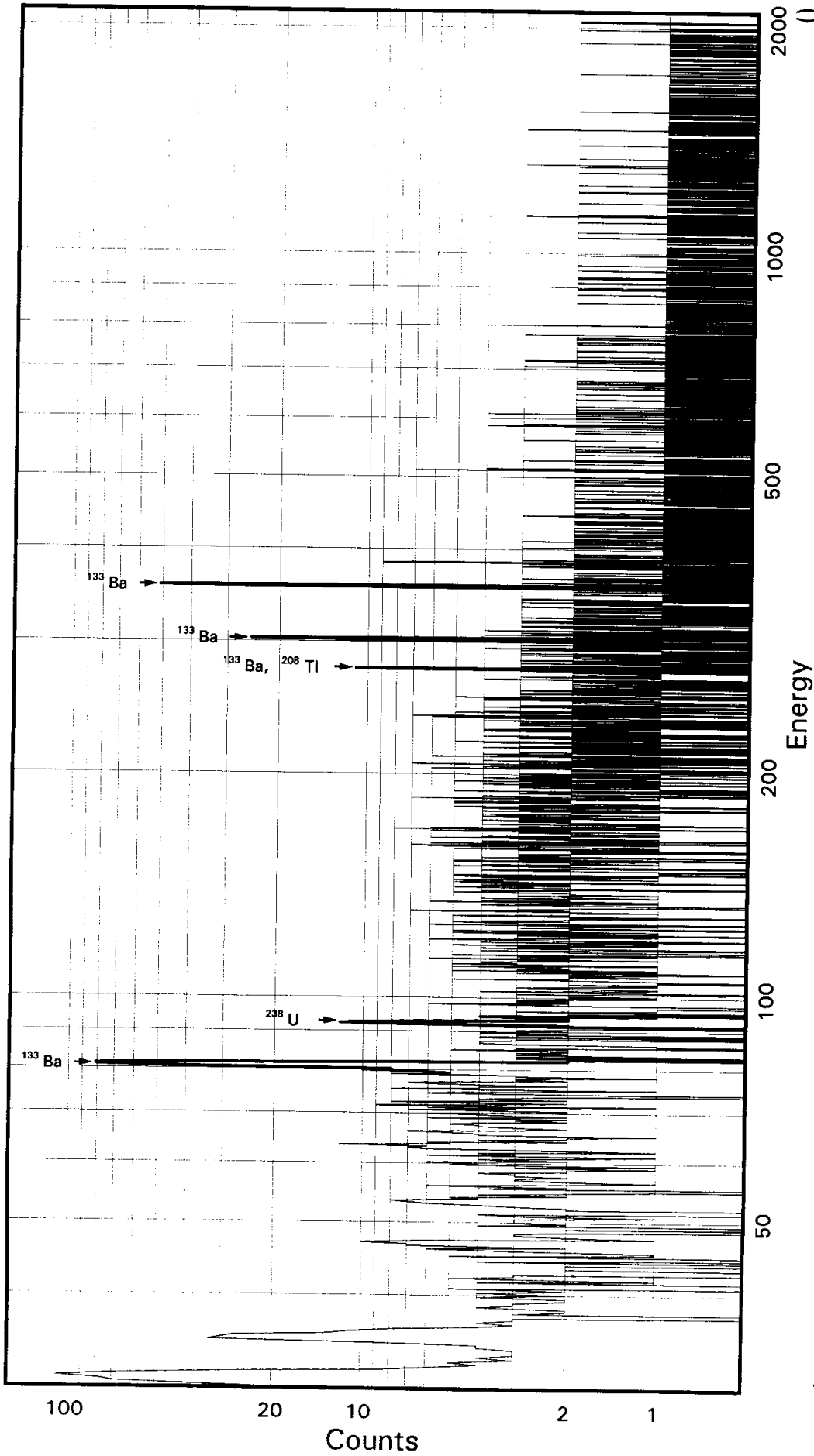
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	576.	8.26

Total Activity :	576.	

STL Richland WA.
BA133

Batch ID: 7159393

Sample ID: JWP2N2AA
Detector ID: GER5 1



Acquisition Start: 11-JUN-2007 14:21:15.10
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -3.70193E-01
Slope: 2.49388E-01
Quadrature: -5.61194E-09

SAMPLE IDENTIFICATION: JWP2N2AA

CONFIGURATION ID: GER5:JWP2N2AA_110671421
TITLE : BA133
SAMPLE ID : JWP2N2AA

REPORT DATE: 11-JUN-07
ACQUIRE DATE: 11-JUN-07 14:21:15
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 11-JUN-2007 05:32:52.65
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.3702E+00 keV
ENERGY SLOPE: 2.4939E-01 keV/C
ENERGY Q COEFF: -.5612E-08 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.7756E-01 keV
FWHM SLOPE: 3.2835E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 14:51:30

Configuration : RDND06\$DKA100:[GER5.SAMPLE]JWP2N2AA_110671421.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 14:21:15
 Sample ID : JWP2N2AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.21 0.0%
 Start energy : 19.58 End energy : 2042.24
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.92	384	107	0.92	125.47	116	16	2.13E-01	7.8	
2	0	35.26	128	31	0.80	142.88	137	15	7.09E-02	13.2	
3	0	46.73*	24	13	1.34	188.88	181	17	1.36E-02	44.1	
4	0	81.07	306	59	0.92	326.54	319	16	1.70E-01	8.2	
5	0	92.90*	35	3	0.93	373.98	367	17	1.94E-02	26.7	
6	0	160.91	21	24	2.85	646.71	636	16	1.19E-02	55.5	
7	0	276.94	28	11	0.57	1112.00	1105	14	1.54E-02	33.9	
8	0	302.84	90	8	0.75	1215.84	1208	16	5.00E-02	12.7	
9	0	356.05	213	12	1.11	1429.21	1421	14	1.18E-01	7.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 11-JUN-2007 14:51:30

```

Configuration      : RDND06$DKA100:[GER5.SAMPLE]JWP2N2AA_110671421.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 14:21:15
Sample ID        : JWP2N2AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.21 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma %Error
					DPM/SAMPL	DPM/SAMPL	
BA-133	81.00	306	33.00	1.919E+00	1.609E+03	1.616E+03	9.81
	276.40	28	6.90	2.072E+00	6.452E+02	6.481E+02	34.33
	302.84	90	17.80	2.074E+00	8.120E+02	8.157E+02	13.77
	356.00	213	62.05*	2.076E+00	5.512E+02	5.537E+02	9.31
	383.85	-----	8.70	2.076E+00	-----	Line Not Found	-----

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2N2AA

Page : 2
Acquisition date : 11-JUN-2007 14:21:15

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.92	384	107	0.92	125.47	116	16	2.13E-01	7.8	1.68E+00	
0	35.26	128	31	0.80	142.88	137	15	7.09E-02	13.2	1.71E+00	
0	46.73	24	13	1.34	188.88	181	17	1.36E-02	44.1	1.79E+00	
0	92.90	35	3	0.93	373.98	367	17	1.94E-02	26.7	1.95E+00	T
0	160.91	21	24	2.85	646.71	636	16	1.19E-02	55.5	2.03E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2N2AA

Page : 3
Acquisition date : 11-JUN-2007 14:21:15

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	6.547E+02	34.33	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
		% Abundances Found =		5.44			
U-238DHP	4.47E+09Y	0.00	63.28*	3.80	---	Not Found	---
			92.59	5.41	1.105E+03	27.28	Abun.
		% Abundances Found =		58.74			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 11-JUN-2007 14:51:31

```

Configuration      : RDND06$DKA100:[GER5.SAMPLE]JWP2N2AA_110671421.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      : BA133
Sample date       : 17-MAY-2007 12:00:00
Sample ID         : JWP2N2AA
Sample type       :
Elapsed live time : 0 00:30:00.00
Peak Width (FWHM): 3.00
Energy tolerance  : 1.50
Errors propagated: Yes
Efficiency type   : Empirical
Abundance limit   : 80.00

Acquisition date  : 11-JUN-2007 14:21:15
Sample quantity   : 1.0000 SAMPL
Sample geometry   : BA133T15
Elapsed real time : 0 00:30:00.21 0.0%
Confidence level  : 5.00 %
Half life ratio   : 8.00
Systematic Error  : 5.00 %
Efficiencies at   : Peak Energy
WTM error limit   : 3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.537E+02	5.155E+01	5.168E+01	1.034E+00	10.715

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-2.171E+01	7.379E+01	2.865E+02	5.749E+00	-0.076
NA-22	-3.973E-02	3.489E+00	1.610E+01	3.413E-01	-0.002
NA-24	-1.024E+06	1.697E+06	Half-Life too short		
K-40	-6.708E+01	6.783E+01	3.244E+02	6.970E+00	-0.207
SC-46	4.132E-01	7.641E+00	3.108E+01	6.518E-01	0.013
CR-51	8.522E+01	1.746E+02	6.870E+02	1.374E+01	0.124
MN-54	1.857E+00	4.569E+00	2.092E+01	4.294E-01	0.089
CO-57	-2.466E+00	1.353E+02	4.826E+02	9.976E+00	-0.005
CO-58	6.169E+00	3.628E+00	2.252E+01	4.615E-01	0.274
FE-59	-3.791E+00	1.140E+01	4.725E+01	9.892E-01	-0.080
CO-60	-2.299E-01	4.260E+00	1.842E+01	3.923E-01	-0.012
ZN-65	-6.269E+00	1.310E+01	5.017E+01	1.052E+00	-0.125
SE-75	-7.896E+00	1.688E+01	6.080E+01	1.220E+00	-0.130
SR-85	-8.874E+00	1.185E+01	4.257E+01	8.555E-01	-0.208
Y-88	-2.021E+00	2.024E+00	5.662E+00	1.247E-01	-0.357
NB-94	-1.308E+01	5.228E+00	1.215E+01	2.501E-01	-1.076
NB-95	2.832E+00	8.692E+00	3.757E+01	7.674E-01	0.075
TC-95M	1.093E+01	2.402E+01	9.045E+01	1.829E+00	0.121
ZR-95	2.434E+01	1.538E+01	7.052E+01	1.439E+00	0.345
ZRNB-95	5.556E+00	1.403E+01	6.092E+01	1.244E+00	0.091
MO-99	3.883E-03	3.926E-03	Half-Life too short		
RH-101	1.622E+01	1.687E+01	6.521E+01	1.320E+00	0.249
RH-102M	1.750E+00	5.905E+00	2.469E+01	4.953E-01	0.071
RU-103	-1.964E+01	1.240E+01	3.904E+01	7.840E-01	-0.503
RU-106DA	6.227E+01	6.410E+01	2.836E+02	5.735E+00	0.220
AG-108M	-2.382E+00	9.411E+00	3.483E+01	6.976E-01	-0.068
AG-110M	-9.659E+00	9.124E+00	3.200E+01	6.593E-01	-0.302

---- Non-Identified Nuclides ----

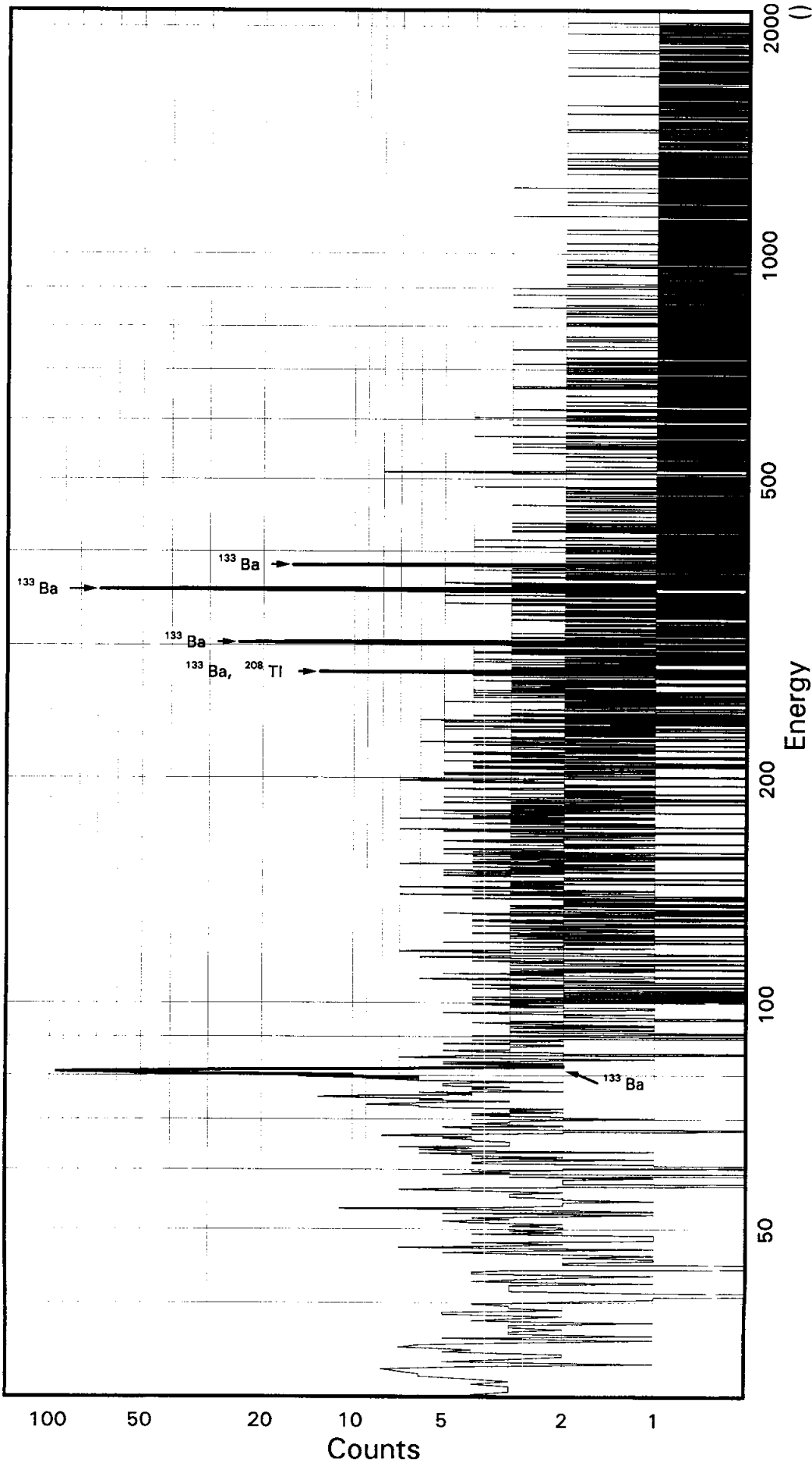
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	8.035E-01		1.473E+01	5.651E+01	1.131E+00	0.014
SB-124	-6.472E+00		7.311E+00	2.659E+01	5.372E-01	-0.243
SB-125	-1.180E+00		2.387E+01	9.271E+01	1.857E+00	-0.013
SN-126DA	-4.954E+00		7.217E+00	2.606E+01	5.286E-01	-0.190
I-131	2.668E+01		8.589E+01	3.388E+02	6.777E+00	0.079
CS-134	-3.660E+00		4.715E+00	1.827E+01	3.740E-01	-0.200
CS-137DA	4.816E-01		7.822E+00	3.098E+01	6.282E-01	0.016
LA-138	0.000E+00		1.291E-01	6.976E+00	1.496E-01	0.000
CE-139	-5.007E+00		1.854E+01	6.707E+01	1.370E+00	-0.075
BA-140	-6.975E+01		7.374E+01	2.710E+02	5.453E+00	-0.257
BALA-140	8.098E-02		2.839E+01	1.319E+02	2.860E+00	0.001
LA-140	1.493E-04		5.310E-02	Half-Life too short		
CE-141	9.424E+01		4.741E+01	1.869E+02	3.848E+00	0.504
CE-144	-1.522E+02		1.275E+02	4.215E+02	8.727E+00	-0.361
CEPR-144	-3.084E+02		2.548E+02	8.412E+02	1.742E+01	-0.367
PM-144	-4.417E+00		7.567E+00	2.782E+01	5.624E-01	-0.159
PM-146	-7.299E+00		9.312E+00	3.356E+01	6.726E-01	-0.217
EU-152	-1.102E+01		2.912E+01	1.092E+02	2.184E+00	-0.101
EU-154	-4.986E+00		1.086E+01	4.473E+01	9.484E-01	-0.111
EU-155	-6.380E+00		5.240E+01	1.922E+02	4.055E+00	-0.033
HF-181	1.533E+01		9.096E+00	4.485E+01	8.999E-01	0.342
BI-207	-9.523E+00		6.547E+00	2.173E+01	4.380E-01	-0.438
TL-208	-1.595E+01		9.394E+00	3.348E+01	6.755E-01	-0.476
BI-210M	-6.078E+00		1.702E+01	6.209E+01	1.246E+00	-0.098
BI-212	-6.653E+00		8.803E+01	3.502E+02	1.071E+01	-0.019
PB-212	-9.324E+00		2.782E+01	1.050E+02	2.112E+00	-0.089
BI-214	-1.611E+01		1.795E+01	6.886E+01	1.391E+00	-0.234
PB-214	1.607E+01		2.618E+01	9.150E+01	1.830E+00	0.176
RA-223	9.491E+01		7.325E+01	2.945E+02	5.907E+00	0.322
RA-224DA	-9.560E+00		2.853E+01	1.077E+02	2.166E+00	-0.089
RA-226DA	-1.597E+01		1.797E+01	6.895E+01	1.393E+00	-0.232
AC-227DA	-2.833E+02		1.058E+02	3.099E+02	6.237E+00	-0.914
AC-228	3.583E+01		2.083E+01	9.963E+01	2.057E+00	0.360
RA-228DA	3.613E+01		2.101E+01	1.005E+02	2.074E+00	0.360
TH-228DA	-4.552E+01		2.681E+01	9.555E+01	1.928E+00	-0.476
TH-232DA	4.652E+00		7.802E+01	2.951E+02	5.903E+00	0.016
TH-234DA	7.450E+02		7.794E+02	3.617E+03	7.517E+01	0.206
U-234DA	5.271E+01		5.095E+01	2.025E+02	4.056E+00	0.260
U-235HP	-1.691E+01		1.420E+02	4.979E+02	1.026E+01	-0.034
NP-237DA	-3.432E+01		2.701E+01	9.242E+01	1.850E+00	-0.371
U-238DA	1.607E+01		2.618E+01	9.150E+01	1.830E+00	0.176
U-238DHP	-6.483E+01		4.549E+02	1.755E+03	3.908E+01	-0.037
AM-241HP	1.676E+01		3.979E+01	1.499E+02	3.362E+00	0.112

STL Richland WA.

BA133

Batch ID: 7159393

Sample ID: JWP2P2AA
Detector ID: GER12 1



Acquisition Start: 11-JUN-2007 14:23:20.45
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.13956E+01
Slope: 2.47612E-01
Quadrature: 1.11747E-09

SAMPLE IDENTIFICATION: JWP2P2AA

CONFIGURATION ID: GER12:JWP2P2AA_110671423
TITLE : BA133
SAMPLE ID : JWP2P2AA

REPORT DATE: 11-JUN-07 SAMPLE DATE: 17-MAY-2007 12:00:00.00
ACQUIRE DATE: 11-JUN-07 14:23:20 CALIB DATE: 11-JUN-2007 05:36:00.36
ELAPSED LIVE TIME: 1800.0 Sec ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00 ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00 UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15 SAMPLE TYPE:

ENERGY OFFSET: 1.1396E+01 keV FWHM OFFSET: 3.8807E-01 keV
ENERGY SLOPE: 2.4761E-01 keV/C FWHM SLOPE: 3.8434E-02 sqr keV
ENERGY Q COEFF: 1.1175E-09 keV/C² 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: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 14:53:38

```

Configuration      : $DISK1:[GER12.SAMPLE]JWP2P2AA_110671423.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 14:23:20
Sample ID         : JWP2P2AA Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 0.0%
Start energy      : 11.64 End energy : 2039.91
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.92	267	60	0.62	280.76	275	13	1.48E-01	8.7	
2	0	276.45	43	16	0.65	1070.43	1062	16	2.40E-02	25.7	
3	0	302.78	115	5	1.15	1176.76	1166	17	6.37E-02	10.2	
4	0	355.91	375	16	1.13	1391.33	1380	22	2.08E-01	5.9	
5	0	383.93	54	7	1.05	1504.48	1497	14	3.00E-02	17.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:53:38

Configuration : \$DISK1:[GER12.SAMPLE]JWP2P2AA_110671423.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 14:23:20
 Sample ID : JWP2P2AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 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	Decay Corr	1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	267	33.00	2.915E+00	9.254E+02	9.296E+02	10.25
	276.40	43	6.90	3.094E+00	6.751E+02	6.782E+02	26.21
	302.84	115	17.80	3.097E+00	6.937E+02	6.969E+02	11.57
	356.00	375	62.05*	3.100E+00	6.493E+02	6.523E+02	7.96
	383.85	54	8.70	3.099E+00	6.676E+02	6.706E+02	17.95

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2P2AA

Page : 2
Acquisition date : 11-JUN-2007 14:23:20

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2P2AA

Page : 3
Acquisition date : 11-JUN-2007 14:23:20

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	6.850E+02	26.21	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:53:41

```

Configuration      : $DISK1:[GER12.SAMPLE]JWP2P2AA_110671423.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 14:23:20
Sample ID        : JWP2P2AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.523E+02	5.190E+01	3.223E+01	6.446E-01	20.237

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-4.483E+01	5.444E+01	1.932E+02	3.873E+00	-0.232
NA-22	-9.713E-01	3.383E+00	1.377E+01	2.881E-01	-0.071
K-40	3.532E+00	4.389E+01	2.207E+02	4.667E+00	0.016
SC-46	6.846E+00	3.659E+00	1.935E+01	4.015E-01	0.354
CR-51	1.442E+02	9.913E+01	4.299E+02	8.600E+00	0.336
MN-54	-5.893E+00	4.221E+00	1.393E+01	2.843E-01	-0.423
CO-57	-5.881E+01	6.814E+01	2.365E+02	4.852E+00	-0.249
CO-58	-3.889E+00	3.791E+00	1.360E+01	2.772E-01	-0.286
FE-59	-5.928E+00	8.281E+00	3.133E+01	6.493E-01	-0.189
CO-60	-6.727E+00	3.205E+00	8.377E+00	1.759E-01	-0.803
ZN-65	-4.810E+00	4.772E+00	1.735E+01	3.599E-01	-0.277
SE-75	-1.005E+01	1.365E+01	4.757E+01	9.537E-01	-0.211
SR-85	-4.486E+01	1.142E+01	3.041E+01	6.106E-01	-1.475
Y-88	-1.107E+00	1.553E+00	6.716E+00	1.448E-01	-0.165
NB-94	-3.490E+00	3.710E+00	1.320E+01	2.700E-01	-0.264
NB-95	-1.552E+00	5.894E+00	2.357E+01	4.792E-01	-0.066
TC-95M	-1.109E+01	1.516E+01	5.381E+01	1.086E+00	-0.206
ZR-95	2.804E+00	6.783E+00	3.112E+01	6.325E-01	0.090
ZRNB-95	-2.476E+00	9.402E+00	3.760E+01	7.645E-01	-0.066
RH-101	4.117E+01	1.175E+01	5.105E+01	1.031E+00	0.807
RH-102M	-2.798E+00	4.142E+00	1.511E+01	3.029E-01	-0.185
RU-103	8.061E-01	6.374E+00	2.673E+01	5.363E-01	0.030
RU-106DA	-1.306E+02	4.625E+01	1.077E+02	2.172E+00	-1.213
AG-108M	-9.804E+00	6.038E+00	1.926E+01	3.857E-01	-0.509
AG-110M	-3.450E+00	4.067E+00	1.508E+01	3.087E-01	-0.229
SN-113DA	3.799E+00	8.584E+00	3.483E+01	6.969E-01	0.109
SB-124	7.241E+00	6.803E+00	2.875E+01	5.795E-01	0.252

---- Non-Identified Nuclides ----

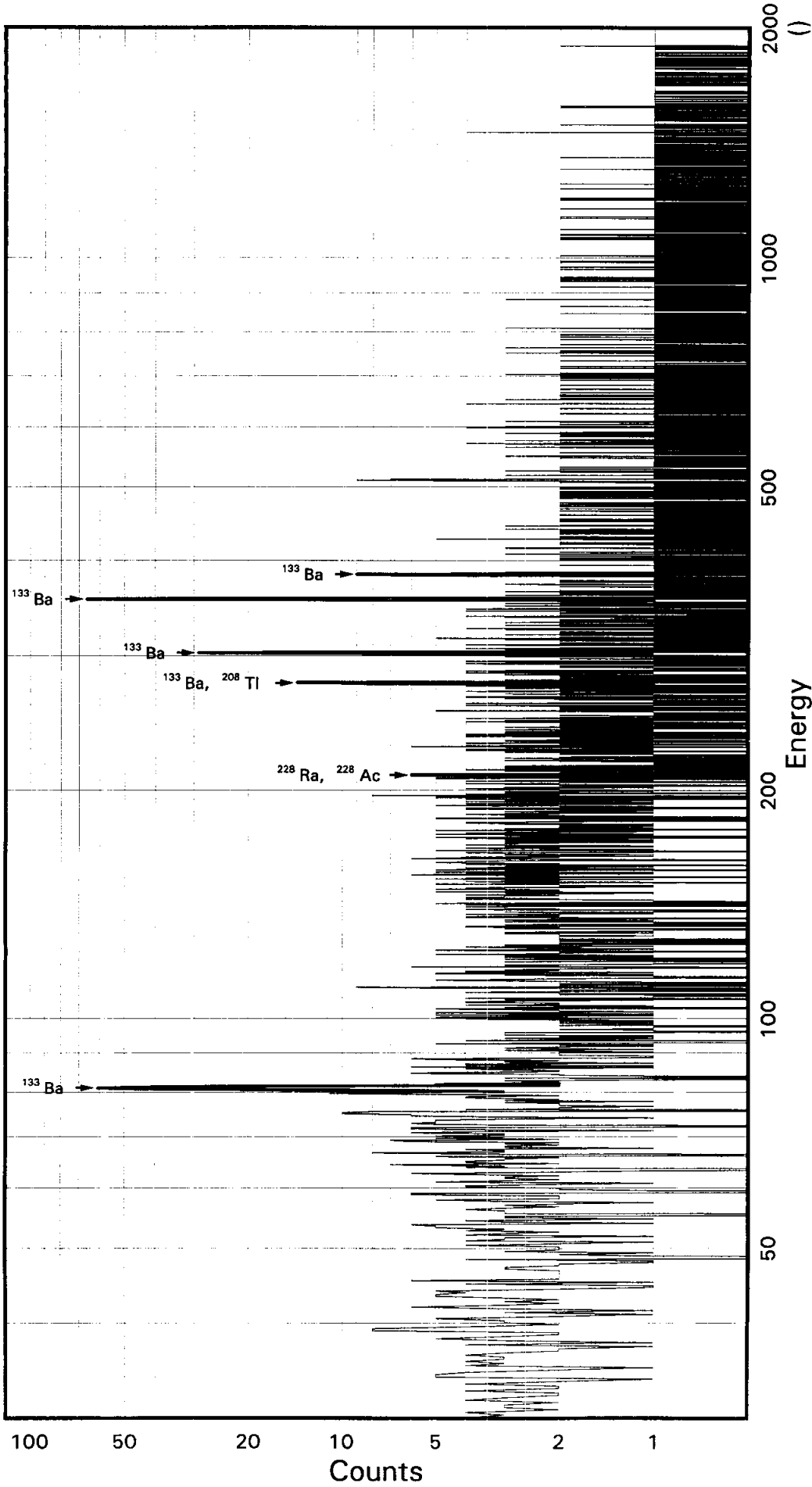
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	1.172E+01		1.902E+01	7.598E+01	1.521E+00	0.154
SN-126DA	1.515E+00		4.103E+00	1.694E+01	3.426E-01	0.089
I-131	2.024E+01		6.166E+01	2.414E+02	4.828E+00	0.084
CS-134	2.660E+00		3.702E+00	1.719E+01	3.501E-01	0.155
CS-137DA	7.334E-01		5.368E+00	2.122E+01	4.290E-01	0.035
LA-138	1.649E+00		3.832E+00	1.831E+01	3.867E-01	0.090
CE-139	1.563E+01		1.020E+01	4.091E+01	8.317E-01	0.382
BA-140	-7.895E+01		6.405E+01	2.208E+02	4.437E+00	-0.358
BALA-140	-1.817E+01		1.288E+01	2.528E+01	5.385E-01	-0.719
CE-141	-3.086E+01		2.770E+01	9.309E+01	1.904E+00	-0.331
CE-144	-5.692E+01		6.277E+01	2.181E+02	4.480E+00	-0.261
CEPR-144	-1.112E+02		1.258E+02	4.378E+02	8.994E+00	-0.254
PM-144	1.412E+01		4.991E+00	2.402E+01	4.845E-01	0.588
PM-146	-8.196E+00		7.609E+00	2.594E+01	5.196E-01	-0.316
EU-152	2.217E+00		2.173E+01	8.396E+01	1.679E+00	0.026
EU-154	1.456E+00		9.068E+00	3.947E+01	8.261E-01	0.037
EU-155	6.504E-02		3.405E+01	1.283E+02	2.674E+00	0.001
HF-181	-6.188E+00		9.478E+00	3.365E+01	6.748E-01	-0.184
BI-207	8.958E+00		4.717E+00	2.160E+01	4.347E-01	0.415
TL-208	-1.333E+00		3.840E+00	1.535E+01	3.092E-01	-0.087
BI-210M	-1.351E+01		1.355E+01	4.628E+01	9.277E-01	-0.292
BI-212	3.793E+01		6.517E+01	2.761E+02	8.425E+00	0.137
PB-212	1.737E+01		1.511E+01	6.060E+01	1.217E+00	0.287
BI-214	-2.807E+00		9.099E+00	3.493E+01	7.042E-01	-0.080
PB-214	-3.168E+01		1.939E+01	5.521E+01	1.104E+00	-0.574
RA-223	7.079E+01		5.051E+01	2.037E+02	4.083E+00	0.348
RA-224DA	1.781E+01		1.549E+01	6.213E+01	1.248E+00	0.287
RA-226DA	-2.902E+00		9.087E+00	3.484E+01	7.025E-01	-0.083
AC-227DA	-7.124E+01		6.026E+01	2.048E+02	4.115E+00	-0.348
AC-228	7.122E+00		1.403E+01	5.971E+01	1.224E+00	0.119
RA-228DA	7.181E+00		1.415E+01	6.021E+01	1.234E+00	0.119
TH-228DA	-3.804E+00		1.096E+01	4.382E+01	8.824E-01	-0.087
TH-232DA	-3.610E+01		4.373E+01	1.572E+02	3.144E+00	-0.230
TH-234DA	2.824E+02		4.641E+02	2.156E+03	4.442E+01	0.131
U-234DA	2.371E+01		3.409E+01	1.321E+02	2.644E+00	0.180
U-235HP	7.492E+01		7.644E+01	2.942E+02	6.022E+00	0.255
NP-237DA	-8.072E+00		1.326E+01	4.756E+01	9.517E-01	-0.170
U-238DA	-3.168E+01		1.939E+01	5.521E+01	1.104E+00	-0.574
U-238DHP	2.809E+02		2.404E+02	9.215E+02	2.003E+01	0.305
AM-241HP	-4.725E+00		2.093E+01	7.577E+01	1.657E+00	-0.062

STL Richland WA.

BA133

Batch ID: 7159393

Sample ID: JWW952AA
Detector ID: GER11 1



Acquisition Start: 11-JUN-2007 14:23:40.16
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -9.95443E-01
Slope: 2.31769E-01
Quadrature: 3.52207E-08

SAMPLE IDENTIFICATION: JWW952AA

CONFIGURATION ID: GER11:JWW952AA_110671423
TITLE : BA133
SAMPLE ID : JWW952AA

REPORT DATE: 11-JUN-07 SAMPLE DATE: 17-MAY-2007 12:00:00.00
ACQUIRE DATE: 11-JUN-07 14:23:40 CALIB DATE: 11-JUN-2007 05:35:46.21
ELAPSED LIVE TIME: 1800.0 Sec ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00 ELAPSED REAL TIME: 0 00:30:01

SAMPLE QUANTITY: 1.0000E+00 UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15 SAMPLE TYPE:

ENERGY OFFSET: -.9954E+00 keV FWHM OFFSET: 2.4136E-01 keV
ENERGY SLOPE: 2.3177E-01 keV/C FWHM SLOPE: 3.8880E-02 sqr keV
ENERGY Q COEFF: 3.5221E-08 keV/C² ITERATIONS: 10
PEAK SENSITIVITY: 5.000 GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 % HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 1.500 keV ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 14:54:02

```

Configuration      : $DISK1:[GER11.SAMPLE]JWW952AA_110671423.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 14:23:40
Sample ID        : JWW952AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:01.00 0.1%
Start energy     : 1.32 End energy : 1900.02
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.17*	12	16	0.74	328.61	324	8	6.62E-03	74.0	
2	0	81.12	170	32	0.69	354.30	350	10	9.42E-02	10.0	
3	0	209.41	16	2	0.68	907.70	904	7	9.04E-03	28.2	
4	0	276.30	61	7	1.07	1196.23	1189	14	3.39E-02	15.8	
5	0	302.65	111	20	0.72	1309.88	1302	16	6.16E-02	13.1	
6	0	355.89	337	16	1.19	1539.46	1531	16	1.87E-01	6.1	
7	0	383.61	24	17	0.87	1659.02	1653	11	1.31E-02	39.3	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER11.SAMPLE]JWW952AA_110671423.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 14:23:40
Sample ID        : JWW952AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:01.00 0.1%
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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	170	33.00	2.880E+00	5.946E+02	5.973E+02	11.42
	276.40	61	6.90	3.084E+00	9.556E+02	9.599E+02	16.66
	302.84	111	17.80	3.088E+00	6.723E+02	6.754E+02	14.17
	356.00	337	62.05*	3.090E+00	5.850E+02	5.877E+02	8.11
	383.85	24	8.70	3.090E+00	2.914E+02	2.927E+02	39.69

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWW952AA

Page : 2
Acquisition date : 11-JUN-2007 14:23:40

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.17	12	16	0.74	328.61	324	8	6.62E-03	74.0	2.86E+00	
0	209.41	16	2	0.68	907.70	904	7	9.04E-03	28.2	3.06E+00	T

Flags: "T" = Tentatively associated

Nuclide	Half-Life		Energy	%Abund	Activity 1-Sigma		Rejected by	
	Half-life	Ratio			(DPM/SAMPL)	%Error		
TL-208	1.41E+10Y	0.00	277.35	6.80	9.696E+02	16.66	Abun.	
			510.84	21.60	---	Not Found		---
			583.14*	84.20	---	Not Found		---
			860.37	12.46	---	Not Found		---
% Abundances Found =			5.44					
AC-228	1.41E+10Y	0.00	209.28	4.40	4.027E+02	28.71	Abun.	
			270.23	3.60	---	Not Found		---
			338.32	11.40	---	Not Found		---
			911.07*	27.70	---	Not Found		---
% Abundances Found =			6.91					
RA-228DA	5.75Y	0.01	209.28	4.40	4.060E+02	28.71	Abun.	
			338.32	11.40	---	Not Found		---
			911.07*	27.70	---	Not Found		---
			964.60	5.20	---	Not Found		---
% Abundances Found =			6.74					

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER11.SAMPLE]JWW952AA_110671423.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 14:23:40
Sample ID        : JWW952AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:01.00 0.1%
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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.877E+02	4.768E+01	3.105E+01	6.210E-01	18.926

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	2.988E+01		5.026E+01	2.173E+02	4.357E+00	0.138
NA-22	-2.173E+00		2.249E+00	8.518E+00	1.795E-01	-0.255
K-40	1.383E+00		4.580E+01	2.296E+02	4.898E+00	0.006
SC-46	2.778E+00		4.380E+00	1.952E+01	4.073E-01	0.142
CR-51	4.306E+01		9.744E+01	3.898E+02	7.799E+00	0.110
MN-54	-1.016E+00		4.168E+00	1.646E+01	3.369E-01	-0.062
CO-57	7.486E+01		6.699E+01	2.740E+02	5.645E+00	0.273
CO-58	1.143E+01		4.927E+00	2.469E+01	5.047E-01	0.463
FE-59	8.841E+00		6.574E+00	3.526E+01	7.347E-01	0.251
CO-60	5.284E-02		2.276E+00	1.068E+01	2.260E-01	0.005
ZN-65	-4.721E+00		6.723E+00	2.560E+01	5.341E-01	-0.184
SE-75	1.080E+01		1.262E+01	5.043E+01	1.011E+00	0.214
SR-85	-4.044E+01		9.894E+00	2.263E+01	4.546E-01	-1.787
Y-88	-1.474E+00		2.462E+00	1.025E+01	2.235E-01	-0.144
NB-94	-2.068E+00		3.521E+00	1.344E+01	2.759E-01	-0.154
NB-95	-1.333E+01		6.544E+00	1.959E+01	3.992E-01	-0.681
TC-95M	-5.685E+00		1.336E+01	4.789E+01	9.674E-01	-0.119
ZR-95	-5.296E+00		8.684E+00	3.228E+01	6.576E-01	-0.164
ZRNB-95	-2.127E+01		1.044E+01	3.124E+01	6.368E-01	-0.681
RH-101	6.313E+00		1.121E+01	4.279E+01	8.653E-01	0.148
RH-102M	5.961E+00		4.531E+00	2.030E+01	4.071E-01	0.294
RU-103	6.162E+00		6.443E+00	2.899E+01	5.818E-01	0.213
RU-106DA	-1.007E+02		4.492E+01	1.272E+02	2.570E+00	-0.791
AG-108M	-1.995E-01		4.375E+00	1.765E+01	3.534E-01	-0.011
AG-110M	-8.248E+00		5.465E+00	1.760E+01	3.615E-01	-0.469
SN-113DA	8.518E-01		5.357E+00	2.361E+01	4.723E-01	0.036
SB-124	-8.329E+00		6.180E+00	2.093E+01	4.223E-01	-0.398

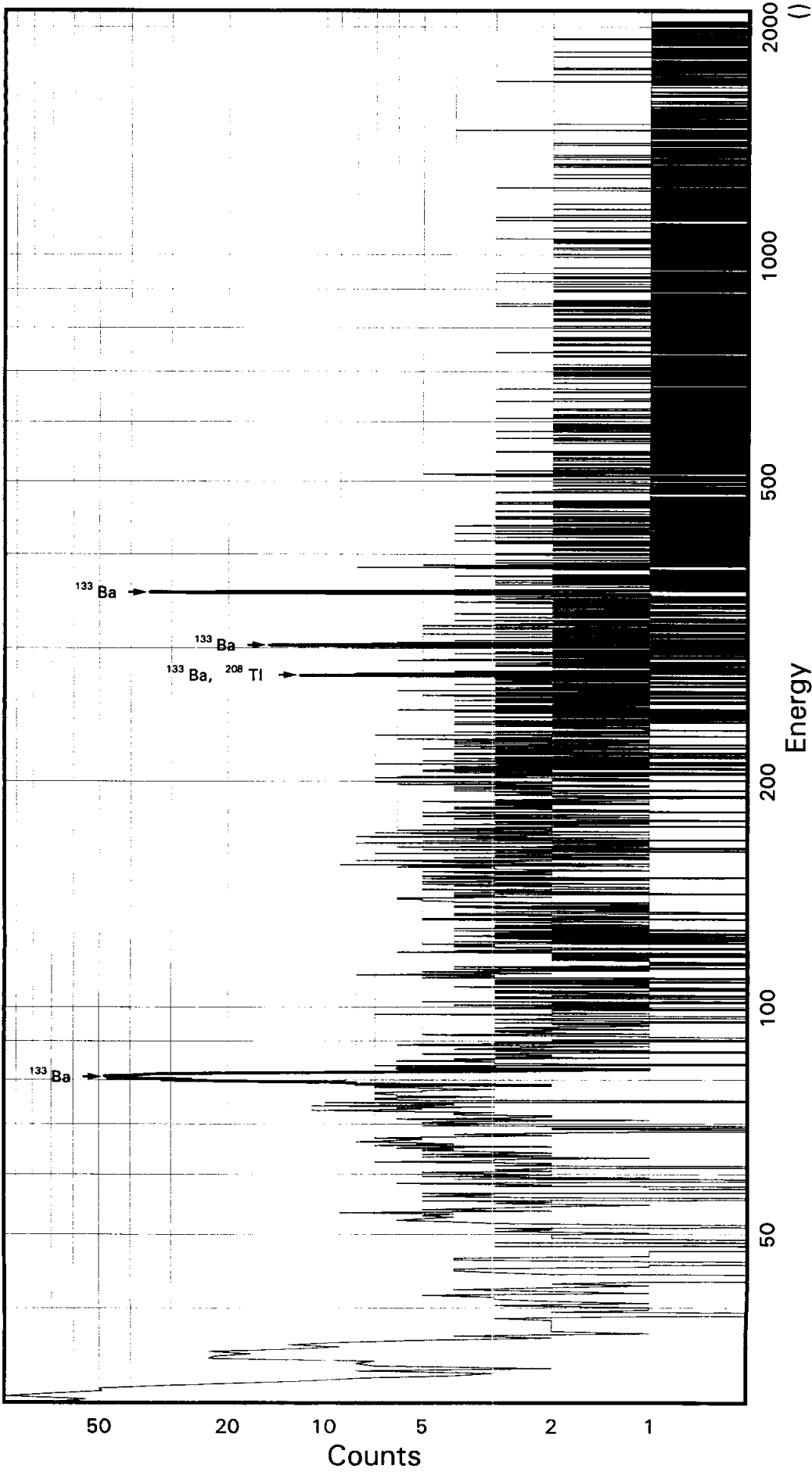
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	1.434E+01		1.552E+01	6.682E+01	1.338E+00	0.215
SN-126DA	2.147E+00		3.799E+00	1.640E+01	3.322E-01	0.131
I-131	1.464E+01		4.712E+01	1.900E+02	3.799E+00	0.077
CS-134	3.268E+00		5.232E+00	2.220E+01	4.533E-01	0.147
CS-137DA	1.717E+00		5.670E+00	2.273E+01	4.602E-01	0.076
LA-138	-1.710E+00		3.013E+00	1.276E+01	2.717E-01	-0.134
CE-139	-5.958E-01		1.017E+01	3.784E+01	7.712E-01	-0.016
BA-140	2.332E+01		6.423E+01	2.642E+02	5.314E+00	0.088
BALA-140	3.037E-01		1.318E+01	6.965E+01	1.498E+00	0.004
CE-141	1.847E+01		2.632E+01	1.030E+02	2.113E+00	0.179
CE-144	-9.343E+01		6.412E+01	2.029E+02	4.187E+00	-0.460
CEPR-144	-1.840E+02		1.285E+02	4.078E+02	8.413E+00	-0.451
PM-144	3.144E+00		3.733E+00	1.693E+01	3.419E-01	0.186
PM-146	6.246E+00		6.176E+00	2.746E+01	5.502E-01	0.227
EU-152	2.467E+01		2.216E+01	9.041E+01	1.808E+00	0.273
EU-154	-6.039E+00		6.249E+00	2.367E+01	4.989E-01	-0.255
EU-155	4.255E+01		3.180E+01	1.301E+02	2.729E+00	0.327
HF-181	3.867E+00		5.602E+00	2.581E+01	5.177E-01	0.150
BI-207	-2.211E-01		5.143E+00	2.077E+01	4.183E-01	-0.011
TL-208	1.525E+00		3.798E+00	1.691E+01	3.410E-01	0.090
BI-210M	-5.788E-01		1.239E+01	4.699E+01	9.425E-01	-0.012
BI-212	-7.257E-01		2.409E+01	1.225E+02	3.743E+00	-0.006
PB-212	1.121E+00		1.477E+01	5.439E+01	1.094E+00	0.021
BI-214	1.320E+01		9.194E+00	4.174E+01	8.426E-01	0.316
PB-214	-1.243E+00		1.708E+01	5.481E+01	1.096E+00	-0.023
RA-223	-1.766E+00		4.582E+01	1.737E+02	3.482E+00	-0.010
RA-224DA	1.149E+00		1.514E+01	5.577E+01	1.121E+00	0.021
RA-226DA	1.330E+01		9.207E+00	4.182E+01	8.441E-01	0.318
AC-227DA	6.893E+01		5.988E+01	2.368E+02	4.761E+00	0.291
AC-228	-8.293E+00		9.939E+00	3.718E+01	7.650E-01	-0.223
RA-228DA	-8.362E+00		1.002E+01	3.749E+01	7.714E-01	-0.223
TH-228DA	4.351E+00		1.084E+01	4.827E+01	9.730E-01	0.090
TH-232DA	-3.035E+00		3.950E+01	1.512E+02	3.025E+00	-0.020
TH-234DA	-2.212E+02		4.862E+02	1.953E+03	4.043E+01	-0.113
U-234DA	-6.121E+00		3.274E+01	1.217E+02	2.436E+00	-0.050
U-235HP	-4.268E+01		6.805E+01	2.466E+02	5.064E+00	-0.173
NP-237DA	-2.404E+01		1.475E+01	4.753E+01	9.512E-01	-0.506
U-238DA	-1.243E+00		1.708E+01	5.481E+01	1.096E+00	-0.023
U-238DHP	-1.539E+02		1.992E+02	7.201E+02	1.586E+01	-0.214
AM-241HP	4.695E+00		2.042E+01	7.945E+01	1.762E+00	0.059

STL Richland WA.
BA133

Sample ID: JWW952AC
Detector ID: GER14 1

Batch ID: 7159393



Acquisition Start: 11-JUN-2007 14:23:51.92
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -6.82968E-01
Slope: 2.48232E-01
Quadrature: 5.76312E-09

SAMPLE IDENTIFICATION: JWW952AC

CONFIGURATION ID: GER14:JWW952AC_110671423
TITLE : BA133
SAMPLE ID : JWW952AC

REPORT DATE: 11-JUN-07	SAMPLE DATE: 9-MAY-2007 12:00:00.00
ACQUIRE DATE: 11-JUN-07 14:23:51	CALIB DATE: 11-JUN-2007 05:36:14.30
ELAPSED LIVE TIME: 1800.0 Sec	ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00	ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00	UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15	SAMPLE TYPE:

ENERGY OFFSET: -.6830E+00 keV	FWHM OFFSET: 1.0483E+00 keV
ENERGY SLOPE: 2.4823E-01 keV/C	FWHM SLOPE: 2.7362E-02 sqr keV
ENERGY Q COEFF: 5.7631E-09 keV/C ²	ITERATIONS: 10
PEAK SENSITIVITY: 5.000	GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %	HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 1.500 keV	ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00	LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUN-2007 14:54:19

Configuration : \$DISK1:[GER14.SAMPLE]JWW952AC_110671423.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 9-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 14:23:51
 Sample ID : JWW952AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.43 0.0%
 Start energy : 19.18 End energy : 2033.22
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.74	444	143	1.06	126.59	118	20	2.47E-01	8.3	
2	0	35.05	113	56	1.66	143.94	137	18	6.26E-02	18.9	
3	0	80.82	292	69	1.78	328.33	320	19	1.62E-01	9.1	
4	0	276.41	42	17	1.25	1116.22	1106	18	2.34E-02	25.2	
5	0	303.11	84	9	1.26	1223.78	1214	18	4.68E-02	13.0	
6	0	355.96	189	22	1.40	1436.70	1422	27	1.05E-01	9.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 11-JUN-2007 14:54:19

Configuration : \$DISK1:[GER14.SAMPLE]JWW952AC_110671423.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 9-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 14:23:51
 Sample ID : JWW952AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.43 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	292	33.00	1.818E+00	1.621E+03	1.631E+03	10.57
	276.40	42	6.90	1.945E+00	1.046E+03	1.053E+03	25.80
	302.84	84	17.80	1.948E+00	8.097E+02	8.146E+02	14.08
	356.00	189	62.05*	1.949E+00	5.205E+02	5.236E+02	10.80
	383.85	-----		8.70	1.949E+00	-----	Line Not Found

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWW952AC

Page : 2
Acquisition date : 11-JUN-2007 14:23:51

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.74	444	143	1.06	126.59	118	20	2.47E-01	8.3	1.61E+00	
0	35.05	113	56	1.66	143.94	137	18	6.26E-02	18.9	1.64E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.062E+03	25.80	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

Configuration : \$DISK1:[GER14.SAMPLE]JWW952AC_110671423.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 : BA133
 Sample date : 9-MAY-2007 12:00:00 Acquisition date : 11-JUN-2007 14:23:51
 Sample ID : JWW952AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.43 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.236E+02	5.653E+01	6.035E+01	1.207E+00	8.676

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.251E+02		9.782E+01	3.312E+02	6.643E+00	-0.378
NA-22	5.464E+00		4.920E+00	2.418E+01	5.092E-01	0.226
K-40	5.456E+01		9.207E+01	4.662E+02	9.932E+00	0.117
SC-46	2.021E-01		8.887E+00	3.742E+01	7.802E-01	0.005
CR-51	2.595E+02		2.896E+02	1.110E+03	2.220E+01	0.234
MN-54	-3.828E+00		6.577E+00	2.475E+01	5.065E-01	-0.155
CO-57	-3.950E+02		1.724E+02	5.312E+02	1.094E+01	-0.744
CO-58	-7.349E+00		7.322E+00	2.615E+01	5.343E-01	-0.281
FE-59	5.431E+00		1.172E+01	5.669E+01	1.180E+00	0.096
CO-60	1.359E+00		5.522E+00	2.370E+01	5.010E-01	0.057
ZN-65	-2.264E+01		1.535E+01	5.054E+01	1.053E+00	-0.448
SE-75	1.517E+01		2.614E+01	9.849E+01	1.975E+00	0.154
SR-85	-3.573E+01		1.988E+01	6.377E+01	1.281E+00	-0.560
Y-88	-2.474E+00		4.115E+00	1.709E+01	3.722E-01	-0.145
NB-94	8.599E+00		6.854E+00	3.053E+01	6.264E-01	0.282
NB-95	3.273E+00		1.293E+01	5.303E+01	1.080E+00	0.062
TC-95M	2.173E+01		3.516E+01	1.305E+02	2.636E+00	0.167
ZR-95	2.087E+00		2.023E+01	7.961E+01	1.621E+00	0.026
ZRNB-95	5.271E+00		1.924E+01	7.905E+01	1.611E+00	0.067
RH-101	3.871E+01		2.247E+01	8.719E+01	1.763E+00	0.444
RH-102M	1.111E+01		6.915E+00	3.211E+01	6.438E-01	0.346
RU-103	-1.950E+01		1.487E+01	4.992E+01	1.002E+00	-0.391
RU-106DA	1.707E+01		7.964E+01	3.163E+02	6.389E+00	0.054
AG-108M	-2.759E+00		1.035E+01	3.854E+01	7.717E-01	-0.072
AG-110M	1.067E+01		8.499E+00	3.999E+01	8.211E-01	0.267
SN-113DA	-2.386E+01		1.881E+01	6.411E+01	1.283E+00	-0.372
SB-124	-3.699E+00		1.207E+01	4.493E+01	9.064E-01	-0.082

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	1.081E+01		3.204E+01	1.253E+02	2.509E+00	0.086
SN-126DA	-8.099E+00		6.107E+00	2.079E+01	4.211E-01	-0.389
I-131	1.540E+02		2.151E+02	8.397E+02	1.679E+01	0.183
CS-134	-8.525E+00		8.429E+00	2.960E+01	6.043E-01	-0.288
CS-137DA	8.765E+00		8.993E+00	3.834E+01	7.763E-01	0.229
LA-138	5.706E+00		7.631E+00	3.572E+01	7.599E-01	0.160
CE-139	-2.201E+01		2.366E+01	7.932E+01	1.616E+00	-0.277
BA-140	-1.846E+01		2.118E+02	7.993E+02	1.607E+01	-0.023
BALA-140	5.495E+01		3.578E+01	2.284E+02	4.905E+00	0.241
CE-141	7.517E+00		7.059E+01	2.509E+02	5.147E+00	0.030
CE-144	-2.972E+01		1.475E+02	5.231E+02	1.079E+01	-0.057
CEPR-144	-6.372E+01		2.948E+02	1.045E+03	2.154E+01	-0.061
PM-144	1.195E+00		7.815E+00	3.091E+01	6.242E-01	0.039
PM-146	-1.881E-01		1.288E+01	4.964E+01	9.946E-01	-0.004
EU-152	1.800E+01		4.672E+01	1.736E+02	3.472E+00	0.104
EU-154	2.033E+01		1.260E+01	6.692E+01	1.409E+00	0.304
EU-155	4.017E+00		6.247E+01	2.298E+02	4.818E+00	0.017
HF-181	3.566E+01		1.602E+01	7.372E+01	1.479E+00	0.484
BI-207	1.945E+01		9.351E+00	4.079E+01	8.215E-01	0.477
TL-208	3.863E+00		1.023E+01	4.017E+01	8.097E-01	0.096
BI-210M	8.267E+00		2.536E+01	9.441E+01	1.893E+00	0.088
BI-212	-3.085E+01		9.318E+01	3.646E+02	1.114E+01	-0.085
PB-212	6.148E+01		2.982E+01	1.204E+02	2.421E+00	0.511
BI-214	2.260E+00		2.054E+01	8.361E+01	1.688E+00	0.027
PB-214	-1.524E+01		3.778E+01	1.109E+02	2.218E+00	-0.137
RA-223	-1.370E+01		9.466E+01	3.373E+02	6.763E+00	-0.041
RA-224DA	6.354E+01		3.082E+01	1.244E+02	2.502E+00	0.511
RA-226DA	2.259E+00		2.054E+01	8.361E+01	1.688E+00	0.027
AC-227DA	-4.650E+00		1.219E+02	4.425E+02	8.897E+00	-0.011
AC-228	1.253E+01		2.419E+01	1.014E+02	2.086E+00	0.124
RA-228DA	1.267E+01		2.446E+01	1.026E+02	2.109E+00	0.124
TH-228DA	1.111E+01		2.943E+01	1.156E+02	2.329E+00	0.096
TH-232DA	7.131E+01		9.534E+01	3.643E+02	7.287E+00	0.196
TH-234DA	5.935E+02		9.293E+02	4.084E+03	8.449E+01	0.145
U-234DA	2.640E+01		5.926E+01	2.245E+02	4.494E+00	0.118
U-235HP	-3.655E+02		1.675E+02	5.205E+02	1.069E+01	-0.702
NP-237DA	-3.013E+01		3.568E+01	1.223E+02	2.447E+00	-0.246
U-238DA	-1.524E+01		3.778E+01	1.109E+02	2.218E+00	-0.137
U-238DHP	-6.002E+02		5.273E+02	1.791E+03	3.938E+01	-0.335
AM-241HP	-5.032E+00		4.627E+01	1.674E+02	3.704E+00	-0.030

Balance Id: 1120403183
 Pipet #: AL 5/23/07 1047
 Sep1 DT/Tm Tech: AL 5/23/07 1047
 Sep2 DT/Tm Tech: FABREM

Sample Preparation/Analysis
 BU Ra-226/228 Pp/Seprc5005
 TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
 01 STANDARD TEST SET
 PM, Quote: JAE, 75203
 All Tests: 7134312 9NS1, 7134317 7YSR, 7134319 BUTE, 7134321 BUTF,
 pCi/L
 Batch: 7134319
 SEQ Batch, Test: 7134321, BUTF 7134321, BUTF

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 JWP17-1-AA F7E100384-1-SAMP	1000.80g.in		rata26765 05/17/07	7.4508 7.10 1.0494				7"	1411	5/29/07 1649p 3#A 6/6/07 1040 081	5/23/07 R
05/09/2007 06:45			AmtRec: 2XLP	#Containers: 2				Scr:	Alpha: 1.60E-04 uCi/Sa	Beta: 4.20E-04 uCi/Sa	

2 JWP17-1-AD-X
 F7E100384-1-DUP
~~INSUFFICIENT VOLUME~~

05/09/2007 06:45			AmtRec: 2XLP	#Containers: 2				Scr:	Alpha: 1.60E-04 uCi/Sa	Beta: 4.20E-04 uCi/Sa	
3 JWP18-1-AA F7E100384-2-SAMP	1002.00g.in		rata26766 05/17/07	7.5253 5.747 1.2981				64	1413	5/29/07 1649p	5/23/07 R
05/09/2007 07:15			AmtRec: 2XLP	#Containers: 2				Scr:	Alpha: 1.57E-04 uCi/Sa	Beta: 3.33E-04 uCi/Sa	

4 JWP19-1-AA F7E100384-3-SAMP	1001.40g.in		rata26767 05/17/07	7.4322 7.734 1.0009				66	1414	MB 6/6/07 1030p 105 5/29/07 1649p	5/23/07 R
05/09/2007 07:30			AmtRec: 2XLP	#Containers: 2				Scr:	Alpha: 4.04E-04 uCi/Sa	Beta: 3.65E-04 uCi/Sa	

STL 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
 ISV - Insufficient Volume for Analysis
 WO Cnt: 4
 Prep_SamplePrep v4.8.2c

Balance Id: 1120403183
 Pipet #: _____
 Sep1 DT/Tm Tech: _____
 Sep2 DT/Tm Tech: _____

Sample Preparation/Analysis
 BU Ra-226/228 Prp/SepRC5005
 TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
 01 STANDARD TEST SET
 PM, Quote: JAE, 75203

Batch: 7134319
 pCi/L
 AMSEQ Batch, Test: 7134321, BUTF

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 JWP2A-1-AA F7E100384-4-SAMP		1000.50g.in	rata26768 05/17/07	7.3949 6.767 1.0928				67	1415	5/23/07	r
05/09/2007 08:35			AmtRec: 2XLP	#Containers: 2				Scr: Alpha: 2.12E-04 uCi/Sa		Beta: 2.93E-04 uCi/Sa	
6 JWP2C-1-AA F7E100384-5-SAMP		1000.80g.in	rata26769 05/17/07	7.4136 6.266 1.1831				610	1415	5/23/07	r
05/09/2007 09:30			AmtRec: 2XLP	#Containers: 2				Scr: Alpha: 1.95E-04 uCi/Sa		Beta: 3.47E-04 uCi/Sa	
7 JWP2D-1-AA F7E100384-6-SAMP		1001.70g.in	rata26770 05/17/07	7.4601 6.814 1.0448				611	1416	5/23/07	r
05/09/2007 09:10			AmtRec: 2XLP	#Containers: 2				Scr: Alpha: 1.54E-04 uCi/Sa		Beta: 5.11E-04 uCi/Sa	1.8E-01L
8 JWP2E-1-AA F7E100384-7-SAMP		1000.70g.in	rata26771 05/17/07	7.5626 6.377 1.1859				612	1414	5/23/07	r
05/09/2007 10:35			AmtRec: 2XLP	#Containers: 2				Scr: Alpha: 5.63E-05 uCi/Sa		Beta: 2.68E-04 uCi/Sa	

Balance Id: 1120403183
 Pipet #:
 Sep1 DT/Tm Tech:
 Sep2 DT/Tm Tech:
 Prep Tech: FABREM

Sample Preparation/Analysis
 BU Ra-226/228 Prp/SepRC5005
 TE Ba-133 by Nal & Ra-226 by Alpha Scint 7 day ingrow
 01 STANDARD TEST SET
 PM, Quote: JAE, 75203

Batch: 7134319
 EQ Batch, Test: 7134321, BUTF

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:
9 JWP2F-1-AA F7E100384-8-SAMP	1001.50g.in	1001.50g.in	05/17/07	7.5067 7.048 1.0651				613	1417	5/23/07	r
05/09/2007 11:30											Beta: 8.40E-05 uCi/Sa
10 JWP2G-1-AA F7E100384-9-SAMP	1002.80g.in	1002.80g.in	05/17/07	7.5626 6.088 1.2422				614	1417	5/23/07	r
05/09/2007 11:15											Beta: 1.71E-04 uCi/Sa
11 JWP2H-1-AA F7E100384-10-SAMP	1000.10g.in	1000.10g.in	05/17/07	7.5905 7.05 1.0767				9"	1450	5/23/07	r
05/09/2007 12:45											Beta: 1.99E-04 uCi/Sa
12 JWP2J-1-AA F7E100384-11-SAMP	1001.70g.in	1001.70g.in	05/17/07	7.5719 6.978 1.0851				64	1451	5/23/07	r
05/09/2007 13:05											Beta: 3.24E-04 uCi/Sa

Balance Id:1120403183

Sample Preparation/Analysis

BU Ra-226/228 Prp/SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

5/17/2007 6:31:35 PM
56833, ENSR International Corporation
ENSR International Corporation
AnalyseDate: 06/06/2007

Prep Tech: ,FABREM

PM, Quote: JAE, 75203

pCi/L

Batch: 7134319
SEQ Batch, Test: 7134321, BUTF

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:
13 JWP2K-1-AA F7E100384-12-SAMP	1001.40g.in	1001.40g.in	05/17/07	7.5067 7.366 1.0191				64	1452	5/29/07 1715.8	5/23/07
14 JWP2L-1-AA F7E100384-13-SAMP	1000.00g.in	1000.00g.in	05/17/07	7.4974 7.513 1.0009				67	1453	5/29/07 1715.8 6/6/07 1338.8	Beta: 3.02E-04 uCi/Sa 5/23/07
15 JWP2N-1-AA F7E100384-14-SAMP	1000.90g.in	1000.90g.in	05/17/07	7.6650 7.674 1.0009				610	1453	5/29/07 1715.8 6/6/07 1338.8	Beta: 3.67E-04 uCi/Sa 5/23/07
16 JWP2P-1-AA F7E100384-15-SAMP	1001.10g.in	1001.10g.in	05/17/07	7.5532 6.961 1.0851				611	1454	5/29/07 1715.8 6/6/07 1320	Beta: 2.57E-04 uCi/Sa 5/23/07
05/09/2007 15:30											Beta: 1.47E-04 uCi/Sa

WO Cnt: 16
Prep_SamplePrep v4.8.26

ISV - Insufficient Volume for Analysis

Page 4

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

STL Richland
Richland Wa.

5/17/2007 6:31:35 PM Balance Id:1120403183
Sample Preparation/Analysis
 BU Ra-226/228 Prp/SepRC5005
 TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
 01 STANDARD TEST SET
 AnalytDueDate: 06/06/2007
 Batch: 7134319 pCi/L
 SEQ Batch, Test: None
 Prep Tech: FABREM
 Sep1 DT/Tm Tech: Sep2 DT/Tm Tech:

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:
17 JWW95-1-AA-B	1003.50g,in	1003.50g,in	rata26780	7.5439				612	1454	5/23/07	
J7E140000-319-BLK			05/17/07	7.726					5/29/07	1715	
				1.000							

Amt/Rec	#Containers: 1	Scr:	Alpha:	Beta:
05/09/2007 06:45				
1000.60g,in	7.4244	614	1455	5/23/07
J7E140000-319-LCS	7.69	9"	1404	5/24/07
	1.000		5/29/07	1730p
			G5B 6/6/07	1336
			055	

05/09/2007 06:45 Amt/Rec: #Containers: 1
 rasc4433 7.4244
 05/09/07 7.69
 1.000
 Comments: JWP17-SAMP "Comments/ISV - INSUFFICIENT VOLUME FOR DUP SAMPLE."
 05/09/2007 06:45 Amt/Rec: #Containers: 1

All Clients for Batch:
 456833, ENSR International Corporation
 ENSR International Corporation, JAE, 75203
 JWP17IAA-SAMP Constituent List:

Constituent	RDL:	pCi/L	LCL:20	UCL:115	RPD:20	Ra-226	RDL:2.00E+00	pCi/L	LCL:	UCL:	RPD:
JWW95IAA-BLK: Ba-133											
JWW95IAC-LCS: Ba-133											
JWP17IAA-SAMP Calc Info:											
Uncert Level (#): 4											
Decay to Sadt: N											
Blk Subst.: N											
Sci. Not.: N											
ODRs: B											

STL RICHLAND
 Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 5
 Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added
 ISV - Insufficient Volume for Analysis
 WO Cnt: 18
 Prep. SamplePrep v4.8.26

5/17/2007 6:31:38 PM

Sample Preparation/Analysis

Balance Id:1120403183

BU Ra-226/228 Prp/SepRC5005

TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow

01 STANDARD TEST SET

AnalyDueDate: 06/06/2007

Batch: 7134319

SEQ Batch, Test: None

pCi/L

Prep Tech: FABREM

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

JWW95IAC-LCS:

Uncert Level (#s): 4 Decay to Sadt: N Blk Subt.: N Sci.Not.: N ODRs: B

Approved By _____ Date: _____

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld	
Ra-226 by ASC-7				Richland Standard Ra-226/Ra-228 Deem Wo Blk Subt.								<i>CRDL</i>			
Calc	TE	WATER	JWP171AA	RA-226	1.79E-01	(4.85E-02)		PCI/L	R	5.47E-02	1.24E-01	✓	95%		
Calc	TE	WATER	JWP181AA	RA-226	8.87E-02	(3.16E-02)		PCI/L	R	3.30E-02	8.31E-02	✓	77%		
Calc	TE	WATER	JWP191AA	RA-226	1.12E-01	(4.48E-02)		PCI/L	R	5.91E-02	1.35E-01	✓	100%		
Calc	TE	WATER	JWP2A1AA	RA-226	3.56E-01	(6.80E-02)		PCI/L	R	5.21E-02	1.22E-01	✓	92%		
Calc	TE	WATER	JWP2C1AA	RA-226	1.51E-01	(5.18E-02)		PCI/L	R	6.83E-02	1.52E-01	✓	85%		
Calc	TE	WATER	JWP2D1AA	RA-226	1.58E-01	(3.90E-02)		PCI/L	R	3.58E-02	8.61E-02	✓	91%		
Calc	TE	WATER	JWP2E1AA	RA-226	1.81E-01	(4.16E-02)		PCI/L	R	3.04E-02	7.67E-02	✓	84%		
Calc	TE	WATER	JWP2F1AA	RA-226	6.18E-02	(2.94E-02)		PCI/L	R	3.89E-02	9.15E-02	✓	94%		
Calc	TE	WATER	JWP2G1AA	RA-226	7.76E-02	(3.05E-02)		PCI/L	R	3.50E-02	8.56E-02	✓	81%		
Calc	TE	WATER	JWP2H1AA	RA-226	2.29E-01	(5.22E-02)		PCI/L	R	4.72E-02	1.11E-01	✓	93%		
Calc	TE	WATER	JWP2J1AA	RA-226	2.43E-01	(5.08E-02)		PCI/L	R	4.41E-02	1.04E-01	✓	92%		
Calc	TE	WATER	JWP2K1AA	RA-226	3.12E-01	(5.54E-02)		PCI/L	R	3.68E-02	8.76E-02	✓	98%		
Calc	TE	WATER	JWP2L1AA	RA-226	3.00E-01	(5.58E-02)		PCI/L	R	4.21E-02	9.75E-02	✓	100%		
Calc	TE	WATER	JWP2N1AA	RA-226	5.59E-02	(4.73E-02)	U4	PCI/L	R	7.52E-02	1.64E-01	✓	100%		
Calc	TE	WATER	JWP2P1AA	RA-226	2.54E-02	(4.11E-02)	U4	PCI/L	R	6.75E-02	1.50E-01	✓	92%		
Calc	TE	WATER	JWW951AA	RA-226	-1.82E-02	(2.78E-02)	U4	pCi/L	R	5.05E-02	1.15E-01	B ✓	100%		
Calc	TE	WATER	JWW951AC	RA-226	6.21E-01	(8.89E-02)		pCi/L	R	4.71E-02	1.08E-01	S ✓	100%	44%	
Calc	TE	WATER	JWW951AC	RA-226	6.97E-01	(9.73E-02)		pCi/L	R	4.85E-02	1.11E-01	S ✓	100%	50%	
Calc	TE	WATER	JWW951AC	RA-226	6.59E-01	(6.59E-02)		pCi/L	A	3.38E-02	7.74E-02	S ✓	100%	47% N	

Angela Long
6/7/07

() - (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

Alpha Beta, Ra-226 by ASC-7 , Calculated Results Detailed Report

Sq	Calc	TE	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	v4.8.26		WATER	*STLE	Ra226WoBS	JWP171AA	PCI/L		06/06/07 00:00	06/06/07 14:40	05/29/07 16:49	rata26765	1	95%	1000.80 g			
			WATER								06/06/07 10:40	rata26765	Alq	95%				
Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/06/07 14:40	RA-226	51	22	ASC3HA	ASC	N	2.3545E+00	1.0000E+00	1.0000E+00	N	95%	N	1.3685E+00	4.5045E+02	9.9999E-01		
			50	60			Y	(1.100E-01)	(0.000E+00)			8%		(0.000E+00)	0.000999			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EntFct	Chem Yld,EFctU	IDC/LcC	BIK/LcC/MDC	StdDvMdc/LcC				
06/06/07		RA-226	R	0.179348		6.53333E-01	0.398474	0.398474	1.0008 L	95%	0.12419	0.054688						
				(0.04852)		(1.6282E-01)	(0.105945)	(0.105945)	(0.173205)									

Sq	Calc	TE	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol		
2	v4.8.26		WATER	*STLE	Ra226WoBS	JWP181AA	PCI/L		06/06/07 00:00	06/06/07 14:30	05/29/07 16:49	rata26766	1	77%	1002.00 g			
			WATER								06/06/07 10:30	rata26766	Alq	77%				
Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/06/07 14:30	RA-226	19	6	ASC1MB	ASC	N	2.5215E+00	1.0000E+00	1.0000E+00	N	77%	N	1.3692E+00	4.5045E+02	9.9999E-01		
			50	60			Y	(1.183E-02)	(0.000E+00)			6%		(0.000E+00)	0.000998			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EntFct	Chem Yld,EFctU	IDC/LcC	BIK/LcC/MDC	StdDvMdc/LcC				
06/06/07		RA-226	R	0.088723		2.80000E-01	0.197361	0.197361	1.002 L	77%	0.083068	0.032967						
				(0.031633)		(9.6264E-02)	(0.069671)	(0.069671)	(0.173205)									

Sq	Calc	TE	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	v4.8.26		WATER	*STLE	Ra226WoBS	JWP191AA	PCI/L		06/06/07 00:00	06/06/07 14:42	05/29/07 16:49	rata26767	1	100%	1001.40 g			
			WATER								06/06/07 10:42	rata26767	Alq	100%				
Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/06/07 14:42	RA-226	36	21	ASCHSB	ASC	N	2.0281E+00	1.0000E+00	1.0000E+00	N	100%	N	1.3683E+00	4.5045E+02	9.9999E-01		
			50	60			Y	(9.471E-02)	(0.000E+00)			8%		(0.000E+00)	0.000999			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EntFct	Chem Yld,EFctU	IDC/LcC	BIK/LcC/MDC	StdDvMdc/LcC				
06/06/07		RA-226	R	0.11229		3.70000E-01	0.249635	0.249635	1.0014 L	100%	0.13452	0.05907						
				(0.044758)		(1.4224E-01)	(0.098717)	(0.098717)	(0.173205)									

Sq	Calc	TE	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	v4.8.26		WATER	*STLE	Ra226WoBS	JWP2A1AA	PCI/L		06/06/07 00:00	06/06/07 14:44	05/29/07 16:49	rata26768	1	92%	1000.50 g			
			WATER								06/06/07 10:44	rata26768	Alq	92%				
Sq	Calc Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/06/07 14:44	RA-226	66	14	ASC9RA	ASC	N	2.0536E+00	1.0000E+00	1.0000E+00	N	92%	N	1.3682E+00	4.5045E+02	9.9999E-01		
			50	60			Y	(8.974E-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, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration
 Sr-89 - Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count. All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Page 1
 RecCnt:4 RADCALC v4.8.26
 STL Richland

Alpha Beta, Ra-226 by ASC-7, Calculated Results

Batch Nbr: 7134319

6/7/2007 8:14:28 AM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIkLcC/MDC	StdDvMdc/LcC			
06/06/07	RA-226	R	0.356204	1.08667E+00	0.791176	0.791176	0.791176	1.0005 L	92%	0.121892							
			(0.068015)	(1.7404E-01)	(0.145799)	(0.145799)	(0.145799)	(0.173205)		0.052094							
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																	
5	Calc	TE		*STLE Ra226WoBS	JWP2C1AA	PCI/L	06/06/07 00:00	06/06/07 14:45	05/29/07 16:49	06/06/07 10:45	1	1000.80 g					
v4.8.26						WATER											
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/06/07 14:45	RA-226	52	31	ASC6RA	ASC	N	2.5216E+00	1.0000E+00	1.0000E+00	N	85%	1.3682E+00	1.3682E+00	4.5045E+02	9.9999E-01	
			50	60			Y	(8.674E-02)	(0.000E+00)	(0.000E+00)	7%		(0.000E+00)	0.000999			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIkLcC/MDC	StdDvMdc/LcC			
06/06/07	RA-226	R	0.151206	5.23333E-01	0.335949	0.335949	0.335949	1.0008 L	85%	0.152233							
			(0.051824)	(1.7150E-01)	(0.113912)	(0.113912)	(0.113912)	(0.173205)		0.068327							
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																	
6	Calc	TE		*STLE Ra226WoBS	JWP2D1AA	PCI/L	06/06/07 00:00	06/06/07 14:45	05/29/07 16:49	06/06/07 10:45	1	1001.70 g					
v4.8.26						WATER											
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/06/07 14:45	RA-226	38	10	ASC8HC	ASC	N	2.5249E+00	1.0000E+00	1.0000E+00	N	91%	1.3682E+00	1.3682E+00	4.5045E+02	9.9999E-01	
			50	60			Y	(6.186E-02)	(0.000E+00)	(0.000E+00)	7%		(0.000E+00)	0.000998			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIkLcC/MDC	StdDvMdc/LcC			
06/06/07	RA-226	R	0.158282	5.93333E-01	0.351987	0.351987	0.351987	1.0017 L	91%	0.086077							
			(0.038954)	(1.3408E-01)	(0.084819)	(0.084819)	(0.084819)	(0.173205)		0.035831							
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																	
7	Calc	TE		*STLE Ra226WoBS	JWP2E1AA	PCI/L	06/06/07 00:00	06/06/07 16:50	05/29/07 16:49	06/06/07 12:50	1	1000.70 g					
v4.8.26						WATER											
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/06/07 16:50	RA-226	36	6	ASCJMB	ASC	N	2.4836E+00	1.0000E+00	1.0000E+00	N	84%	1.3613E+00	1.3613E+00	4.5045E+02	9.9999E-01	
			50	60			Y	(1.095E-01)	(0.000E+00)	(0.000E+00)	7%		(0.000E+00)	0.000999			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIkLcC/MDC	StdDvMdc/LcC			
06/06/07	RA-226	R	0.1814	6.20000E-01	0.402994	0.402994	0.402994	1.0007 L	84%	0.076701							
			(0.04162)	(1.2675E-01)	(0.09024)	(0.09024)	(0.09024)	(0.173205)		0.03044							
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																	
8	Calc	TE		*STLE Ra226WoBS	JWP2F1AA	PCI/L	06/06/07 00:00	06/06/07 16:41	05/29/07 16:49	06/06/07 12:41	1	1001.50 g					
v4.8.26						WATER											
Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn

Alpha Beta, Ra-226 by ASC-7, Calculated Results

Batch Nbr: 7134319

6/7/2007 8:14:28 AM

1	06/06/07 16:41	RA-226	23	13	ASCKMD ASC	N	2.5702E+00	1.0000E+00	N	94%	N	94%	1.3618E+00	4.5045E+02	9.9999E-01
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC	
	06/06/07	RA-226	R	0.061762		2.43333E-01	0.137319	0.137319	1.0015 L	94%		0.09145			
				(0.029387)		(1.1319E-01)	(0.064975)	(0.064975)	(0.173205)			0.03887			

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC
06/06/07	RA-226		R	0.061762		2.43333E-01	0.137319	0.137319	1.0015 L	94%		0.09145		
				(0.029387)		(1.1319E-01)	(0.064975)	(0.064975)	(0.173205)			0.03887		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC
06/06/07	RA-226		R	0.077582		2.66667E-01	0.172715	0.172715	1.0028 L	81%		0.085628		
				(0.030482)		(1.0111E-01)	(0.067309)	(0.067309)	(0.173205)			0.034951		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC
06/06/07	RA-226		R	0.077582		2.66667E-01	0.172715	0.172715	1.0028 L	81%		0.085628		
				(0.030482)		(1.0111E-01)	(0.067309)	(0.067309)	(0.173205)			0.034951		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC
06/06/07	RA-226		R	0.077582		2.66667E-01	0.172715	0.172715	1.0028 L	81%		0.085628		
				(0.030482)		(1.0111E-01)	(0.067309)	(0.067309)	(0.173205)			0.034951		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC
06/06/07	RA-226		R	0.228952		7.43333E-01	0.508329	0.508329	1.0001 L	93%		0.110975		
				(0.052158)		(1.5103E-01)	(0.112979)	(0.112979)	(0.173205)			0.047169		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC
06/06/07	RA-226		R	0.228952		7.43333E-01	0.508329	0.508329	1.0001 L	93%		0.110975		
				(0.052158)		(1.5103E-01)	(0.112979)	(0.112979)	(0.173205)			0.047169		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC
06/06/07	RA-226		R	0.228952		7.43333E-01	0.508329	0.508329	1.0001 L	93%		0.110975		
				(0.052158)		(1.5103E-01)	(0.112979)	(0.112979)	(0.173205)			0.047169		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC
06/06/07	RA-226		R	0.242757		8.43333E-01	0.539843	0.539843	1.0017 L	92%		0.103714		
				(0.050814)		(1.5752E-01)	(0.109728)	(0.109728)	(0.173205)			0.044082		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC
06/06/07	RA-226		R	0.242757		8.43333E-01	0.539843	0.539843	1.0017 L	92%		0.103714		
				(0.050814)		(1.5752E-01)	(0.109728)	(0.109728)	(0.173205)			0.044082		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlC/MDC	StdDvMdc/LcC
06/06/07	RA-226		R	0.242757		8.43333E-01	0.539843	0.539843	1.0017 L	92%		0.103714		
				(0.050814)		(1.5752E-01)	(0.109728)	(0.109728)	(0.173205)			0.044082		

() - (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-88 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

6/7/2007 8:14:28 AM

Batch Nbr: 7134319

Sq	Calc	TE	Method	Matrix	Protocol	Equation	Set	Wrk	Ord	Units/Matrix	QC/BB	Sa/On	Date	AnalysisDate/PtWt	Sep1/Sep2	Date	QC/Tracer	Vial	Multi/Ent	Yld	Total/Analy	Vol	Final/Count	Vol	Final/Count	
12	Calc	TE	WATER	*STLE	Ra226WoBS	JWP2K1AA	PCI/L						06/06/07 00:00	06/06/07 16:52	05/29/07 17:15	06/06/07 12:52	rata26776	Alq	1	98%	1001.40	g				
							WATER																			
Sq	Cnt	Date	Parameter	Sample	Cnt	Bkgrnd	Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld	Fct	Blk	Value	Ingr	Fct	Conv	Fct/VolAdj	Decay	Abn		
1	06/06/07	16:52	RA-226	69	11	ASC2MA	ASC	ASC2MA	ASC	N	2.3937E+00	1.0000E+00	1.0000E+00	N	98%	N	1.3626E+00	1.3626E+00	1.3626E+00	4.5045E+02	4.5045E+02	9.9999E-01				
Sq	Calc	Date	Parameter	Avg	Sa	Act	Q	Net	Cnt	Rt	Dpm	Wo	Blk	Dpm	Blk	Vol	Used	Yield	Ent	Fct	Chem	Yld	IDC	ILcC	Std	DvMdc/LcC
	06/06/07	RA-226	R	0.312265				1.19667E+00	0.694206	0.694206	0.694206	1.0014	L	98%				0.087618								
				(0.055371)				(1.7509E-01)	(0.118103)	(0.118103)	(0.118103)	(0.173205)						0.036759								
13	Calc	TE	WATER	*STLE	Ra226WoBS	JWP2L1AA	PCI/L						06/06/07 00:00	06/06/07 17:38	05/29/07 17:15	06/06/07 13:38	rata26777	Alq	1	100%	1000.00	g				
							WATER																			
Sq	Cnt	Date	Parameter	Sample	Cnt	Bkgrnd	Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld	Fct	Blk	Value	Ingr	Fct	Conv	Fct/VolAdj	Decay	Abn		
1	06/06/07	17:38	RA-226	74	16	ASCEHB	ASC	ASCEHB	ASC	N	2.4744E+00	1.0000E+00	1.0000E+00	N	100%	N	1.3601E+00	1.3601E+00	1.3601E+00	4.5045E+02	4.5045E+02	9.9999E-01				
Sq	Calc	Date	Parameter	Avg	Sa	Act	Q	Net	Cnt	Rt	Dpm	Wo	Blk	Dpm	Blk	Vol	Used	Yield	Ent	Fct	Chem	Yld	IDC	ILcC	Std	DvMdc/LcC
	06/06/07	RA-226	R	0.30041				1.21333E+00	0.666916	0.666916	0.666916	1.00	L	100%				0.097498								
				(0.055771)				(1.8451E-01)	(0.119237)	(0.119237)	(0.119237)	(0.173205)						0.042064								
14	Calc	TE	WATER	*STLE	Ra226WoBS	JWP2N1AA	PCI/L						06/06/07 00:00	06/06/07 17:20	05/29/07 17:15	06/06/07 13:20	rata26778	Alq	1	100%	1000.90	g				
							WATER																			
Sq	Cnt	Date	Parameter	Sample	Cnt	Bkgrnd	Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld	Fct	Blk	Value	Ingr	Fct	Conv	Fct/VolAdj	Decay	Abn		
1	06/06/07	17:20	RA-226	50	47	ASC7HA	ASC	ASC7HA	ASC	N	2.3720E+00	1.0000E+00	1.0000E+00	N	100%	N	1.3610E+00	1.3610E+00	1.3610E+00	4.5045E+02	4.5045E+02	9.9999E-01				
Sq	Calc	Date	Parameter	Avg	Sa	Act	Q	Net	Cnt	Rt	Dpm	Wo	Blk	Dpm	Blk	Vol	Used	Yield	Ent	Fct	Chem	Yld	IDC	ILcC	Std	DvMdc/LcC
	06/06/07	RA-226	R	0.05595				2.16667E-01	0.124321	0.124321	0.124321	1.0009	L	100%				0.164291								
				(0.047325)				(1.8181E-01)	(0.104972)	(0.104972)	(0.104972)	(0.173205)						0.075192								
15	Calc	TE	WATER	*STLE	Ra226WoBS	JWP2P1AA	PCI/L						06/06/07 00:00	06/06/07 17:34	05/29/07 17:15	06/06/07 13:34	rata26779	Alq	1	92%	1001.10	g				
							WATER																			
Sq	Cnt	Date	Parameter	Sample	Cnt	Bkgrnd	Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld	Fct	Blk	Value	Ingr	Fct	Conv	Fct/VolAdj	Decay	Abn		
1	06/06/07	17:34	RA-226	33	34	ASC5HA	ASC	ASC5HA	ASC	N	2.4371E+00	1.0000E+00	1.0000E+00	N	92%	N	1.3603E+00	1.3603E+00	1.3603E+00	4.5045E+02	4.5045E+02	9.9999E-01				
Sq	Calc	Date	Parameter	Avg	Sa	Act	Q	Net	Cnt	Rt	Dpm	Wo	Blk	Dpm	Blk	Vol	Used	Yield	Ent	Fct	Chem	Yld	IDC	ILcC	Std	DvMdc/LcC
	06/06/07	RA-226	R	0.05595				2.16667E-01	0.124321	0.124321	0.124321	1.0009	L	100%				0.164291								
				(0.047325)				(1.8181E-01)	(0.104972)	(0.104972)	(0.104972)	(0.173205)						0.075192								

() - (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:15 RADCALC v4.8.26
 STL Richland

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BkLcC/MDC	StdDvMdc/LcC
06/06/07	RA-226	R	0.025435 (0.04109)	U4	9.33333E-02 (1.5048E-01)	0.056529 (0.091277)	0.056529 (0.091277)	1.0011 L (0.173205)	92%	0.149676	0.067493			

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
16	Calc	TE	WATER	*STLE	Ra226WoBS	JWW951AA	B	05/09/07 06:45	06/06/07 17:34	05/29/07 17:15	06/06/07 13:34	05/29/07 17:15	rata26780	1	g	
												06/06/07 13:34	rata26780	Alq	100%	1003.50 g

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/06/07 17:34	RA-226	14	21	ASCCUB	ASC	N	2.3517E+00	1.0000E+00	1.0000E+00	N	100%	N	1.3603E+00	1.3603E+00	4.5045E+02	1.0000E+00	
			50	60			Y	(1.150E-01)	(0.0000E+00)	(0.0000E+00)		8%		(0.0000E+00)	(0.0000E+00)	0.000999		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BkLcC/MDC	StdDvMdc/LcC
06/06/07	RA-226	R	-0.018176 (0.027831)	U4	-7.00000E-02 (1.0693E-01)	-0.04049 (0.061966)	-0.04049 (0.061966)	1.0035 L (0.173205)	100%	0.11509	0.050539			

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
17	Calc	TE	WATER	*STLE	Ra226WoBS	JWW951AC	S	05/09/07 06:45	06/06/07 21:23	05/29/07 17:30	06/06/07 13:36	05/29/07 17:30	rasc4433	1	g	
												06/06/07 13:36	rasc4433	Alq	100%	1000.60 G

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	06/06/07 17:36	RA-226	138	19	ASCSB	ASC	N	2.4088E+00	1.0000E+00	1.0000E+00	N	100%	N	1.3610E+00	1.3610E+00	4.5045E+02	1.0000E+00	
			50	60			Y	(9.081E-02)	(0.0000E+00)	(0.0000E+00)		8%		(0.0000E+00)	(0.0000E+00)	0.000999		

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
2	06/06/07 21:23	RA-226	149	19	ASCSB	ASC	N	2.4088E+00	1.0000E+00	1.0000E+00	N	100%	N	1.4006E+00	1.4006E+00	4.5045E+02	1.0000E+00	
			50	60			Y	(9.081E-02)	(0.0000E+00)	(0.0000E+00)		8%		(0.0000E+00)	(0.0000E+00)	0.000999		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BkLcC/MDC	StdDvMdc/LcC
06/07/07	RA-226	R	0.621482 (0.088878)	U4	2.44333E+00 (2.4592E-01)	1.380486 (0.184963)	1.380486 (0.184963)	1.0006 L (0.173205)	100%	0.107913	0.047092			

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BkLcC/MDC	StdDvMdc/LcC
06/07/07	RA-226	R	0.697165 (0.097273)	U4	2.66333E+00 (2.5471E-01)	1.5486 (0.20172)	1.5486 (0.20172)	1.0006 L (0.173205)	100%	0.111055	0.048463			

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BkLcC/MDC	StdDvMdc/LcC
06/07/07	RA-226	A	0.659324 (0.065881)	U4	2.55333E+00 (1.7703E-01)	1.464543 (0.136842)	1.464543 (0.136842)	1.0006 L (0.122474)	100%	0.077417	0.033784			

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP171AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0494 ✓
Technician: JP

Analysis Size: 1000.8 Analysis Unit: G

 Report Date: 6-JUN-2007 15:30:00.61
 First Separation Date: 29-MAY-2007 16:49:00.00
 Second Separation Date: 6-JUN-2007 10:40:00.00

Detector ID: 3 Cell ID: 3HA

Bkg Date: 5-JUN-2007 21:47:06.82
 Bkg Counts: 000022 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 14:40:00.27
 Counts: 000051 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP181AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.2981 ✓
Technician: JP
Analysis Size: 1002.0 Analysis Unit: G
 Report Date: 6-JUN-2007 15:20:49.17
 First Separation Date: 29-MAY-2007 16:49:00.00
 Second Separation Date: 6-JUN-2007 10:30:00.00
Detector ID: 1 Cell ID: 1MB
Bkg Date: 5-JUN-2007 21:46:52.61
 Bkg Counts: 000006 Bkg Duration: 000060.0
Count Date: 6-JUN-2007 14:30:48.84
 Counts: 000019 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP191AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0 ✓
Technician: JP

Analysis Size: 1001.4 Analysis Unit: G

 Report Date: 6-JUN-2007 15:32:00.60
 First Separation Date: 29-MAY-2007 16:49:00.00
 Second Separation Date: 6-JUN-2007 10:42:00.00

Detector ID: 17 Cell ID: HSB

Bkg Date: 5-JUN-2007 21:47:32.03
 Bkg Counts: 000021 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 14:42:00.28
 Counts: 000036 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2A1AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0928 ✓
Technician: JP

Analysis Size: 1000.5 Analysis Unit: G

 Report Date: 6-JUN-2007 15:34:00.63
 First Separation Date: 29-MAY-2007 16:49:00.00
 Second Separation Date: 6-JUN-2007 10:44:00.00

Detector ID: 9 Cell ID: 9RA

Bkg Date: 5-JUN-2007 15:50:28.07
 Bkg Counts: 000014 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 14:44:00.27
 Counts: 000066 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2C1AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.1831
Technician: JP

Analysis Size: 1000.8 Analysis Unit: G

Report Date: 6-JUN-2007 15:35:00.99
First Separation Date: 29-MAY-2007 16:49:00.00
Second Separation Date: 6-JUN-2007 10:45:00.00

Detector ID: 6 Cell ID: 6RA

Bkg Date: 5-JUN-2007 15:53:40.49
Bkg Counts: 000031 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 14:45:00.41
Counts: 000052 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2D1AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0948
Technician: JP

Analysis Size: 1001.7 Analysis Unit: G

Report Date: 6-JUN-2007 15:35:00.90
First Separation Date: 29-MAY-2007 16:49:00.00
Second Separation Date: 6-JUN-2007 10:45:00.00

Detector ID: 8 Cell ID: 8HC

Bkg Date: 5-JUN-2007 21:47:14.93
Bkg Counts: 000010 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 14:45:00.40
Counts: 000038 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2E1AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.1859 ✓
Technician: JP

Analysis Size: 1000.7 Analysis Unit: G

 Report Date: 6-JUN-2007 17:40:00.71
 First Separation Date: 29-MAY-2007 16:49:00.00
 Second Separation Date: 6-JUN-2007 12:50:00.00

Detector ID: 18 Cell ID: JMB

Bkg Date: 6-JUN-2007 10:09:18.83
 Bkg Counts: 000006 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 16:50:00.35
 Counts: 000036 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2F1AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0651 ✓
Technician: JP

Analysis Size: 1001.5 Analysis Unit: G

 Report Date: 6-JUN-2007 17:31:00.80
 First Separation Date: 29-MAY-2007 16:49:00.00
 Second Separation Date: 6-JUN-2007 12:41:00.00

Detector ID: 19 Cell ID: KMD

Bkg Date: 6-JUN-2007 09:44:35.83
 Bkg Counts: 000013 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 16:41:00.38
 Counts: 000023 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2G1AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.2422
Technician: JP

Analysis Size: 1002.8 Analysis Unit: G

 Report Date: 6-JUN-2007 17:37:00.65
 First Separation Date: 29-MAY-2007 17:15:00.00
 Second Separation Date: 6-JUN-2007 12:47:00.00

Detector ID: 24 Cell ID: QMB

Bkg Date: 4-JUN-2007 09:32:35.04
 Bkg Counts: 000008 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 16:47:00.31
 Counts: 000020 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2H1AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0767 ✓
Technician: JP

Analysis Size: 1000.1 Analysis Unit: G

 Report Date: 6-JUN-2007 17:41:00.68
 First Separation Date: 29-MAY-2007 17:15:00.00
 Second Separation Date: 6-JUN-2007 12:51:00.00

Detector ID: 10 Cell ID: ASB

Bkg Date: 5-JUN-2007 15:50:33.89
 Bkg Counts: 000013 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 16:51:00.34
 Counts: 000048 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2J1AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0851
Technician: JP

Analysis Size: 1001.7 Analysis Unit: G

 Report Date: 6-JUN-2007 17:38:00.71
 First Separation Date: 29-MAY-2007 17:15:00.00
 Second Separation Date: 6-JUN-2007 12:48:00.00

Detector ID: 13 Cell ID: DUB

Bkg Date: 4-JUN-2007 09:31:35.46
 Bkg Counts: 000013 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 16:48:00.35
 Counts: 000053 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2K1AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0191 ✓
Technician: JP

Analysis Size: 1001.4 Analysis Unit: G

 Report Date: 6-JUN-2007 17:42:00.66
 First Separation Date: 29-MAY-2007 17:15:00.00
 Second Separation Date: 6-JUN-2007 12:52:00.00

Detector ID: 2 Cell ID: 2MA

Bkg Date: 5-JUN-2007 15:50:14.38
 Bkg Counts: 000011 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 16:52:00.34
 Counts: 000069 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2L1AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0 ✓
Technician: JP

Analysis Size: 1000.0 Analysis Unit: G

 Report Date: 6-JUN-2007 18:28:00.64
 First Separation Date: 29-MAY-2007 17:15:00.00
 Second Separation Date: 6-JUN-2007 13:38:00.00

Detector ID: 14 Cell ID: EHB

Bkg Date: 6-JUN-2007 10:09:09.07
 Bkg Counts: 000016 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 17:38:00.33
 Counts: 000074 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2N1AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0 ✓
Technician: JP

Analysis Size: 1000.9 Analysis Unit: G

 Report Date: 6-JUN-2007 18:10:00.70
 First Separation Date: 29-MAY-2007 17:15:00.00
 Second Separation Date: 6-JUN-2007 13:20:00.00

Detector ID: 7 Cell ID: 7HA

Bkg Date: 6-JUN-2007 10:08:30.09
 Bkg Counts: 000047 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 17:20:00.34
 Counts: 000050 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWP2P1AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0851 ✓
Technician: JP

Analysis Size: 1001.1 Analysis Unit: G

 Report Date: 6-JUN-2007 18:24:01.02
 First Separation Date: 29-MAY-2007 17:15:00.00
 Second Separation Date: 6-JUN-2007 13:34:00.00

Detector ID: 5 Cell ID: 5HA

Bkg Date: 6-JUN-2007 10:08:22.30
 Bkg Counts: 000034 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 17:34:00.51
 Counts: 000033 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWW951AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0
Technician: JP

Analysis Size: 1003.5 Analysis Unit: G

 Report Date: 6-JUN-2007 18:24:01.15
 First Separation Date: 29-MAY-2007 17:15:00.00
 Second Separation Date: 6-JUN-2007 13:34:00.00

Detector ID: 12 Cell ID: CUB

Bkg Date: 6-JUN-2007 10:47:58.40
 Bkg Counts: 000021 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 17:34:00.54
 Counts: 000014 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWW951AC Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0
Technician: JP

Analysis Size: 1000.6 Analysis Unit: G

 Report Date: 6-JUN-2007 18:26:00.73
 First Separation Date: 29-MAY-2007 17:30:00.00
 Second Separation Date: 6-JUN-2007 13:36:00.00

Detector ID: 16 Cell ID: GSB

Bkg Date: 6-JUN-2007 10:48:06.96
 Bkg Counts: 000019 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 17:36:00.33
 Counts: 000138 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JWW951AC Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 7134319 Activity Unit: PCI/L Multiplier: 1.0
Technician: JP

Analysis Size: 1000.6 Analysis Unit: G

 Report Date: 6-JUN-2007 22:13:59.05
 First Separation Date: 29-MAY-2007 17:30:00.00
 Second Separation Date: 6-JUN-2007 13:36:00.00

Detector ID: 16 Cell ID: GSB

Bkg Date: 6-JUN-2007 10:48:06.96
 Bkg Counts: 000019 Bkg Duration: 000060.0

Count Date: 6-JUN-2007 21:23:58.70
 Counts: 000149 Count Duration: 000050.0

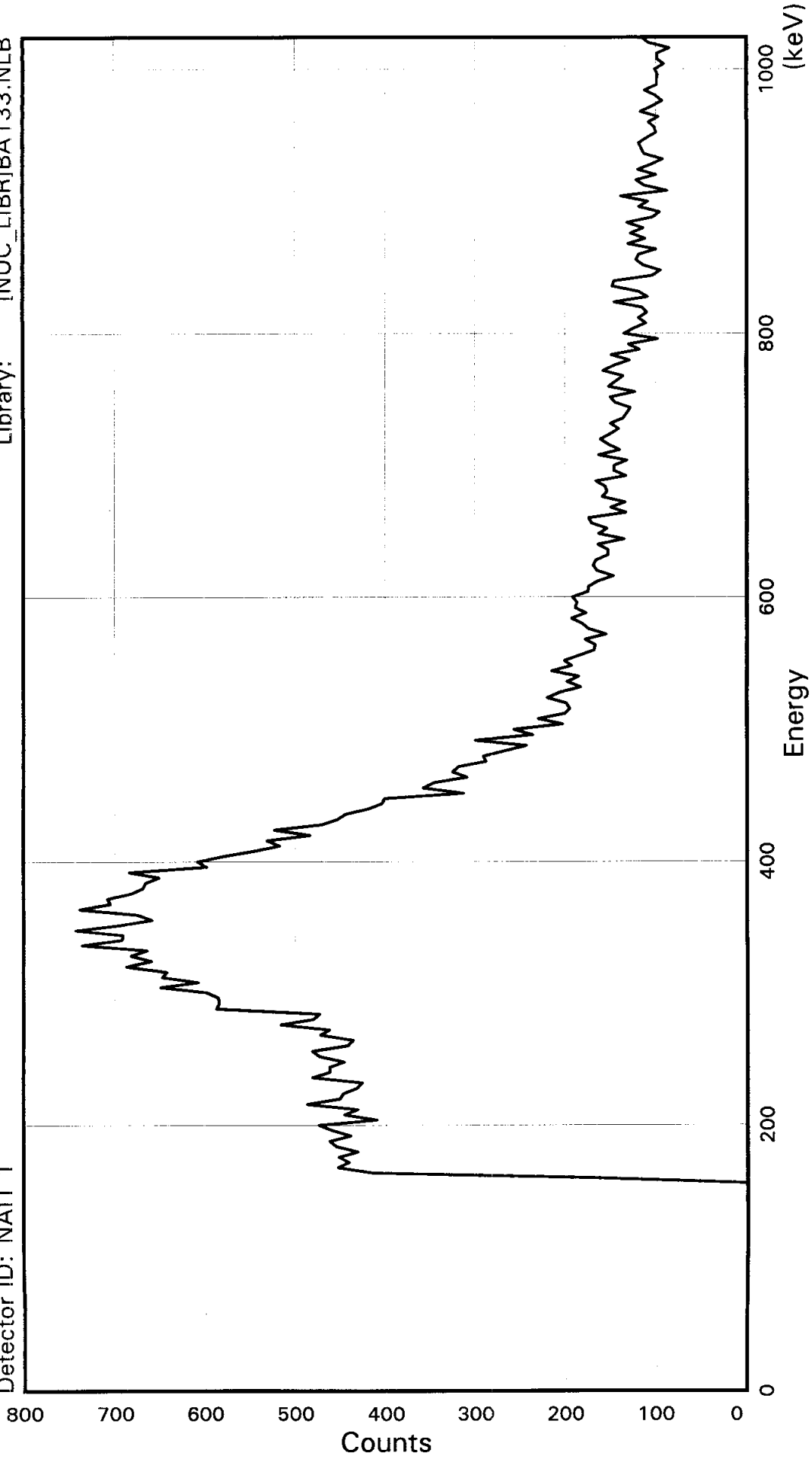
End of Report

STL Richland WA.

BA133

Sample ID: JWP171AA
Detector ID: NAI1 1

BatchID: 7134319
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 23-MAY-2007 13:41:59.61
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: JWP171AA

CONFIGURATION ID: NAI1:JWP171AA_230571341
TITLE : BA133
SAMPLE ID : JWP171AA

REPORT DATE: 23-MAY-07
ACQUIRE DATE: 23-MAY-07 13:41:59
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-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/C²
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]JWP171AA_230571341.CNF;1
Analyses by : NAI V3.0
Sample title : BA133
Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:41:59
Sample ID : JWP171AA Sample quantity : 1.0000 sampl
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.66 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	4.2	3.9	2.3	5.6	2.2	2.4	2.9
88:	0.4	-0.9	-1.0	0.9	1.6	0.1	0.2	-1.1
96:	-0.9	-1.4	1.1	-1.8	-3.1	-1.9	-3.6	-3.7
104:	-2.9	-4.5	-1.9	-2.6	-3.5	-3.3	-4.3	-4.4
112:	-3.2	-6.3						

List of Suspicious Channels

81 82 83 84 85 86

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	9.54E+00	0.00E+00	1.02E+00
2	4.08E+00	0.00E+00	1.04E+00
3	1.95E+00	0.00E+00	1.05E+00
4	1.00E+00	0.00E+00	1.07E+00

Brief Report

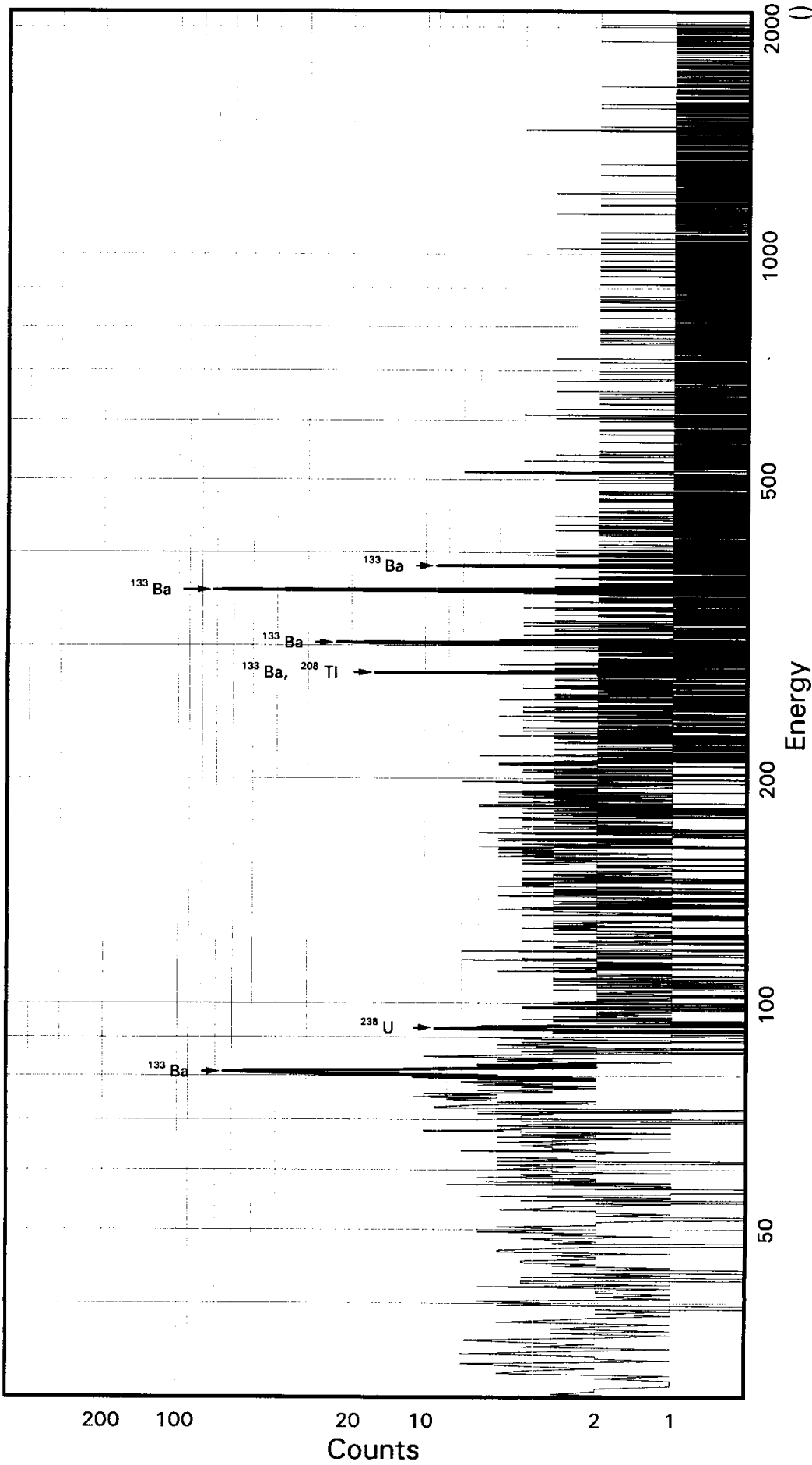
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	710.	8.97

Total Activity :	710.	

STL Richland WA.
BA133

Batch ID: 7134319

Sample ID: JWP181AA
Detector ID: GER4 1



Acquisition Start: 23-MAY-2007 13:44:19.41
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -8.16554E-02
Slope: 2.48813E-01
Quadrature: 3.83483E-09

SAMPLE IDENTIFICATION: JWP181AA

CONFIGURATION ID: GER4:JWP181AA_230571344
TITLE : BA133
SAMPLE ID : JWP181AA

REPORT DATE: 23-MAY-07
ACQUIRE DATE: 23-MAY-07 13:44:19
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 23-MAY-2007 05:10:52.09
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.8166E-01 keV
ENERGY SLOPE: 2.4881E-01 keV/C
ENERGY Q COEFF: 3.8348E-09 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.9346E-01 keV
FWHM SLOPE: 4.0657E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:14:33

```

Configuration      : $DISK1:[GER4.SAMPLE]JWP181AA_230571344.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:44:19
Sample ID         : JWP181AA Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.40 0.0%
Start energy      : 19.82 End energy : 2038.45
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.03	194	60	0.73	326.00	319	15	1.08E-01	11.3	
2	0	92.75*	11	5	0.83	373.09	369	8	6.36E-03	58.0	
3	0	276.36	46	12	0.48	1111.04	1101	17	2.54E-02	23.1	
4	0	302.85	82	14	1.02	1217.50	1212	11	4.58E-02	14.0	
5	0	356.03	239	24	0.68	1431.19	1423	16	1.33E-01	7.9	
6	0	383.67	35	8	0.94	1542.27	1533	18	1.92E-02	26.5	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER4.SAMPLE]JWP181AA_230571344.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:44:19
Sample ID        : JWP181AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.40 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	194	33.00	2.054E+00	9.539E+02	9.550E+02	12.59
	276.40	46	6.90	2.214E+00	9.984E+02	9.995E+02	23.79
	302.84	82	17.80	2.217E+00	6.957E+02	6.964E+02	15.09
	356.00	239	62.05*	2.220E+00	5.790E+02	5.797E+02	9.58
	383.85	35	8.70	2.219E+00	5.963E+02	5.969E+02	27.00

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP181AA

Page : 2
Acquisition date : 23-MAY-2007 13:44:19

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	92.75	11	5	0.83	373.09	369	8	6.36E-03	58.0	2.08E+00	T

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.013E+03	23.79	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
		% Abundances Found =		5.44			
U-238DHP	4.47E+09Y	0.00	63.28*	3.80	---	Not Found	---
			92.59	5.41	3.387E+02	58.26	Abun.
		% Abundances Found =		58.74			

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER4.SAMPLE]JWP181AA_230571344.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:44:19
Sample ID        : JWP181AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.40 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	5.797E+02	5.552E+01	5.161E+01	1.035E+00	11.233

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-4.247E+00	6.043E+01	2.409E+02	4.833E+00	-0.018
NA-22	9.556E+00	5.093E+00	2.535E+01	5.369E-01	0.377
K-40	3.212E+01	7.950E+01	3.919E+02	8.410E+00	0.082
SC-46	8.336E+00	4.377E+00	2.332E+01	4.885E-01	0.358
CR-51	9.679E+01	9.144E+01	3.797E+02	8.814E+00	0.255
MN-54	-4.216E+00	4.443E+00	1.583E+01	3.248E-01	-0.266
CO-57	-2.143E+01	8.795E+01	3.198E+02	7.664E+00	-0.067
CO-58	-6.032E+00	4.333E+00	1.386E+01	2.840E-01	-0.435
FE-59	-1.925E+01	7.927E+00	8.259E+00	1.728E-01	-2.331
CO-60	8.390E-01	2.587E+00	1.360E+01	2.893E-01	0.062
ZN-65	-8.699E+00	9.219E+00	3.391E+01	7.102E-01	-0.257
SE-75	1.519E+01	1.528E+01	6.077E+01	1.415E+00	0.250
SR-85	-1.710E+01	1.112E+01	3.657E+01	7.349E-01	-0.468
Y-88	-3.424E+00	2.429E+00	4.673E+00	1.028E-01	-0.733
NB-94	-1.302E+00	3.997E+00	1.662E+01	3.419E-01	-0.078
NB-95	-8.615E-01	5.955E+00	2.376E+01	4.851E-01	-0.036
TC-95M	1.370E+01	1.673E+01	6.506E+01	1.526E+00	0.211
ZR-95	-3.148E+00	8.943E+00	3.552E+01	7.249E-01	-0.089
ZRNB-95	-1.235E+00	1.133E+01	4.537E+01	9.264E-01	-0.027
MO-99	8.952E+01	5.387E+01	2.166E+02	5.182E+00	0.413
RH-101	1.438E+01	1.406E+01	5.547E+01	1.303E+00	0.259
RH-102M	-1.910E+00	6.338E+00	2.455E+01	4.924E-01	-0.078
RU-103	-6.085E-01	6.865E+00	2.751E+01	5.524E-01	-0.022
RU-106DA	1.189E+00	5.691E+01	2.273E+02	4.596E+00	0.005
AG-108M	4.971E+00	8.380E+00	3.327E+01	6.663E-01	0.149
AG-110M	-4.113E+00	4.229E+00	1.593E+01	3.280E-01	-0.258
SN-113DA	1.790E+00	1.005E+01	3.999E+01	8.000E-01	0.045

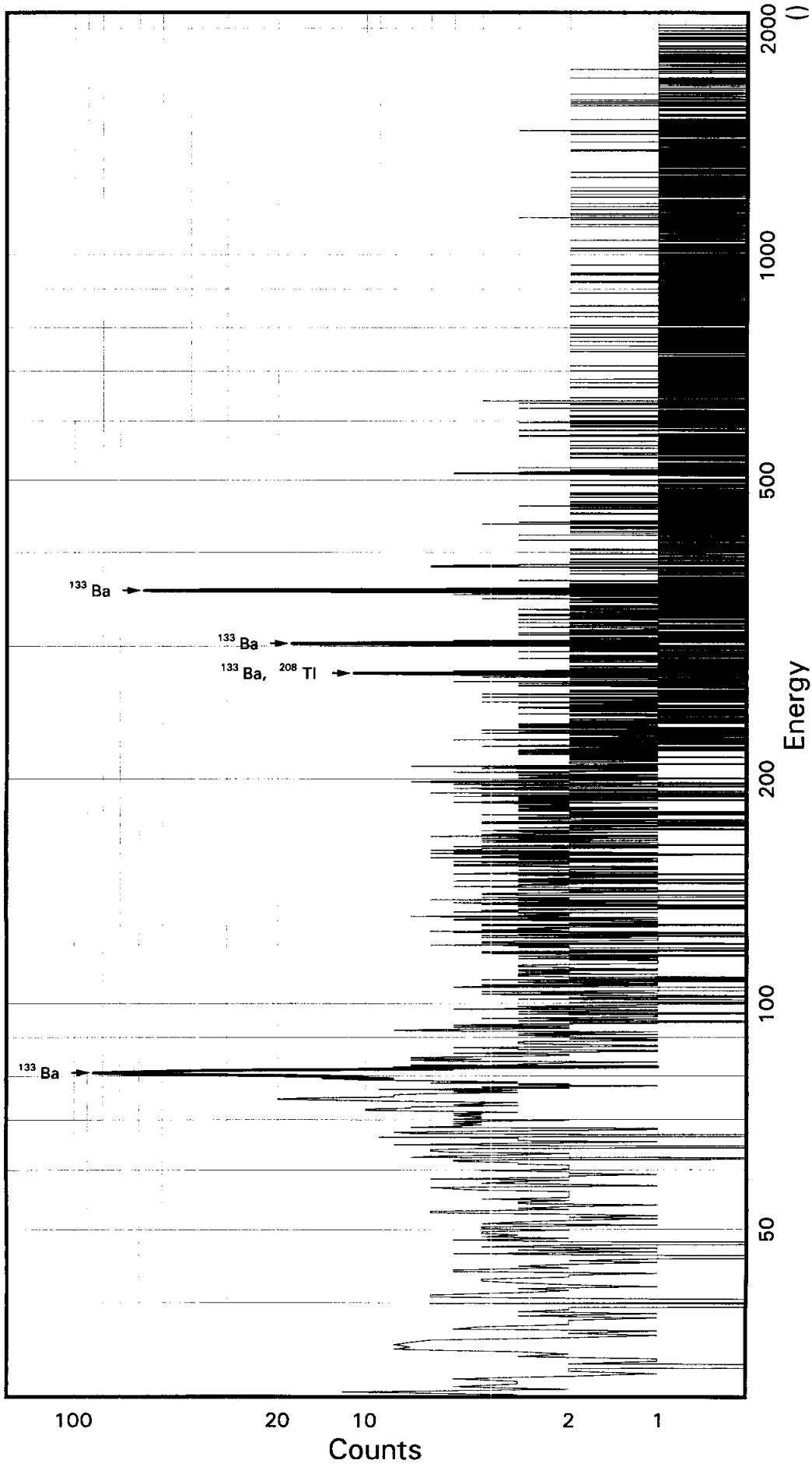
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	4.501E+00		6.569E+00	2.768E+01	5.590E-01	0.163
SB-125	1.225E+01		2.299E+01	9.289E+01	1.860E+00	0.132
SN-126DA	-8.051E+00		4.819E+00	1.520E+01	3.083E-01	-0.530
I-131	-1.160E+01		1.486E+01	5.296E+01	1.059E+00	-0.219
CS-134	-4.928E+00		6.261E+00	2.274E+01	4.653E-01	-0.217
CS-137DA	1.573E+00		5.204E+00	2.294E+01	4.652E-01	0.069
LA-138	2.480E+00		4.140E+00	2.238E+01	4.794E-01	0.111
CE-139	1.348E+01		1.308E+01	5.215E+01	1.235E+00	0.258
BA-140	3.346E+01		3.377E+01	1.464E+02	2.946E+00	0.229
BALA-140	-4.801E+00		4.808E+00	1.280E+01	2.772E-01	-0.375
LA-140	-2.137E+01		2.140E+01	5.698E+01	1.234E+00	-0.375
CE-141	5.862E+00		2.735E+01	9.965E+01	2.379E+00	0.059
CE-144	8.669E+01		9.717E+01	3.767E+02	9.043E+00	0.230
CEPR-144	1.746E+02		1.944E+02	7.540E+02	1.810E+01	0.232
PM-144	-6.921E+00		5.591E+00	1.860E+01	3.760E-01	-0.372
PM-146	9.276E+00		1.006E+01	4.295E+01	8.607E-01	0.216
EU-152	4.285E+01		2.629E+01	1.157E+02	2.684E+00	0.370
EU-154	2.529E+01		1.404E+01	6.986E+01	1.480E+00	0.362
EU-155	-5.053E+01		4.079E+01	1.389E+02	3.396E+00	-0.364
HF-181	2.320E+00		6.575E+00	2.833E+01	5.684E-01	0.082
BI-207	-4.950E+00		5.237E+00	1.860E+01	3.749E-01	-0.266
TL-208	2.691E+00		7.200E+00	3.225E+01	6.506E-01	0.083
BI-210M	-7.568E+00		1.830E+01	6.522E+01	1.518E+00	-0.116
BI-212	4.872E+01		6.611E+01	3.066E+02	9.373E+00	0.159
PB-212	-4.214E+01		2.177E+01	7.604E+01	1.774E+00	-0.554
BI-214	1.835E+01		1.527E+01	6.981E+01	1.410E+00	0.263
PB-214	4.003E+00		2.502E+01	9.091E+01	2.110E+00	0.044
RA-223	4.382E+00		7.010E+01	2.579E+02	6.001E+00	0.017
RA-224DA	-4.240E+01		2.191E+01	7.651E+01	1.785E+00	-0.554
RA-226DA	1.835E+01		1.527E+01	6.981E+01	1.410E+00	0.263
AC-227DA	-1.673E+02		8.172E+01	2.507E+02	5.853E+00	-0.667
AC-228	1.230E+01		2.025E+01	9.524E+01	1.965E+00	0.129
RA-228DA	1.233E+01		2.029E+01	9.543E+01	1.969E+00	0.129
TH-228DA	7.537E+00		2.016E+01	9.032E+01	1.822E+00	0.083
TH-232DA	5.974E+01		5.995E+01	2.491E+02	5.781E+00	0.240
TH-234DA	1.004E+03		6.958E+02	3.584E+03	7.444E+01	0.280
U-234DA	2.843E+00		3.987E+01	1.551E+02	3.604E+00	0.018
U-235HP	1.009E+02		1.072E+02	4.095E+02	9.783E+00	0.246
NP-237DA	-3.604E+00		2.253E+01	8.508E+01	1.975E+00	-0.042
U-238DA	4.003E+00		2.502E+01	9.091E+01	2.110E+00	0.044
U-238DHP	-1.718E+02		3.270E+02	1.159E+03	2.987E+01	-0.148
AM-241HP	-1.368E+01		3.722E+01	1.301E+02	3.379E+00	-0.105

STL Richland WA.
BA133

Sample ID: JWP191AA
Detector ID: GER6 1

Batch ID: 7134319



Acquisition Start: 23-MAY-2007 13:44:56.40
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 2.84732E-02
Slope: 2.49432E-01
Quadrature: -6.30239E-10

SAMPLE IDENTIFICATION: JWP191AA

CONFIGURATION ID: GER6:JWP191AA_230571344
TITLE : BA133
SAMPLE ID : JWP191AA

REPORT DATE: 23-MAY-07 SAMPLE DATE: 17-MAY-2007 12:00:00.00
ACQUIRE DATE: 23-MAY-07 13:44:56 CALIB DATE: 23-MAY-2007 05:07:45.96
ELAPSED LIVE TIME: 1800.0 Sec ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00 ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00 UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15 SAMPLE TYPE:

ENERGY OFFSET: 2.8473E-02 keV FWHM OFFSET: 1.6161E-01 keV
ENERGY SLOPE: 2.4943E-01 keV/C FWHM SLOPE: 6.3231E-02 sqr keV
ENERGY Q COEFF: -.6302E-09 keV/C² ITERATIONS: 10
PEAK SENSITIVITY: 5.000 GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 % HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 1.500 keV ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:15:12

Configuration : \$DISK1:[GER6.SAMPLE]JWP191AA_230571344.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:44:56
 Sample ID : JWP191AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
 Start energy : 19.98 End energy : 2043.34
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	74.90*	11	46	0.61	300.15	295	11	6.35E-03	131.7	
2	0	80.90	292	84	0.88	324.21	318	13	1.62E-01	8.8	
3	0	276.55	44	7	0.86	1108.60	1101	14	2.44E-02	19.7	
4	0	302.74	107	5	1.26	1213.62	1203	20	5.96E-02	10.9	
5	0	356.07	325	5	1.40	1427.41	1419	19	1.80E-01	5.8	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER6.SAMPLE]JWP191AA_230571344.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:44:56
 Sample ID : JWP191AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	292	33.00	2.090E+00	1.412E+03	1.413E+03	10.35
	276.40	44	6.90	2.253E+00	9.435E+02	9.446E+02	20.47
	302.84	107	17.80	2.256E+00	8.911E+02	8.921E+02	12.16
	356.00	325	62.05*	2.258E+00	7.726E+02	7.734E+02	7.90
	383.85	-----	8.70	2.257E+00	-----	Line Not Found	-----

Flag: "*" = Keyline

Unidentified Energy Lines

Sample ID : JWP191AA

Acquisition date : 23-MAY-2007 13:44:56

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	74.90	11	46	0.61	300.15	295	11	6.35E-03	****	2.07E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	9.574E+02	20.47	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER6.SAMPLE]JWP191AA_230571344.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:44:56
Sample ID        : JWP191AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.734E+02	6.111E+01	4.673E+01	9.347E-01	16.550

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	9.599E+00	7.806E+01	2.994E+02	6.006E+00	0.032
NA-22	-6.047E+00	3.766E+00	1.155E+01	2.446E-01	-0.523
K-40	5.665E+01	7.792E+01	3.782E+02	8.113E+00	0.150
SC-46	4.982E+00	4.851E+00	2.292E+01	4.800E-01	0.217
CR-51	1.656E+02	1.030E+02	4.297E+02	8.598E+00	0.385
MN-54	1.562E+00	5.085E+00	2.164E+01	4.439E-01	0.072
CO-57	-1.791E+01	1.016E+02	3.624E+02	7.487E+00	-0.049
CO-58	-3.039E+00	5.540E+00	2.115E+01	4.332E-01	-0.144
FE-59	-2.461E+00	9.799E+00	3.934E+01	8.228E-01	-0.063
CO-60	-4.611E+00	5.190E+00	1.888E+01	4.015E-01	-0.244
ZN-65	-8.714E+00	1.102E+01	4.059E+01	8.499E-01	-0.215
SE-75	-2.647E+01	1.388E+01	4.293E+01	8.613E-01	-0.616
SR-85	-3.351E+01	1.082E+01	3.059E+01	6.147E-01	-1.096
Y-88	-1.038E+01	4.903E+00	1.249E+01	2.746E-01	-0.831
NB-94	4.413E+00	4.026E+00	1.980E+01	4.072E-01	0.223
NB-95	8.056E+00	6.700E+00	2.959E+01	6.041E-01	0.272
TC-95M	6.160E+00	1.800E+01	6.615E+01	1.337E+00	0.093
ZR-95	8.041E+00	1.145E+01	4.844E+01	9.884E-01	0.166
ZRNB-95	1.487E+01	1.264E+01	5.573E+01	1.138E+00	0.267
MO-99	-7.039E+01	5.544E+01	1.803E+02	3.717E+00	-0.390
RH-101	3.258E+01	1.618E+01	6.443E+01	1.304E+00	0.506
RH-102M	-6.078E+00	7.884E+00	2.783E+01	5.582E-01	-0.218
RU-103	-3.561E+00	6.149E+00	2.305E+01	4.627E-01	-0.155
RU-106DA	2.224E+01	4.872E+01	2.115E+02	4.277E+00	0.105
AG-108M	-1.774E+01	8.208E+00	2.468E+01	4.942E-01	-0.719
AG-110M	-6.788E+00	7.797E+00	2.789E+01	5.744E-01	-0.243
SN-113DA	-9.360E+00	1.116E+01	3.890E+01	7.783E-01	-0.241

---- Non-Identified Nuclides ----

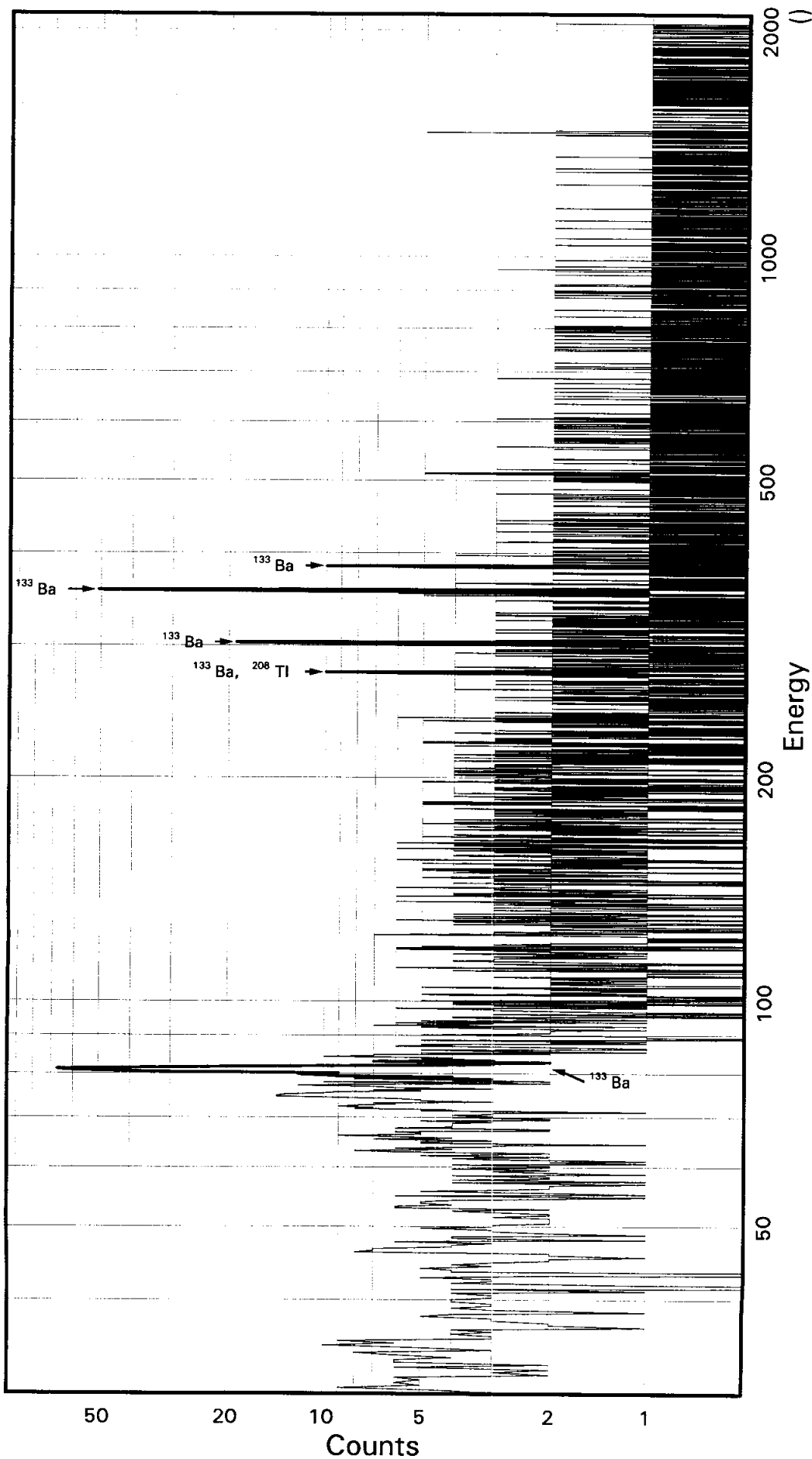
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	8.022E+00		7.615E+00	3.197E+01	6.457E-01	0.251
SB-125	-1.956E+01		1.734E+01	6.068E+01	1.215E+00	-0.322
SN-126DA	6.134E+00		5.575E+00	2.494E+01	5.057E-01	0.246
I-131	-4.316E+00		1.620E+01	5.980E+01	1.196E+00	-0.072
CS-134	-3.754E+00		5.999E+00	2.276E+01	4.657E-01	-0.165
CS-137DA	-1.138E-01		6.455E+00	2.605E+01	5.281E-01	-0.004
LA-138	2.310E+00		4.142E+00	2.199E+01	4.709E-01	0.105
CE-139	-1.089E+00		1.515E+01	5.509E+01	1.125E+00	-0.020
BA-140	1.311E+01		3.215E+01	1.339E+02	2.694E+00	0.098
BALA-140	4.558E+00		1.045E+01	5.006E+01	1.084E+00	0.091
LA-140	2.029E+01		4.653E+01	2.229E+02	4.824E+00	0.091
CE-141	4.147E+00		2.417E+01	9.156E+01	1.884E+00	0.045
CE-144	-5.513E+01		1.098E+02	3.804E+02	7.870E+00	-0.145
CEPR-144	-1.079E+02		2.197E+02	7.619E+02	1.576E+01	-0.142
PM-144	3.906E+00		4.563E+00	2.102E+01	4.248E-01	0.186
PM-146	-9.330E+00		1.025E+01	3.610E+01	7.236E-01	-0.258
EU-152	1.123E+01		2.851E+01	1.123E+02	2.246E+00	0.100
EU-154	-1.697E+01		1.057E+01	3.242E+01	6.865E-01	-0.523
EU-155	-2.331E+01		4.603E+01	1.663E+02	3.505E+00	-0.140
HF-181	-1.201E+01		9.586E+00	3.200E+01	6.420E-01	-0.375
BI-207	-1.108E+01		6.650E+00	2.115E+01	4.263E-01	-0.524
TL-208	2.473E+01		7.205E+00	3.663E+01	7.388E-01	0.675
BI-210M	5.774E+00		1.756E+01	6.699E+01	1.344E+00	0.086
BI-212	2.096E+01		6.917E+01	2.992E+02	9.147E+00	0.070
PB-212	-3.361E+01		2.101E+01	7.224E+01	1.453E+00	-0.465
BI-214	2.427E+01		1.575E+01	6.894E+01	1.393E+00	0.352
PB-214	3.185E+01		2.462E+01	9.081E+01	1.816E+00	0.351
RA-223	4.789E+01		6.520E+01	2.551E+02	5.116E+00	0.188
RA-224DA	-3.381E+01		2.114E+01	7.267E+01	1.462E+00	-0.465
RA-226DA	2.414E+01		1.573E+01	6.887E+01	1.391E+00	0.351
AC-227DA	8.270E+01		8.389E+01	3.328E+02	6.696E+00	0.248
AC-228	-8.237E-01		1.584E+01	6.599E+01	1.361E+00	-0.012
RA-228DA	-8.253E-01		1.588E+01	6.612E+01	1.364E+00	-0.012
TH-228DA	6.925E+01		2.018E+01	1.026E+02	2.069E+00	0.675
TH-232DA	3.213E+01		6.137E+01	2.441E+02	4.882E+00	0.132
TH-234DA	3.173E+02		6.394E+02	2.923E+03	6.071E+01	0.109
U-234DA	1.078E+01		4.123E+01	1.616E+02	3.236E+00	0.067
U-235HP	4.837E+01		9.992E+01	3.848E+02	7.922E+00	0.126
NP-237DA	-5.328E+00		2.344E+01	8.741E+01	1.749E+00	-0.061
U-238DA	3.185E+01		2.462E+01	9.081E+01	1.816E+00	0.351
U-238DHP	2.672E+02		3.534E+02	1.360E+03	3.021E+01	0.196
AM-241HP	-3.584E+01		2.934E+01	9.968E+01	2.231E+00	-0.360

STL Richland WA.

BA133

Batch ID: 7134319

Sample ID: JWP2A1AA
Detector ID: GER7 1



Acquisition Start: 23-MAY-2007 13:45:15.28
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 6.23004E-01
Slope: 2.49271E-01
Quadrature: 1.43771E-07

SAMPLE IDENTIFICATION: JWP2A1AA

CONFIGURATION ID: GER7:JWP2A1AA_230571345
TITLE : BA133
SAMPLE ID : JWP2A1AA

REPORT DATE: 23-MAY-07 SAMPLE DATE: 17-MAY-2007 12:00:00.00
ACQUIRE DATE: 23-MAY-07 13:45:15 CALIB DATE: 23-MAY-2007 05:08:02.34
ELAPSED LIVE TIME: 1800.0 Sec ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00 ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00 UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15 SAMPLE TYPE:

ENERGY OFFSET: 6.2300E-01 keV FWHM OFFSET: 5.2650E-01 keV
ENERGY SLOPE: 2.4927E-01 keV/C FWHM SLOPE: 3.7460E-02 sqr keV
ENERGY Q COEFF: 1.4377E-07 keV/C² ITERATIONS: 10
PEAK SENSITIVITY: 5.000 GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 % HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 1.500 keV ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:15:31

```

Configuration      : $DISK1:[GER7.SAMPLE]JWP2A1AA_230571345.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:45:15
Sample ID        : JWP2A1AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Start energy     : 20.57 End energy : 2052.30
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.95	299	65	0.99	322.17	313	20	1.66E-01	8.8	
2	0	276.52	43	11	1.07	1106.10	1099	19	2.38E-02	23.2	
3	0	302.89	96	14	1.25	1211.77	1204	14	5.31E-02	13.2	
4	0	356.08	260	20	1.21	1424.81	1418	20	1.44E-01	7.7	
5	0	384.14	28	15	1.15	1537.18	1529	12	1.54E-02	33.9	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER7.SAMPLE]JWP2A1AA_230571345.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:45:15
Sample ID        : JWP2A1AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	299	33.00	1.909E+00	1.585E+03	1.586E+03	10.32
	276.40	43	6.90	2.061E+00	1.005E+03	1.006E+03	23.85
	302.84	96	17.80	2.064E+00	8.677E+02	8.687E+02	14.24
	356.00	260	62.05*	2.065E+00	6.759E+02	6.767E+02	9.43
	383.85	28	8.70	2.065E+00	5.135E+02	5.140E+02	34.32

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2A1AA

Page : 2
Acquisition date : 23-MAY-2007 13:45:15

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2A1AA

Page : 3
Acquisition date : 23-MAY-2007 13:45:15

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.019E+03	23.85	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER7.SAMPLE]JWP2A1AA_230571345.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:45:15
Sample ID        : JWP2A1AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.767E+02	6.382E+01	6.416E+01	1.283E+00	10.546

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-6.883E+01	5.881E+01	2.018E+02	4.048E+00	-0.341
NA-22	-1.855E+00	4.602E+00	1.850E+01	3.923E-01	-0.100
K-40	4.367E+01	6.824E+01	3.462E+02	7.438E+00	0.126
SC-46	-1.455E+00	6.327E+00	2.508E+01	5.258E-01	-0.058
CR-51	9.068E+01	9.289E+01	3.844E+02	7.692E+00	0.236
MN-54	-4.771E+00	4.350E+00	1.558E+01	3.199E-01	-0.306
CO-57	9.960E+01	1.042E+02	4.119E+02	8.514E+00	0.242
CO-58	-3.092E+00	3.483E+00	1.348E+01	2.763E-01	-0.229
FE-59	-2.751E+00	9.683E+00	3.944E+01	8.258E-01	-0.070
CO-60	3.382E+00	3.480E+00	1.852E+01	3.944E-01	0.183
ZN-65	3.857E+00	1.111E+01	4.779E+01	1.002E+00	0.081
SE-75	-1.997E+01	1.478E+01	4.974E+01	9.979E-01	-0.402
SR-85	-3.388E+01	1.297E+01	3.792E+01	7.621E-01	-0.894
Y-88	1.886E+00	3.211E+00	1.727E+01	3.805E-01	0.109
NB-94	2.130E+00	4.434E+00	2.037E+01	4.194E-01	0.105
NB-95	7.282E+00	5.343E+00	2.625E+01	5.361E-01	0.277
TC-95M	-2.764E+01	2.159E+01	7.073E+01	1.431E+00	-0.391
ZR-95	9.283E+00	8.532E+00	4.168E+01	8.508E-01	0.223
ZRNB-95	1.379E+01	1.012E+01	4.970E+01	1.015E+00	0.277
MO-99	-4.199E+01	6.061E+01	2.137E+02	4.410E+00	-0.196
RH-101	2.325E+01	1.514E+01	6.060E+01	1.227E+00	0.384
RH-102M	-6.965E+00	5.461E+00	1.840E+01	3.691E-01	-0.378
RU-103	3.856E+00	6.474E+00	2.856E+01	5.735E-01	0.135
RU-106DA	-3.563E+01	5.690E+01	2.157E+02	4.363E+00	-0.165
AG-108M	-1.595E+01	9.579E+00	3.103E+01	6.216E-01	-0.514
AG-110M	5.606E+00	6.714E+00	3.139E+01	6.468E-01	0.179
SN-113DA	-7.566E+00	1.082E+01	3.996E+01	7.995E-01	-0.189

---- Non-Identified Nuclides ----

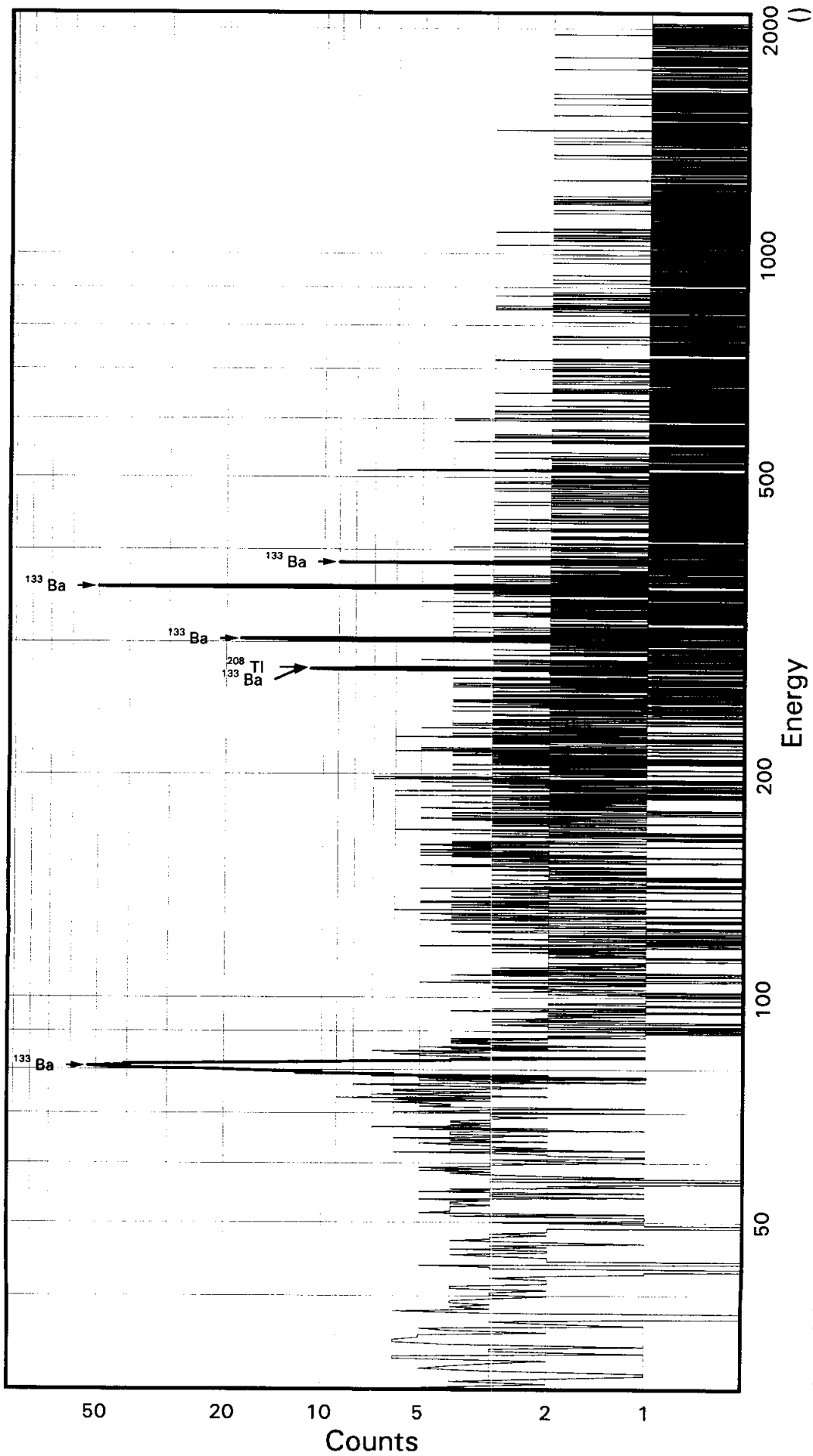
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-3.699E+00		7.758E+00	2.914E+01	5.886E-01	-0.127
SB-125	1.212E+01		2.451E+01	1.003E+02	2.008E+00	0.121
SN-126DA	6.562E+00		6.134E+00	2.727E+01	5.532E-01	0.241
I-131	2.360E+01		1.517E+01	6.630E+01	1.326E+00	0.356
CS-134	1.401E+01		6.474E+00	3.256E+01	6.665E-01	0.430
CS-137DA	-1.339E+01		7.464E+00	2.309E+01	4.682E-01	-0.580
LA-138	-7.597E+00		4.405E+00	7.014E+00	1.504E-01	-1.083
CE-139	-1.058E+01		1.496E+01	5.218E+01	1.066E+00	-0.203
BA-140	-9.014E+00		3.116E+01	1.211E+02	2.436E+00	-0.074
BALA-140	-5.319E+00		1.150E+01	4.729E+01	1.026E+00	-0.112
LA-140	-6.611E-01		4.572E+01	2.106E+02	4.567E+00	-0.003
CE-141	-3.439E+01		2.756E+01	9.309E+01	1.916E+00	-0.369
CE-144	-1.783E+02		1.039E+02	3.394E+02	7.027E+00	-0.525
CEPR-144	-3.566E+02		2.077E+02	6.788E+02	1.405E+01	-0.525
PM-144	8.071E+00		6.351E+00	2.865E+01	5.793E-01	0.282
PM-146	2.553E+00		9.626E+00	3.947E+01	7.911E-01	0.065
EU-152	2.652E+01		2.690E+01	1.134E+02	2.269E+00	0.234
EU-154	-5.204E+00		1.292E+01	5.192E+01	1.101E+00	-0.100
EU-155	2.687E+00		5.174E+01	1.892E+02	3.991E+00	0.014
HF-181	1.064E+01		8.426E+00	3.760E+01	7.545E-01	0.283
BI-207	6.685E-01		6.496E+00	2.640E+01	5.323E-01	0.025
TL-208	-5.536E+00		5.224E+00	2.288E+01	4.617E-01	-0.242
BI-210M	1.274E+01		1.627E+01	6.645E+01	1.333E+00	0.192
BI-212	7.357E+01		6.676E+01	3.273E+02	1.000E+01	0.225
PB-212	-1.425E+01		2.405E+01	9.128E+01	1.836E+00	-0.156
BI-214	-4.904E+00		1.503E+01	5.865E+01	1.185E+00	-0.084
PB-214	3.286E+01		2.855E+01	1.059E+02	2.118E+00	0.310
RA-223	2.381E+01		6.437E+01	2.518E+02	5.050E+00	0.095
RA-224DA	-1.433E+01		2.420E+01	9.183E+01	1.847E+00	-0.156
RA-226DA	-4.904E+00		1.503E+01	5.865E+01	1.185E+00	-0.084
AC-227DA	3.296E+01		8.313E+01	3.245E+02	6.529E+00	0.102
AC-228	2.778E+01		2.046E+01	1.002E+02	2.068E+00	0.277
RA-228DA	2.783E+01		2.050E+01	1.004E+02	2.072E+00	0.277
TH-228DA	-1.550E+01		1.463E+01	6.408E+01	1.293E+00	-0.242
TH-232DA	4.425E+01		5.897E+01	2.427E+02	4.855E+00	0.182
TH-234DA	2.348E+02		6.916E+02	3.097E+03	6.437E+01	0.076
U-234DA	5.996E+01		4.409E+01	1.850E+02	3.704E+00	0.324
U-235HP	2.420E+01		1.097E+02	4.110E+02	8.466E+00	0.059
NP-237DA	3.015E+01		2.604E+01	1.054E+02	2.109E+00	0.286
U-238DA	3.286E+01		2.855E+01	1.059E+02	2.118E+00	0.310
U-238DHP	9.698E+00		4.164E+02	1.537E+03	3.422E+01	0.006
AM-241HP	6.763E+00		3.495E+01	1.307E+02	2.932E+00	0.052

STL Richland WA.

BA133

Sample ID: JWP2C1AA
Detector ID: GER10 1

Batch ID: 7134319



Acquisition Start: 23-MAY-2007 13:45:36.11
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.46610E+01
Slope: 2.47248E-01
Quadrature: 8.34281E-10

SAMPLE IDENTIFICATION: JWP2C1AA

CONFIGURATION ID: GER10:JWP2C1AA_230571345
TITLE : BA133
SAMPLE ID : JWP2C1AA

REPORT DATE: 23-MAY-07 SAMPLE DATE: 17-MAY-2007 12:00:00.00
ACQUIRE DATE: 23-MAY-07 13:45:36 CALIB DATE: 23-MAY-2007 05:22:47.65
ELAPSED LIVE TIME: 1800.0 Sec ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00 ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00 UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15 SAMPLE TYPE:

ENERGY OFFSET: 1.4661E+01 keV FWHM OFFSET: 1.0681E+00 keV
ENERGY SLOPE: 2.4725E-01 keV/C FWHM SLOPE: 2.1478E-02 sqr keV
ENERGY Q COEFF: 8.3428E-10 keV/C² ITERATIONS: 10
PEAK SENSITIVITY: 5.000 GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 % HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 1.500 keV ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:15:52

```

Configuration      : $DISK1:[GER10.SAMPLE]JWP2C1AA_230571345.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:45:36
Sample ID         : JWP2C1AA Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Start energy      : 17.13 End energy : 2040.18
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.86	311	63	1.33	267.75	255	22	1.73E-01	8.5	
2	1	276.25	45	13	1.43	1058.00	1046	21	2.52E-02	24.5	7.32E+00
3	1	277.49	40	5	1.43	1063.00	1046	21	2.23E-02	19.5	
4	0	303.10	92	37	1.57	1166.57	1158	17	5.10E-02	18.6	
5	0	356.07	308	33	1.59	1380.82	1371	19	1.71E-01	7.3	
6	0	384.32	40	13	0.79	1495.07	1484	19	2.23E-02	24.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 23-MAY-2007 14:15:52

Configuration : \$DISK1:[GER10.SAMPLE]JWP2C1AA_230571345.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:45:36
 Sample ID : JWP2C1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	311	33.00	2.478E+00	1.268E+03	1.269E+03	10.13
	276.40	45	6.90	2.637E+00	8.325E+02	8.334E+02	25.11
	302.84	92	17.80	2.640E+00	6.515E+02	6.522E+02	19.36
	356.00	308	62.05*	2.642E+00	6.259E+02	6.266E+02	9.04
	383.85	40	8.70	2.641E+00	5.811E+02	5.818E+02	24.68

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2C1AA

Page : 2
Acquisition date : 23-MAY-2007 13:45:36

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	277.49	40	5	1.43	1063.00	1046	21	2.23E-02	19.5	2.64E+00	T

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2C1AA

Page : 3
Acquisition date : 23-MAY-2007 13:45:36

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma (DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	7.448E+02	20.25	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 23-MAY-2007 14:15:54

```

Configuration      : $DISK1:[GER10.SAMPLE]JWP2C1AA_230571345.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:45:36
Sample ID        : JWP2C1AA Sample quantity   : 1.0000 SAMPL
Sample type      : Sample geometry    : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.266E+02	5.662E+01	5.802E+01	1.160E+00	10.799

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	4.236E+01	5.895E+01	2.428E+02	4.868E+00	0.174
NA-22	-5.399E+00	3.303E+00	9.778E+00	2.051E-01	-0.552
K-40	-1.390E+01	5.165E+01	2.272E+02	4.817E+00	-0.061
SC-46	2.695E+00	4.315E+00	1.930E+01	4.011E-01	0.140
CR-51	-1.266E+02	8.513E+01	2.821E+02	5.645E+00	-0.449
MN-54	6.437E+00	4.376E+00	2.072E+01	4.232E-01	0.311
CO-57	5.107E+00	1.072E+02	3.868E+02	7.947E+00	0.013
CO-58	1.916E+00	4.698E+00	1.999E+01	4.078E-01	0.096
FE-59	-4.909E+00	6.170E+00	2.364E+01	4.906E-01	-0.208
CO-60	-1.613E+00	2.971E+00	1.202E+01	2.529E-01	-0.134
ZN-65	1.610E-01	7.376E+00	3.154E+01	6.553E-01	0.005
SE-75	-4.095E+00	1.467E+01	5.373E+01	1.077E+00	-0.076
SR-85	-2.529E+01	1.071E+01	3.215E+01	6.455E-01	-0.787
Y-88	-1.500E-02	2.865E+00	1.326E+01	2.869E-01	-0.001
NB-94	-2.877E+00	4.562E+00	1.692E+01	3.464E-01	-0.170
NB-95	1.425E+00	3.255E+00	1.560E+01	3.174E-01	0.091
TC-95M	8.683E+00	1.620E+01	6.009E+01	1.213E+00	0.145
ZR-95	2.398E+00	8.243E+00	3.492E+01	7.101E-01	0.069
ZRNB-95	2.699E+00	6.163E+00	2.954E+01	6.010E-01	0.091
MO-99	-3.349E+00	4.934E+01	1.792E+02	3.676E+00	-0.019
RH-101	2.182E+01	1.511E+01	5.790E+01	1.170E+00	0.377
RH-102M	-5.227E-01	6.382E+00	2.423E+01	4.857E-01	-0.022
RU-103	-1.388E+01	8.642E+00	2.756E+01	5.530E-01	-0.504
RU-106DA	-3.815E+00	5.997E+01	2.327E+02	4.697E+00	-0.016
AG-108M	-7.470E+00	6.533E+00	2.224E+01	4.453E-01	-0.336
AG-110M	-4.771E+00	5.736E+00	2.082E+01	4.267E-01	-0.229
SN-113DA	1.288E+01	1.042E+01	4.350E+01	8.701E-01	0.296

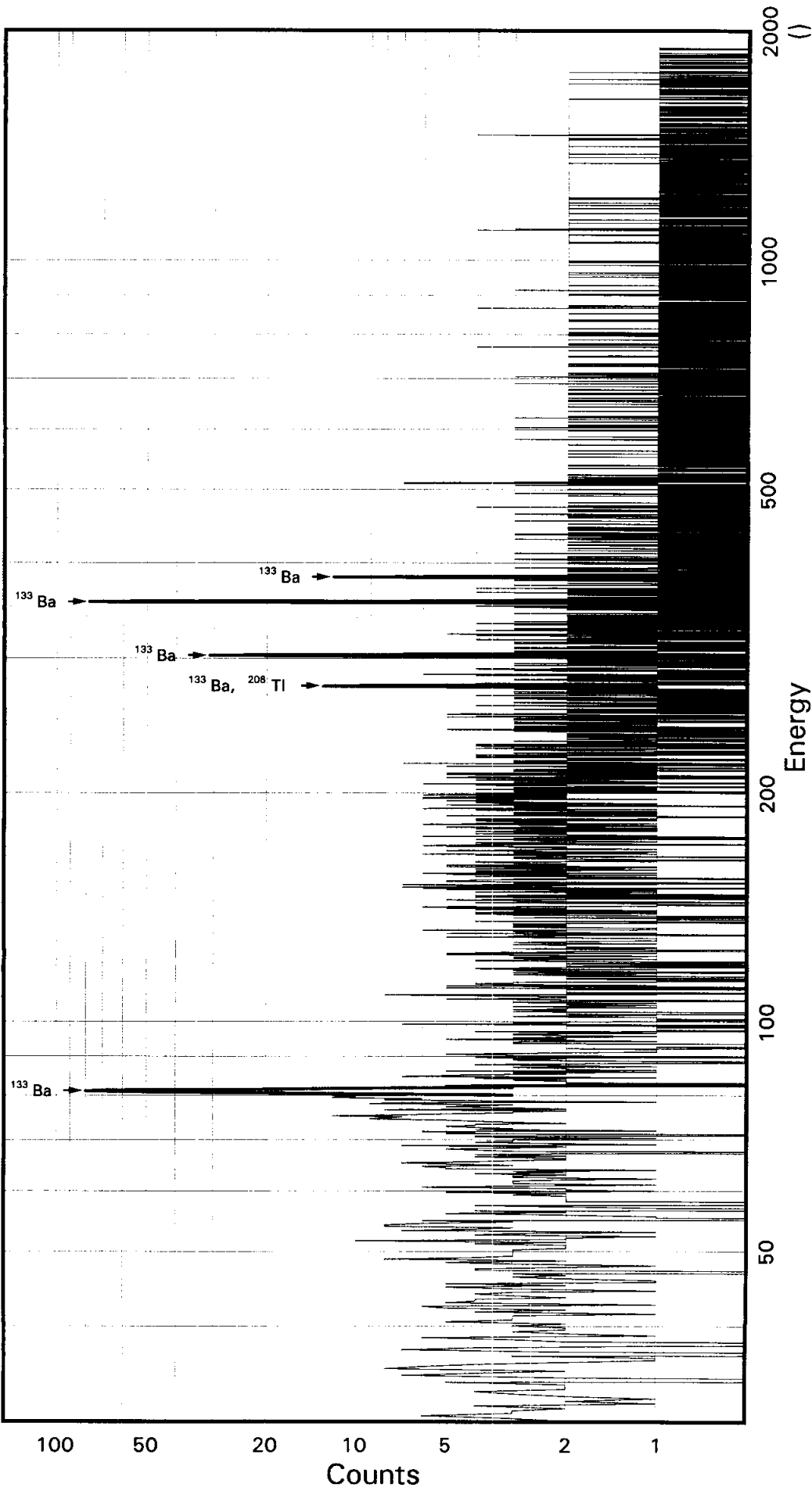
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	7.463E+00		7.161E+00	2.970E+01	5.987E-01	0.251
SB-125	-1.245E+01		2.114E+01	7.645E+01	1.530E+00	-0.163
SN-126DA	3.917E+00		4.217E+00	1.917E+01	3.878E-01	0.204
I-131	1.482E+00		1.626E+01	6.100E+01	1.220E+00	0.024
CS-134	-9.434E-02		4.316E+00	1.817E+01	3.704E-01	-0.005
CS-137DA	1.011E-01		4.207E+00	1.800E+01	3.641E-01	0.006
LA-138	-3.795E+00		4.229E+00	1.569E+01	3.321E-01	-0.242
CE-139	-8.488E+00		1.263E+01	4.385E+01	8.921E-01	-0.194
BA-140	-5.290E+01		2.359E+01	6.544E+01	1.315E+00	-0.808
BALA-140	4.028E+00		6.743E+00	3.642E+01	7.779E-01	0.111
LA-140	1.793E+01		3.002E+01	1.622E+02	3.464E+00	0.111
CE-141	2.902E+00		2.092E+01	7.758E+01	1.588E+00	0.037
CE-144	1.149E+02		1.046E+02	3.977E+02	8.180E+00	0.289
CEPR-144	2.347E+02		2.094E+02	7.971E+02	1.640E+01	0.294
PM-144	-4.760E+00		5.720E+00	2.060E+01	4.158E-01	-0.231
PM-146	-9.756E+00		8.255E+00	2.796E+01	5.602E-01	-0.349
EU-152	-6.152E+01		2.964E+01	9.214E+01	1.843E+00	-0.668
EU-154	-1.515E+01		9.269E+00	2.744E+01	5.756E-01	-0.552
EU-155	-2.196E+01		4.795E+01	1.710E+02	3.571E+00	-0.128
HF-181	1.113E+00		7.490E+00	2.938E+01	5.892E-01	0.038
BI-207	9.420E+00		5.617E+00	2.531E+01	5.095E-01	0.372
TL-208	6.319E+00		5.583E+00	2.513E+01	5.062E-01	0.251
BI-210M	2.761E+00		1.644E+01	6.217E+01	1.246E+00	0.044
BI-212	-1.556E+02		5.577E+01	5.261E+01	1.606E+00	-2.958
PB-212	4.725E+00		1.962E+01	7.237E+01	1.454E+00	0.065
BI-214	-8.913E+00		1.220E+01	4.445E+01	8.965E-01	-0.201
PB-214	2.480E+00		2.742E+01	8.633E+01	1.727E+00	0.029
RA-223	3.407E+01		5.939E+01	2.229E+02	4.468E+00	0.153
RA-224DA	4.754E+00		1.973E+01	7.281E+01	1.463E+00	0.065
RA-226DA	-8.912E+00		1.220E+01	4.445E+01	8.965E-01	-0.201
AC-227DA	5.326E+01		8.781E+01	3.260E+02	6.552E+00	0.163
AC-228	-1.327E+01		1.473E+01	5.276E+01	1.083E+00	-0.252
RA-228DA	-1.330E+01		1.476E+01	5.287E+01	1.085E+00	-0.252
TH-228DA	1.769E+01		1.563E+01	7.038E+01	1.418E+00	0.251
TH-232DA	-1.044E+02		6.195E+01	2.008E+02	4.016E+00	-0.520
TH-234DA	1.009E+03		5.300E+02	2.822E+03	5.824E+01	0.357
U-234DA	-2.698E+00		3.937E+01	1.475E+02	2.954E+00	-0.018
U-235HP	-1.205E+02		8.787E+01	2.916E+02	5.974E+00	-0.413
NP-237DA	1.818E+01		2.372E+01	9.210E+01	1.843E+00	0.197
U-238DA	2.480E+00		2.742E+01	8.633E+01	1.727E+00	0.029
U-238DHP	3.059E+02		3.450E+02	1.298E+03	2.832E+01	0.236
AM-241HP	3.007E+01		3.377E+01	1.253E+02	2.751E+00	0.240

STL Richland WA.
BA133

Batch ID: 7134319

Sample ID: JWP2D1AA
Detector ID: GER11 1



Acquisition Start: 23-MAY-2007 13:46:11.39
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -9.93571E-01
Slope: 2.31797E-01
Quadrature: 3.52799E-08

SAMPLE IDENTIFICATION:

JWP2D1AA

CONFIGURATION ID: GER11:JWP2D1AA_230571346

TITLE : BA133

SAMPLE ID : JWP2D1AA

REPORT DATE: 23-MAY-07

SAMPLE DATE: 17-MAY-2007 12:00:00.00

ACQUIRE DATE: 23-MAY-07 13:46:11

CALIB DATE: 23-MAY-2007 05:08:41.12

ELAPSED LIVE TIME: 1800.0 Sec

ELAPSED LIVE TIME: 0 00:30:00

PRESET LIVE TIME: 0 00:30:00

ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00

UNITS: SAMPL

SAMPLE GEOMETRY: BA133T15

SAMPLE TYPE:

ENERGY OFFSET: -.9936E+00 keV

FWHM OFFSET: 2.2468E-01 keV

ENERGY SLOPE: 2.3180E-01 keV/C

FWHM SLOPE: 3.9915E-02 sqr keV

ENERGY Q COEFF: 3.5280E-08 keV/C²

ITERATIONS: 10

PEAK SENSITIVITY: 5.000

GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %

HALF-LIFE RATIO: 8.00

ENERGY TOLERANCE: 1.500 keV

ACTIVITY MULTIPLIER: 2.2200E+06

VARIABLE PEAK WIDTH: 3.00

LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:16:28

Configuration : \$DISK1:[GER11.SAMPLE]JWP2D1AA_230571346.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:46:11
 Sample ID : JWP2D1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.98 0.1%
 Start energy : 1.32 End energy : 1900.25
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.18	224	40	0.61	354.49	350	12	1.25E-01	9.1	
2	0	276.35	74	9	1.18	1196.28	1187	20	4.12E-02	15.5	
3	0	302.70	108	25	0.97	1309.89	1304	12	6.01E-02	13.2	
4	0	355.81	392	3	1.10	1538.92	1532	15	2.18E-01	5.2	
5	0	383.63	53	7	0.97	1658.88	1652	14	2.94E-02	17.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 23-MAY-2007 14:16:28

Configuration : \$DISK1:[GER11.SAMPLE]JWP2D1AA_230571346.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:46:11
 Sample ID : JWP2D1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.98 0.1%
 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected	Decay Corr	1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	224	33.00	2.880E+00	7.874E+02	7.882E+02	10.60
	276.40	74	6.90	3.084E+00	1.163E+03	1.164E+03	16.45
	302.84	108	17.80	3.088E+00	6.557E+02	6.565E+02	14.30
	356.00	392	62.05*	3.090E+00	6.807E+02	6.814E+02	7.46
	383.85	53	8.70	3.090E+00	6.572E+02	6.579E+02	18.16

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2D1AA

Page : 2
Acquisition date : 23-MAY-2007 13:46:11

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2D1AA

Page : 3
Acquisition date : 23-MAY-2007 13:46:11

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma (DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.180E+03	16.45	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

Configuration : \$DISK1:[GER11.SAMPLE]JWP2D1AA_230571346.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 : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:46:11
 Sample ID : JWP2D1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.98 0.1%
 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.814E+02	5.085E+01	3.349E+01	6.698E-01	20.346

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-6.898E+01		4.262E+01	1.348E+02	2.704E+00	-0.512
NA-22	4.637E+00		3.218E+00	1.610E+01	3.394E-01	0.288
K-40	6.964E+01		5.411E+01	2.720E+02	5.800E+00	0.256
SC-46	9.723E-01		3.112E+00	1.400E+01	2.921E-01	0.069
CR-51	3.722E+00		6.615E+01	2.526E+02	5.053E+00	0.015
MN-54	1.074E+01		4.160E+00	2.074E+01	4.245E-01	0.518
CO-57	-3.765E+01		5.561E+01	1.929E+02	3.975E+00	-0.195
CO-58	-4.559E+00		3.286E+00	1.092E+01	2.233E-01	-0.417
FE-59	-6.589E+00		7.899E+00	2.864E+01	5.967E-01	-0.230
CO-60	-3.357E+00		3.411E+00	1.230E+01	2.602E-01	-0.273
ZN-65	-4.584E+00		5.560E+00	2.093E+01	4.365E-01	-0.219
SE-75	-1.064E+01		9.803E+00	3.434E+01	6.887E-01	-0.310
SR-85	-2.739E+01		7.749E+00	1.927E+01	3.870E-01	-1.422
Y-88	-1.186E+00		1.188E+00	3.329E+00	7.261E-02	-0.356
NB-94	5.224E+00		3.648E+00	1.732E+01	3.554E-01	0.302
NB-95	-3.452E+00		3.189E+00	1.153E+01	2.349E-01	-0.299
TC-95M	-5.306E-01		1.135E+01	4.169E+01	8.422E-01	-0.013
ZR-95	2.434E+00		5.499E+00	2.547E+01	5.188E-01	0.096
ZRNB-95	-6.535E+00		6.037E+00	2.182E+01	4.448E-01	-0.299
MO-99	7.840E+00		3.816E+01	1.493E+02	3.071E+00	0.053
RH-101	1.041E+00		1.271E+01	4.763E+01	9.632E-01	0.022
RH-102M	1.289E+01		4.531E+00	2.247E+01	4.506E-01	0.573
RU-103	-8.535E+00		5.197E+00	1.625E+01	3.262E-01	-0.525
RU-106DA	3.492E+01		4.878E+01	2.038E+02	4.118E+00	0.171
AG-108M	-7.984E+00		5.690E+00	1.905E+01	3.815E-01	-0.419
AG-110M	-6.302E+00		3.169E+00	4.195E+00	8.616E-02	-1.502
SN-113DA	1.096E+00		5.859E+00	2.473E+01	4.948E-01	0.044

---- Non-Identified Nuclides ----

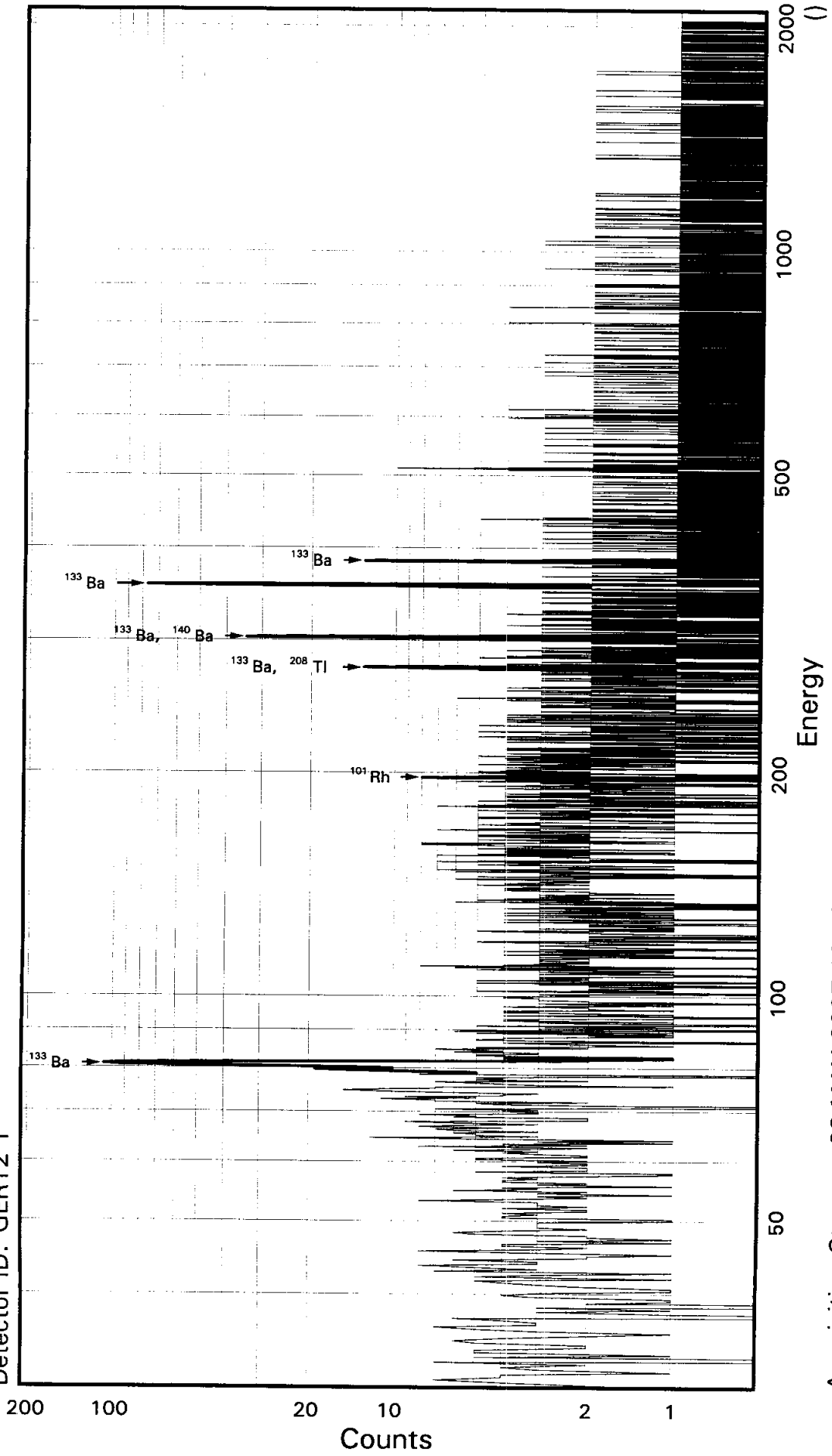
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-2.688E-01		5.201E+00	2.033E+01	4.103E-01	-0.013
SB-125	1.305E+00		1.463E+01	5.898E+01	1.181E+00	0.022
SN-126DA	-3.091E+00		3.709E+00	1.347E+01	2.728E-01	-0.230
I-131	-2.706E+00		1.126E+01	4.156E+01	8.312E-01	-0.065
CS-134	-3.592E+00		4.598E+00	1.699E+01	3.470E-01	-0.211
CS-137DA	5.209E+00		3.672E+00	1.819E+01	3.684E-01	0.286
LA-138	-5.354E+00		4.636E+00	1.598E+01	3.402E-01	-0.335
CE-139	-2.895E-01		9.624E+00	3.574E+01	7.285E-01	-0.008
BA-140	4.185E+01		1.837E+01	9.565E+01	1.923E+00	0.438
BALA-140	-3.314E+00		3.319E+00	9.131E+00	1.964E-01	-0.363
LA-140	-1.476E+01		1.478E+01	4.066E+01	8.745E-01	-0.363
CE-141	8.171E+00		1.608E+01	6.307E+01	1.294E+00	0.130
CE-144	-3.809E+01		6.685E+01	2.313E+02	4.772E+00	-0.165
CEPR-144	-7.797E+01		1.336E+02	4.616E+02	9.523E+00	-0.169
PM-144	-4.275E+00		4.411E+00	1.567E+01	3.165E-01	-0.273
PM-146	2.207E+00		5.577E+00	2.391E+01	4.790E-01	0.092
EU-152	8.817E+00		1.784E+01	7.238E+01	1.448E+00	0.122
EU-154	1.301E+01		9.030E+00	4.519E+01	9.524E-01	0.288
EU-155	-1.253E+01		3.343E+01	1.205E+02	2.528E+00	-0.104
HF-181	5.721E+00		4.112E+00	2.034E+01	4.080E-01	0.281
BI-207	-6.001E-01		3.928E+00	1.581E+01	3.184E-01	-0.038
TL-208	4.073E+00		4.229E+00	1.937E+01	3.905E-01	0.210
BI-210M	1.201E+01		1.060E+01	4.480E+01	8.985E-01	0.268
BI-212	9.736E+01		5.878E+01	2.775E+02	8.477E+00	0.351
PB-212	-5.453E+00		1.323E+01	4.733E+01	9.515E-01	-0.115
BI-214	3.829E+00		9.732E+00	3.998E+01	8.072E-01	0.096
PB-214	5.449E+00		1.807E+01	6.388E+01	1.278E+00	0.085
RA-223	-3.434E+01		4.286E+01	1.537E+02	3.081E+00	-0.223
RA-224DA	-5.486E+00		1.331E+01	4.762E+01	9.572E-01	-0.115
RA-226DA	3.728E+00		9.720E+00	3.991E+01	8.056E-01	0.093
AC-227DA	-1.293E+01		4.858E+01	1.778E+02	3.575E+00	-0.073
AC-228	-1.681E+01		1.295E+01	4.310E+01	8.868E-01	-0.390
RA-228DA	-1.684E+01		1.298E+01	4.318E+01	8.886E-01	-0.390
TH-228DA	1.140E+01		1.184E+01	5.426E+01	1.094E+00	0.210
TH-232DA	-4.248E+01		4.499E+01	1.554E+02	3.108E+00	-0.273
TH-234DA	-6.179E+02		5.340E+02	1.880E+03	3.891E+01	-0.329
U-234DA	6.996E+00		2.677E+01	1.060E+02	2.122E+00	0.066
U-235HP	-5.572E+01		6.672E+01	2.388E+02	4.905E+00	-0.233
NP-237DA	-2.278E+01		1.549E+01	5.095E+01	1.020E+00	-0.447
U-238DA	5.449E+00		1.807E+01	6.388E+01	1.278E+00	0.085
U-238DHP	-1.858E+02		1.983E+02	7.115E+02	1.567E+01	-0.261
AM-241HP	-5.317E+00		2.051E+01	7.247E+01	1.607E+00	-0.073

STL Richland WA.

BA133

Batch ID: 7134319

Sample ID: JWP2E1AA
Detector ID: GER12 1



Energy Coefficients:
Offset: 1.13769E+01
Slope: 2.47667E-01
Quadrature: -6.48278E-09

Acquisition Start: 23-MAY-2007 13:46:44.90
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JWP2E1AA

CONFIGURATION ID: GER12:JWP2E1AA_230571346
TITLE : BA133
SAMPLE ID : JWP2E1AA

REPORT DATE: 23-MAY-07 SAMPLE DATE: 17-MAY-2007 12:00:00.00
ACQUIRE DATE: 23-MAY-07 13:46:44 CALIB DATE: 23-MAY-2007 05:09:10.02
ELAPSED LIVE TIME: 1800.0 Sec ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00 ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00 UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15 SAMPLE TYPE:

ENERGY OFFSET: 1.1377E+01 keV FWHM OFFSET: 4.0450E-01 keV
ENERGY SLOPE: 2.4767E-01 keV/C FWHM SLOPE: 3.5418E-02 sqr keV
ENERGY Q COEFF: -.6483E-08 keV/C² 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: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:17:01

```

Configuration      : $DISK1:[GER12.SAMPLE]JWP2E1AA_230571346.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:46:44
Sample ID         : JWP2E1AA Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 0.0%
Start energy      : 11.62 End energy : 2039.83
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	74.93*	15	21	0.74	256.60	253	8	8.33E-03	69.0	
2	0	80.89	371	73	0.79	280.67	272	16	2.06E-01	7.3	
3	0	197.21*	10	14	0.67	750.35	744	10	5.65E-03	82.4	
4	0	276.06	69	12	1.25	1068.75	1060	16	3.85E-02	16.4	
5	0	302.95	139	33	0.91	1177.30	1168	19	7.70E-02	13.1	
6	0	356.10	368	23	1.09	1391.93	1384	16	2.04E-01	6.0	
7	0	384.16	47	16	0.83	1505.24	1497	17	2.61E-02	24.7	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER12.SAMPLE]JWP2E1AA_230571346.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:46:44
Sample ID        : JWP2E1AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 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:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
RH-101	197.99	10	73.00*	3.070E+00	1.512E+01	1.517E+01	82.53

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	371	33.00	2.915E+00	1.287E+03	1.289E+03	9.09
	276.40	69	6.90	3.094E+00	1.082E+03	1.083E+03	17.26
	302.84	139	17.80	3.097E+00	8.380E+02	8.389E+02	14.17
	356.00	368	62.05*	3.100E+00	6.370E+02	6.377E+02	8.07
	383.85	47	8.70	3.099E+00	5.817E+02	5.824E+02	25.29

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2E1AA

Page : 2
Acquisition date : 23-MAY-2007 13:46:44

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	74.93	15	21	0.74	256.60	253	8	8.33E-03	69.0	2.90E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by		
BA-140	12.79D	0.48	162.64	6.70	---	Not Found	---	Abun.	
			304.84	4.50	4.610E+03	14.17			
			423.70	3.20	---	Not Found	---		
			537.32*	25.00	---	Not Found	---		
% Abundances Found =			11.42						
TL-208	1.41E+10Y	0.00	277.35	6.80	1.098E+03	17.26	Abun.		
			510.84	21.60	---	Not Found		---	
			583.14*	84.20	---	Not Found		---	
			860.37	12.46	---	Not Found		---	
% Abundances Found =			5.44						

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 23-MAY-2007 14:17:03

Configuration : \$DISK1:[GER12.SAMPLE]JWP2E1AA_230571346.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 : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:46:44
 Sample ID : JWP2E1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
RH-101	1.517E+01	1.252E+01	4.152E+01	8.384E-01	0.365
BA-133	6.377E+02	5.143E+01	4.582E+01	9.164E-01	13.917

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-9.654E+00	4.122E+01	1.607E+02	3.221E+00	-0.060
NA-22	-1.168E+00	2.546E+00	1.050E+01	2.197E-01	-0.111
K-40	7.038E+00	4.477E+01	2.201E+02	4.654E+00	0.032
SC-46	-3.216E+00	3.805E+00	1.408E+01	2.922E-01	-0.228
CR-51	-7.810E+01	7.963E+01	2.706E+02	5.413E+00	-0.289
MN-54	-8.509E+00	3.426E+00	8.181E+00	1.670E-01	-1.040
CO-57	1.477E+01	7.078E+01	2.654E+02	5.446E+00	0.056
CO-58	2.455E+00	2.823E+00	1.405E+01	2.863E-01	0.175
FE-59	-4.202E+00	4.161E+00	1.558E+01	3.229E-01	-0.270
CO-60	3.331E+00	3.023E+00	1.482E+01	3.113E-01	0.225
ZN-65	-6.190E+00	6.545E+00	2.405E+01	4.989E-01	-0.257
SE-75	-1.029E+00	9.708E+00	3.672E+01	7.363E-01	-0.028
SR-85	-3.500E+01	8.832E+00	2.154E+01	4.324E-01	-1.625
Y-88	-3.496E+00	2.656E+00	8.924E+00	1.924E-01	-0.392
NB-94	1.207E+00	3.264E+00	1.441E+01	2.947E-01	0.084
NB-95	-9.604E-01	3.453E+00	1.395E+01	2.837E-01	-0.069
TC-95M	1.086E+00	1.326E+01	4.949E+01	9.984E-01	0.022
ZR-95	-3.699E-01	6.101E+00	2.533E+01	5.147E-01	-0.015
ZRNB-95	-1.251E+00	6.638E+00	2.712E+01	5.514E-01	-0.046
MO-99	1.248E+01	4.356E+01	1.638E+02	3.355E+00	0.076
RH-102M	1.226E+00	3.838E+00	1.623E+01	3.254E-01	0.076
RU-103	9.964E+00	5.388E+00	2.494E+01	5.003E-01	0.400
RU-106DA	7.122E+01	3.920E+01	1.889E+02	3.811E+00	0.377
AG-108M	-1.615E+01	6.590E+00	1.924E+01	3.852E-01	-0.839
AG-110M	-4.480E+00	4.032E+00	1.431E+01	2.928E-01	-0.313
SN-113DA	4.835E+00	6.447E+00	2.802E+01	5.606E-01	0.173

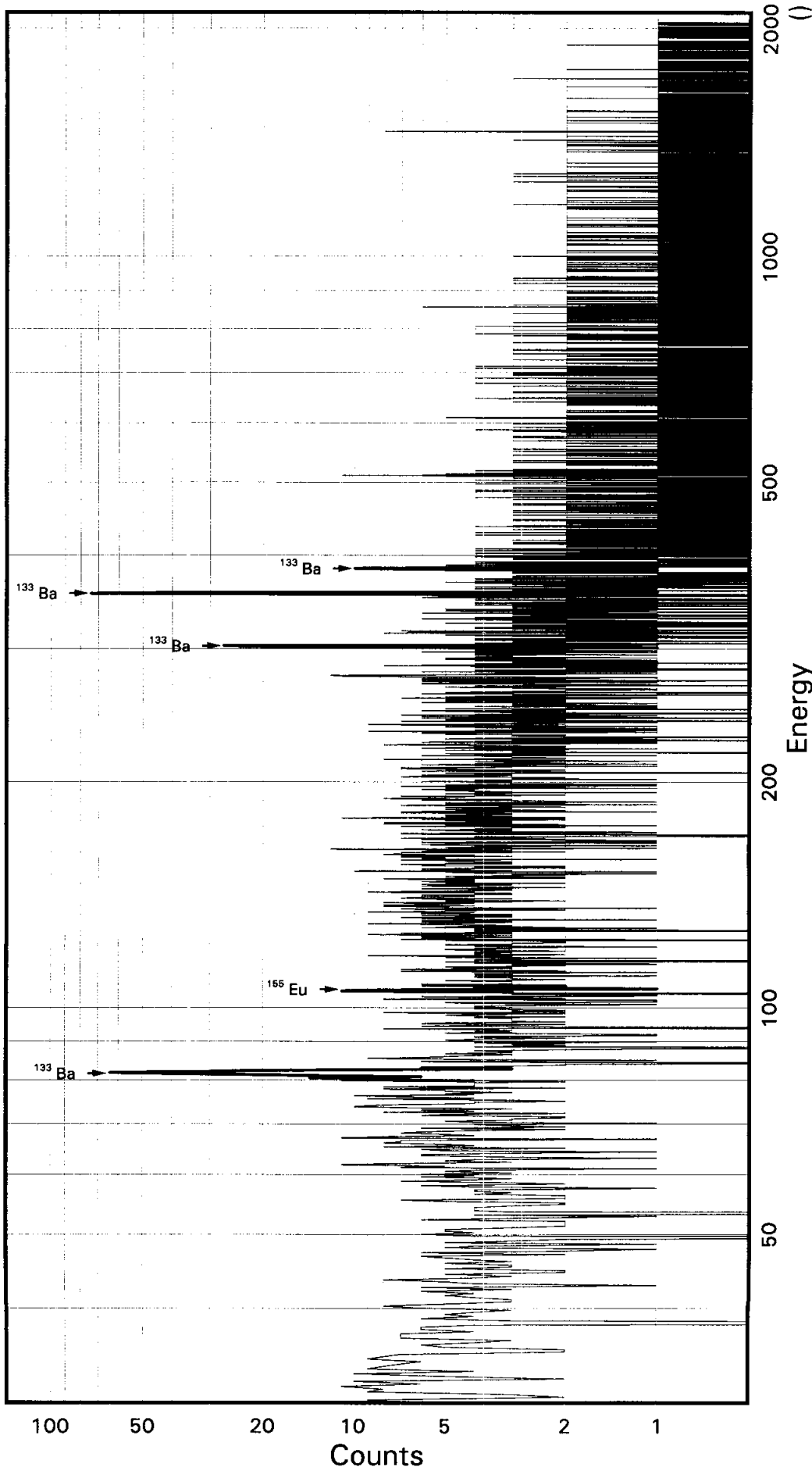
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	1.446E+01		5.581E+00	2.598E+01	5.237E-01	0.557
SB-125	2.259E+01		1.723E+01	7.408E+01	1.483E+00	0.305
SN-126DA	-1.917E-01		4.040E+00	1.614E+01	3.264E-01	-0.012
I-131	-1.377E+01		9.355E+00	3.154E+01	6.308E-01	-0.437
CS-134	1.647E+00		4.172E+00	1.817E+01	3.701E-01	0.091
CS-137DA	3.112E-02		4.418E+00	1.801E+01	3.641E-01	0.002
LA-138	1.768E+00		2.913E+00	1.580E+01	3.336E-01	0.112
CE-139	-1.200E+01		1.160E+01	3.891E+01	7.910E-01	-0.308
BA-140	1.622E+01		2.220E+01	9.529E+01	1.915E+00	0.170
BALA-140	0.000E+00		0.000E+00	9.016E+00	1.920E-01	0.000
LA-140	0.000E+00		0.000E+00	4.015E+01	8.553E-01	0.000
CE-141	-2.669E+01		1.804E+01	5.929E+01	1.213E+00	-0.450
CE-144	-7.737E+01		6.700E+01	2.282E+02	4.689E+00	-0.339
CEPR-144	-1.531E+02		1.341E+02	4.574E+02	9.397E+00	-0.335
PM-144	-9.508E+00		4.762E+00	1.454E+01	2.933E-01	-0.654
PM-146	-6.675E+00		6.226E+00	2.172E+01	4.352E-01	-0.307
EU-152	8.414E+00		2.091E+01	8.129E+01	1.626E+00	0.104
EU-154	-3.277E+00		7.146E+00	2.945E+01	6.165E-01	-0.111
EU-155	1.397E+01		3.368E+01	1.308E+02	2.727E+00	0.107
HF-181	4.465E+00		5.280E+00	2.306E+01	4.624E-01	0.194
BI-207	3.621E+00		3.917E+00	1.756E+01	3.534E-01	0.206
TL-208	-1.699E+01		5.601E+00	1.383E+01	2.785E-01	-1.228
BI-210M	1.953E+01		1.201E+01	5.062E+01	1.015E+00	0.386
BI-212	3.024E+01		6.284E+01	2.629E+02	8.021E+00	0.115
PB-212	1.975E+01		1.502E+01	6.117E+01	1.229E+00	0.323
BI-214	5.031E+00		1.079E+01	4.378E+01	8.826E-01	0.115
PB-214	-1.634E+01		2.176E+01	6.489E+01	1.298E+00	-0.252
RA-223	-3.839E+01		4.412E+01	1.547E+02	3.101E+00	-0.248
RA-224DA	1.987E+01		1.512E+01	6.154E+01	1.236E+00	0.323
RA-226DA	4.936E+00		1.077E+01	4.371E+01	8.814E-01	0.113
AC-227DA	-1.593E+01		6.409E+01	2.349E+02	4.721E+00	-0.068
AC-228	5.877E+00		1.219E+01	5.393E+01	1.105E+00	0.109
RA-228DA	5.889E+00		1.221E+01	5.404E+01	1.108E+00	0.109
TH-228DA	-4.758E+01		1.568E+01	3.874E+01	7.800E-01	-1.228
TH-232DA	2.688E+01		4.536E+01	1.787E+02	3.575E+00	0.150
TH-234DA	1.660E+02		2.980E+02	1.582E+03	3.259E+01	0.105
U-234DA	7.331E+00		2.629E+01	1.037E+02	2.076E+00	0.071
U-235HP	5.383E+01		7.522E+01	2.873E+02	5.879E+00	0.187
NP-237DA	4.077E+00		1.722E+01	6.531E+01	1.307E+00	0.062
U-238DA	-1.634E+01		2.176E+01	6.489E+01	1.298E+00	-0.252
U-238DHP	-3.936E+02		2.501E+02	8.076E+02	1.756E+01	-0.487
AM-241HP	6.928E+00		2.166E+01	8.133E+01	1.779E+00	0.085

STL Richland WA.
BA133

Batch ID: 7134319

Sample ID: JWP2F1AA
Detector ID: GER13 1



Energy Coefficients:
Offset: -5.87968E-01
Slope: 2.50815E-01
Quadrature: -1.04941E-07

Acquisition Start: 23-MAY-2007 13:47:10.26
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JWP2F1AA

CONFIGURATION ID: GER13:JWP2F1AA_230571347
TITLE : BA133
SAMPLE ID : JWP2F1AA

REPORT DATE: 23-MAY-07
ACQUIRE DATE: 23-MAY-07 13:47:10
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 23-MAY-2007 05:08:55.88
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.5880E+00 keV
ENERGY SLOPE: 2.5081E-01 keV/C
ENERGY Q COEFF: -.1049E-06 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.4720E-01 keV
FWHM SLOPE: 4.6593E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:17:26

Configuration : \$DISK1:[GER13.SAMPLE]JWP2F1AA_230571347.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:47:10
 Sample ID : JWP2F1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.38 0.0%
 Start energy : 19.48 End energy : 2047.04
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.72	207	52	0.59	328.21	321	14	1.15E-01	10.2	
2	0	105.49	11	31	0.48	423.03	419	10	6.10E-03	95.8	
3	0	302.76	109	39	1.18	1210.05	1202	16	6.06E-02	16.1	
4	0	355.81	377	25	1.19	1421.81	1413	17	2.09E-01	6.0	
5	0	383.91	42	32	1.15	1534.00	1525	16	2.33E-02	33.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 23-MAY-2007 14:17:26

```

Configuration      : $DISK1:[GER13.SAMPLE]JWP2F1AA_230571347.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:47:10
Sample ID        : JWP2F1AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.38 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma %Error
					DPM/SAMPL	DPM/SAMPL	
BA-133	81.00	207	33.00	2.677E+00	7.799E+02	7.808E+02	11.54
	276.40	-----	6.90	2.869E+00	-----	Line Not Found	-----
	302.84	109	17.80	2.872E+00	7.116E+02	7.124E+02	16.96
	356.00	377	62.05*	2.875E+00	7.041E+02	7.048E+02	8.06
	383.85	42	8.70	2.874E+00	5.599E+02	5.605E+02	34.27

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2F1AA

Page : 2
Acquisition date : 23-MAY-2007 13:47:10

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	105.49	11	31	0.48	423.03	419	10	6.10E-03	95.8	2.74E+00	T

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2F1AA

Page : 3
Acquisition date : 23-MAY-2007 13:47:10

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma (DPM/SAMPL)%Error	Rejected by
EU-155	4.96Y	0.00	42.90	21.16	--- Not Found ---	Abun.
			86.54	30.90	--- Not Found ---	
			105.31*	20.70	6.477E+01 95.93	
		% Abundances Found =		28.45		

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 23-MAY-2007 14:17:28

```

Configuration      : $DISK1:[GER13.SAMPLE]JWP2F1AA_230571347.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:47:10
Sample ID        : JWP2F1AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.38 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.048E+02	5.681E+01	4.586E+01	9.172E-01	15.369

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	8.478E+01	7.455E+01	2.980E+02	5.977E+00	0.285
NA-22	-3.678E-01	5.466E+00	2.115E+01	4.462E-01	-0.017
K-40	-1.050E+02	9.523E+01	4.427E+02	9.454E+00	-0.237
SC-46	-9.653E+00	5.410E+00	1.911E+01	3.991E-01	-0.505
CR-51	1.919E+01	1.011E+02	3.730E+02	7.462E+00	0.051
MN-54	-7.062E+00	5.746E+00	1.940E+01	3.973E-01	-0.364
CO-57	-1.520E+00	1.225E+02	4.270E+02	8.803E+00	-0.004
CO-58	-1.234E+01	6.528E+00	2.035E+01	4.163E-01	-0.606
FE-59	-3.429E+00	9.791E+00	3.690E+01	7.696E-01	-0.093
CO-60	-2.779E+00	4.297E+00	1.598E+01	3.384E-01	-0.174
ZN-65	4.430E+00	8.533E+00	3.641E+01	7.602E-01	0.122
SE-75	-2.351E+01	1.657E+01	5.582E+01	1.120E+00	-0.421
SR-85	-2.557E+01	1.103E+01	3.352E+01	6.735E-01	-0.763
Y-88	5.494E-01	2.789E+00	1.317E+01	2.878E-01	0.042
NB-94	9.043E-01	4.979E+00	1.983E+01	4.071E-01	0.046
NB-95	6.635E+00	5.760E+00	2.496E+01	5.090E-01	0.266
TC-95M	3.033E+01	1.756E+01	6.767E+01	1.367E+00	0.448
ZR-95	-1.076E+01	8.714E+00	2.996E+01	6.105E-01	-0.359
ZRNB-95	1.226E+01	1.087E+01	4.706E+01	9.596E-01	0.260
MO-99	2.012E+00	6.385E+01	2.229E+02	4.586E+00	0.009
RH-101	-1.127E+01	1.505E+01	5.176E+01	1.047E+00	-0.218
RH-102M	-4.673E+00	7.512E+00	2.658E+01	5.331E-01	-0.176
RU-103	8.016E+00	7.520E+00	3.090E+01	6.202E-01	0.259
RU-106DA	2.774E+01	5.459E+01	2.219E+02	4.483E+00	0.125
AG-108M	-1.065E+01	8.054E+00	2.706E+01	5.418E-01	-0.394
AG-110M	6.432E+00	7.213E+00	3.038E+01	6.245E-01	0.212
SN-113DA	2.468E+00	1.228E+01	4.649E+01	9.302E-01	0.053

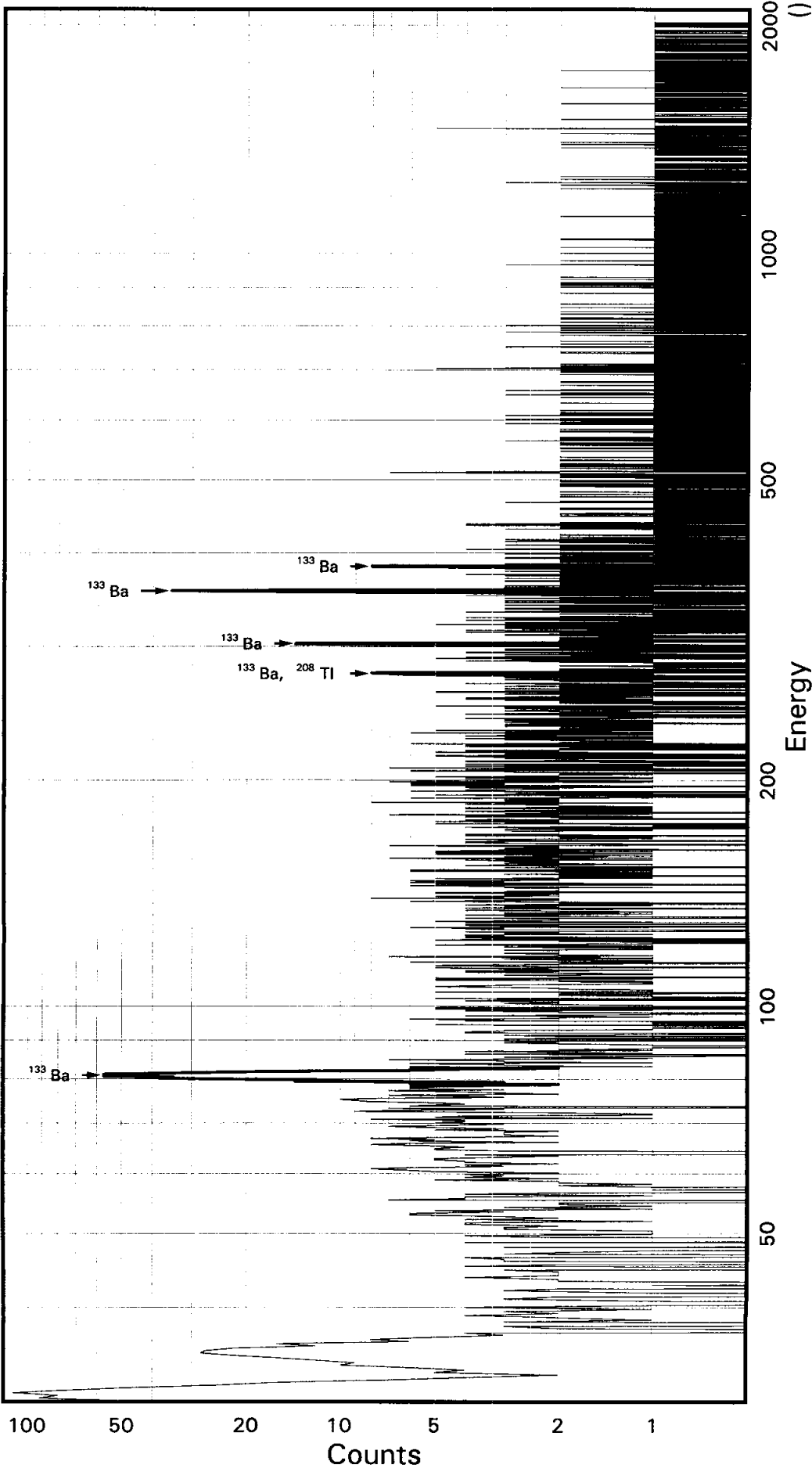
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-2.157E+00		6.279E+00	2.342E+01	4.727E-01	-0.092
SB-125	1.268E+00		2.226E+01	8.467E+01	1.695E+00	0.015
SN-126DA	-2.737E+00		5.345E+00	1.957E+01	3.965E-01	-0.140
I-131	-1.948E+01		1.827E+01	6.106E+01	1.221E+00	-0.319
CS-134	1.263E+01		5.788E+00	2.718E+01	5.554E-01	0.465
CS-137DA	-1.942E+00		7.540E+00	2.775E+01	5.620E-01	-0.070
LA-138	-3.447E+00		5.154E+00	1.994E+01	4.251E-01	-0.173
CE-139	-1.625E+01		1.384E+01	4.727E+01	9.637E-01	-0.344
BA-140	3.681E+00		2.965E+01	1.176E+02	2.364E+00	0.031
BALA-140	1.085E+01		8.181E+00	4.366E+01	9.403E-01	0.249
LA-140	3.369E+01		3.297E+01	1.763E+02	3.798E+00	0.191
CE-141	-2.556E+01		2.895E+01	9.621E+01	1.976E+00	-0.266
CE-144	9.324E+01		1.125E+02	4.104E+02	8.471E+00	0.227
CEPR-144	1.883E+02		2.252E+02	8.213E+02	1.695E+01	0.229
PM-144	2.522E-01		5.104E+00	2.011E+01	4.062E-01	0.013
PM-146	5.195E+00		8.573E+00	3.473E+01	6.959E-01	0.150
EU-152	1.335E+01		3.391E+01	1.252E+02	2.505E+00	0.107
EU-154	3.272E+00		1.504E+01	5.998E+01	1.266E+00	0.055
EU-155	6.477E+01	+	6.214E+01	1.891E+02	3.971E+00	0.343
HF-181	-1.476E+01		9.087E+00	2.919E+01	5.855E-01	-0.506
BI-207	1.936E+00		5.444E+00	2.194E+01	4.419E-01	0.088
TL-208	-7.819E+00		7.757E+00	2.926E+01	5.899E-01	-0.267
BI-210M	-5.718E+00		1.831E+01	6.616E+01	1.327E+00	-0.086
BI-212	3.363E+01		9.193E+01	3.641E+02	1.112E+01	0.092
PB-212	-1.441E+01		2.505E+01	8.842E+01	1.778E+00	-0.163
BI-214	5.184E+00		1.731E+01	7.220E+01	1.458E+00	0.072
PB-214	1.258E+01		2.702E+01	9.512E+01	1.902E+00	0.132
RA-223	5.110E+00		7.483E+01	2.732E+02	5.478E+00	0.019
RA-224DA	-1.450E+01		2.520E+01	8.896E+01	1.789E+00	-0.163
RA-226DA	5.184E+00		1.731E+01	7.220E+01	1.458E+00	0.072
AC-227DA	-2.345E+02		9.759E+01	2.951E+02	5.936E+00	-0.795
AC-228	-1.339E+00		2.001E+01	8.383E+01	1.726E+00	-0.016
RA-228DA	-1.341E+00		2.005E+01	8.400E+01	1.730E+00	-0.016
TH-228DA	-2.190E+01		2.172E+01	8.193E+01	1.652E+00	-0.267
TH-232DA	5.544E+01		7.866E+01	2.927E+02	5.855E+00	0.189
TH-234DA	8.523E+02		7.941E+02	3.419E+03	7.082E+01	0.249
U-234DA	-1.400E+01		5.449E+01	1.938E+02	3.881E+00	-0.072
U-235HP	8.484E+00		1.148E+02	4.019E+02	8.258E+00	0.021
NP-237DA	-1.288E+01		2.497E+01	8.801E+01	1.761E+00	-0.146
U-238DA	1.258E+01		2.702E+01	9.512E+01	1.902E+00	0.132
U-238DHP	-5.375E+02		3.102E+02	9.811E+02	2.165E+01	-0.548
AM-241HP	2.377E+01		3.044E+01	1.130E+02	2.511E+00	0.210

STL Richland WA.
BA133

Batch ID: 7134319

Sample ID: JWP2G1AA
Detector ID: GER14 1



Acquisition Start: 23-MAY-2007 13:47:29.72
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -7.00655E-01
Slope: 2.48278E-01
Quadrature: -3.74530E-09

SAMPLE IDENTIFICATION:

JWP2G1AA

CONFIGURATION ID: GER14:JWP2G1AA_230571347

TITLE : BA133

SAMPLE ID : JWP2G1AA

REPORT DATE: 23-MAY-07

SAMPLE DATE: 17-MAY-2007 12:00:00.00

ACQUIRE DATE: 23-MAY-07 13:47:29

CALIB DATE: 23-MAY-2007 05:09:40.01

ELAPSED LIVE TIME: 1800.0 Sec

ELAPSED LIVE TIME: 0 00:30:00

PRESET LIVE TIME: 0 00:30:00

ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00

UNITS: SAMPL

SAMPLE GEOMETRY: BA133T15

SAMPLE TYPE:

ENERGY OFFSET: -.7007E+00 keV

FWHM OFFSET: 1.1221E+00 keV

ENERGY SLOPE: 2.4828E-01 keV/C

FWHM SLOPE: 2.4553E-02 sqr keV

ENERGY Q COEFF: -.3745E-08 keV/C²

ITERATIONS: 10

PEAK SENSITIVITY: 5.000

GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %

HALF-LIFE RATIO: 8.00

ENERGY TOLERANCE: 1.500 keV

ACTIVITY MULTIPLIER: 2.2200E+06

VARIABLE PEAK WIDTH: 3.00

LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:17:45

```

Configuration      : $DISK1:[GER14.SAMPLE]JWP2G1AA_230571347.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:47:29
Sample ID        : JWP2G1AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.40 0.0%
Start energy     : 19.16 End energy : 2032.94
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	4	30.65	531	109	1.38	126.25	118	36	2.95E-01	6.0	1.25E+00
2	4	34.98	160	48	1.86	143.70	118	36	8.91E-02	18.6	
3	0	80.98	282	96	1.43	328.98	318	19	1.57E-01	10.2	
4	0	276.55	48	19	1.87	1116.71	1107	19	2.67E-02	23.5	
5	0	303.05	78	21	1.44	1223.47	1211	25	4.35E-02	17.4	
6	0	356.16	221	17	1.36	1437.38	1426	26	1.23E-01	8.0	
7	0	383.88	31	15	1.12	1549.02	1539	16	1.71E-02	30.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 23-MAY-2007 14:17:46

Configuration : \$DISK1:[GER14.SAMPLE]JWP2G1AA_230571347.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:47:29
 Sample ID : JWP2G1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.40 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected	Decay Corr	1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	282	33.00	1.818E+00	1.565E+03	1.567E+03	11.58
	276.40	48	6.90	1.945E+00	1.192E+03	1.193E+03	24.10
	302.84	78	17.80	1.948E+00	7.535E+02	7.544E+02	18.21
	356.00	221	62.05*	1.949E+00	6.082E+02	6.088E+02	9.66
	383.85	31	8.70	1.949E+00	6.038E+02	6.044E+02	31.13

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2G1AA

Page : 2
Acquisition date : 23-MAY-2007 13:47:29

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	30.65	531	109	1.38	126.25	118	36	2.95E-01	6.0	1.61E+00	
4	34.98	160	48	1.86	143.70	118	36	8.91E-02	18.6	1.64E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2G1AA

Page : 3
Acquisition date : 23-MAY-2007 13:47:29

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.210E+03	24.10	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
		% Abundances Found =		5.44			

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER14.SAMPLE]JWP2G1AA_230571347.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 13:47:29
Sample ID        : JWP2G1AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.40 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.088E+02	5.881E+01	7.270E+01	1.454E+00	8.375

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	8.941E+01	8.932E+01	3.693E+02	7.406E+00	0.242
NA-22	6.017E+00	3.316E+00	2.024E+01	4.261E-01	0.297
K-40	-7.696E+01	9.072E+01	4.437E+02	9.452E+00	-0.173
SC-46	1.316E+01	5.657E+00	2.973E+01	6.199E-01	0.443
CR-51	2.980E+02	1.575E+02	6.258E+02	1.252E+01	0.476
MN-54	-1.869E+00	7.338E+00	2.813E+01	5.756E-01	-0.066
CO-57	-9.425E+01	1.602E+02	5.636E+02	1.160E+01	-0.167
CO-58	5.594E+00	6.734E+00	2.958E+01	6.044E-01	0.189
FE-59	-1.315E+01	1.182E+01	4.157E+01	8.656E-01	-0.316
CO-60	-1.899E+00	4.090E+00	1.681E+01	3.552E-01	-0.113
ZN-65	-2.763E+01	1.413E+01	4.289E+01	8.939E-01	-0.644
SE-75	-2.073E+01	2.326E+01	7.944E+01	1.593E+00	-0.261
SR-85	-1.018E+01	1.430E+01	4.955E+01	9.953E-01	-0.205
Y-88	1.909E+00	4.379E+00	2.097E+01	4.568E-01	0.091
NB-94	3.408E+00	5.582E+00	2.472E+01	5.071E-01	0.138
NB-95	6.030E+00	7.599E+00	3.278E+01	6.680E-01	0.184
TC-95M	-2.070E+00	2.498E+01	8.956E+01	1.809E+00	-0.023
ZR-95	-1.634E+01	1.378E+01	4.740E+01	9.651E-01	-0.345
ZRNB-95	1.142E+01	1.439E+01	6.207E+01	1.265E+00	0.184
MO-99	1.631E+02	8.575E+01	3.343E+02	6.873E+00	0.488
RH-101	2.008E+01	2.474E+01	9.109E+01	1.842E+00	0.220
RH-102M	3.553E+00	8.880E+00	3.525E+01	7.068E-01	0.101
RU-103	-6.699E+00	1.079E+01	3.890E+01	7.808E-01	-0.172
RU-106DA	-7.100E+00	6.297E+01	2.493E+02	5.036E+00	-0.028
AG-108M	-1.357E+00	1.241E+01	4.574E+01	9.159E-01	-0.030
AG-110M	1.446E+01	1.109E+01	4.788E+01	9.831E-01	0.302
SN-113DA	-3.641E+00	1.574E+01	5.849E+01	1.170E+00	-0.062

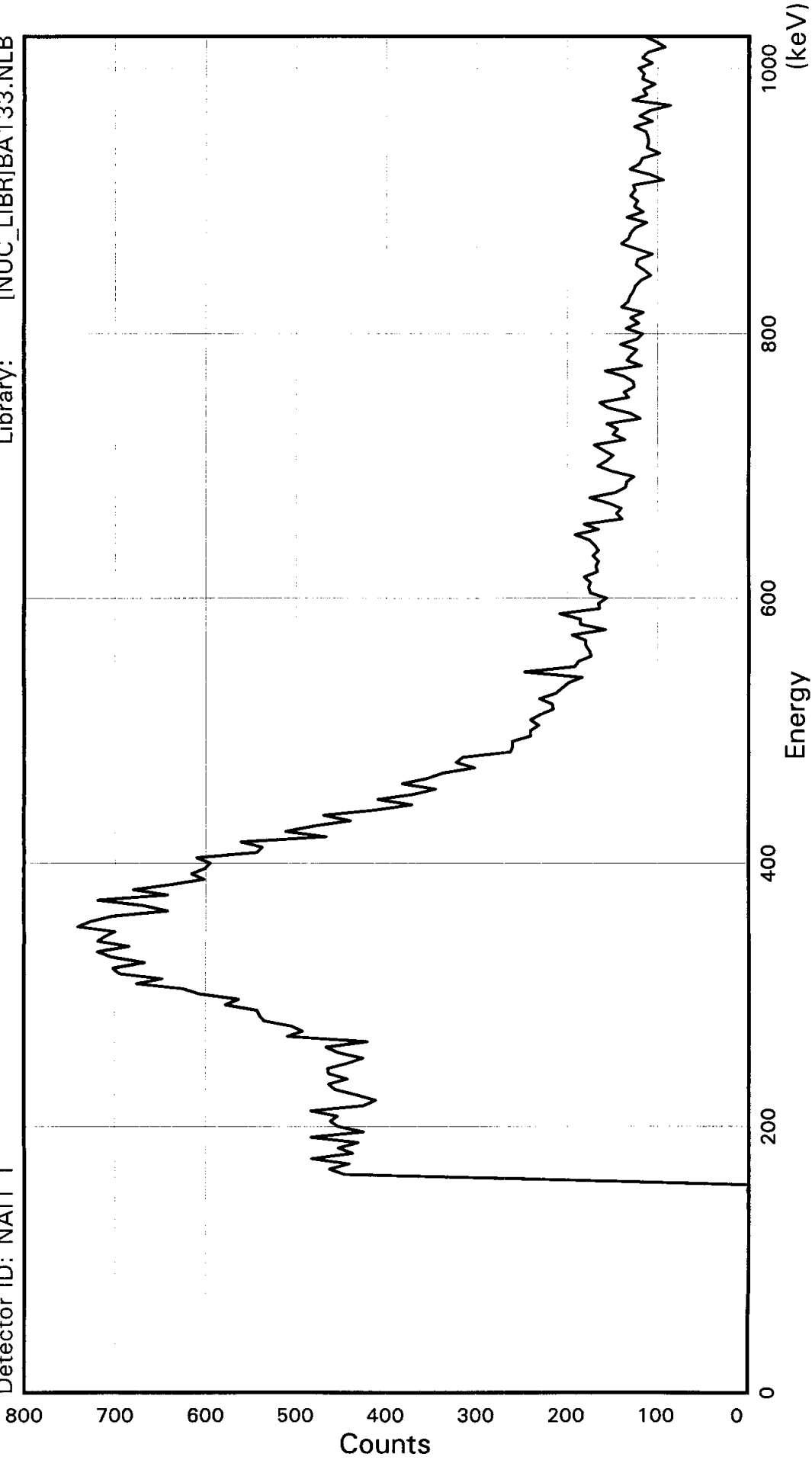
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-5.944E+00		9.368E+00	3.347E+01	6.752E-01	-0.178
SB-125	-4.018E+01		2.534E+01	8.231E+01	1.648E+00	-0.488
SN-126DA	-4.194E+00		5.186E+00	1.946E+01	3.941E-01	-0.215
I-131	1.585E+01		2.283E+01	8.840E+01	1.768E+00	0.179
CS-134	1.829E+01		8.498E+00	3.987E+01	8.138E-01	0.459
CS-137DA	4.520E+00		7.499E+00	3.226E+01	6.532E-01	0.140
LA-138	6.894E+00		4.352E+00	2.753E+01	5.856E-01	0.250
CE-139	1.078E+01		1.986E+01	7.380E+01	1.503E+00	0.146
BA-140	2.513E+01		4.188E+01	1.720E+02	3.459E+00	0.146
BALA-140	-1.034E+01		1.053E+01	3.933E+01	8.448E-01	-0.263
LA-140	-4.604E+01		4.692E+01	1.752E+02	3.763E+00	-0.263
CE-141	6.289E+01		3.960E+01	1.525E+02	3.129E+00	0.412
CE-144	-2.110E+01		1.459E+02	5.131E+02	1.058E+01	-0.041
CEPR-144	-4.221E+01		2.918E+02	1.026E+03	2.116E+01	-0.041
PM-144	2.949E+00		7.198E+00	2.935E+01	5.928E-01	0.100
PM-146	-1.871E+01		1.203E+01	3.916E+01	7.846E-01	-0.478
EU-152	-3.330E+01		4.342E+01	1.537E+02	3.074E+00	-0.217
EU-154	1.013E+01		1.019E+01	5.463E+01	1.150E+00	0.185
EU-155	-1.683E+01		7.476E+01	2.636E+02	5.527E+00	-0.064
HF-181	2.370E+00		1.052E+01	4.159E+01	8.342E-01	0.057
BI-207	-1.256E+00		8.335E+00	3.150E+01	6.345E-01	-0.040
TL-208	5.401E+00		9.976E+00	3.985E+01	8.031E-01	0.136
BI-210M	5.310E-01		2.658E+01	9.632E+01	1.931E+00	0.006
BI-212	9.718E+01		1.035E+02	4.511E+02	1.378E+01	0.215
PB-212	3.338E+01		3.071E+01	1.178E+02	2.367E+00	0.284
BI-214	1.471E+01		2.013E+01	8.362E+01	1.688E+00	0.176
PB-214	1.774E+01		3.591E+01	1.187E+02	2.374E+00	0.149
RA-223	9.430E+01		9.020E+01	3.498E+02	7.013E+00	0.270
RA-224DA	3.359E+01		3.090E+01	1.185E+02	2.381E+00	0.284
RA-226DA	1.501E+01		2.015E+01	8.379E+01	1.691E+00	0.179
AC-227DA	-1.062E+02		1.231E+02	4.223E+02	8.492E+00	-0.251
AC-228	-4.572E+00		2.838E+01	1.082E+02	2.226E+00	-0.042
RA-228DA	-4.581E+00		2.844E+01	1.084E+02	2.230E+00	-0.042
TH-228DA	1.512E+01		2.794E+01	1.116E+02	2.249E+00	0.136
TH-232DA	4.530E+01		9.722E+01	3.709E+02	7.418E+00	0.122
TH-234DA	1.020E+03		1.108E+03	4.738E+03	9.803E+01	0.215
U-234DA	4.334E+01		6.648E+01	2.502E+02	5.009E+00	0.173
U-235HP	-1.517E+02		1.692E+02	5.836E+02	1.198E+01	-0.260
NP-237DA	2.446E+01		3.434E+01	1.300E+02	2.602E+00	0.188
U-238DA	1.774E+01		3.591E+01	1.187E+02	2.374E+00	0.149
U-238DHP	-1.263E+03		5.709E+02	1.809E+03	3.978E+01	-0.698
AM-241HP	6.038E+01		5.287E+01	1.977E+02	4.376E+00	0.305

STL Richland WA.

BA133

Sample ID: JWP2H1AA
Detector ID: NAI1 1
BatchID: 7134319
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 23-MAY-2007 14:20:38.28
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: JWP2H1AA

CONFIGURATION ID: NAI1:JWP2H1AA_230571420
TITLE : BA133
SAMPLE ID : JWP2H1AA

REPORT DATE: 23-MAY-07 SAMPLE DATE: 17-MAY-2007 12:00:00.00
ACQUIRE DATE: 23-MAY-07 14:20:38 CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 1800.0 Sec ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00 ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00 UNITS: SAMPL
SAMPLE GEOMETRY: SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV FWHM OFFSET: -.2302E+02 keV
ENERGY SLOPE: 4.0000E+00 keV/C FWHM SLOPE: 5.7163E+00 sqr keV
ENERGY Q COEFF: 0.0000E+00 keV/C^2 ITERATIONS: 5
PEAK SENSITIVITY: 5.000 GAUSSIAN SENSITIVITY: 35.00 %

ABUNDANCE LIMIT: 75.00 % HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 20.000 keV ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC_LIBR]BA133.NLB

Configuration : RDND06\$DKA100:[NAI1.SAMPLE]JWP2H1AA_230571420.CNF;1
Analyses by : NAI V3.0
Sample title : BA133
Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:20:38
Sample ID : JWP2H1AA Sample quantity : 1.0000 sampl
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.67 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:	6.8	4.4	4.9	5.0	3.7	3.3	3.4	1.8
88:	2.8	1.8	0.1	-2.3	0.0	-0.2	-1.4	0.4
96:	-0.8	-3.1	-2.2	-2.4	-3.6	-0.6	-3.3	-2.8
104:	-2.6	-5.8	-3.1	-3.1	-4.4	-2.1	-4.7	-5.7
112:	-3.0	-4.4						

List of Suspicious Channels

81 82 83 84 85

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.09E+01	0.00E+00	1.02E+00
2	6.25E+00	0.00E+00	1.04E+00
3	2.26E+00	0.00E+00	1.06E+00
4	1.24E+00	0.00E+00	1.07E+00
5	9.21E-01	0.00E+00	1.08E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	705.	8.49

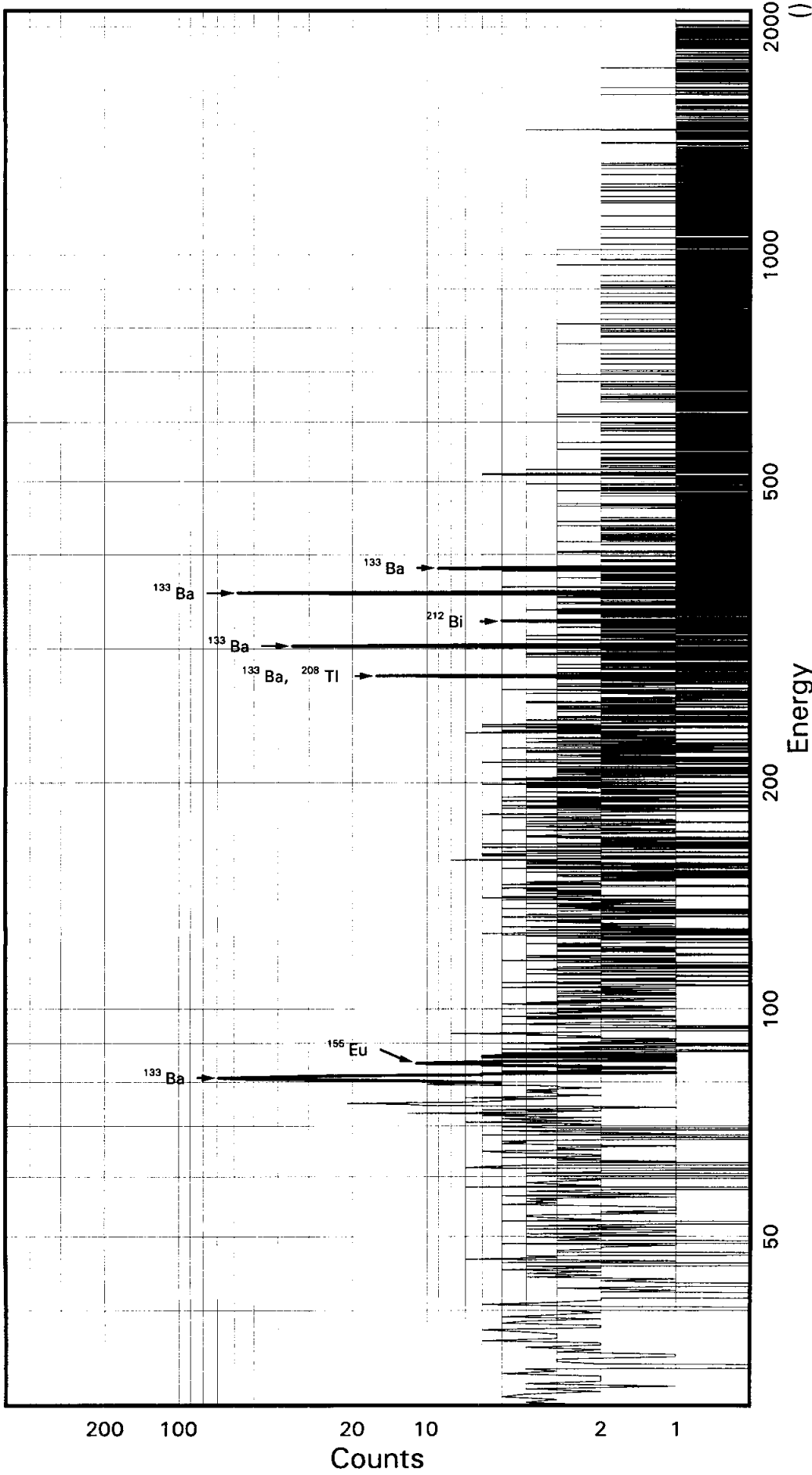
Total Activity :	705.	

STL Richland WA.

BA133

Batch ID: 7134319

Sample ID: JWP2J1AA
Detector ID: GER4 1



Acquisition Start: 23-MAY-2007 14:22:54.60
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -8.16554E-02
Slope: 2.48813E-01
Quadrature: 3.83483E-09

SAMPLE IDENTIFICATION: JWP2J1AA

CONFIGURATION ID: GER4:JWP2J1AA_230571422
TITLE : BA133
SAMPLE ID : JWP2J1AA

REPORT DATE: 23-MAY-07
ACQUIRE DATE: 23-MAY-07 14:22:54
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 23-MAY-2007 05:10:52.09
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.8166E-01 keV
ENERGY SLOPE: 2.4881E-01 keV/C
ENERGY Q COEFF: 3.8348E-09 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.9346E-01 keV
FWHM SLOPE: 4.0657E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:53:11

```

Configuration      : $DISK1:[GER4.SAMPLE]JWP2J1AA_230571422.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:22:54
Sample ID         : JWP2J1AA Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.41 0.0%
Start energy      : 19.82 End energy : 2038.45
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.06*	2	39	0.44	302.01	298	10	8.81E-04	20.6	
2	0	81.07	193	55	0.70	326.16	321	11	1.07E-01	10.4	
3	0	85.44*	7	32	0.84	343.71	336	15	4.12E-03	177.1	
4	0	276.49	45	11	0.77	1111.53	1103	14	2.48E-02	21.5	
5	0	302.91	125	9	0.64	1217.73	1210	17	6.92E-02	10.4	
6	0	326.47	22	0	1.40	1312.41	1306	13	1.22E-02	21.3	
7	0	355.96	288	4	1.10	1430.91	1424	15	1.60E-01	6.1	
8	0	384.02	28	19	1.23	1543.72	1533	15	1.54E-02	39.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 23-MAY-2007 14:53:12

Configuration : \$DISK1:[GER4.SAMPLE]JWP2J1AA_230571422.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:22:54
 Sample ID : JWP2J1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.41 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	193	33.00	2.054E+00	9.509E+02	9.519E+02	11.83
	276.40	45	6.90	2.214E+00	9.756E+02	9.767E+02	22.23
	302.84	125	17.80	2.217E+00	1.051E+03	1.053E+03	11.81
	356.00	288	62.05*	2.220E+00	6.970E+02	6.978E+02	8.12
	383.85	28	8.70	2.219E+00	4.800E+02	4.805E+02	39.33

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2J1AA

Page : 2
Acquisition date : 23-MAY-2007 14:22:54

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.06	2	39	0.44	302.01	298	10	8.81E-04	****	2.04E+00	
0	85.44	7	32	0.84	343.71	336	15	4.12E-03	****	2.07E+00	T
0	326.47	22	0	1.40	1312.41	1306	13	1.22E-02	21.3	2.22E+00	T

Flags: "T" = Tentatively associated

Nuclide	Half-life	Half-Life		Energy	%Abund	Activity 1-Sigma		Rejected by	
		Ratio				(DPM/SAMPL)	%Error		
EU-155	4.96Y	0.00		42.90	21.16	---	Not Found	Abun.	
				86.54	30.90	3.882E+01	177.16		
				105.31*	20.70	---	Not Found		---
			% Abundances Found =		42.47				
TL-208	1.41E+10Y	0.00		277.35	6.80	9.900E+02	22.23	Abun.	
				510.84	21.60	---	Not Found		---
				583.14*	84.20	---	Not Found		---
				860.37	12.46	---	Not Found		---
% Abundances Found =		5.44							
BI-212	1.41E+10Y	0.00		288.07	0.31	---	Not Found	Abun.	
				327.96	0.14	2.378E+04	23.40		
				452.83	0.31	---	Not Found		---
				727.33*	6.58	---	Not Found		---
				785.37	1.10	---	Not Found		---
				893.41	0.38	---	Not Found		---
				952.12	0.17	---	Not Found		---
				1078.62	0.56	---	Not Found		---
				1512.70	0.29	---	Not Found		---
				1620.50	1.49	---	Not Found		---
	1806.00	0.09	---	Not Found	---				
% Abundances Found =		1.22							

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 23-MAY-2007 14:53:13

```

Configuration      : $DISK1:[GER4.SAMPLE]JWP2J1AA_230571422.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:22:54
Sample ID        : JWP2J1AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.41 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.978E+02	5.668E+01	4.217E+01	8.461E-01	16.546

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.884E+01	5.556E+01	2.348E+02	4.711E+00	0.080
NA-22	6.359E+00	4.548E+00	2.253E+01	4.773E-01	0.282
K-40	7.677E+01	7.827E+01	3.989E+02	8.560E+00	0.192
SC-46	3.184E-01	5.134E+00	2.168E+01	4.542E-01	0.015
CR-51	8.648E+00	9.262E+01	3.580E+02	8.310E+00	0.024
MN-54	-1.956E+00	4.820E+00	1.875E+01	3.848E-01	-0.104
CO-57	6.681E+01	9.267E+01	3.588E+02	8.601E+00	0.186
CO-58	1.301E+01	5.772E+00	2.860E+01	5.858E-01	0.455
FE-59	6.333E+00	6.292E+00	3.338E+01	6.982E-01	0.190
CO-60	4.709E+00	4.278E+00	2.097E+01	4.460E-01	0.225
ZN-65	6.326E-01	9.773E+00	4.131E+01	8.651E-01	0.015
SE-75	2.276E+01	1.685E+01	6.727E+01	1.566E+00	0.338
SR-85	-2.646E+01	1.143E+01	3.494E+01	7.022E-01	-0.757
Y-88	1.669E-02	2.434E+00	1.271E+01	2.796E-01	0.001
NB-94	6.405E+00	5.700E+00	2.567E+01	5.280E-01	0.250
NB-95	-6.092E+00	5.719E+00	1.999E+01	4.082E-01	-0.305
TC-95M	-1.968E+01	1.744E+01	5.948E+01	1.395E+00	-0.331
ZR-95	1.180E+01	7.295E+00	3.878E+01	7.914E-01	0.304
ZRNB-95	-1.114E+01	1.088E+01	3.832E+01	7.825E-01	-0.291
MO-99	2.386E+01	5.908E+01	2.185E+02	5.227E+00	0.109
RH-101	2.123E+01	1.487E+01	5.934E+01	1.394E+00	0.358
RH-102M	1.024E+00	5.517E+00	2.307E+01	4.628E-01	0.044
RU-103	1.332E+01	6.808E+00	3.284E+01	6.594E-01	0.406
RU-106DA	1.283E+01	4.257E+01	1.881E+02	3.804E+00	0.068
AG-108M	-1.607E+00	7.279E+00	2.741E+01	5.489E-01	-0.059
AG-110M	-1.801E+00	6.379E+00	2.600E+01	5.355E-01	-0.069
SN-113DA	1.584E+01	8.663E+00	4.126E+01	8.254E-01	0.384

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	3.001E+00		5.364E+00	2.343E+01	4.732E-01	0.128
SB-125	-5.571E+01		2.186E+01	5.538E+01	1.109E+00	-1.006
SN-126DA	-1.243E+00		5.385E+00	2.140E+01	4.340E-01	-0.058
I-131	-3.139E+01		1.555E+01	4.728E+01	9.456E-01	-0.664
CS-134	-1.906E+00		4.901E+00	1.964E+01	4.019E-01	-0.097
CS-137DA	3.772E+00		4.998E+00	2.344E+01	4.753E-01	0.161
LA-138	2.480E+00		4.140E+00	2.238E+01	4.794E-01	0.111
CE-139	8.630E+00		1.186E+01	4.722E+01	1.119E+00	0.183
BA-140	-6.215E-01		3.961E+01	1.525E+02	3.069E+00	-0.004
BALA-140	4.678E+00		8.256E+00	4.401E+01	9.530E-01	0.106
LA-140	2.102E+01		3.711E+01	1.978E+02	4.283E+00	0.106
CE-141	-4.411E+00		2.827E+01	1.003E+02	2.394E+00	-0.044
CE-144	5.363E+01		9.458E+01	3.609E+02	8.663E+00	0.149
CEPR-144	1.073E+02		1.892E+02	7.218E+02	1.733E+01	0.149
PM-144	-1.095E+01		5.024E+00	1.273E+01	2.573E-01	-0.860
PM-146	-2.561E+00		7.326E+00	2.934E+01	5.880E-01	-0.087
EU-152	2.652E+01		2.687E+01	1.125E+02	2.611E+00	0.236
EU-154	1.785E+01		1.276E+01	6.323E+01	1.339E+00	0.282
EU-155	-2.875E+01		4.654E+01	1.667E+02	4.075E+00	-0.173
HF-181	5.550E+00		5.865E+00	2.770E+01	5.557E-01	0.200
BI-207	5.430E-01		5.555E+00	2.258E+01	4.552E-01	0.024
TL-208	-5.141E+00		7.174E+00	2.916E+01	5.883E-01	-0.176
BI-210M	6.417E+00		2.042E+01	7.586E+01	1.765E+00	0.085
BI-212	9.319E+01		8.706E+01	3.870E+02	1.183E+01	0.241
PB-212	-9.705E+00		2.503E+01	9.494E+01	2.215E+00	-0.102
BI-214	1.749E+01		1.664E+01	7.323E+01	1.480E+00	0.239
PB-214	-3.455E-02		2.470E+01	8.868E+01	2.058E+00	0.000
RA-223	5.608E+01		6.645E+01	2.603E+02	6.055E+00	0.215
RA-224DA	-9.764E+00		2.518E+01	9.551E+01	2.229E+00	-0.102
RA-226DA	1.749E+01		1.664E+01	7.323E+01	1.480E+00	0.239
AC-227DA	-1.572E+02		1.110E+02	3.646E+02	8.509E+00	-0.431
AC-228	1.529E+01		2.208E+01	1.014E+02	2.092E+00	0.151
RA-228DA	1.532E+01		2.212E+01	1.016E+02	2.096E+00	0.151
TH-228DA	-1.440E+01		2.009E+01	8.167E+01	1.648E+00	-0.176
TH-232DA	7.626E+01		7.232E+01	2.911E+02	6.755E+00	0.262
TH-234DA	2.751E+02		8.115E+02	3.584E+03	7.444E+01	0.077
U-234DA	3.848E+01		4.700E+01	1.877E+02	4.360E+00	0.205
U-235HP	2.112E+02		1.064E+02	4.296E+02	1.026E+01	0.492
NP-237DA	1.949E+01		2.178E+01	8.930E+01	2.073E+00	0.218
U-238DA	-3.455E-02		2.470E+01	8.868E+01	2.058E+00	0.000
U-238DHP	-7.600E+02		3.364E+02	1.034E+03	2.666E+01	-0.735
AM-241HP	-2.227E+01		3.250E+01	1.121E+02	2.911E+00	-0.199

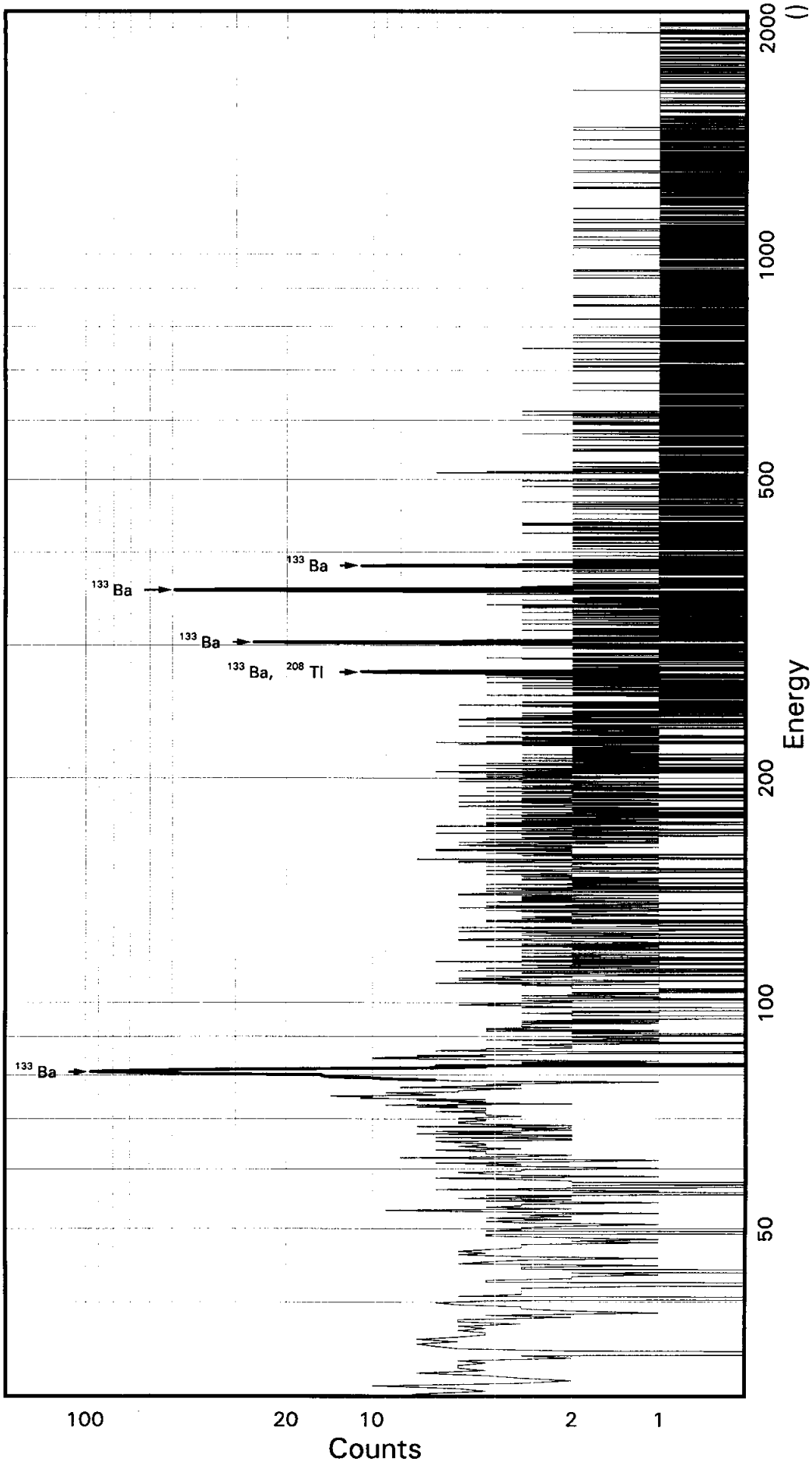
STL Richland WA.

BA133

Batch ID: 7134319

Sample ID: JWP2K1AA

Detector ID: GER6 1



Acquisition Start: 23-MAY-2007 14:23:14.49

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: 2.84732E-02

Slope: 2.49432E-01

Quadrature: -6.30239E-10

SAMPLE IDENTIFICATION:

JWP2K1AA

CONFIGURATION ID: GER6:JWP2K1AA_230571423

TITLE : BA133

SAMPLE ID : JWP2K1AA

REPORT DATE: 23-MAY-07

SAMPLE DATE: 17-MAY-2007 12:00:00.00

ACQUIRE DATE: 23-MAY-07 14:23:14

CALIB DATE: 23-MAY-2007 05:07:45.96

ELAPSED LIVE TIME: 1800.0 Sec

ELAPSED LIVE TIME: 0 00:30:00

PRESET LIVE TIME: 0 00:30:00

ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00

UNITS: SAMPL

SAMPLE GEOMETRY: BA133T15

SAMPLE TYPE:

ENERGY OFFSET: 2.8473E-02 keV

FWHM OFFSET: 1.6161E-01 keV

ENERGY SLOPE: 2.4943E-01 keV/C

FWHM SLOPE: 6.3231E-02 sqr keV

ENERGY Q COEFF: -.6302E-09 keV/C²

ITERATIONS: 10

PEAK SENSITIVITY: 5.000

GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %

HALF-LIFE RATIO: 8.00

ENERGY TOLERANCE: 1.500 keV

ACTIVITY MULTIPLIER: 2.2200E+06

VARIABLE PEAK WIDTH: 3.00

LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:53:31

Configuration : \$DISK1:[GER6.SAMPLE]JWP2K1AA_230571423.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:23:14
 Sample ID : JWP2K1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
 Start energy : 19.98 End energy : 2043.34
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.82	374	54	0.88	323.89	316	16	2.08E-01	6.8	
2	0	276.27	60	15	1.38	1107.48	1098	20	3.32E-02	20.5	
3	0	302.93	117	15	1.00	1214.35	1205	20	6.48E-02	12.3	
4	0	356.05	309	20	1.50	1427.35	1417	25	1.72E-01	6.8	
5	0	383.84	44	6	1.20	1538.75	1532	12	2.43E-02	18.9	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER6.SAMPLE]JWP2K1AA_230571423.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:23:14
 Sample ID : JWP2K1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagatd: 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 DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	374	33.00	2.090E+00	1.807E+03	1.809E+03	8.74
	276.40	60	6.90	2.253E+00	1.281E+03	1.283E+03	21.19
	302.84	117	17.80	2.256E+00	9.687E+02	9.698E+02	13.45
	356.00	309	62.05*	2.258E+00	7.357E+02	7.366E+02	8.70
	383.85	44	8.70	2.257E+00	7.424E+02	7.432E+02	19.61

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2K1AA

Page : 2
Acquisition date : 23-MAY-2007 14:23:14

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2K1AA

Page : 3
Acquisition date : 23-MAY-2007 14:23:14

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.300E+03	21.19	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER6.SAMPLE]JWP2K1AA_230571423.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:23:14
Sample ID        : JWP2K1AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.366E+02	6.407E+01	4.515E+01	9.031E-01	16.312

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-6.587E+01	5.883E+01	2.015E+02	4.043E+00	-0.327
NA-22	1.422E-01	3.791E+00	1.690E+01	3.579E-01	0.008
K-40	-1.664E+02	4.912E+01	2.353E+02	5.047E+00	-0.707
SC-46	3.968E+00	4.676E+00	2.193E+01	4.594E-01	0.181
CR-51	-4.612E+01	8.267E+01	3.047E+02	6.097E+00	-0.151
MN-54	1.997E+00	4.141E+00	1.894E+01	3.886E-01	0.105
CO-57	-6.722E+01	1.029E+02	3.537E+02	7.307E+00	-0.190
CO-58	1.723E+00	4.809E+00	2.115E+01	4.333E-01	0.081
FE-59	3.613E-01	8.371E+00	3.606E+01	7.542E-01	0.010
CO-60	6.185E-02	4.427E+00	1.888E+01	4.015E-01	0.003
ZN-65	6.488E+00	9.714E+00	4.367E+01	9.144E-01	0.149
SE-75	-5.948E+00	1.560E+01	5.628E+01	1.129E+00	-0.106
SR-85	-2.123E+01	1.140E+01	3.690E+01	7.415E-01	-0.575
Y-88	-1.752E+00	2.975E+00	1.249E+01	2.747E-01	-0.140
NB-94	-6.296E+00	5.751E+00	1.989E+01	4.092E-01	-0.316
NB-95	-2.239E+00	5.781E+00	2.224E+01	4.541E-01	-0.101
TC-95M	-8.024E+00	1.703E+01	5.959E+01	1.205E+00	-0.135
ZR-95	1.306E+01	9.610E+00	4.518E+01	9.219E-01	0.289
ZRNB-95	-4.626E+00	1.089E+01	4.170E+01	8.513E-01	-0.111
MO-99	5.589E+01	5.708E+01	2.173E+02	4.479E+00	0.257
RH-101	1.452E+01	1.580E+01	5.989E+01	1.212E+00	0.242
RH-102M	7.909E+00	5.281E+00	2.499E+01	5.013E-01	0.316
RU-103	-1.194E+01	8.631E+00	2.817E+01	5.656E-01	-0.424
RU-106DA	1.312E+01	4.725E+01	2.024E+02	4.092E+00	0.065
AG-108M	-1.458E+01	8.809E+00	2.852E+01	5.712E-01	-0.511
AG-110M	7.489E+00	5.907E+00	2.911E+01	5.994E-01	0.257
SN-113DA	1.252E+00	1.172E+01	4.475E+01	8.952E-01	0.028

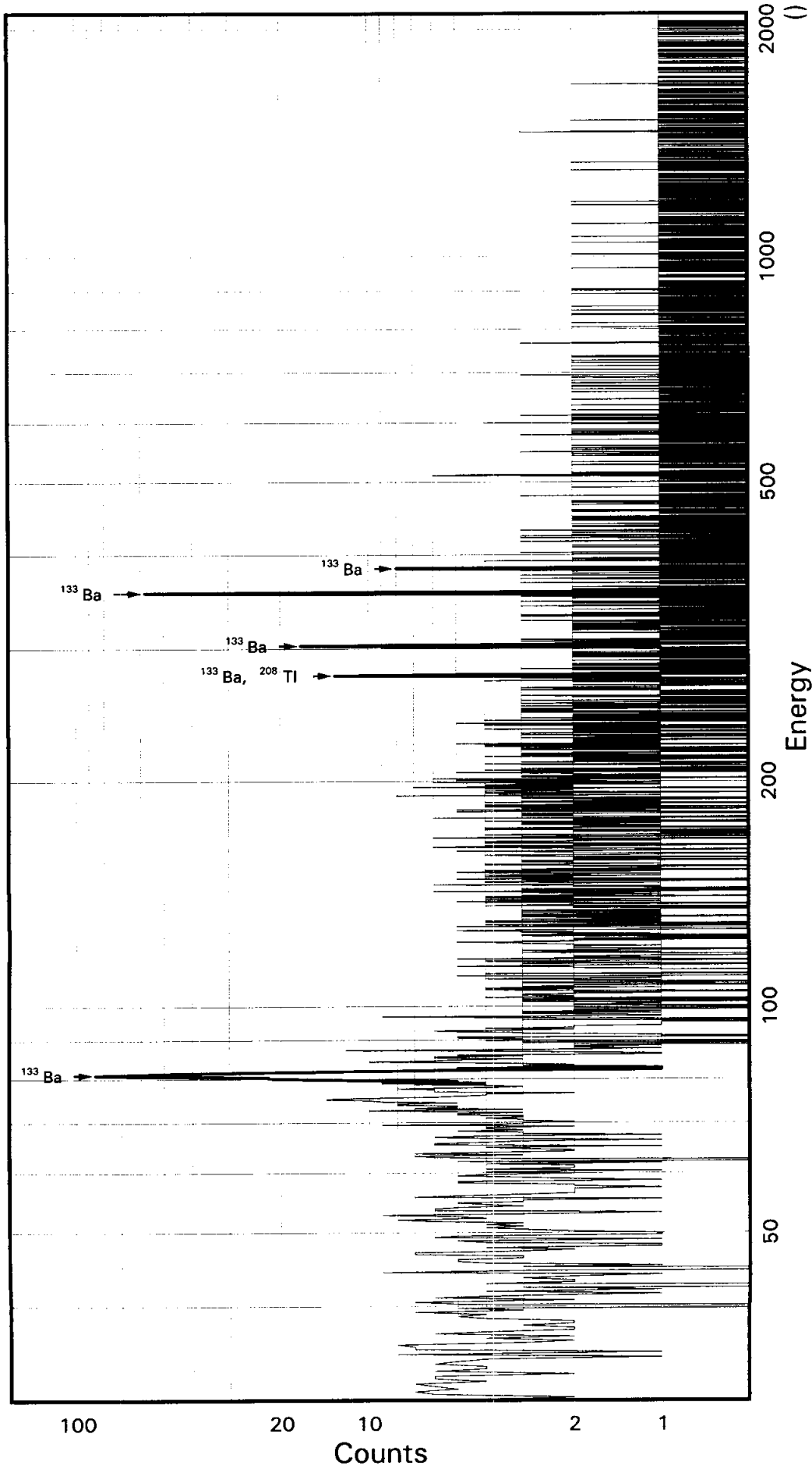
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	4.670E+00		6.843E+00	2.853E+01	5.763E-01	0.164
SB-125	-1.541E+01		2.589E+01	9.412E+01	1.885E+00	-0.164
SN-126DA	-2.793E+00		5.132E+00	1.962E+01	3.978E-01	-0.142
I-131	9.515E+00		1.043E+01	4.675E+01	9.351E-01	0.204
CS-134	-3.245E+00		6.074E+00	2.330E+01	4.767E-01	-0.139
CS-137DA	-2.001E+00		5.690E+00	2.254E+01	4.569E-01	-0.089
LA-138	-7.473E-01		5.764E+00	2.472E+01	5.293E-01	-0.030
CE-139	-1.605E+01		1.367E+01	4.649E+01	9.491E-01	-0.345
BA-140	1.725E+01		2.595E+01	1.166E+02	2.346E+00	0.148
BALA-140	-9.512E+00		1.151E+01	4.324E+01	9.361E-01	-0.220
LA-140	-5.981E+01		4.819E+01	1.627E+02	3.522E+00	-0.368
CE-141	-4.637E-01		2.286E+01	8.614E+01	1.772E+00	-0.005
CE-144	9.425E+01		8.829E+01	3.489E+02	7.218E+00	0.270
CEPR-144	1.873E+02		1.765E+02	6.972E+02	1.442E+01	0.269
PM-144	-5.089E+00		5.644E+00	1.996E+01	4.034E-01	-0.255
PM-146	5.127E+00		9.784E+00	4.017E+01	8.050E-01	0.128
EU-152	2.846E-01		3.262E+01	1.223E+02	2.446E+00	0.002
EU-154	3.996E-01		1.064E+01	4.743E+01	1.004E+00	0.008
EU-155	1.535E+01		5.126E+01	1.936E+02	4.078E+00	0.079
HF-181	9.531E+00		7.765E+00	3.441E+01	6.904E-01	0.277
BI-207	6.041E+00		6.482E+00	2.761E+01	5.564E-01	0.219
TL-208	3.346E+00		7.124E+00	2.945E+01	5.940E-01	0.114
BI-210M	2.803E+01		1.743E+01	7.225E+01	1.449E+00	0.388
BI-212	1.217E+02		9.638E+01	4.212E+02	1.287E+01	0.289
PB-212	-2.733E+01		2.384E+01	8.398E+01	1.689E+00	-0.325
BI-214	1.693E+01		1.700E+01	7.046E+01	1.424E+00	0.240
PB-214	7.074E+00		2.247E+01	7.620E+01	1.524E+00	0.093
RA-223	-7.026E+00		6.627E+01	2.437E+02	4.888E+00	-0.029
RA-224DA	-2.749E+01		2.399E+01	8.450E+01	1.699E+00	-0.325
RA-226DA	1.693E+01		1.700E+01	7.046E+01	1.424E+00	0.240
AC-227DA	-6.805E+01		8.958E+01	3.152E+02	6.341E+00	-0.216
AC-228	2.708E+01		1.670E+01	8.250E+01	1.702E+00	0.328
RA-228DA	2.713E+01		1.673E+01	8.266E+01	1.705E+00	0.328
TH-228DA	9.370E+00		1.995E+01	8.247E+01	1.664E+00	0.114
TH-232DA	5.855E+01		6.610E+01	2.662E+02	5.324E+00	0.220
TH-234DA	8.144E+01		5.941E+02	2.643E+03	5.489E+01	0.031
U-234DA	-4.224E+01		3.888E+01	1.366E+02	2.735E+00	-0.309
U-235HP	-1.088E+01		9.153E+01	3.434E+02	7.070E+00	-0.032
NP-237DA	-1.503E+01		2.037E+01	7.366E+01	1.474E+00	-0.204
U-238DA	7.074E+00		2.247E+01	7.620E+01	1.524E+00	0.093
U-238DHP	-3.482E+02		3.476E+02	1.218E+03	2.706E+01	-0.286
AM-241HP	-2.548E+01		3.208E+01	1.124E+02	2.515E+00	-0.227

STL Richland WA.
BA133

Batch ID: 7134319

Sample ID: JWP2L1AA
Detector ID: GER7 1



Energy Coefficients:
Offset: 6.23004E-01
Slope: 2.49271E-01
Quadrature: 1.43771E-07

Acquisition Start: 23-MAY-2007 14:23:34.62
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JWP2L1AA

CONFIGURATION ID: GER7:JWP2L1AA_230571423
TITLE : BA133
SAMPLE ID : JWP2L1AA

REPORT DATE: 23-MAY-07 SAMPLE DATE: 17-MAY-2007 12:00:00.00
ACQUIRE DATE: 23-MAY-07 14:23:34 CALIB DATE: 23-MAY-2007 05:08:02.34
ELAPSED LIVE TIME: 1800.0 Sec ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00 ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00 UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15 SAMPLE TYPE:

ENERGY OFFSET: 6.2300E-01 keV FWHM OFFSET: 5.2650E-01 keV
ENERGY SLOPE: 2.4927E-01 keV/C FWHM SLOPE: 3.7460E-02 sqr keV
ENERGY Q COEFF: 1.4377E-07 keV/C² ITERATIONS: 10
PEAK SENSITIVITY: 5.000 GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 % HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 1.500 keV ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:53:53

Configuration : \$DISK1:[GER7.SAMPLE]JWP2L1AA_230571423.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:23:34
 Sample ID : JWP2L1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
 Start energy : 20.57 End energy : 2052.30
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.98	329	52	0.78	322.31	314	17	1.83E-01	7.6	
2	0	276.21	55	4	0.76	1104.87	1097	15	3.07E-02	15.5	
3	0	302.80	83	8	1.02	1211.39	1204	16	4.61E-02	13.4	
4	0	355.98	289	14	0.98	1424.42	1417	16	1.60E-01	6.6	
5	0	383.63	38	8	1.30	1535.17	1527	16	2.11E-02	23.2	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER7.SAMPLE]JWP2L1AA_230571423.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:23:34
 Sample ID : JWP2L1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	329	33.00	1.909E+00	1.739E+03	1.741E+03	9.31
	276.40	55	6.90	2.061E+00	1.294E+03	1.295E+03	16.40
	302.84	83	17.80	2.064E+00	7.532E+02	7.541E+02	14.41
	356.00	289	62.05*	2.065E+00	7.505E+02	7.513E+02	8.55
	383.85	38	8.70	2.065E+00	7.050E+02	7.058E+02	23.86

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2L1AA

Page : 2
Acquisition date : 23-MAY-2007 14:23:34

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2L1AA

Page : 3
Acquisition date : 23-MAY-2007 14:23:34

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.313E+03	16.40	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 23-MAY-2007 14:53:55

```

Configuration      : $DISK1:[GER7.SAMPLE]JWP2L1AA_230571423.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:23:34
Sample ID        : JWP2L1AA Sample quantity   : 1.0000 SAMPL
Sample type      : Sample geometry    : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio  : 8.00
Errors propagatd: 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.513E+02	6.423E+01	5.199E+01	1.040E+00	14.453

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	2.975E+01	5.297E+01	2.340E+02	4.695E+00	0.127
NA-22	-1.012E-01	4.254E+00	1.850E+01	3.923E-01	-0.005
K-40	-2.016E+01	7.530E+01	3.462E+02	7.438E+00	-0.058
SC-46	4.168E+00	4.433E+00	2.195E+01	4.603E-01	0.190
CR-51	7.700E+00	1.042E+02	3.941E+02	7.886E+00	0.020
MN-54	2.001E+00	5.968E+00	2.520E+01	5.174E-01	0.079
CO-57	-9.868E+01	1.098E+02	3.830E+02	7.918E+00	-0.258
CO-58	-4.934E+00	4.544E+00	1.639E+01	3.358E-01	-0.301
FE-59	-1.898E+01	9.093E+00	2.417E+01	5.061E-01	-0.785
CO-60	-1.862E-01	4.295E+00	1.852E+01	3.944E-01	-0.010
ZN-65	-3.111E+00	7.460E+00	3.146E+01	6.595E-01	-0.099
SE-75	2.479E+01	1.592E+01	6.671E+01	1.338E+00	0.372
SR-85	-2.463E+01	1.148E+01	3.485E+01	7.005E-01	-0.707
Y-88	1.861E+00	1.864E+00	1.369E+01	3.016E-01	0.136
NB-94	-4.835E+00	4.346E+00	1.541E+01	3.173E-01	-0.314
NB-95	9.280E+00	6.310E+00	2.972E+01	6.071E-01	0.312
TC-95M	1.065E+01	1.914E+01	7.152E+01	1.447E+00	0.149
ZR-95	5.714E+00	9.101E+00	4.142E+01	8.455E-01	0.138
ZRNB-95	1.799E+01	1.201E+01	5.660E+01	1.156E+00	0.318
MO-99	-2.405E+01	6.226E+01	2.238E+02	4.617E+00	-0.107
RH-101	1.489E+01	1.847E+01	6.893E+01	1.396E+00	0.216
RH-102M	-1.869E+00	5.150E+00	2.045E+01	4.102E-01	-0.091
RU-103	-8.405E+00	5.857E+00	1.881E+01	3.778E-01	-0.447
RU-106DA	8.659E+01	6.904E+01	3.053E+02	6.175E+00	0.284
AG-108M	-9.155E+00	8.848E+00	3.083E+01	6.175E-01	-0.297
AG-110M	-2.240E+00	5.170E+00	2.161E+01	4.454E-01	-0.104
SN-113DA	-1.147E+01	1.094E+01	3.872E+01	7.747E-01	-0.296

---- Non-Identified Nuclides ----

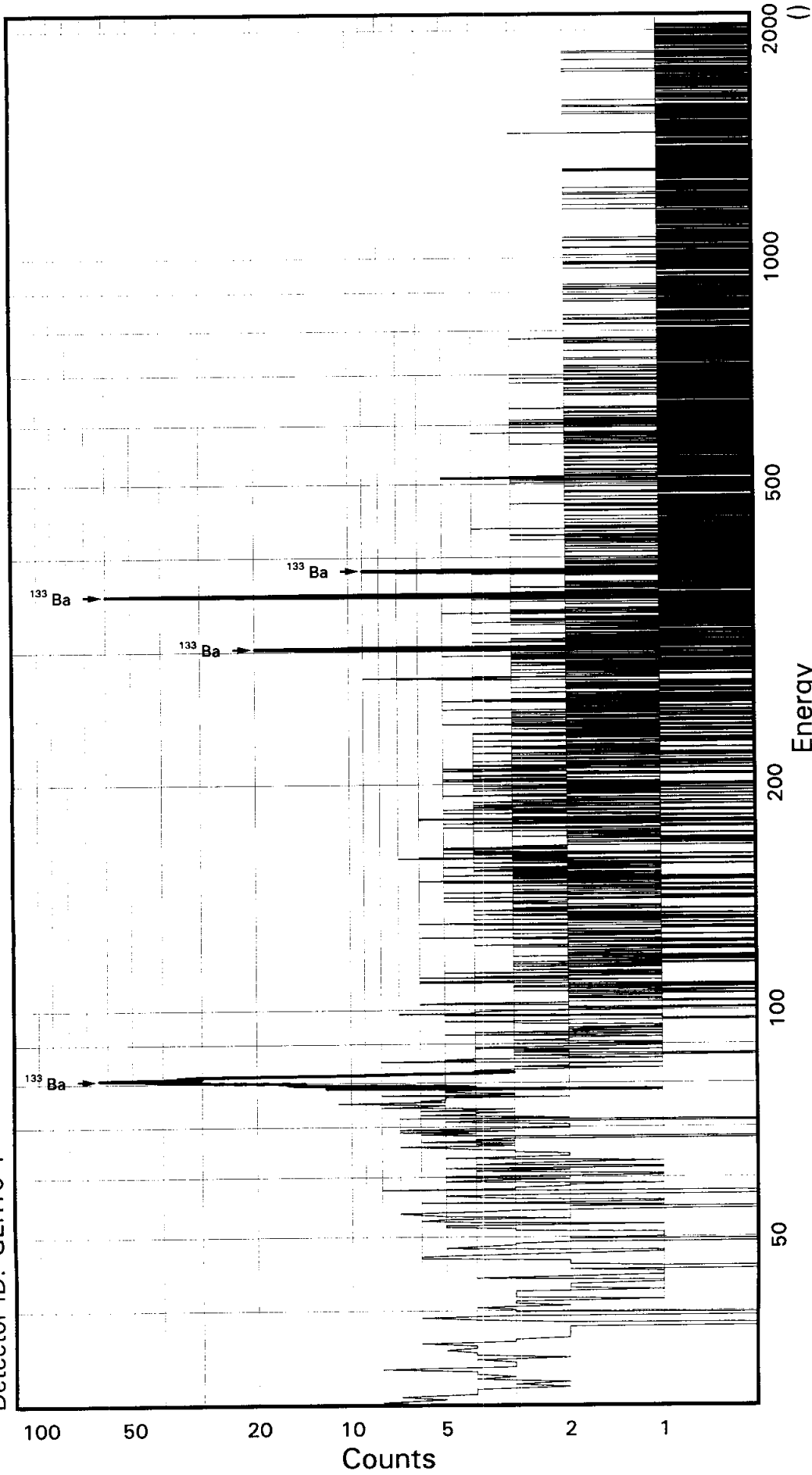
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-4.770E+00		7.230E+00	2.681E+01	5.416E-01	-0.178
SB-125	-3.870E+01		2.490E+01	8.158E+01	1.634E+00	-0.474
SN-126DA	-1.307E+01		6.161E+00	1.762E+01	3.573E-01	-0.742
I-131	-2.093E+01		1.345E+01	4.213E+01	8.426E-01	-0.497
CS-134	4.597E-01		6.008E+00	2.548E+01	5.217E-01	0.018
CS-137DA	4.386E+00		5.529E+00	2.573E+01	5.218E-01	0.170
LA-138	-2.469E+00		4.424E+00	1.908E+01	4.093E-01	-0.129
CE-139	-1.741E+01		1.627E+01	5.506E+01	1.125E+00	-0.316
BA-140	-1.335E+00		2.271E+01	9.729E+01	1.958E+00	-0.014
BALA-140	-5.401E+00		1.362E+01	5.490E+01	1.191E+00	-0.098
LA-140	7.175E+00		5.824E+01	2.575E+02	5.584E+00	0.028
CE-141	-3.470E+00		2.755E+01	1.008E+02	2.074E+00	-0.034
CE-144	5.736E+01		9.637E+01	3.768E+02	7.801E+00	0.152
CEPR-144	1.172E+02		1.930E+02	7.549E+02	1.563E+01	0.155
PM-144	-9.998E+00		6.510E+00	2.133E+01	4.313E-01	-0.469
PM-146	-7.414E+00		7.461E+00	2.678E+01	5.367E-01	-0.277
EU-152	-1.412E+01		3.089E+01	1.119E+02	2.238E+00	-0.126
EU-154	4.637E+00		1.088E+01	5.192E+01	1.101E+00	0.089
EU-155	7.449E+00		5.780E+01	2.098E+02	4.425E+00	0.036
HF-181	-6.673E+00		6.556E+00	2.325E+01	4.664E-01	-0.287
BI-207	5.658E+00		5.482E+00	2.527E+01	5.095E-01	0.224
TL-208	-2.453E+00		6.869E+00	2.963E+01	5.978E-01	-0.083
BI-210M	2.219E+01		1.835E+01	7.534E+01	1.511E+00	0.294
BI-212	8.033E+01		7.700E+01	3.590E+02	1.098E+01	0.224
PB-212	3.445E+00		2.535E+01	9.942E+01	2.000E+00	0.035
BI-214	-6.474E+00		1.707E+01	6.497E+01	1.313E+00	-0.100
PB-214	1.004E+01		2.671E+01	9.375E+01	1.875E+00	0.107
RA-223	-1.141E+02		6.886E+01	2.240E+02	4.492E+00	-0.510
RA-224DA	3.466E+00		2.550E+01	1.000E+02	2.012E+00	0.035
RA-226DA	-6.474E+00		1.707E+01	6.497E+01	1.313E+00	-0.100
AC-227DA	1.807E+01		9.469E+01	3.585E+02	7.214E+00	0.050
AC-228	-2.633E+01		1.285E+01	4.422E+01	9.130E-01	-0.595
RA-228DA	-2.639E+01		1.287E+01	4.431E+01	9.148E-01	-0.595
TH-228DA	-6.868E+00		1.923E+01	8.297E+01	1.674E+00	-0.083
TH-232DA	-3.246E+01		5.969E+01	2.168E+02	4.335E+00	-0.150
TH-234DA	-2.890E+02		6.946E+02	2.775E+03	5.768E+01	-0.104
U-234DA	-3.002E+01		4.010E+01	1.434E+02	2.872E+00	-0.209
U-235HP	-1.300E+02		1.120E+02	3.813E+02	7.855E+00	-0.341
NP-237DA	-3.265E+01		1.992E+01	6.322E+01	1.265E+00	-0.516
U-238DA	1.004E+01		2.671E+01	9.375E+01	1.875E+00	0.107
U-238DHP	-5.450E+01		4.074E+02	1.496E+03	3.331E+01	-0.036
AM-241HP	5.403E+01		3.565E+01	1.428E+02	3.205E+00	0.378

STL Richland WA.

BA133

Batch ID: 7134319

Sample ID: JWP2N1AA
Detector ID: GER10 1



Energy Coefficients:
Offset: 1.46610E+01
Slope: 2.47248E-01
Quadrature: 8.34281E-10

Acquisition Start: 23-MAY-2007 14:23:56.24
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JWP2N1AA

CONFIGURATION ID: GER10:JWP2N1AA_230571423
TITLE : BA133
SAMPLE ID : JWP2N1AA

REPORT DATE: 23-MAY-07
ACQUIRE DATE: 23-MAY-07 14:23:56
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 23-MAY-2007 05:22:47.65
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 1.4661E+01 keV
ENERGY SLOPE: 2.4725E-01 keV/C
ENERGY Q COEFF: 8.3428E-10 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.0681E+00 keV
FWHM SLOPE: 2.1478E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:54:12

```

Configuration      : $DISK1:[GER10.SAMPLE]JWP2N1AA_230571423.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:23:56
Sample ID        : JWP2N1AA           Sample quantity  : 1.0000 SAMPL
Sample type      :                   Sample geometry   : BA133T15
Elapsed live time: 0 00:30:00.00     Elapsed real time: 0 00:30:00.23  0.0%
Start energy     :    17.13           End energy       :   2040.18
Sensitivity      :    5.00           Gaussian        :    10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.73	302	62	1.14	267.20	258	19	1.68E-01	8.5	
2	0	302.86	100	21	1.20	1165.64	1159	18	5.54E-02	15.0	
3	0	355.97	377	0	1.43	1380.41	1372	17	2.09E-01	5.2	
4	0	384.46	34	28	1.68	1495.63	1482	17	1.87E-02	35.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 23-MAY-2007 14:54:13

```

Configuration      : $DISK1:[GER10.SAMPLE]JWP2N1AA_230571423.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:23:56
Sample ID        : JWP2N1AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma %Error
					DPM/SAMPL	DPM/SAMPL	
BA-133	81.00	302	33.00	2.477E+00	1.231E+03	1.232E+03	10.08
	276.40	-----	6.90	2.637E+00	-----	Line Not Found	-----
	302.84	100	17.80	2.640E+00	7.069E+02	7.077E+02	15.90
	356.00	377	62.05*	2.642E+00	7.666E+02	7.674E+02	7.45
	383.85	34	8.70	2.641E+00	4.883E+02	4.889E+02	35.84

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2N1AA

Page : 2
Acquisition date : 23-MAY-2007 14:23:56

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2N1AA

Page : 3
Acquisition date : 23-MAY-2007 14:23:56

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 23-MAY-2007 14:54:14

Configuration : \$DISK1:[GER10.SAMPLE]JWP2N1AA_230571423.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 : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:23:56
 Sample ID : JWP2N1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.674E+02	5.719E+01	4.975E+01	9.950E-01	15.427

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	4.238E+01	5.897E+01	2.429E+02	4.870E+00	0.174
NA-22	1.298E+00	2.989E+00	1.431E+01	3.000E-01	0.091
K-40	6.340E+01	4.807E+01	2.440E+02	5.174E+00	0.260
SC-46	-5.378E+00	4.327E+00	1.484E+01	3.084E-01	-0.362
CR-51	-4.991E+01	8.907E+01	3.208E+02	6.419E+00	-0.156
MN-54	-3.008E+00	4.942E+00	1.828E+01	3.735E-01	-0.165
CO-57	-7.696E+01	1.009E+02	3.489E+02	7.168E+00	-0.221
CO-58	-2.181E+00	3.545E+00	1.380E+01	2.815E-01	-0.158
FE-59	-2.409E+00	5.638E+00	2.365E+01	4.908E-01	-0.102
CO-60	-2.775E+00	3.310E+00	1.235E+01	2.598E-01	-0.225
ZN-65	2.829E+00	8.657E+00	3.704E+01	7.695E-01	0.076
SE-75	-8.515E+00	1.304E+01	4.691E+01	9.407E-01	-0.181
SR-85	-2.578E+01	1.050E+01	3.115E+01	6.255E-01	-0.828
Y-88	-1.437E+00	1.439E+00	3.863E+00	8.358E-02	-0.372
NB-94	-1.544E+00	4.361E+00	1.692E+01	3.464E-01	-0.091
NB-95	-5.904E+00	5.066E+00	1.742E+01	3.544E-01	-0.339
TC-95M	3.677E+01	1.749E+01	6.909E+01	1.394E+00	0.532
ZR-95	7.674E+00	9.012E+00	3.956E+01	8.044E-01	0.194
ZRNB-95	-1.118E+01	9.589E+00	3.297E+01	6.708E-01	-0.339
MO-99	2.000E+01	5.293E+01	1.960E+02	4.019E+00	0.102
RH-101	8.735E+00	1.335E+01	5.007E+01	1.012E+00	0.174
RH-102M	1.636E+00	6.313E+00	2.476E+01	4.965E-01	0.066
RU-103	2.293E+00	6.407E+00	2.606E+01	5.230E-01	0.088
RU-106DA	-4.131E+01	6.142E+01	2.239E+02	4.520E+00	-0.184
AG-108M	-5.500E+00	7.032E+00	2.486E+01	4.977E-01	-0.221
AG-110M	-2.133E+00	5.542E+00	2.174E+01	4.454E-01	-0.098
SN-113DA	-8.442E+00	9.489E+00	3.344E+01	6.690E-01	-0.252

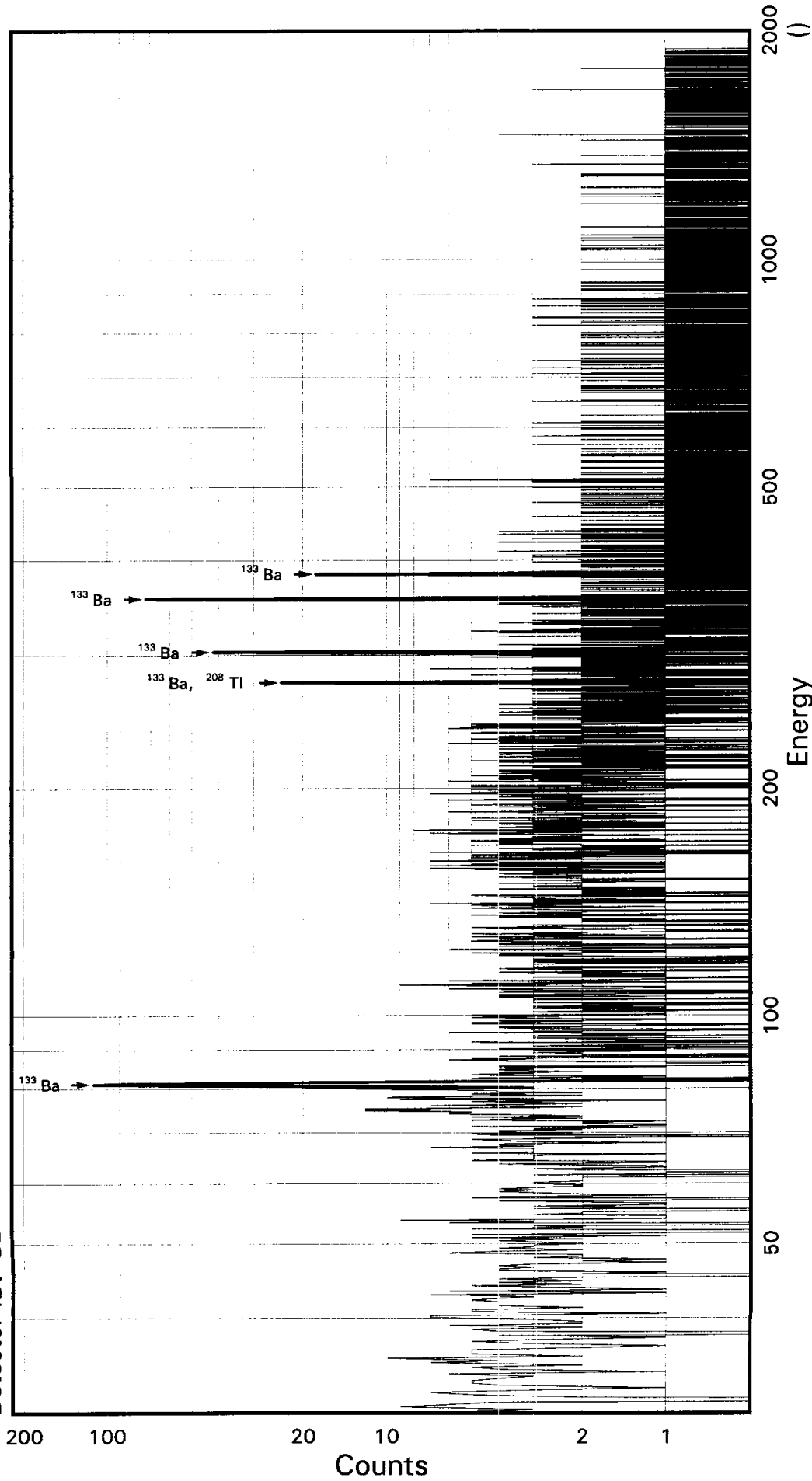
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	4.766E+00		7.406E+00	2.970E+01	5.989E-01	0.160
SB-125	2.924E+01		2.350E+01	9.694E+01	1.941E+00	0.302
SN-126DA	-1.137E+00		4.566E+00	1.800E+01	3.641E-01	-0.063
I-131	-7.866E+00		1.639E+01	5.893E+01	1.179E+00	-0.133
CS-134	-6.051E+00		4.878E+00	1.651E+01	3.366E-01	-0.366
CS-137DA	5.548E+00		5.893E+00	2.566E+01	5.190E-01	0.216
LA-138	1.851E+00		4.547E+00	2.154E+01	4.560E-01	0.086
CE-139	-1.430E+01		1.314E+01	4.426E+01	9.005E-01	-0.323
BA-140	3.269E+00		2.589E+01	1.067E+02	2.144E+00	0.031
BALA-140	-1.138E+01		8.627E+00	2.890E+01	6.173E-01	-0.394
LA-140	-5.116E+01		3.878E+01	1.299E+02	2.775E+00	-0.394
CE-141	-2.322E+01		2.257E+01	7.683E+01	1.573E+00	-0.302
CE-144	-7.784E+01		9.568E+01	3.307E+02	6.802E+00	-0.235
CEPR-144	-1.577E+02		1.912E+02	6.605E+02	1.359E+01	-0.239
PM-144	1.558E-01		6.249E+00	2.426E+01	4.895E-01	0.006
PM-146	-7.284E+00		7.553E+00	2.650E+01	5.309E-01	-0.275
EU-152	-7.365E+00		2.429E+01	9.058E+01	1.812E+00	-0.081
EU-154	3.643E+00		8.388E+00	4.015E+01	8.420E-01	0.091
EU-155	-8.864E+01		5.025E+01	1.632E+02	3.410E+00	-0.543
HF-181	3.121E+00		5.424E+00	2.380E+01	4.772E-01	0.131
BI-207	1.833E+00		5.843E+00	2.356E+01	4.743E-01	0.078
TL-208	5.591E+00		7.180E+00	2.970E+01	5.983E-01	0.188
BI-210M	-3.668E+00		1.477E+01	5.493E+01	1.101E+00	-0.067
BI-212	-1.944E+01		3.372E+01	1.431E+02	4.368E+00	-0.136
PB-212	1.834E+01		2.102E+01	7.984E+01	1.604E+00	0.230
BI-214	7.994E+00		1.635E+01	6.370E+01	1.285E+00	0.125
PB-214	-1.474E+01		2.020E+01	5.888E+01	1.178E+00	-0.250
RA-223	6.576E+01		5.381E+01	2.209E+02	4.428E+00	0.298
RA-224DA	1.845E+01		2.115E+01	8.032E+01	1.614E+00	0.230
RA-226DA	7.994E+00		1.635E+01	6.370E+01	1.285E+00	0.125
AC-227DA	-1.705E+02		8.954E+01	2.793E+02	5.614E+00	-0.610
AC-228	-7.719E-01		1.350E+01	5.610E+01	1.151E+00	-0.014
RA-228DA	-7.734E-01		1.352E+01	5.622E+01	1.154E+00	-0.014
TH-228DA	1.566E+01		2.011E+01	8.318E+01	1.675E+00	0.188
TH-232DA	6.534E+01		5.757E+01	2.351E+02	4.702E+00	0.278
TH-234DA	-2.409E+01		4.722E+02	2.092E+03	4.316E+01	-0.012
U-234DA	8.124E+01		4.423E+01	1.820E+02	3.643E+00	0.446
U-235HP	-5.896E+01		9.191E+01	3.215E+02	6.587E+00	-0.183
NP-237DA	-1.277E+01		2.290E+01	8.199E+01	1.641E+00	-0.156
U-238DA	-1.474E+01		2.020E+01	5.888E+01	1.178E+00	-0.250
U-238DHP	-6.055E+02		3.468E+02	1.146E+03	2.502E+01	-0.528
AM-241HP	4.072E+01		3.488E+01	1.305E+02	2.866E+00	0.312

STL Richland WA.
BA133

Sample ID: JWP2P1AA
Detector ID: GER11 1

Batch ID: 7134319



Acquisition Start: 23-MAY-2007 14:24:14.73
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -9.93571E-01
Slope: 2.31797E-01
Quadrature: 3.52799E-08

SAMPLE IDENTIFICATION: JWP2P1AA

CONFIGURATION ID: GER11:JWP2P1AA_230571424
TITLE : BA133
SAMPLE ID : JWP2P1AA

REPORT DATE: 23-MAY-07
ACQUIRE DATE: 23-MAY-07 14:24:14
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 23-MAY-2007 05:08:41.12
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.9936E+00 keV
ENERGY SLOPE: 2.3180E-01 keV/C
ENERGY Q COEFF: 3.5280E-08 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 2.2468E-01 keV
FWHM SLOPE: 3.9915E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

```

Configuration      : $DISK1:[GER11.SAMPLE]JWP2P1AA_230571424.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:24:14
Sample ID         : JWP2P1AA Sample quantity : 1.0000 SAMPL
Sample type       : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.99 0.1%
Start energy      : 1.32 End energy : 1900.25
Sensitivity       : 5.00 Gaussian : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.15	276	39	0.57	354.36	350	10	1.54E-01	7.5	
2	0	276.12	76	11	0.43	1195.29	1188	15	4.20E-02	15.0	
3	0	302.69	167	4	0.74	1309.86	1302	17	9.28E-02	8.2	
4	0	355.76	400	0	1.18	1538.74	1531	17	2.22E-01	5.0	
5	0	383.86	58	12	0.38	1659.90	1653	13	3.20E-02	18.4	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER11.SAMPLE]JWP2P1AA_230571424.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:24:14
 Sample ID : JWP2P1AA Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.99 0.1%
 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: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	276	33.00	2.880E+00	9.692E+02	9.703E+02	9.25
	276.40	76	6.90	3.084E+00	1.184E+03	1.185E+03	15.98
	302.84	167	17.80	3.088E+00	1.014E+03	1.015E+03	9.83
	356.00	400	62.05*	3.090E+00	6.953E+02	6.961E+02	7.35
	383.85	58	8.70	3.090E+00	7.143E+02	7.151E+02	19.17

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWP2P1AA

Page : 2
Acquisition date : 23-MAY-2007 14:24:14

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWP2P1AA

Page : 3
Acquisition date : 23-MAY-2007 14:24:14

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.201E+03	15.98	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
% Abundances Found =				5.44			

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER11.SAMPLE]JWP2P1AA_230571424.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:24:14
Sample ID        : JWP2P1AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.99 0.1%
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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.961E+02	5.115E+01	3.580E+01	7.159E-01	19.446

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-3.989E+01	5.149E+01	1.838E+02	3.686E+00	-0.217
NA-22	4.739E-01	1.743E+00	9.341E+00	1.969E-01	0.051
K-40	-7.217E+00	5.071E+01	2.441E+02	5.207E+00	-0.030
SC-46	-4.382E+00	3.016E+00	9.592E+00	2.001E-01	-0.457
CR-51	-1.487E+02	8.464E+01	2.704E+02	5.409E+00	-0.550
MN-54	3.732E+00	4.072E+00	1.801E+01	3.688E-01	0.207
CO-57	5.211E+01	6.969E+01	2.651E+02	5.461E+00	0.197
CO-58	-2.255E+00	2.846E+00	1.093E+01	2.233E-01	-0.206
FE-59	-8.767E+00	5.386E+00	1.608E+01	3.351E-01	-0.545
CO-60	3.455E+00	3.022E+00	1.498E+01	3.169E-01	0.231
ZN-65	4.456E+00	6.403E+00	2.955E+01	6.163E-01	0.151
SE-75	-1.798E+00	1.090E+01	4.094E+01	8.212E-01	-0.044
SR-85	-2.583E+01	8.213E+00	2.214E+01	4.447E-01	-1.167
Y-88	1.277E+00	2.109E+00	1.143E+01	2.493E-01	0.112
NB-94	-8.960E+00	4.198E+00	1.191E+01	2.444E-01	-0.753
NB-95	1.353E+00	2.731E+00	1.337E+01	2.725E-01	0.101
TC-95M	9.237E+00	1.155E+01	4.475E+01	9.039E-01	0.206
ZR-95	3.118E-01	5.073E+00	2.283E+01	4.651E-01	0.014
ZRNB-95	2.561E+00	5.170E+00	2.530E+01	5.158E-01	0.101
MO-99	-1.269E+01	4.047E+01	1.527E+02	3.140E+00	-0.083
RH-101	-9.768E-01	1.241E+01	4.629E+01	9.361E-01	-0.021
RH-102M	-4.517E+00	4.637E+00	1.629E+01	3.267E-01	-0.277
RU-103	-3.038E+00	5.159E+00	1.909E+01	3.832E-01	-0.159
RU-106DA	1.773E+01	3.795E+01	1.638E+02	3.310E+00	0.108
AG-108M	-7.657E+00	6.190E+00	2.111E+01	4.228E-01	-0.363
AG-110M	6.067E+00	6.252E+00	2.702E+01	5.550E-01	0.225
SN-113DA	4.941E+00	6.815E+00	2.929E+01	5.860E-01	0.169

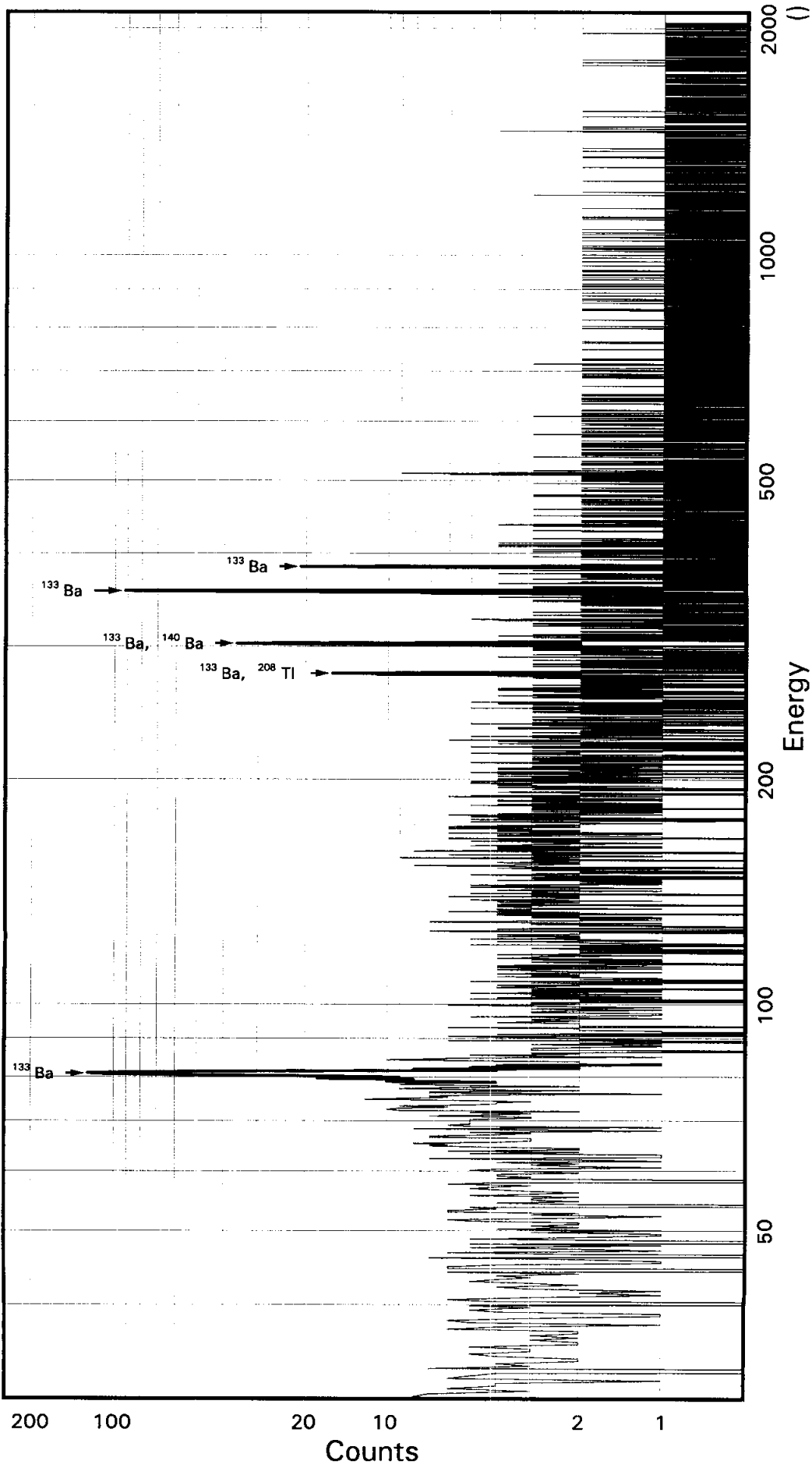
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-3.591E+00		4.516E+00	1.654E+01	3.337E-01	-0.217
SB-125	1.947E+01		1.680E+01	7.206E+01	1.443E+00	0.270
SN-126DA	-1.176E+00		3.307E+00	1.312E+01	2.657E-01	-0.090
I-131	4.040E-01		8.223E+00	3.288E+01	6.577E-01	0.012
CS-134	5.263E+00		3.653E+00	1.828E+01	3.733E-01	0.288
CS-137DA	1.367E+00		3.897E+00	1.697E+01	3.436E-01	0.081
LA-138	-3.632E+00		4.941E+00	1.852E+01	3.944E-01	-0.196
CE-139	7.226E+00		9.208E+00	3.611E+01	7.360E-01	0.200
BA-140	-3.402E+01		2.446E+01	7.914E+01	1.592E+00	-0.430
BALA-140	6.387E-02		4.739E+00	2.487E+01	5.350E-01	0.003
LA-140	2.859E-01		2.131E+01	1.118E+02	2.405E+00	0.003
CE-141	-9.834E+00		1.536E+01	5.600E+01	1.149E+00	-0.176
CE-144	-1.193E+02		5.832E+01	1.706E+02	3.519E+00	-0.700
CEPR-144	-2.404E+02		1.165E+02	3.397E+02	7.008E+00	-0.708
PM-144	-3.198E+00		3.975E+00	1.457E+01	2.942E-01	-0.219
PM-146	-6.552E+00		6.638E+00	2.344E+01	4.698E-01	-0.279
EU-152	2.354E+01		1.856E+01	7.949E+01	1.590E+00	0.296
EU-154	9.479E-02		4.468E+00	2.358E+01	4.969E-01	0.004
EU-155	2.194E+01		3.439E+01	1.328E+02	2.786E+00	0.165
HF-181	-1.035E+00		6.429E+00	2.455E+01	4.925E-01	-0.042
BI-207	2.806E+00		4.116E+00	1.785E+01	3.595E-01	0.157
TL-208	3.486E-01		4.739E+00	1.937E+01	3.905E-01	0.018
BI-210M	2.178E-01		1.175E+01	4.508E+01	9.041E-01	0.005
BI-212	3.043E+00		6.042E+01	2.426E+02	7.410E+00	0.013
PB-212	-2.886E+01		1.678E+01	5.240E+01	1.053E+00	-0.551
BI-214	4.403E+00		1.084E+01	4.369E+01	8.820E-01	0.101
PB-214	-1.154E+01		1.939E+01	5.992E+01	1.198E+00	-0.193
RA-223	2.786E+01		4.579E+01	1.814E+02	3.637E+00	0.154
RA-224DA	-2.904E+01		1.689E+01	5.272E+01	1.060E+00	-0.551
RA-226DA	4.403E+00		1.084E+01	4.369E+01	8.820E-01	0.101
AC-227DA	-1.050E+01		6.826E+01	2.431E+02	4.889E+00	-0.043
AC-228	1.558E+01		1.403E+01	6.352E+01	1.307E+00	0.245
RA-228DA	1.561E+01		1.406E+01	6.365E+01	1.310E+00	0.245
TH-228DA	9.763E-01		1.327E+01	5.426E+01	1.094E+00	0.018
TH-232DA	1.578E+01		4.347E+01	1.704E+02	3.409E+00	0.093
TH-234DA	1.285E+01		3.372E+02	1.594E+03	3.299E+01	0.008
U-234DA	-5.386E+01		3.160E+01	1.021E+02	2.045E+00	-0.527
U-235HP	7.087E+01		6.515E+01	2.643E+02	5.428E+00	0.268
NP-237DA	-2.410E+01		1.350E+01	4.225E+01	8.455E-01	-0.570
U-238DA	-1.154E+01		1.939E+01	5.992E+01	1.198E+00	-0.193
U-238DHP	-9.103E+01		1.665E+02	6.234E+02	1.373E+01	-0.146
AM-241HP	7.865E+00		2.091E+01	7.757E+01	1.720E+00	0.101

STL Richland WA.
BA133

Sample ID: JWW951AA
Detector ID: GER12 1

Batch ID: 7134319



Acquisition Start: 23-MAY-2007 14:24:46.85
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.13769E+01
Slope: 2.47667E-01
Quadrature: -6.48278E-09

SAMPLE IDENTIFICATION: JWW951AA

CONFIGURATION ID: GER12:JWW951AA_230571424
TITLE : BA133
SAMPLE ID : JWW951AA

REPORT DATE: 23-MAY-07
ACQUIRE DATE: 23-MAY-07 14:24:46
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 17-MAY-2007 12:00:00.00
CALIB DATE: 23-MAY-2007 05:09:10.02
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 1.1377E+01 keV
ENERGY SLOPE: 2.4767E-01 keV/C
ENERGY Q COEFF: -.6483E-08 keV/C²
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.0450E-01 keV
FWHM SLOPE: 3.5418E-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: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:55:03

```

Configuration      : $DISK1:[GER12.SAMPLE]JWW951AA_230571424.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:24:46
Sample ID        : JWW951AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.34 0.0%
Start energy     : 11.62 End energy : 2039.83
Sensitivity      : 5.00 Gaussian : 10.00
Critical level   : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.88	423	70	0.76	280.65	272	18	2.35E-01	6.8	
2	0	125.41	14	5	0.60	460.44	457	6	7.57E-03	38.8	
3	0	276.27	70	17	1.35	1069.57	1061	17	3.89E-02	18.0	
4	0	302.95	126	38	0.95	1177.30	1172	13	7.01E-02	13.5	
5	0	356.09	445	12	0.95	1391.91	1384	19	2.47E-01	5.1	
6	0	383.77	82	5	0.94	1503.66	1494	19	4.58E-02	12.7	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER12.SAMPLE]JWW951AA_230571424.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:24:46
Sample ID        : JWW951AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.34 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 DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	423	33.00	2.915E+00	1.465E+03	1.467E+03	8.67
	276.40	70	6.90	3.094E+00	1.093E+03	1.094E+03	18.82
	302.84	126	17.80	3.097E+00	7.634E+02	7.642E+02	14.54
	356.00	445	62.05*	3.100E+00	7.718E+02	7.726E+02	7.45
	383.85	82	8.70	3.099E+00	1.018E+03	1.020E+03	13.80

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWW951AA

Page : 2
Acquisition date : 23-MAY-2007 14:24:46

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	125.41	14	5	0.60	460.44	457	6	7.57E-03	38.8	3.01E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWW951AA

Page : 3
Acquisition date : 23-MAY-2007 14:24:46

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by		
BA-140	12.79D	0.48	162.64	6.70	---	Not Found	---	Abun.	
			304.84	4.50	4.205E+03	14.54			
			423.70	3.20	---	Not Found	---		
			537.32*	25.00	---	Not Found	---		
% Abundances Found =			11.42						
TL-208	1.41E+10Y	0.00	277.35	6.80	1.109E+03	18.82	Abun.		
			510.84	21.60	---	Not Found		---	
			583.14*	84.20	---	Not Found		---	
			860.37	12.46	---	Not Found		---	
% Abundances Found =			5.44						

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER12.SAMPLE]JWW951AA_230571424.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      : BA133
Sample date       : 17-MAY-2007 12:00:00 Acquisition date : 23-MAY-2007 14:24:46
Sample ID        : JWW951AA Sample quantity : 1.0000 SAMPL
Sample type      : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.34 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 (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.726E+02	5.754E+01	4.831E+01	9.663E-01	15.991

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	7.019E+01	5.354E+01	2.281E+02	4.572E+00	0.308
NA-22	1.082E+00	3.410E+00	1.482E+01	3.102E-01	0.073
K-40	-4.420E+01	4.596E+01	2.075E+02	4.387E+00	-0.213
SC-46	1.735E-01	3.259E+00	1.409E+01	2.923E-01	0.012
CR-51	4.196E+01	6.617E+01	2.627E+02	5.256E+00	0.160
MN-54	1.639E+00	3.673E+00	1.597E+01	3.260E-01	0.103
CO-57	1.048E+01	8.068E+01	2.967E+02	6.088E+00	0.035
CO-58	1.497E+00	3.063E+00	1.423E+01	2.900E-01	0.105
FE-59	9.190E+00	5.383E+00	2.884E+01	5.977E-01	0.319
CO-60	-4.653E+00	2.340E+00	3.058E+00	6.422E-02	-1.521
ZN-65	4.731E+00	6.240E+00	2.929E+01	6.077E-01	0.161
SE-75	1.136E+01	1.261E+01	4.923E+01	9.870E-01	0.231
SR-85	-2.036E+01	8.518E+00	2.535E+01	5.090E-01	-0.803
Y-88	-3.533E+00	2.049E+00	3.281E+00	7.075E-02	-1.077
NB-94	-6.358E+00	3.756E+00	1.183E+01	2.420E-01	-0.537
NB-95	-1.534E+00	3.809E+00	1.483E+01	3.016E-01	-0.103
TC-95M	5.320E+00	1.272E+01	4.855E+01	9.794E-01	0.110
ZR-95	8.259E+00	6.054E+00	2.975E+01	6.045E-01	0.278
ZRNB-95	-2.904E+00	7.210E+00	2.808E+01	5.709E-01	-0.103
MO-99	-1.234E+01	4.297E+01	1.567E+02	3.212E+00	-0.079
RH-101	7.384E+00	1.200E+01	4.553E+01	9.194E-01	0.162
RH-102M	-3.330E-02	5.412E+00	2.078E+01	4.166E-01	-0.002
RU-103	-1.153E+00	5.392E+00	2.074E+01	4.160E-01	-0.056
RU-106DA	-9.229E+00	3.983E+01	1.578E+02	3.184E+00	-0.058
AG-108M	-9.330E+00	6.310E+00	2.085E+01	4.174E-01	-0.448
AG-110M	1.163E+00	4.990E+00	2.123E+01	4.345E-01	0.055
SN-113DA	3.116E+00	6.212E+00	2.662E+01	5.325E-01	0.117

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	2.464E+00		4.655E+00	1.962E+01	3.955E-01	0.126
SB-125	4.161E+00		1.508E+01	6.137E+01	1.229E+00	0.068
SN-126DA	8.944E-01		3.891E+00	1.614E+01	3.264E-01	0.055
I-131	1.329E+01		1.102E+01	4.683E+01	9.365E-01	0.284
CS-134	-2.007E+00		4.675E+00	1.817E+01	3.701E-01	-0.110
CS-137DA	-6.358E+00		3.386E+00	9.396E+00	1.899E-01	-0.677
LA-138	3.405E+00		2.415E+00	1.580E+01	3.336E-01	0.216
CE-139	6.973E+00		1.051E+01	3.952E+01	8.034E-01	0.176
BA-140	-1.452E+00		1.755E+01	7.224E+01	1.452E+00	-0.020
BALA-140	6.669E+00		8.195E+00	4.010E+01	8.540E-01	0.166
LA-140	2.998E+01		3.685E+01	1.803E+02	3.840E+00	0.166
CE-141	-4.842E+00		1.730E+01	6.255E+01	1.279E+00	-0.077
CE-144	8.154E+00		8.009E+01	2.941E+02	6.041E+00	0.028
CEPR-144	1.883E+01		1.603E+02	5.892E+02	1.210E+01	0.032
PM-144	-3.568E+00		4.155E+00	1.510E+01	3.047E-01	-0.236
PM-146	-7.156E+00		6.163E+00	2.121E+01	4.250E-01	-0.337
EU-152	2.778E+01		2.276E+01	9.249E+01	1.850E+00	0.300
EU-154	3.037E+00		9.570E+00	4.159E+01	8.704E-01	0.073
EU-155	9.972E+00		3.490E+01	1.339E+02	2.791E+00	0.074
HF-181	-1.292E+01		6.131E+00	1.779E+01	3.568E-01	-0.726
BI-207	5.713E-01		4.056E+00	1.676E+01	3.372E-01	0.034
TL-208	-3.039E-01		4.925E+00	1.973E+01	3.974E-01	-0.015
BI-210M	-7.435E+00		1.397E+01	4.993E+01	1.001E+00	-0.149
BI-212	-1.043E+02		6.363E+01	1.990E+02	6.072E+00	-0.524
PB-212	-9.638E+00		1.445E+01	5.187E+01	1.042E+00	-0.186
BI-214	7.846E+00		1.155E+01	4.707E+01	9.490E-01	0.167
PB-214	1.573E+01		2.471E+01	8.263E+01	1.653E+00	0.190
RA-223	-4.879E+01		4.463E+01	1.531E+02	3.069E+00	-0.319
RA-224DA	-9.697E+00		1.454E+01	5.218E+01	1.048E+00	-0.186
RA-226DA	7.846E+00		1.155E+01	4.707E+01	9.490E-01	0.167
AC-227DA	2.617E+01		5.760E+01	2.239E+02	4.499E+00	0.117
AC-228	4.179E+00		1.429E+01	5.971E+01	1.224E+00	0.070
RA-228DA	4.188E+00		1.432E+01	5.983E+01	1.227E+00	0.070
TH-228DA	-8.511E-01		1.379E+01	5.527E+01	1.113E+00	-0.015
TH-232DA	-5.715E+00		4.009E+01	1.510E+02	3.020E+00	-0.038
TH-234DA	3.329E+02		5.466E+02	2.412E+03	4.970E+01	0.138
U-234DA	-3.874E+01		3.298E+01	1.111E+02	2.224E+00	-0.349
U-235HP	9.369E+01		7.517E+01	2.954E+02	6.045E+00	0.317
NP-237DA	-1.720E+01		1.648E+01	5.606E+01	1.122E+00	-0.307
U-238DA	1.573E+01		2.471E+01	8.263E+01	1.653E+00	0.190
U-238DHP	-3.305E+02		2.456E+02	8.073E+02	1.755E+01	-0.409
AM-241HP	1.500E+01		2.419E+01	9.118E+01	1.994E+00	0.165

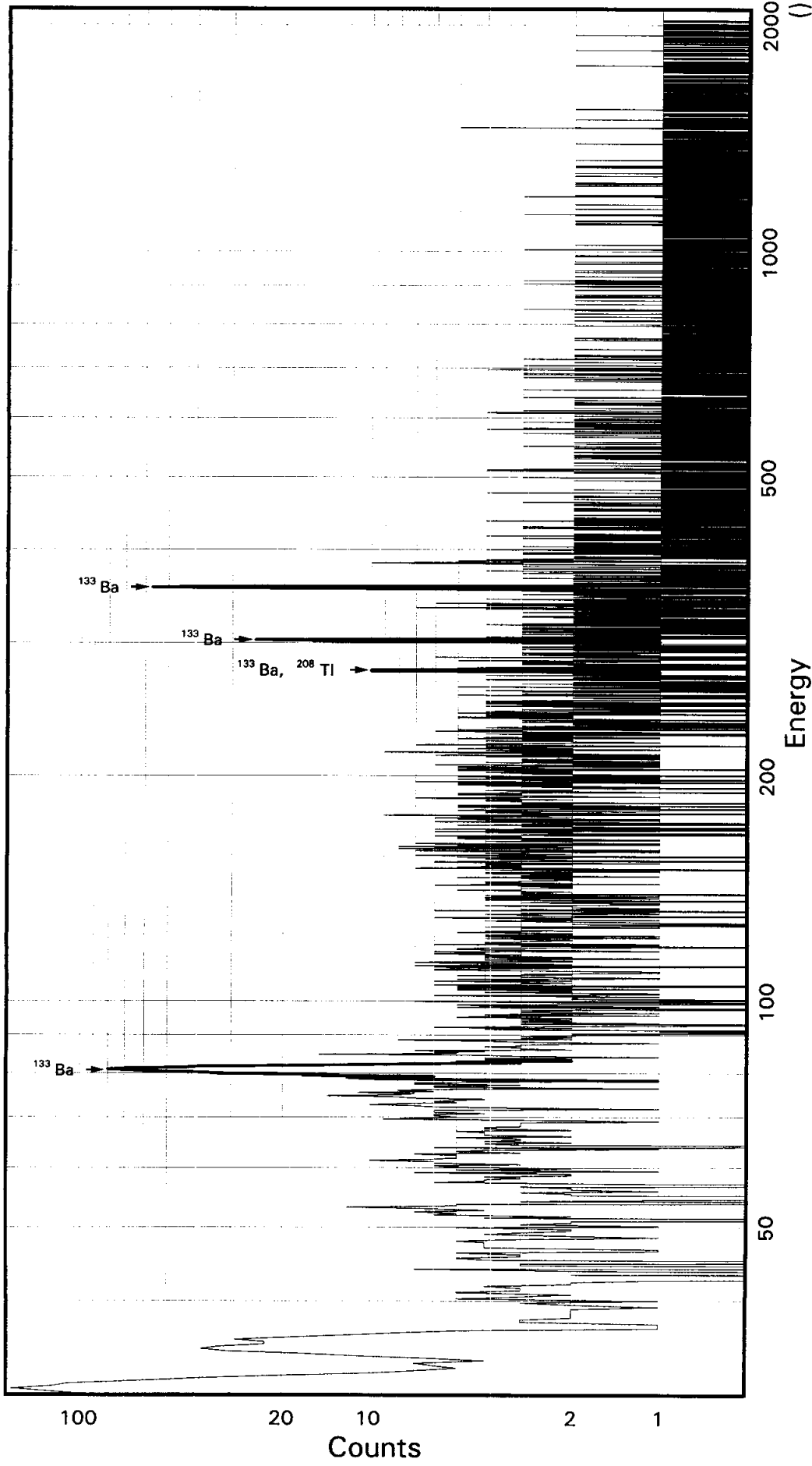
Not Used

STL Richland WA.

BA133

Batch ID: 7134319

Sample ID: JWW951AC
Detector ID: GER14 1



Acquisition Start: 23-MAY-2007 14:25:10.42
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -7.00655E-01
Slope: 2.48278E-01
Quadrature: -3.74530E-09

SAMPLE IDENTIFICATION: JWW951AC

CONFIGURATION ID: GER14:JWW951AC_230571425
TITLE : BA133
SAMPLE ID : JWW951AC

REPORT DATE: 23-MAY-07 SAMPLE DATE: 9-MAY-2007 12:00:00.00
ACQUIRE DATE: 23-MAY-07 14:25:10 CALIB DATE: 23-MAY-2007 05:09:40.01
ELAPSED LIVE TIME: 1800.0 Sec ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00 ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00 UNITS: SAMPL
SAMPLE GEOMETRY: BA133T15 SAMPLE TYPE:

ENERGY OFFSET: -.7007E+00 keV FWHM OFFSET: 1.1221E+00 keV
ENERGY SLOPE: 2.4828E-01 keV/C FWHM SLOPE: 2.4553E-02 sqr keV
ENERGY Q COEFF: -.3745E-08 keV/C² ITERATIONS: 10
PEAK SENSITIVITY: 5.000 GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 % HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 1.500 keV ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00 LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 23-MAY-2007 14:55:26

```

Configuration      : $DISK1:[GER14.SAMPLE]JWW951AC_230571425.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 9-MAY-2007 12:00:00   Acquisition date : 23-MAY-2007 14:25:10
Sample ID         : JWW951AC               Sample quantity  : 1.0000 SAMPL
Sample type       :                         Sample geometry  : BA133T15
Elapsed live time: 0 00:30:00.00          Elapsed real time: 0 00:30:00.46   0.0%
Start energy      : 19.16                  End energy       : 2032.94
Sensitivity       : 5.00                   Gaussian        : 10.00
Critical level    : No
    
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	30.62	794	178	1.32	126.15	117	35	4.41E-01	5.0	1.54E+00
2	3	34.97	209	43	1.69	143.69	117	35	1.16E-01	14.1	
3	0	80.80	476	53	1.28	328.26	318	21	2.65E-01	6.0	
4	0	276.40	43	38	1.44	1116.13	1104	21	2.36E-02	34.6	
5	0	303.13	122	31	1.49	1223.79	1214	23	6.79E-02	13.8	
6	0	356.06	324	29	1.47	1436.96	1426	22	1.80E-01	6.6	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : $DISK1:[GER14.SAMPLE]JWW951AC_230571425.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title      : BA133
Sample date       : 9-MAY-2007 12:00:00   Acquisition date : 23-MAY-2007 14:25:10
Sample ID        : JWW951AC               Sample quantity  : 1.0000 SAMPL
Sample type      :                        Sample geometry  : BA133T15
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.46   0.0%
Energy tolerance : 1.50                   Half life ratio  : 8.00
Errors propagated: Yes                     Systematic Error : 5.00 %
Efficiency type  : Empirical               Efficiencies at  : Peak Energy
Abundance limit  : 80.00
    
```

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma
					DPM/SAMPL	DPM/SAMPL	%Error
BA-133	81.00	476	33.00	1.818E+00	2.646E+03	2.653E+03	8.07
	276.40	43	6.90	1.945E+00	1.056E+03	1.058E+03	34.97
	302.84	122	17.80	1.948E+00	1.175E+03	1.178E+03	14.84
	356.00	324	62.05*	1.949E+00	8.933E+02	8.956E+02	8.53
	383.85	-----	8.70	1.949E+00	-----	Line Not Found	-----

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JWW951AC

Page : 2
Acquisition date : 23-MAY-2007 14:25:10

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	30.62	794	178	1.32	126.15	117	35	4.41E-01	5.0	1.61E+00	
3	34.97	209	43	1.69	143.69	117	35	1.16E-01	14.1	1.64E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JWW951AC

Page : 3
Acquisition date : 23-MAY-2007 14:25:10

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.071E+03	34.97	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
		% Abundances Found =		5.44			

Flag: "*" = Keyline

```

Configuration      : $DISK1:[GER14.SAMPLE]JWW951AC_230571425.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      : BA133
Sample date       : 9-MAY-2007 12:00:00   Acquisition date : 23-MAY-2007 14:25:10
Sample ID        : JWW951AC               Sample quantity  : 1.0000 SAMPL
Sample type      :                        Sample geometry  : BA133T15
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.46   0.0%
Peak Width (FWHM):      3.00             Confidence level :      5.00 %
Energy tolerance :      1.50             Half life ratio  :      8.00
Errors propagated: Yes                    Systematic Error :      5.00 %
Efficiency type  : Empirical              Efficiencies at  : Peak Energy
Abundance limit  :      80.00            WTM error limit  :      3.00
    
```

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	8.956E+02	7.643E+01	7.400E+01	1.480E+00	12.102

---- Non-Identified Nuclides ----

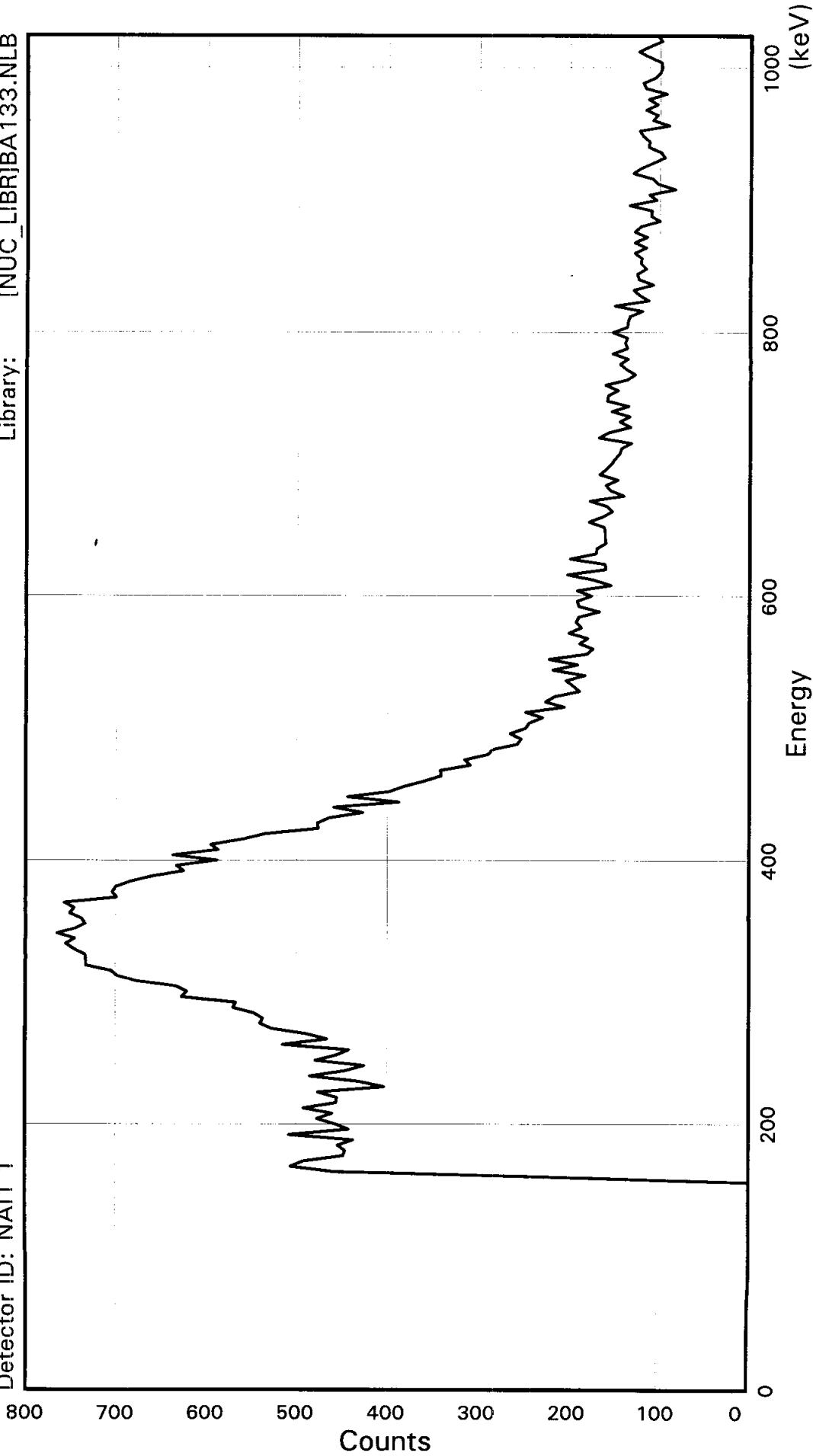
Nuclide	Key-Line Activity K.L. (DPM/SAMPL) Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	7.954E+01	8.865E+01	3.723E+02	7.466E+00	0.214
NA-22	5.416E+00	6.058E+00	2.731E+01	5.752E-01	0.198
K-40	2.186E+01	9.636E+01	4.797E+02	1.022E+01	0.046
SC-46	3.367E+00	8.305E+00	3.415E+01	7.120E-01	0.099
CR-51	7.602E+01	1.641E+02	6.192E+02	1.239E+01	0.123
MN-54	7.593E+00	5.798E+00	2.745E+01	5.617E-01	0.277
CO-57	-1.079E+01	1.508E+02	5.472E+02	1.127E+01	-0.020
CO-58	4.033E+00	7.555E+00	3.200E+01	6.538E-01	0.126
FE-59	-7.055E+00	1.447E+01	5.529E+01	1.151E+00	-0.128
CO-60	8.468E-01	3.881E+00	1.826E+01	3.859E-01	0.046
ZN-65	4.872E-01	1.252E+01	5.151E+01	1.074E+00	0.009
SE-75	-1.008E+01	2.165E+01	7.673E+01	1.539E+00	-0.131
SR-85	-2.182E+01	1.462E+01	4.789E+01	9.619E-01	-0.456
Y-88	8.195E+00	5.060E+00	2.691E+01	5.861E-01	0.305
NB-94	1.082E+01	7.124E+00	3.209E+01	6.582E-01	0.337
NB-95	-2.828E-01	1.071E+01	4.143E+01	8.442E-01	-0.007
TC-95M	5.509E+01	2.869E+01	1.115E+02	2.253E+00	0.494
ZR-95	-8.686E+00	1.435E+01	5.346E+01	1.089E+00	-0.162
ZRNB-95	-4.712E-01	1.886E+01	7.299E+01	1.487E+00	-0.006
MO-99	-2.960E+02	6.566E+02	2.321E+03	4.771E+01	-0.128
RH-101	-8.778E+00	2.243E+01	7.894E+01	1.596E+00	-0.111
RH-102M	-3.175E-02	9.645E+00	3.662E+01	7.343E-01	-0.001
RU-103	1.663E+00	1.075E+01	4.258E+01	8.546E-01	0.039
RU-106DA	-2.545E+01	7.659E+01	2.873E+02	5.803E+00	-0.089
AG-108M	-7.023E+00	1.255E+01	4.476E+01	8.964E-01	-0.157
AG-110M	-4.169E+00	8.212E+00	3.145E+01	6.458E-01	-0.133
SN-113DA	-7.778E+01	2.100E+01	5.535E+01	1.107E+00	-1.405

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	5.134E-02		9.081E+00	3.517E+01	7.097E-01	0.001
SB-125	4.832E+01		3.115E+01	1.323E+02	2.650E+00	0.365
SN-126DA	-5.679E+00		6.864E+00	2.501E+01	5.064E-01	-0.227
I-131	4.709E+00		4.066E+01	1.555E+02	3.110E+00	0.030
CS-134	2.112E+00		7.456E+00	3.107E+01	6.343E-01	0.068
CS-137DA	2.457E+00		7.214E+00	3.053E+01	6.180E-01	0.080
LA-138	5.272E+00		6.760E+00	3.273E+01	6.962E-01	0.161
CE-139	-8.672E+00		2.246E+01	7.933E+01	1.616E+00	-0.109
BA-140	4.143E+01		6.838E+01	2.779E+02	5.589E+00	0.149
BALA-140	-7.703E+00		1.823E+01	7.668E+01	1.647E+00	-0.100
CE-141	1.522E+01		4.658E+01	1.707E+02	3.503E+00	0.089
CE-144	-1.786E+02		1.506E+02	4.967E+02	1.024E+01	-0.359
CEPR-144	-3.571E+02		3.013E+02	9.934E+02	2.048E+01	-0.359
PM-144	-1.040E+01		7.095E+00	2.280E+01	4.605E-01	-0.456
PM-146	1.601E+01		1.296E+01	5.477E+01	1.098E+00	0.292
EU-152	3.253E+01		4.207E+01	1.651E+02	3.301E+00	0.197
EU-154	2.025E+01		1.616E+01	7.634E+01	1.608E+00	0.265
EU-155	9.916E+01		8.451E+01	3.151E+02	6.605E+00	0.315
HF-181	-1.272E+01		1.021E+01	3.461E+01	6.942E-01	-0.368
BI-207	2.055E+00		7.471E+00	2.994E+01	6.030E-01	0.069
TL-208	6.164E+00		1.090E+01	4.294E+01	8.654E-01	0.144
BI-210M	-2.658E+01		2.382E+01	8.031E+01	1.610E+00	-0.331
BI-212	2.057E+02		1.227E+02	5.414E+02	1.654E+01	0.380
PB-212	5.182E+01		3.375E+01	1.302E+02	2.618E+00	0.398
BI-214	3.706E+01		2.218E+01	9.499E+01	1.917E+00	0.390
PB-214	1.991E+01		4.246E+01	1.369E+02	2.737E+00	0.146
RA-223	8.299E+00		9.160E+01	3.216E+02	6.448E+00	0.026
RA-224DA	5.255E+01		3.423E+01	1.321E+02	2.654E+00	0.398
RA-226DA	3.721E+01		2.219E+01	9.507E+01	1.919E+00	0.391
AC-227DA	-3.367E+02		1.289E+02	3.876E+02	7.794E+00	-0.869
AC-228	1.092E+01		3.273E+01	1.276E+02	2.625E+00	0.086
RA-228DA	1.097E+01		3.288E+01	1.282E+02	2.637E+00	0.086
TH-228DA	1.740E+01		3.076E+01	1.212E+02	2.443E+00	0.144
TH-232DA	6.039E+01		1.035E+02	3.944E+02	7.888E+00	0.153
TH-234DA	-3.156E+03		1.175E+03	2.929E+03	6.060E+01	-1.077
U-234DA	-1.236E+01		6.259E+01	2.250E+02	4.506E+00	-0.055
U-235HP	-1.693E+01		1.633E+02	5.861E+02	1.203E+01	-0.029
NP-237DA	3.038E+01		3.406E+01	1.305E+02	2.611E+00	0.233
U-238DA	1.991E+01		4.246E+01	1.369E+02	2.737E+00	0.146
U-238DHP	2.669E+02		5.651E+02	2.031E+03	4.466E+01	0.131
AM-241HP	8.969E+01		5.832E+01	2.186E+02	4.839E+00	0.410

STL Richland WA.
BA133

Sample ID: JWW951AC BatchID: 7134319
Detector ID: NAI1 1 Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 24-MAY-2007 13:34:42.76
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: JWW951AC

CONFIGURATION ID: NAI1:JWW951AC_240571334
TITLE : BA133
SAMPLE ID : JWW951AC

REPORT DATE: 24-MAY-07	SAMPLE DATE: 9-MAY-2007 12:00:00.00
ACQUIRE DATE: 24-MAY-07 13:34:42	CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 1800.0 Sec	ELAPSED LIVE TIME: 0 00:30:00
PRESET LIVE TIME: 0 00:30:00	ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00	UNITS: SAMPL
SAMPLE GEOMETRY:	SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV	FWHM OFFSET: -.2302E+02 keV
ENERGY SLOPE: 4.0000E+00 keV/C	FWHM SLOPE: 5.7163E+00 sqr keV
ENERGY Q COEFF: 0.0000E+00 keV/C ²	ITERATIONS: 5
PEAK SENSITIVITY: 5.000	GAUSSIAN SENSITIVITY: 35.00 %

ABUNDANCE LIMIT: 75.00 %	HALF-LIFE RATIO: 8.00
ENERGY TOLERANCE: 20.000 keV	ACTIVITY MULTIPLIER: 2.2200E+06
VARIABLE PEAK WIDTH: 3.00	LIBRARY: [NUC_LIBR]BA133.NLB

Configuration : RDND06\$DKA100:[NAI1.SAMPLE]JWW951AC_240571334.CNF;1
Analyses by : NAI V3.0
Sample title : BA133
Sample date : 9-MAY-2007 12:00:00 Acquisition date : 24-MAY-2007 13:34:42
Sample ID : JWW951AC 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:	6.6	5.2	4.5	4.3	4.5	2.9	4.2	2.4
88:	1.0	0.5	-0.1	-0.4	1.7	-1.8	-0.1	-0.7
96:	-1.1	-2.9	-2.7	-2.1	-5.4	-0.1	-2.6	-1.1
104:	-3.5	-4.1	-6.0	-4.8	-4.3	-5.4	-3.4	-5.1
112:	-1.4	-3.5						

List of Suspicious Channels

81 82 83 84 85 86

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.07E+01	0.00E+00	1.03E+00
2	3.06E+00	0.00E+00	1.06E+00
3	1.04E+00	0.00E+00	1.07E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	769.	9.70

Total Activity :	769.	

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	
RASC4433	RA-226	3.1115E+00 ± 4.787E-02 DPM	0.1481 g	5/9/2007 5/9/2007	Armstron	2.1010E+01 ± 3.226E-01 DPM/G
		3.1115E+000 ± 3.112E+000 (1)	3.1115E+000 , 3.1115E+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>
3) Source Identification Number / Ref. Number	<u>RA22606A000</u>	<u>6068</u>	
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>	%	
11) Specific Activity of Diluted Solution dpm/g	<u>2.1120E+01</u>	±	<u>6.970E-01</u>
12) Total Uncertainty	<u>3.300</u>	%	
13) Dilution Identification Number / Ref. Number	<u>RA22606A100</u>	<u>6069</u>	
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>

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: RA22804A110		Ref: 7/19/2004	1.0994E+02 ± 3.355E+00	DPM/G		
RASC4433	RA-228	1.1080E+01 ± 3.383E-01 DPM	0.1413 g	5/9/2007 5/9/2007	Armstron	7.8412E+01 ± 2.393E+00 DPM/G

1.1080E+001 ± 1.108E+001 (1)

1.1080E+001 , 1.1080E+001

Ra22804A000

Ra22804A000
Ref. 5756
2.945E5 ± 9.719E3
dpm/g
7/19/04



Ra22804A100
Ref. 6023
1.408E4 ± 4.667E2
dpm/g
8/12/05



Ra22804A110
Ref. 6024
1.099E2 ± 3.689E2
dpm/g
8/12/05

ISOTOPE DILUTION RECORD

1) Prepared by TDA 2) Date Prepared 10/12/2005

3) Source Identification Number / Ref. Number RA22804A100 6023

4) Source Activity (dpm ± dpm/g) 1.4082E+04 ± 4.667E+02

5) Percent error of Source Activity 3.314 %

6) Weight of Source Material used (g) 1.0212

7) (% Error) of Weight of Source Material used 0.4700 %

8) Diluent 1 M HCL

9) Total Weight of the Dilution (g) 130.8

10) (% Error) of Total Weight of the Dilution 0.2294 %

11) Specific Activity of Diluted Solution dpm/g 1.0994E+02 ± 3.689E+00

12) Total Uncertainty 3.355 %

13) Dilution Identification Number / Ref. Number RA22804A110 6024

14) Calibration Reference Date 7/19/2004

15) Isotope Inventory File update by/date tda 10/12/2005

16) Reviewed by/date sew 10/31/2005

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 DILUTION RECORD

1) Prepared by	<u>TDA</u>	2) Date Prepared	<u>10/12/2005</u>
3) Source Identification Number / Ref. Number	<u>RA22804A000</u>	<u>5756</u>	
4) Source Activity (dpm ± dpm/g)	<u>2.9453E+05</u>	±	<u>9.719E+03</u>
5) Percent error of Source Activity	<u>3.3</u>	%	
6) Weight of Source Material used (g)	<u>4.967</u>		
7) (% Error) of Weight of Source Material used	<u>0.0966</u>	%	
8) Diluent	<u>1 M HCL</u>		
9) Total Weight of the Dilution (g)	<u>103.89</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.2888</u>	%	
11) Specific Activity of Diluted Solution dpm/g	<u>1.4082E+04</u>	±	<u>4.667E+02</u>
12) Total Uncertainty	<u>3.314</u>	%	
13) Dilution Identification Number / Ref. Number	<u>RA22804A100</u>	<u>6023</u>	
14) Calibration Reference Date	<u>7/19/2004</u>		
15) Isotope Inventory File update by/date	<u>tda</u>		<u>10/12/2005</u>
16) Reviewed by/date	<u>SEW</u>		<u>1/17/2006</u>
17) Location <u>qclab</u>	18) Exhausted		

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>10/17/2002</u>
3) Source Identification Number / Ref. Number	<u>RA22801A000</u>	<u>5025</u>	
4) Source Activity (dpm ± dpm/g)	<u>2.7299E+04</u>	±	<u>1.092E+03</u>
5) Percent error of Source Activity	<u>4.0</u>	%	
6) Weight of Source Material used (g)	<u>0.3819</u>		
7) (% Error) of Weight of Source Material used	<u>1.2569</u>	%	
8) Diluent	<u>1M HCL-5122</u>		
9) Total Weight of the Dilution (g)	<u>121.17</u>		
10) (% Error) of Total Weight of the Dilution	<u>0.2476</u>	%	
11) Specific Activity of Diluted Solution dpm/g	<u>8.6040E+01</u>	±	<u>3.614E+00</u>
12) Total Uncertainty	<u>4.200</u>	%	
13) Dilution Identification Number / Ref. Number	<u>RA22801A200</u>	<u>5307</u>	
14) Calibration Reference Date	<u>10/17/2002</u>		
15) Isotope Inventory File update by/date	<u>W.G</u>		<u>10/17/2002</u>
16) Reviewed by/date	<u>SEW</u>		<u>10/31/2002</u>
17) Location <u>QCLAB/STWT0678</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 W.G 2) Date Prepared 3/19/2002

3) Source Identification Number / Ref. Number RA22801A100 5032

4) Source Activity (dpm ± dpm/g) 1.9600E+03 ± 8.402E+01

5) Percent error of Source Activity 4.287 %

6) Weight of Source Material used (g) 4.4028

7) (% Error) of Weight of Source Material used 0.1090 %

8) Diluent 1M HCL-5122

9) Total Weight of the Dilution (g) 121.34

10) (% Error) of Total Weight of the Dilution 0.2472 %

11) Specific Activity of Diluted Solution dpm/g 7.1118E+01 ± 3.055E+00

12) Total Uncertainty 4.296 %

13) Dilution Identification Number / Ref. Number RA22801A110 5123

14) Calibration Reference Date 3/19/2002

15) Isotope Inventory File update by/date W.G 3/19/2002

16) Reviewed by/date SEW 3/20/2002

17) Location QCLAB/STWT0558 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 W.G 2) Date Prepared 10/25/2001

3) Source Identification Number / Ref. Number RA22801A000 5025

4) Source Activity (dpm ± dpm/g) 3.0707E+04 ± 1.228E+02

5) Percent error of Source Activity 4.0 %

6) Weight of Source Material used (g) 1.3397

7) (% Error) of Weight of Source Material used 0.3583 %

8) Diluent 1M HCL-5031

9) Total Weight of the Dilution (g) 20.01

10) (% Error) of Total Weight of the Dilution 1.4993 %

11) Specific Activity of Diluted Solution dpm/g 2.0559E+03 ± 8.813E+01

12) Total Uncertainty 4.287 %

13) Dilution Identification Number / Ref. Number RA22801A100 5032

14) Calibration Reference Date 10/25/2001

15) Isotope Inventory File update by/date W.G 10/25/2001

16) Reviewed by/date RROSS 10/29/2001

17) Location QCLAB/STWT0496 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-228 2) Reference Number 5025
 3) Half Life 5.75 yrs 4) Storage Location PM
 5) Source Identification Number RA22801A000

CALIBRATION DATA

6) Activity as Received Units 2575 dps
 7) Overall Uncertainty Percent 4.0%
 8) Reference Date / Time 10/12/01 12:00 EST (9.00AM)
 9) Activity dpm/g 30839.62 ± 1233.58 dpm/g
 10) Volume or Mass (ml/g) 5.00979 g
 11) Calibrated by ANALYTICS
 12) Certificate Solution Number 62588-310

SURVEY DATA

13) Date Received 10/16/2001
 14) Surveyed by W.G
 15) Survey Reading (Beta/Gamma) cpm <200CPM
 16) Survey Reading (Alpha) cpm <200CPM

17) Activity Conversion 2575.0 dps*60s/m/5.00979g=30839.62 ± 1233.58dpm/g

18) Remarks Transferred to acid leach vial 10/25/01 stwt0495

19) Isotope File Updated by 10/17/10 W.G

20) QC Approved RROSS 10/23/01

RADIUM 226
CONTINUING CALIBRATION

Quality Assurance Report.

Generated 12-JUL-2007 11:45:19.36

QA Filename : \$DISK1:[SCINT23.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-23

Parameter Units : counts Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 79095.000000 Upper Bound : 81861.000000

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 : 80478.390625 Std Deviation : 461.366028

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 09:21	count		79972.0000		
3-APR-2007 09:24	count		80905.0000		
4-APR-2007 09:17	count		79934.0000		
5-APR-2007 09:34	count		81073.0000		
6-APR-2007 09:24	count		80456.0000		
9-APR-2007 09:26	count		81296.0000		
10-APR-2007 07:54	count		80090.0000		
11-APR-2007 09:27	count		80372.0000		
12-APR-2007 09:08	count		80376.0000		
13-APR-2007 10:21	count		80807.0000		
16-APR-2007 09:11	count		80459.0000		
17-APR-2007 09:36	count		80152.0000		
18-APR-2007 09:10	count		80166.0000		
19-APR-2007 09:03	count		79873.0000		
20-APR-2007 08:09	count		80005.0000		
23-APR-2007 08:53	count		79909.0000		
24-APR-2007 08:46	count		80027.0000		
25-APR-2007 08:34	count		80656.0000		
26-APR-2007 08:55	count		80684.0000		
30-APR-2007 07:46	count		80168.0000		
1-MAY-2007 11:00	count		80477.0000		

2-MAY-2007 08:51	count	80995.0000	
3-MAY-2007 09:35	count	80576.0000	
4-MAY-2007 08:59	count	80587.0000	
7-MAY-2007 08:33	count	80107.0000	
8-MAY-2007 08:36	count	80517.0000	
9-MAY-2007 10:03	count	81470.0000	In
10-MAY-2007 08:41	count	80599.0000	
11-MAY-2007 08:30	count	80214.0000	
14-MAY-2007 08:16	count	80778.0000	
15-MAY-2007 08:31	count	80876.0000	
16-MAY-2007 10:18	count	81080.0000	
17-MAY-2007 09:05	count	81296.0000	
21-MAY-2007 08:39	count	80146.0000	
22-MAY-2007 09:42	count	80688.0000	
23-MAY-2007 09:56	count	80499.0000	
25-MAY-2007 08:37	count	81076.0000	
29-MAY-2007 09:03	count	80559.0000	

Quality Assurance Multi-Test Full Report (continued)

Page : 2

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
30-MAY-2007 09:24	count		80899.0000		
31-MAY-2007 09:08	count		81233.0000		
1-JUN-2007 08:00	count		80766.0000		
4-JUN-2007 08:59	count		81214.0000		
5-JUN-2007 09:45	count		81012.0000		
6-JUN-2007 09:54	count		80885.0000		
7-JUN-2007 07:17	count		80268.0000		
8-JUN-2007 05:55	count		80830.0000		
11-JUN-2007 08:04	count		80001.0000		
12-JUN-2007 07:48	count		80163.0000		
13-JUN-2007 09:05	count		80573.0000		
14-JUN-2007 10:33	count		80444.0000		
15-JUN-2007 09:48	count		81151.0000		
18-JUN-2007 08:51	count		80288.0000		
19-JUN-2007 09:05	count		80387.0000		
20-JUN-2007 09:02	count		80956.0000		
21-JUN-2007 09:08	count		80711.0000		

Quality Assurance Report.

Generated 12-JUL-2007 11:45:19.80

QA Filename : \$DISK1:[SCINT23.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-23
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 : 4.428571 Std Deviation : 3.631365

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
30-APR-2007 17:16	count		0.0000	
25-MAY-2007 16:15	count		1.0000	

Quality Assurance Report.

Generated 12-JUL-2007 11:45:14.94

QA Filename : \$DISK1:[SCINT22.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-22

Parameter Units : counts Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 75836.000000 Upper Bound : 79498.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 08:51	count		78343.0000		
3-APR-2007 08:48	count		77723.0000		
4-APR-2007 08:44	count		77569.0000		
5-APR-2007 09:04	count		78205.0000		
6-APR-2007 09:03	count		78804.0000		
9-APR-2007 09:07	count		78175.0000		
10-APR-2007 08:14	count		77372.0000		
11-APR-2007 09:06	count		77742.0000		
12-APR-2007 08:47	count		77837.0000		
13-APR-2007 09:18	count		77796.0000		
16-APR-2007 08:51	count		77710.0000		
17-APR-2007 09:16	count		77670.0000		
18-APR-2007 08:56	count		77870.0000		
19-APR-2007 08:36	count		77402.0000		
20-APR-2007 07:52	count		77152.0000		
23-APR-2007 08:34	count		77312.0000		
24-APR-2007 08:30	count		77495.0000		
25-APR-2007 08:22	count		78289.0000		
26-APR-2007 08:43	count		77978.0000		
30-APR-2007 08:04	count		77959.0000		
1-MAY-2007 10:49	count		78200.0000		
2-MAY-2007 08:40	count		78545.0000		
3-MAY-2007 09:19	count		77897.0000		
4-MAY-2007 08:45	count		79048.0000		
7-MAY-2007 08:21	count		78198.0000		
8-MAY-2007 08:21	count		78182.0000		
9-MAY-2007 09:25	count		78864.0000		

10-MAY-2007 08:23	count	78566.0000	
11-MAY-2007 08:18	count	78539.0000	
14-MAY-2007 08:31	count	77125.0000	
15-MAY-2007 08:17	count	78363.0000	
16-MAY-2007 10:04	count	78396.0000	
17-MAY-2007 08:27	count	78722.0000	
21-MAY-2007 08:27	count	77578.0000	
22-MAY-2007 09:01	count	77945.0000	
23-MAY-2007 09:43	count	78251.0000	
25-MAY-2007 08:17	count	77766.0000	
29-MAY-2007 08:51	count	77738.0000	
30-MAY-2007 09:03	count	78383.0000	
31-MAY-2007 08:53	count	77928.0000	
1-JUN-2007 08:42	count	77148.0000	
4-JUN-2007 08:22	count	78257.0000	
5-JUN-2007 09:26	count	78542.0000	
6-JUN-2007 09:42	count	78121.0000	

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

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
7-JUN-2007 07:35	count		77426.0000		
8-JUN-2007 06:25	count		77448.0000		
9-JUN-2007 07:28	count		77145.0000		
11-JUN-2007 08:17	count		78158.0000		
12-JUN-2007 08:05	count		77409.0000		
13-JUN-2007 08:54	count		77346.0000		
14-JUN-2007 10:12	count		77727.0000		
15-JUN-2007 09:22	count		78000.0000		
18-JUN-2007 08:39	count		77754.0000		
19-JUN-2007 08:46	count		77539.0000		
20-JUN-2007 08:48	count		78349.0000		
21-JUN-2007 08:52	count		77939.0000		

Quality Assurance Report. Generated 12-JUL-2007 11:45:15.29

QA Filename : \$DISK1:[SCINT22.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-22
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 : 0.250000 Std Deviation : 0.462910

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

30-APR-2007 17:16 count 0.0000 | | |
25-MAY-2007 16:15 count 0.0000 | | |

Quality Assurance Report.

Generated 12-JUL-2007 11:45:08.95

QA Filename : \$DISK1:[SCINT21.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-21

Parameter Units : counts Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 76957.000000 Upper Bound : 79333.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 08:24	count		77191.0000		
3-APR-2007 08:28	count		78475.0000		
4-APR-2007 08:26	count		77589.0000		
5-APR-2007 08:38	count		78312.0000		
6-APR-2007 08:18	count		78304.0000		
9-APR-2007 08:22	count		78494.0000		
10-APR-2007 08:32	count		78369.0000		
11-APR-2007 08:32	count		78000.0000		
12-APR-2007 08:29	count		78461.0000		
13-APR-2007 08:45	count		78769.0000		
16-APR-2007 08:17	count		78690.0000		
17-APR-2007 08:52	count		77951.0000		
18-APR-2007 08:34	count		77881.0000		
19-APR-2007 08:18	count		78471.0000		
20-APR-2007 07:27	count		77890.0000		
23-APR-2007 08:16	count		77582.0000		
24-APR-2007 08:16	count		78324.0000		
25-APR-2007 08:08	count		77975.0000		
26-APR-2007 08:30	count		78347.0000		
30-APR-2007 08:18	count		78643.0000		
1-MAY-2007 10:35	count		78777.0000		
2-MAY-2007 08:17	count		78192.0000		
3-MAY-2007 08:59	count		78490.0000		
4-MAY-2007 08:22	count		77661.0000		
7-MAY-2007 08:04	count		78436.0000		
8-MAY-2007 08:04	count		78074.0000		
9-MAY-2007 08:21	count		79004.0000		

10-MAY-2007 08:09	count	78328.0000			
11-MAY-2007 08:03	count	78522.0000			
13-MAY-2007 13:47	count	77809.0000			
14-MAY-2007 09:03	count	78300.0000			
15-MAY-2007 08:01	count	78393.0000			
16-MAY-2007 09:45	count	78674.0000			
17-MAY-2007 08:10	count	78579.0000			
21-MAY-2007 08:13	count	77757.0000			
22-MAY-2007 08:31	count	77942.0000			
23-MAY-2007 09:29	count	78177.0000			
25-MAY-2007 08:00	count	78230.0000			
29-MAY-2007 08:36	count	78449.0000			
30-MAY-2007 08:34	count	77997.0000			
31-MAY-2007 08:38	count	78415.0000			
1-JUN-2007 09:03	count	78797.0000			
4-JUN-2007 08:08	count	78775.0000			
5-JUN-2007 08:47	count	78346.0000			

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-JUN-2007 09:26	count	78563.0000			
7-JUN-2007 07:48	count	77935.0000			
8-JUN-2007 06:42	count	77722.0000			
9-JUN-2007 07:50	count	78555.0000			
11-JUN-2007 08:40	count	78521.0000			
12-JUN-2007 08:19	count	78422.0000			
13-JUN-2007 08:24	count	78020.0000			
14-JUN-2007 09:53	count	78153.0000			
15-JUN-2007 09:00	count	78295.0000			
18-JUN-2007 08:22	count	77909.0000			
19-JUN-2007 08:29	count	78489.0000			
20-JUN-2007 08:24	count	78130.0000			
21-JUN-2007 08:36	count	78193.0000			

Quality Assurance Report.

Generated 12-JUL-2007 11:45:09.27

QA Filename : \$DISK1:[SCINT21.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-21

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

30-APR-2007 17:16 count 0.0000 | | |
25-MAY-2007 16:15 count 0.0000 | | |

Quality Assurance Report.

Generated 12-JUL-2007 11:45:03.93

QA Filename : \$DISK1:[SCINT20.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-20

Parameter Units : counts Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 78297.000000 Upper Bound : 81252.000000

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 08:04	count		79624.0000		
3-APR-2007 08:08	count		78887.0000		
4-APR-2007 08:07	count		79743.0000		
5-APR-2007 08:08	count		79345.0000		
6-APR-2007 07:57	count		80302.0000		
9-APR-2007 07:59	count		80081.0000		
10-APR-2007 08:52	count		80829.0000		
11-APR-2007 08:14	count		79439.0000		
12-APR-2007 08:17	count		79463.0000		
13-APR-2007 08:24	count		79764.0000		
16-APR-2007 07:57	count		78826.0000		
17-APR-2007 08:30	count		79077.0000		
18-APR-2007 08:16	count		79804.0000		
19-APR-2007 07:59	count		79013.0000		
20-APR-2007 07:07	count		78955.0000		
23-APR-2007 07:55	count		78874.0000		
24-APR-2007 07:59	count		79503.0000		
25-APR-2007 07:51	count		79463.0000		
26-APR-2007 08:11	count		79296.0000		
30-APR-2007 08:32	count		80639.0000		
1-MAY-2007 10:22	count		79296.0000		
2-MAY-2007 08:03	count		79124.0000		
3-MAY-2007 08:44	count		79236.0000		
4-MAY-2007 08:07	count		78776.0000		
7-MAY-2007 07:51	count		79708.0000		
8-MAY-2007 07:51	count		79134.0000		
9-MAY-2007 07:58	count		80278.0000		

10-MAY-2007 07:55	count	79868.0000			
11-MAY-2007 07:47	count	79762.0000			
14-MAY-2007 08:47	count	80412.0000			
15-MAY-2007 07:44	count	79950.0000			
16-MAY-2007 09:28	count	79907.0000			
17-MAY-2007 07:50	count	80010.0000			
21-MAY-2007 07:58	count	79032.0000			
22-MAY-2007 08:16	count	79168.0000			
23-MAY-2007 09:16	count	79018.0000			
25-MAY-2007 07:45	count	79407.0000			
29-MAY-2007 08:13	count	79246.0000			
30-MAY-2007 08:15	count	79651.0000			
31-MAY-2007 08:24	count	79896.0000			
1-JUN-2007 09:14	count	80168.0000			
4-JUN-2007 07:46	count	79972.0000			
5-JUN-2007 08:10	count	79891.0000			
6-JUN-2007 09:08	count	79490.0000			

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

Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS	Rej
7-JUN-2007 08:10	count		79784.0000					
8-JUN-2007 07:17	count		79835.0000					
9-JUN-2007 08:05	count		79857.0000					
11-JUN-2007 08:50	count		80327.0000					
12-JUN-2007 08:30	count		80042.0000					
13-JUN-2007 08:10	count		79020.0000					
14-JUN-2007 09:37	count		79017.0000					
15-JUN-2007 08:32	count		79862.0000					
18-JUN-2007 08:02	count		79356.0000					
19-JUN-2007 08:13	count		79662.0000					
20-JUN-2007 08:04	count		79629.0000					
21-JUN-2007 08:19	count		79506.0000					

Quality Assurance Report. Generated 12-JUL-2007 11:45:04.27

QA Filename : \$DISK1:[SCINT20.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-20
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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30-APR-2007 17:16	count		0.0000	
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25-MAY-2007 16:15	count		0.0000	
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Quality Assurance Report.

Generated 12-JUL-2007 11:44:56.17

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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2-APR-2007 08:04	count		18240.0000		
3-APR-2007 08:08	count		18042.0000		
4-APR-2007 08:07	count		18043.0000		
5-APR-2007 08:08	count		18252.0000		
6-APR-2007 07:57	count		18173.0000		
9-APR-2007 07:59	count		18442.0000		
10-APR-2007 07:54	count		18187.0000		
11-APR-2007 08:13	count		18202.0000		
12-APR-2007 08:17	count		18280.0000		
12-APR-2007 09:12	count		1.0000	Be Ac	R
13-APR-2007 08:24	count		17966.0000		
16-APR-2007 07:56	count		18055.0000		
17-APR-2007 08:30	count		18005.0000		
18-APR-2007 08:16	count		18043.0000		
19-APR-2007 07:59	count		18438.0000		
20-APR-2007 07:07	count		18056.0000		
23-APR-2007 07:55	count		18182.0000		
24-APR-2007 07:59	count		18368.0000		
25-APR-2007 07:51	count		18056.0000		
26-APR-2007 08:11	count		18083.0000		
30-APR-2007 07:46	count		18505.0000		

1-MAY-2007 10:22	count	18517.0000		
2-MAY-2007 08:02	count	18441.0000		
3-MAY-2007 08:43	count	18429.0000		
4-MAY-2007 08:07	count	18598.0000		
7-MAY-2007 07:51	count	18184.0000		
8-MAY-2007 07:50	count	18428.0000		
9-MAY-2007 07:58	count	0.0000	Be Ac	R
9-MAY-2007 10:21	count	18610.0000		
10-MAY-2007 07:55	count	18275.0000		
11-MAY-2007 07:47	count	18611.0000		
11-MAY-2007 08:18	count	18347.0000		
13-MAY-2007 13:47	count	18509.0000		
14-MAY-2007 08:16	count	18245.0000		
15-MAY-2007 07:44	count	18357.0000		
16-MAY-2007 09:28	count	18243.0000		
17-MAY-2007 07:50	count	18269.0000		
21-MAY-2007 07:58	count	18185.0000		

Quality Assurance Multi-Test Full Report (continued)

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

22-MAY-2007 08:16	count		18280.0000		
23-MAY-2007 09:16	count		18255.0000		
25-MAY-2007 07:45	count		18269.0000		
29-MAY-2007 08:13	count		18257.0000		
30-MAY-2007 08:15	count		18297.0000		
31-MAY-2007 08:24	count		18295.0000		
1-JUN-2007 08:00	count		18356.0000		
4-JUN-2007 07:46	count		18522.0000		
5-JUN-2007 08:10	count		0.0000	Be Ac	R
5-JUN-2007 08:56	count		0.0000	Be Ac	R
5-JUN-2007 09:23	count		18495.0000		
6-JUN-2007 09:08	count		18102.0000		
7-JUN-2007 07:17	count		18481.0000		
8-JUN-2007 05:54	count		18017.0000		
11-JUN-2007 08:04	count		18048.0000		
12-JUN-2007 07:48	count		18001.0000		
13-JUN-2007 08:10	count		18051.0000		
14-JUN-2007 09:37	count		18550.0000		
15-JUN-2007 08:31	count		18352.0000		
18-JUN-2007 08:02	count		18400.0000		
19-JUN-2007 08:13	count		18054.0000		
20-JUN-2007 08:04	count		18377.0000		

21-JUN-2007 08:19 count 18534.0000 | | |

Quality Assurance Report. Generated 12-JUL-2007 11:44:56.56

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 : 0.472727 Std Deviation : 1.136182

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
30-APR-2007 17:15	count		0.0000	
25-MAY-2007 16:15	count		1.0000	

Quality Assurance Report.

Generated 12-JUL-2007 11:44:50.98

QA Filename : \$DISK1:[SCINT18.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-18

Parameter Units : counts Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 19590.000000 Upper Bound : 21654.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 20622.431641 Std Deviation : 344.169220

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 08:51	count		20771.0000		
3-APR-2007 09:24	count		20688.0000		
4-APR-2007 09:17	count		20350.0000		
5-APR-2007 09:04	count		20443.0000		
6-APR-2007 09:24	count		20527.0000		
9-APR-2007 09:07	count		20635.0000		
10-APR-2007 08:32	count		20602.0000		
11-APR-2007 09:06	count		20857.0000		
12-APR-2007 09:12	count		20671.0000		
13-APR-2007 10:21	count		20839.0000		
16-APR-2007 08:51	count		20832.0000		
17-APR-2007 09:36	count		20526.0000		
18-APR-2007 08:56	count		20372.0000		
19-APR-2007 09:03	count		20336.0000		
20-APR-2007 07:52	count		20173.0000		
23-APR-2007 08:34	count		20545.0000		
24-APR-2007 08:30	count		20670.0000		
25-APR-2007 08:22	count		20472.0000		
26-APR-2007 08:43	count		20754.0000		
30-APR-2007 08:18	count		20680.0000		
1-MAY-2007 10:49	count		20573.0000		

2-MAY-2007 08:40	count	20380.0000			
3-MAY-2007 09:19	count	20457.0000			
4-MAY-2007 08:45	count	20699.0000			
7-MAY-2007 08:21	count	20751.0000			
8-MAY-2007 08:21	count	20392.0000			
9-MAY-2007 09:25	count	20388.0000			
10-MAY-2007 08:23	count	20714.0000			
11-MAY-2007 08:18	count	20698.0000			
14-MAY-2007 08:46	count	20382.0000			
15-MAY-2007 08:17	count	20518.0000			
16-MAY-2007 10:04	count	20586.0000			
17-MAY-2007 08:27	count	20573.0000			
21-MAY-2007 08:27	count	20619.0000			
22-MAY-2007 09:01	count	20566.0000			
23-MAY-2007 09:42	count	20678.0000			
25-MAY-2007 08:17	count	20286.0000			
29-MAY-2007 08:51	count	20592.0000			

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

Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS	Rej
30-MAY-2007 09:24	count		20611.0000					
31-MAY-2007 08:53	count		20658.0000					
1-JUN-2007 09:03	count		20278.0000					
4-JUN-2007 08:21	count		20598.0000					
5-JUN-2007 09:26	count		20777.0000					
6-JUN-2007 09:55	count		20428.0000					
7-JUN-2007 07:17	count		20787.0000					
8-JUN-2007 06:42	count		20707.0000					
11-JUN-2007 08:40	count		20489.0000					
12-JUN-2007 08:19	count		20715.0000					
13-JUN-2007 08:54	count		20502.0000					
14-JUN-2007 10:12	count		20513.0000					
15-JUN-2007 09:22	count		20480.0000					
18-JUN-2007 08:39	count		20517.0000					
19-JUN-2007 09:05	count		20500.0000					
20-JUN-2007 08:48	count		20805.0000					
21-JUN-2007 08:51	count		20770.0000					

Quality Assurance Report.

Generated 12-JUL-2007 11:44:51.39

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
30-APR-2007 17:15	count		0.0000	
25-MAY-2007 16:15	count		0.0000	

Quality Assurance Report.

Generated 12-JUL-2007 11:44:45.48

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
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2-APR-2007 08:23	count		23431.0000		
3-APR-2007 08:48	count		23581.0000		
4-APR-2007 08:44	count		23356.0000		
5-APR-2007 08:38	count		23641.0000		
6-APR-2007 09:03	count		23782.0000		
9-APR-2007 08:22	count		23636.0000		
10-APR-2007 08:14	count		23607.0000		
11-APR-2007 08:32	count		23358.0000		
12-APR-2007 08:29	count		23960.0000		
12-APR-2007 08:47	count		23659.0000		
13-APR-2007 08:45	count		23529.0000		
16-APR-2007 08:17	count		23572.0000		
17-APR-2007 09:16	count		23689.0000		
18-APR-2007 08:34	count		23460.0000		
19-APR-2007 08:18	count		23961.0000		
19-APR-2007 08:36	count		23569.0000		
20-APR-2007 07:27	count		23747.0000		
23-APR-2007 08:16	count		23667.0000		
24-APR-2007 08:16	count		23778.0000		
25-APR-2007 08:08	count		23765.0000		
26-APR-2007 08:30	count		23393.0000		

30-APR-2007 08:04	count	23508.0000			
1-MAY-2007 10:35	count	23324.0000			
2-MAY-2007 08:17	count	23449.0000			
3-MAY-2007 08:59	count	23393.0000			
4-MAY-2007 08:22	count	23716.0000			
7-MAY-2007 08:04	count	23695.0000			
8-MAY-2007 08:04	count	23487.0000			
9-MAY-2007 08:21	count	23641.0000			
10-MAY-2007 08:09	count	23474.0000			
11-MAY-2007 08:03	count	23597.0000			
13-MAY-2007 13:47	count	23622.0000			
14-MAY-2007 08:31	count	23472.0000			
15-MAY-2007 08:01	count	23590.0000			
16-MAY-2007 09:44	count	23762.0000			
17-MAY-2007 08:10	count	23478.0000			
18-MAY-2007 10:41	count	23459.0000			
21-MAY-2007 08:13	count	23542.0000			

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS	Rej
22-MAY-2007 08:31	count		23536.0000					
23-MAY-2007 09:28	count		23711.0000					
25-MAY-2007 08:00	count		23695.0000					
29-MAY-2007 08:36	count		23725.0000					
30-MAY-2007 08:34	count		23724.0000					
31-MAY-2007 08:38	count		23605.0000					
1-JUN-2007 08:42	count		23582.0000					
4-JUN-2007 08:07	count		23737.0000					
5-JUN-2007 08:47	count		23625.0000					
6-JUN-2007 09:26	count		23901.0000					
6-JUN-2007 09:42	count		No Value					
7-JUN-2007 08:27	count		23863.0000					
8-JUN-2007 06:25	count		23711.0000					
11-JUN-2007 08:17	count		23784.0000					
12-JUN-2007 08:05	count		23669.0000					
13-JUN-2007 08:24	count		23757.0000					
14-JUN-2007 09:53	count		23525.0000					
15-JUN-2007 09:00	count		23556.0000					
18-JUN-2007 08:22	count		23741.0000					
19-JUN-2007 08:29	count		23417.0000					
19-JUN-2007 08:45	count		No Value					
20-JUN-2007 08:23	count		23462.0000					

21-JUN-2007 08:36 count 23600.0000 | | |

Quality Assurance Report. Generated 12-JUL-2007 11:44:46.63

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
30-APR-2007 17:15	count		3.0000		
25-MAY-2007 16:15	count		4.0000		

Quality Assurance Report.

Generated 12-JUL-2007 11:44:38.54

QA Filename : \$DISK1:[SCINT10.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-10

Parameter Units : counts Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 11242.000000 Upper Bound : 12058.000000

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 : 11650.000000 Std Deviation : 136.252686

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 08:04	count		11579.0000		
3-APR-2007 08:07	count		11332.0000	In	
4-APR-2007 08:07	count		11708.0000		
5-APR-2007 08:08	count		11690.0000		
6-APR-2007 07:57	count		11523.0000		
9-APR-2007 07:59	count		11556.0000		
10-APR-2007 07:53	count		11577.0000		
11-APR-2007 08:13	count		11537.0000		
12-APR-2007 08:16	count		11575.0000		
13-APR-2007 08:24	count		11667.0000		
16-APR-2007 07:56	count		11740.0000		
17-APR-2007 08:30	count		11597.0000		
18-APR-2007 08:16	count		11570.0000		
19-APR-2007 07:58	count		11447.0000		
20-APR-2007 07:07	count		11610.0000		
23-APR-2007 07:55	count		11661.0000		
24-APR-2007 08:46	count		11551.0000		
25-APR-2007 07:50	count		11645.0000		
26-APR-2007 08:11	count		11708.0000		
30-APR-2007 07:46	count		11640.0000		
1-MAY-2007 10:21	count		11619.0000		

2-MAY-2007 08:02	count	11712.0000	
3-MAY-2007 08:43	count	11919.0000	
4-MAY-2007 08:07	count	11633.0000	
7-MAY-2007 07:50	count	11753.0000	
8-MAY-2007 07:50	count	11853.0000	
9-MAY-2007 07:57	count	11644.0000	
10-MAY-2007 07:55	count	11449.0000	
11-MAY-2007 07:47	count	11464.0000	
14-MAY-2007 08:15	count	11494.0000	
15-MAY-2007 07:43	count	11315.0000	In
16-MAY-2007 09:28	count	11598.0000	
17-MAY-2007 07:50	count	11536.0000	
21-MAY-2007 07:57	count	11552.0000	
22-MAY-2007 08:16	count	11638.0000	
23-MAY-2007 09:16	count	11718.0000	
25-MAY-2007 07:45	count	11631.0000	
29-MAY-2007 08:13	count	11699.0000	

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

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

30-MAY-2007 08:15	count		11647.0000		
31-MAY-2007 08:24	count		11685.0000		
1-JUN-2007 08:00	count		11678.0000		
4-JUN-2007 07:46	count		12051.0000	In	
5-JUN-2007 08:10	count		11679.0000		
6-JUN-2007 09:08	count		11537.0000		
7-JUN-2007 07:16	count		11681.0000		
8-JUN-2007 05:54	count		11674.0000		
11-JUN-2007 08:04	count		11568.0000		
12-JUN-2007 07:47	count		11662.0000		
13-JUN-2007 08:10	count		11790.0000		
14-JUN-2007 09:37	count		11846.0000		
15-JUN-2007 08:31	count		11746.0000		
18-JUN-2007 08:02	count		11631.0000		
19-JUN-2007 08:12	count		11810.0000		
20-JUN-2007 08:03	count		11806.0000		
21-JUN-2007 08:19	count		11424.0000		

Quality Assurance Report.

Generated 12-JUL-2007 11:44:39.75

QA Filename : \$DISK1:[SCINT10.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-10
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 : 1.142857 Std Deviation : 0.899735

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
30-APR-2007 17:15	count		1.0000	
25-MAY-2007 16:15	count		0.0000	

Quality Assurance Report.

Generated 12-JUL-2007 11:44:30.26

QA Filename : \$DISK1:[SCINT9.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-9

Parameter Units : counts Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 380458.000000 Upper Bound : 424024.000000

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 : 402241.093750 Std Deviation : 7261.176758

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 08:51	count		408080.0000		
3-APR-2007 08:48	count		397708.0000		
4-APR-2007 08:44	count		401972.0000		
5-APR-2007 09:04	count		397641.0000		
6-APR-2007 09:02	count		400111.0000		
9-APR-2007 09:07	count		400187.0000		
10-APR-2007 08:32	count		404336.0000		
11-APR-2007 09:06	count		401301.0000		
12-APR-2007 08:47	count		415454.0000		
13-APR-2007 09:17	count		404421.0000		
16-APR-2007 08:51	count		397428.0000		
17-APR-2007 09:15	count		402650.0000		
18-APR-2007 08:56	count		402211.0000		
19-APR-2007 08:36	count		408629.0000		
20-APR-2007 07:52	count		413608.0000		
23-APR-2007 08:34	count		408337.0000		
24-APR-2007 08:30	count		404633.0000		
25-APR-2007 08:22	count		413138.0000		
26-APR-2007 08:43	count		406874.0000		
30-APR-2007 08:17	count		403431.0000		
1-MAY-2007 10:48	count		417589.0000	In	

2-MAY-2007 08:39	count	414091.0000			
3-MAY-2007 09:18	count	409925.0000			
4-MAY-2007 08:45	count	409157.0000			
7-MAY-2007 08:21	count	396611.0000			
8-MAY-2007 08:21	count	404778.0000			
9-MAY-2007 09:25	count	404587.0000			
10-MAY-2007 08:23	count	403077.0000			
11-MAY-2007 08:18	count	403523.0000			
14-MAY-2007 08:46	count	399455.0000			
15-MAY-2007 08:17	count	406745.0000			
16-MAY-2007 10:03	count	409577.0000			
17-MAY-2007 08:26	count	401646.0000			
21-MAY-2007 08:27	count	407489.0000			
22-MAY-2007 09:01	count	398943.0000			
23-MAY-2007 09:42	count	395633.0000			
23-MAY-2007 09:57	count	392756.0000			
25-MAY-2007 08:17	count	398285.0000			

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
29-MAY-2007 08:51	count	395581.0000			
29-MAY-2007 09:04	count	391457.0000			
30-MAY-2007 09:03	count	403077.0000			
31-MAY-2007 08:53	count	401569.0000			
1-JUN-2007 09:04	count	403408.0000			
4-JUN-2007 08:21	count	404712.0000			
5-JUN-2007 09:26	count	405263.0000			
6-JUN-2007 09:42	count	405439.0000			
7-JUN-2007 08:27	count	402981.0000			
8-JUN-2007 06:42	count	395252.0000			
8-JUN-2007 07:17	count	392415.0000			
11-JUN-2007 08:39	count	397553.0000			
12-JUN-2007 08:19	count	401030.0000			
13-JUN-2007 08:54	count	395651.0000			
13-JUN-2007 09:15	count	393371.0000			
14-JUN-2007 10:12	count	403346.0000			
15-JUN-2007 09:22	count	224431.0000	Be Ac		R
15-JUN-2007 09:52	count	394107.0000			
18-JUN-2007 08:38	count	397318.0000			
19-JUN-2007 08:45	count	398518.0000			
20-JUN-2007 08:48	count	391343.0000			
20-JUN-2007 09:02	count	401154.0000			

21-JUN-2007 08:19 count 395552.0000 | | |
21-JUN-2007 09:08 count 394360.0000 | | |

Quality Assurance Report. Generated 12-JUL-2007 11:44:31.11

QA Filename : \$DISK1:[SCINT9.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-9
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
30-APR-2007 17:15	count		0.0000	
25-MAY-2007 16:15	count		0.0000	

Quality Assurance Report.

Generated 12-JUL-2007 11:44:21.22

QA Filename : \$DISK1:[SCINT8.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-8

Parameter Units : counts Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 384784.000000 Upper Bound : 426946.000000

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 : 405865.250000 Std Deviation : 7027.312012

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 08:22	count		415758.0000		
3-APR-2007 08:27	count		400168.0000		
4-APR-2007 08:26	count		401259.0000		
5-APR-2007 08:38	count		400590.0000		
6-APR-2007 08:18	count		409732.0000		
9-APR-2007 08:22	count		408639.0000		
10-APR-2007 08:14	count		407209.0000		
11-APR-2007 08:32	count		400460.0000		
12-APR-2007 08:29	count		414591.0000		
13-APR-2007 08:44	count		406359.0000		
16-APR-2007 08:17	count		399746.0000		
17-APR-2007 08:52	count		401692.0000		
18-APR-2007 08:34	count		403582.0000		
19-APR-2007 08:18	count		408430.0000		
20-APR-2007 07:26	count		414215.0000		
23-APR-2007 08:15	count		405752.0000		
24-APR-2007 08:16	count		408124.0000		
25-APR-2007 08:08	count		413950.0000		
26-APR-2007 08:29	count		402385.0000		
30-APR-2007 08:04	count		400832.0000		
1-MAY-2007 10:35	count		409042.0000		

2-MAY-2007 08:17	count	415212.0000			
3-MAY-2007 08:59	count	406927.0000			
4-MAY-2007 08:21	count	410155.0000			
7-MAY-2007 08:04	count	405182.0000			
8-MAY-2007 08:04	count	405951.0000			
9-MAY-2007 08:20	count	409923.0000			
10-MAY-2007 08:08	count	403870.0000			
11-MAY-2007 08:03	count	414632.0000			
14-MAY-2007 08:30	count	402325.0000			
15-MAY-2007 08:00	count	409971.0000			
16-MAY-2007 09:44	count	408185.0000			
17-MAY-2007 08:10	count	401738.0000			
21-MAY-2007 08:13	count	403655.0000			
22-MAY-2007 08:30	count	399878.0000			
23-MAY-2007 09:28	count	400025.0000			
25-MAY-2007 08:00	count	401678.0000			
29-MAY-2007 08:35	count	397360.0000			

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

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
30-MAY-2007 08:33	count		401557.0000		
31-MAY-2007 08:37	count		415305.0000		
1-JUN-2007 08:53	count		400010.0000		
4-JUN-2007 08:07	count		402958.0000		
5-JUN-2007 08:47	count		407803.0000		
6-JUN-2007 09:26	count		404304.0000		
7-JUN-2007 08:10	count		405857.0000		
8-JUN-2007 06:24	count		398800.0000		
9-JUN-2007 07:49	count		403888.0000		
11-JUN-2007 08:16	count		398840.0000		
12-JUN-2007 08:04	count		401472.0000		
13-JUN-2007 08:24	count		402509.0000		
14-JUN-2007 09:53	count		402367.0000		
15-JUN-2007 09:00	count		403177.0000		
18-JUN-2007 08:22	count		393974.0000		
19-JUN-2007 08:29	count		406336.0000		
20-JUN-2007 08:23	count		392189.0000		
21-JUN-2007 08:51	count		410680.0000		

Quality Assurance Report. Generated 12-JUL-2007 11:44:21.64

QA Filename : \$DISK1:[SCINT8.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-8
 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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30-APR-2007 17:15	count		0.0000	
25-MAY-2007 16:15	count		0.0000	

Quality Assurance Report.

Generated 12-JUL-2007 11:44:08.27

QA Filename : \$DISK1:[SCINT7.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-7

Parameter Units : counts Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 395176.000000 Upper Bound : 430269.000000

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 : 412722.750000 Std Deviation : 5848.966797

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 08:04	count		416311.0000		
3-APR-2007 08:07	count		409635.0000		
4-APR-2007 08:07	count		400331.0000	In	
5-APR-2007 08:08	count		412306.0000		
6-APR-2007 07:57	count		416556.0000		
9-APR-2007 07:59	count		413741.0000		
10-APR-2007 07:53	count		408970.0000		
11-APR-2007 08:13	count		417410.0000		
12-APR-2007 08:16	count		423022.0000		
13-APR-2007 08:24	count		413213.0000		
16-APR-2007 07:56	count		411934.0000		
17-APR-2007 08:30	count		408304.0000		
18-APR-2007 08:16	count		412408.0000		
19-APR-2007 07:58	count		417597.0000		
20-APR-2007 07:07	count		422993.0000		
23-APR-2007 07:55	count		421430.0000		
24-APR-2007 07:58	count		407862.0000		
25-APR-2007 07:50	count		415586.0000		
26-APR-2007 08:11	count		409707.0000		
30-APR-2007 07:46	count		411168.0000		
1-MAY-2007 10:21	count		420852.0000		

2-MAY-2007 08:02	count	420212.0000			
3-MAY-2007 08:43	count	417274.0000			
4-MAY-2007 08:07	count	414151.0000			
7-MAY-2007 07:50	count	408748.0000			
8-MAY-2007 07:50	count	413924.0000			
9-MAY-2007 07:57	count	422952.0000			
10-MAY-2007 07:55	count	411263.0000			
11-MAY-2007 07:47	count	415600.0000			
13-MAY-2007 13:47	count	408459.0000			
14-MAY-2007 08:15	count	407412.0000			
15-MAY-2007 07:43	count	418408.0000			
16-MAY-2007 09:28	count	417440.0000			
17-MAY-2007 07:50	count	412973.0000			
21-MAY-2007 07:57	count	412168.0000			
22-MAY-2007 08:16	count	414175.0000			
23-MAY-2007 09:16	count	407563.0000			
25-MAY-2007 07:45	count	408092.0000			

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS	Rej
29-MAY-2007 08:13	count		404332.0000					
30-MAY-2007 08:15	count		411495.0000					
31-MAY-2007 08:24	count		423126.0000					
1-JUN-2007 08:40	count		409800.0000					
4-JUN-2007 07:46	count		408738.0000					
5-JUN-2007 08:30	count		415579.0000					
6-JUN-2007 09:08	count		411230.0000					
7-JUN-2007 07:16	count		415576.0000					
8-JUN-2007 05:54	count		406902.0000					
9-JUN-2007 07:28	count		414654.0000					
11-JUN-2007 08:04	count		410114.0000					
12-JUN-2007 07:47	count		408775.0000					
13-JUN-2007 08:10	count		409233.0000					
14-JUN-2007 09:37	count		409007.0000					
15-JUN-2007 08:31	count		418337.0000					
18-JUN-2007 08:03	count		406119.0000					
19-JUN-2007 08:12	count		413155.0000					
20-JUN-2007 08:03	count		417435.0000					
21-JUN-2007 08:35	count		410355.0000					

Quality Assurance Report.

Generated 12-JUL-2007 11:44:08.67

QA Filename : \$DISK1:[SCINT7.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-7

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 : 0.857143 Std Deviation : 2.267787

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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30-APR-2007 17:15	count		0.0000		
25-MAY-2007 16:15	count		0.0000		

Quality Assurance Report.

Generated 12-JUL-2007 11:44:03.41

QA Filename : \$DISK1:[SCINT6.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-6

Parameter Units : counts Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 23463.000000 Upper Bound : 25491.000000

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 : 24477.566406 Std Deviation : 338.038757

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 08:22	count		24846.0000	
2-APR-2007 08:51	count		24649.0000	
3-APR-2007 08:48	count		24891.0000	
3-APR-2007 09:24	count		24680.0000	
4-APR-2007 09:16	count		24683.0000	
4-APR-2007 09:37	count		24997.0000	
5-APR-2007 09:04	count		24992.0000	
5-APR-2007 09:34	count		25110.0000	
6-APR-2007 09:02	count		24746.0000	
6-APR-2007 09:23	count		24508.0000	
9-APR-2007 09:07	count		24851.0000	
9-APR-2007 09:26	count		25010.0000	
10-APR-2007 08:32	count		24633.0000	
10-APR-2007 08:52	count		24532.0000	
11-APR-2007 09:06	count		24515.0000	
12-APR-2007 08:47	count		24719.0000	
12-APR-2007 09:08	count		24857.0000	
13-APR-2007 09:17	count		24437.0000	
16-APR-2007 08:51	count		24621.0000	
16-APR-2007 09:38	count		24881.0000	
17-APR-2007 09:15	count		24677.0000	

17-APR-2007 09:36	count	24789.0000	
18-APR-2007 08:56	count	24890.0000	
18-APR-2007 09:11	count	24924.0000	
19-APR-2007 08:35	count	24923.0000	
19-APR-2007 09:02	count	24757.0000	
20-APR-2007 07:50	count	23975.0000	
23-APR-2007 08:33	count	24152.0000	
24-APR-2007 08:30	count	24088.0000	
25-APR-2007 08:22	count	24094.0000	
26-APR-2007 08:42	count	24061.0000	
30-APR-2007 08:17	count	23798.0000	In
1-MAY-2007 10:48	count	24452.0000	
2-MAY-2007 08:39	count	23785.0000	In
3-MAY-2007 09:18	count	24120.0000	
4-MAY-2007 08:45	count	23870.0000	
7-MAY-2007 08:21	count	23895.0000	
8-MAY-2007 08:21	count	24334.0000	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
9-MAY-2007 09:25	count	24141.0000		
10-MAY-2007 08:23	count	24128.0000		
11-MAY-2007 08:18	count	24022.0000		
14-MAY-2007 08:46	count	23858.0000		
15-MAY-2007 08:17	count	24314.0000		
16-MAY-2007 10:03	count	23806.0000		
17-MAY-2007 08:26	count	24198.0000		
21-MAY-2007 08:26	count	24220.0000		
22-MAY-2007 09:01	count	23956.0000		
23-MAY-2007 09:42	count	24218.0000		
25-MAY-2007 08:17	count	24128.0000		
29-MAY-2007 08:51	count	24224.0000		
30-MAY-2007 09:03	count	24299.0000		
31-MAY-2007 08:53	count	24319.0000		
1-JUN-2007 09:03	count	24136.0000		
4-JUN-2007 08:21	count	24262.0000		
5-JUN-2007 09:26	count	24033.0000		
6-JUN-2007 09:42	count	24136.0000		
7-JUN-2007 08:10	count	24371.0000		
8-JUN-2007 07:17	count	23936.0000		
11-JUN-2007 08:39	count	24275.0000		
12-JUN-2007 08:19	count	24147.0000		

13-JUN-2007 08:53	count	24044.0000			
14-JUN-2007 10:12	count	24144.0000			
15-JUN-2007 09:21	count	No Value			R
15-JUN-2007 09:52	count	24254.0000			
18-JUN-2007 08:38	count	24374.0000			
19-JUN-2007 08:42	count	24064.0000			
20-JUN-2007 08:48	count	24247.0000			
21-JUN-2007 08:19	count	24371.0000			

Quality Assurance Report. Generated 12-JUL-2007 11:44:03.80

QA Filename : \$DISK1:[SCINT6.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-6
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 : 2.000000 Std Deviation : 1.603567

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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30-APR-2007 17:15	count		1.0000			
25-MAY-2007 16:15	count		3.0000			

Quality Assurance Report.

Generated 12-JUL-2007 11:44:16.09

QA Filename : \$DISK1:[SCINT5.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-5

Parameter Units : counts Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 16529.000000 Upper Bound : 19187.000000

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 : 17858.449219 Std Deviation : 443.435150

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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3-APR-2007 08:27	count		17699.0000		
4-APR-2007 08:44	count		17671.0000		
5-APR-2007 08:38	count		17938.0000		
6-APR-2007 08:18	count		17770.0000		
9-APR-2007 08:22	count		18004.0000		
10-APR-2007 08:14	count		17717.0000		
11-APR-2007 08:32	count		17783.0000		
12-APR-2007 08:29	count		18046.0000		
13-APR-2007 08:44	count		17740.0000		
16-APR-2007 08:17	count		18347.0000		
17-APR-2007 08:51	count		17908.0000		
18-APR-2007 08:34	count		17899.0000		
19-APR-2007 08:18	count		17758.0000		
20-APR-2007 07:26	count		17930.0000		
23-APR-2007 08:15	count		17797.0000		
24-APR-2007 08:16	count		17972.0000		
25-APR-2007 08:07	count		18002.0000		
26-APR-2007 08:29	count		17840.0000		
30-APR-2007 08:04	count		18206.0000		
1-MAY-2007 10:35	count		18145.0000		
2-MAY-2007 08:17	count		18094.0000		

3-MAY-2007 08:58	count	17953.0000			
4-MAY-2007 08:21	count	17819.0000			
7-MAY-2007 08:04	count	18003.0000			
8-MAY-2007 08:04	count	18141.0000			
9-MAY-2007 08:20	count	18021.0000			
10-MAY-2007 08:08	count	17929.0000			
11-MAY-2007 08:03	count	17812.0000			
14-MAY-2007 08:30	count	18011.0000			
15-MAY-2007 08:00	count	17984.0000			
16-MAY-2007 09:44	count	18324.0000			
17-MAY-2007 08:09	count	17953.0000			
21-MAY-2007 08:13	count	18443.0000			
21-MAY-2007 08:39	count	17544.0000			
22-MAY-2007 08:30	count	18025.0000			
23-MAY-2007 09:28	count	18123.0000			
25-MAY-2007 08:00	count	18235.0000			
29-MAY-2007 08:35	count	18039.0000			

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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30-MAY-2007 08:33	count	18210.0000			
31-MAY-2007 08:37	count	18038.0000			
1-JUN-2007 08:41	count	18248.0000			
4-JUN-2007 08:07	count	17971.0000			
5-JUN-2007 08:47	count	18266.0000			
6-JUN-2007 09:26	count	18294.0000			
7-JUN-2007 07:34	count	18412.0000			
7-JUN-2007 07:47	count	18385.0000			
8-JUN-2007 06:24	count	18459.0000			
8-JUN-2007 06:42	count	18159.0000			
9-JUN-2007 07:49	count	18434.0000			
9-JUN-2007 08:05	count	18250.0000			
11-JUN-2007 08:16	count	18482.0000			
11-JUN-2007 08:58	count	18027.0000			
12-JUN-2007 08:04	count	18200.0000			
13-JUN-2007 08:24	count	18013.0000			
14-JUN-2007 09:53	count	18055.0000			
15-JUN-2007 09:00	count	18337.0000			
18-JUN-2007 08:21	count	18484.0000			
18-JUN-2007 08:51	count	18211.0000			
19-JUN-2007 08:28	count	17992.0000			
20-JUN-2007 08:23	count	18294.0000			

21-JUN-2007 08:51 count 18438.0000 | | |
 21-JUN-2007 09:08 count 18115.0000 | | |

Quality Assurance Report. Generated 12-JUL-2007 11:44:16.45

QA Filename : \$DISK1:[SCINT5.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-5
 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 : 3778.179199 Std Deviation : 37901.007813

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS Rej
2-APR-2007 08:00	count		0.0000	
30-APR-2007 17:15	count		1.0000	
25-MAY-2007 16:14	count		0.0000	

Quality Assurance Report.

Generated 12-JUL-2007 11:43:57.97

QA Filename : \$DISK1:[SCINT4.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-4

Parameter Units : counts Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 23957.000000 Upper Bound : 25361.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Trend Test Test Parameters ----

N Mean Samples : 10 M Slope Samples: 10

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 1-JAN-2007 00:00 End Date : 1-JUL-2007 00:00

Mean : 24659.130859 Std Deviation : 234.288513

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 08:04	count		24458.0000		
3-APR-2007 08:07	count		24695.0000		
4-APR-2007 08:06	count		25068.0000		
4-APR-2007 08:25	count		24825.0000		
5-APR-2007 08:07	count		24746.0000		
6-APR-2007 07:56	count		24929.0000		
9-APR-2007 07:59	count		24928.0000		
10-APR-2007 07:53	count		24543.0000		
11-APR-2007 08:13	count		24608.0000		
12-APR-2007 08:16	count		24842.0000		
13-APR-2007 08:24	count		24370.0000		
16-APR-2007 07:56	count		24927.0000		
17-APR-2007 08:30	count		24525.0000		
18-APR-2007 08:16	count		24814.0000		
19-APR-2007 07:58	count		24754.0000		
20-APR-2007 07:07	count		24378.0000		
23-APR-2007 07:55	count		24312.0000		
24-APR-2007 07:58	count		24777.0000		

25-APR-2007 07:50	count	24336.0000			
26-APR-2007 08:11	count	25064.0000			
26-APR-2007 08:55	count	24864.0000			
30-APR-2007 07:46	count	24737.0000			
1-MAY-2007 10:21	count	25003.0000			
2-MAY-2007 08:02	count	24810.0000			
3-MAY-2007 08:43	count	24643.0000			
4-MAY-2007 08:07	count	24485.0000			
7-MAY-2007 07:50	count	24600.0000			
8-MAY-2007 07:50	count	24647.0000			
9-MAY-2007 07:57	count	24926.0000			
10-MAY-2007 07:55	count	24756.0000			
11-MAY-2007 07:47	count	24745.0000			
13-MAY-2007 13:47	count	25035.0000			
14-MAY-2007 08:15	count	24485.0000			
15-MAY-2007 07:43	count	25001.0000			
16-MAY-2007 09:27	count	25010.0000			

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS	Rej
17-MAY-2007 07:50	count		24786.0000					
21-MAY-2007 07:57	count		24730.0000					
22-MAY-2007 08:16	count		24795.0000					
23-MAY-2007 09:16	count		24909.0000					
25-MAY-2007 07:45	count		25003.0000					
29-MAY-2007 08:12	count		24762.0000					
30-MAY-2007 08:15	count		24738.0000					
31-MAY-2007 08:24	count		24889.0000					
1-JUN-2007 07:59	count		24811.0000					
4-JUN-2007 07:46	count		24771.0000					
5-JUN-2007 08:10	count		24508.0000					
6-JUN-2007 09:08	count		24536.0000					
7-JUN-2007 07:16	count		24613.0000					
8-JUN-2007 05:54	count		24858.0000					
9-JUN-2007 07:28	count		24658.0000					
11-JUN-2007 08:04	count		24598.0000					
12-JUN-2007 07:47	count		24760.0000					
13-JUN-2007 08:10	count		24496.0000					
14-JUN-2007 09:37	count		24794.0000					
15-JUN-2007 08:31	count		24550.0000					
18-JUN-2007 08:02	count		24993.0000					
19-JUN-2007 08:12	count		24458.0000					

20-JUN-2007 08:03	count	24974.0000	
21-JUN-2007 08:35	count	24547.0000	

Quality Assurance Report. Generated 12-JUL-2007 11:43:58.38

QA Filename : \$DISK1:[SCINT4.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-4
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 : 4.540541 Std Deviation : 16.366680

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

30-APR-2007 17:15	count		3.0000	
25-MAY-2007 16:14	count		2.0000	

Quality Assurance Report.

Generated 12-JUL-2007 11:43:50.96

QA Filename : \$DISK1:[SCINT3.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-3

Parameter Units : counts Parameter Type : Manual

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 254392.000000 Upper Bound : 270567.000000

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 : 262480.093750 Std Deviation : 2695.693359

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 08:51	count		264099.0000		
3-APR-2007 08:48	count		259785.0000		
4-APR-2007 08:43	count		266734.0000		
5-APR-2007 09:04	count		259153.0000		
6-APR-2007 09:02	count		262136.0000		
9-APR-2007 09:07	count		261444.0000		
10-APR-2007 08:32	count		263450.0000		
11-APR-2007 09:06	count		265005.0000		
12-APR-2007 08:47	count		265487.0000		
13-APR-2007 09:17	count		262609.0000		
16-APR-2007 08:51	count		264148.0000		
17-APR-2007 09:15	count		262439.0000		
18-APR-2007 08:56	count		262754.0000		
19-APR-2007 08:35	count		263761.0000		
20-APR-2007 08:09	count		263377.0000		
23-APR-2007 08:33	count		264751.0000		
24-APR-2007 08:30	count		265165.0000		
25-APR-2007 08:22	count		264678.0000		
26-APR-2007 08:42	count		263755.0000		
30-APR-2007 08:17	count		264916.0000		
1-MAY-2007 10:48	count		266829.0000		

2-MAY-2007 08:39	count	267233.0000			
3-MAY-2007 09:18	count	264996.0000			
4-MAY-2007 08:45	count	265484.0000			
7-MAY-2007 08:21	count	261384.0000			
8-MAY-2007 08:21	count	265883.0000			
9-MAY-2007 09:24	count	260963.0000			
10-MAY-2007 08:23	count	263299.0000			
11-MAY-2007 08:18	count	260018.0000			
14-MAY-2007 08:46	count	262784.0000			
15-MAY-2007 08:17	count	260517.0000			
16-MAY-2007 10:03	count	262764.0000			
17-MAY-2007 08:26	count	265253.0000			
21-MAY-2007 08:26	count	259561.0000			
22-MAY-2007 09:01	count	260797.0000			
23-MAY-2007 09:42	count	262500.0000			
25-MAY-2007 08:17	count	259202.0000			
29-MAY-2007 08:51	count	259141.0000			

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS	Rej
30-MAY-2007 09:03	count		264141.0000					
31-MAY-2007 08:53	count		264211.0000					
1-JUN-2007 09:03	count		264253.0000					
4-JUN-2007 08:21	count		264589.0000					
5-JUN-2007 09:26	count		264912.0000					
6-JUN-2007 09:42	count		263416.0000					
7-JUN-2007 08:27	count		263444.0000					
8-JUN-2007 06:42	count		259723.0000					
9-JUN-2007 07:49	count		260869.0000					
11-JUN-2007 08:39	count		259628.0000					
12-JUN-2007 08:19	count		260612.0000					
13-JUN-2007 08:53	count		261880.0000					
14-JUN-2007 10:12	count		261165.0000					
15-JUN-2007 09:21	count		260751.0000					
18-JUN-2007 08:38	count		259907.0000					
19-JUN-2007 08:42	count		260566.0000					
20-JUN-2007 08:48	count		259142.0000					
21-JUN-2007 08:51	count		262103.0000					

Quality Assurance Report.

Generated 12-JUL-2007 11:43:51.55

QA Filename : \$DISK1:[SCINT3.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-3
 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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30-APR-2007 17:15	count		0.0000		
25-MAY-2007 16:14	count		0.0000		

Quality Assurance Report.

Generated 12-JUL-2007 11:41:45.64

QA Filename : \$DISK1:[SCINT1.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-1

Parameter Units : counts Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 261532.000000 Upper Bound : 274615.000000

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 : 268074.031250 Std Deviation : 2180.427979

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
2-APR-2007 08:04	count		267336.0000		
3-APR-2007 08:07	count		266821.0000		
4-APR-2007 08:06	count		266569.0000		
5-APR-2007 08:07	count		266963.0000		
6-APR-2007 07:57	count		267205.0000		
9-APR-2007 07:59	count		270506.0000		
10-APR-2007 07:53	count		268624.0000		
11-APR-2007 08:13	count		266942.0000		
12-APR-2007 08:16	count		269101.0000		
13-APR-2007 08:24	count		268253.0000		
16-APR-2007 07:56	count		268791.0000		
17-APR-2007 08:30	count		268656.0000		
18-APR-2007 08:16	count		268046.0000		
19-APR-2007 07:58	count		268592.0000		
20-APR-2007 07:07	count		269769.0000		
23-APR-2007 07:55	count		268189.0000		
24-APR-2007 07:58	count		269820.0000		
25-APR-2007 07:50	count		269829.0000		
26-APR-2007 08:11	count		266753.0000		
30-APR-2007 07:46	count		266967.0000		
1-MAY-2007 10:21	count		272180.0000		

2-MAY-2007 08:02	count	271998.0000	
3-MAY-2007 08:43	count	268795.0000	
4-MAY-2007 08:07	count	270160.0000	
7-MAY-2007 07:50	count	267338.0000	
8-MAY-2007 07:50	count	270567.0000	
9-MAY-2007 07:57	count	267945.0000	
10-MAY-2007 07:55	count	268254.0000	
11-MAY-2007 07:47	count	266771.0000	
13-MAY-2007 13:47	count	268163.0000	
14-MAY-2007 08:15	count	266467.0000	
15-MAY-2007 07:43	count	268253.0000	
16-MAY-2007 09:27	count	270807.0000	
17-MAY-2007 07:50	count	272636.0000	In
21-MAY-2007 07:57	count	266947.0000	
22-MAY-2007 08:16	count	268469.0000	
23-MAY-2007 09:15	count	270855.0000	
25-MAY-2007 07:45	count	268222.0000	

Quality Assurance Multi-Test Full Report (continued)

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Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
29-MAY-2007 08:12	count	265886.0000			
30-MAY-2007 08:15	count	268173.0000			
31-MAY-2007 08:24	count	269826.0000			
1-JUN-2007 07:59	count	271069.0000			
4-JUN-2007 07:46	count	272751.0000	In		
5-JUN-2007 08:09	count	271790.0000			
6-JUN-2007 09:08	count	270762.0000			
7-JUN-2007 08:10	count	268559.0000			
8-JUN-2007 05:54	count	267653.0000			
9-JUN-2007 07:28	count	270211.0000			
11-JUN-2007 08:04	count	268147.0000			
12-JUN-2007 07:47	count	266664.0000			
13-JUN-2007 08:10	count	269727.0000			
14-JUN-2007 09:37	count	266677.0000			
15-JUN-2007 08:31	count	267606.0000			
18-JUN-2007 08:02	count	268286.0000			
19-JUN-2007 08:12	count	269321.0000			
20-JUN-2007 08:03	count	268342.0000			
21-JUN-2007 08:35	count	269704.0000			

Quality Assurance Report.

Generated 12-JUL-2007 11:41:46.03

QA Filename : \$DISK1:[SCINT1.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000min bkg, ascint-1

Parameter Units : counts Parameter Type : Generic

---- 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
30-APR-2007 17:14	count		0.0000		
25-MAY-2007 16:14	count		0.0000		

Quality Assurance Report.

Generated 12-JUL-2007 11:45:24.41

QA Filename : \$DISK1:[SCINT24.QA]CHK.QAF;1

-- Multi-Test Full Report --

Description : 10 min check, ascint-24

Parameter Units : counts Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----

Lower Bound : 45043.000000 Upper Bound : 47791.000000

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 : 46417.433594 Std Deviation : 458.412476

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej
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2-APR-2007 08:05	count		46605.0000		
3-APR-2007 08:08	count		46762.0000		
4-APR-2007 08:14	count		46840.0000		
5-APR-2007 08:08	count		47147.0000		
5-APR-2007 08:38	count		46735.0000		
6-APR-2007 07:57	count		46562.0000		
9-APR-2007 07:59	count		46610.0000		
10-APR-2007 07:54	count		46232.0000		
11-APR-2007 08:14	count		47269.0000		
11-APR-2007 09:06	count		46929.0000		
12-APR-2007 08:17	count		46612.0000		
13-APR-2007 08:24	count		47208.0000		
13-APR-2007 08:48	count		46548.0000		
16-APR-2007 07:57	count		46297.0000		
17-APR-2007 08:31	count		46560.0000		
18-APR-2007 08:16	count		46557.0000		
19-APR-2007 07:59	count		46775.0000		
20-APR-2007 07:07	count		46229.0000		
23-APR-2007 07:55	count		46717.0000		
24-APR-2007 07:59	count		46924.0000		
25-APR-2007 07:51	count		46728.0000		

26-APR-2007 08:11	count	46624.0000	
30-APR-2007 07:46	count	46911.0000	
1-MAY-2007 10:23	count	47053.0000	
2-MAY-2007 08:03	count	46843.0000	
3-MAY-2007 08:44	count	47112.0000	
3-MAY-2007 09:03	count	46764.0000	
4-MAY-2007 08:07	count	46922.0000	
7-MAY-2007 07:51	count	47137.0000	
7-MAY-2007 08:08	count	46644.0000	
8-MAY-2007 07:51	count	47258.0000	
8-MAY-2007 08:30	count	47084.0000	
9-MAY-2007 07:58	count	46929.0000	
10-MAY-2007 08:41	count	47292.0000	
10-MAY-2007 08:55	count	47413.0000	In
11-MAY-2007 07:47	count	47542.0000	In
11-MAY-2007 08:24	count	47175.0000	
14-MAY-2007 08:16	count	46267.0000	

Quality Assurance Multi-Test Full Report (continued)

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

15-MAY-2007 07:44	count		46368.0000		
16-MAY-2007 09:28	count		46052.0000		
17-MAY-2007 07:50	count		46592.0000		
21-MAY-2007 07:58	count		0.0000	Be Ac	R
21-MAY-2007 08:29	count		46138.0000		
22-MAY-2007 08:16	count		45914.0000		
23-MAY-2007 09:16	count		45796.0000		
25-MAY-2007 07:45	count		46403.0000		
29-MAY-2007 08:13	count		46436.0000		
30-MAY-2007 08:15	count		46241.0000		
31-MAY-2007 08:24	count		46309.0000		
1-JUN-2007 08:00	count		46532.0000		
4-JUN-2007 07:46	count		46609.0000		
5-JUN-2007 08:10	count		46273.0000		
6-JUN-2007 09:08	count		46777.0000		
7-JUN-2007 07:17	count		46639.0000		
8-JUN-2007 05:55	count		45923.0000		
11-JUN-2007 08:04	count		46270.0000		
12-JUN-2007 07:48	count		45907.0000		
13-JUN-2007 08:11	count		46325.0000		
14-JUN-2007 09:37	count		46310.0000		
15-JUN-2007 08:32	count		46010.0000		

18-JUN-2007 08:03	count	46141.0000			
19-JUN-2007 08:13	count	45793.0000			
20-JUN-2007 08:04	count	46101.0000			
21-JUN-2007 08:20	count	46142.0000			

Quality Assurance Report. Generated 12-JUL-2007 11:45:24.81

QA Filename : \$DISK1:[SCINT24.QA]BKG.QAF;1

-- Multi-Test Full Report --

Description : 1000 min bkg, ascint-24
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 : 0.142857 Std Deviation : 0.377964

Measurement Time	Sample ID	Sample Analyst	Value	LU SD UD BS	Rej	
30-APR-2007 17:16	count		0.0000			
25-MAY-2007 16:15	count		0.0000			

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