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Analytical Data Package Prepared For

Brown and Caldwell

Yerington Air Quality - Event #105

Radiochemical Analysis By

STL Richland

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

Assigned Laboratory Code: STLR

Data Package Contains _____ Pages

Report No.: 33894

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
32992	ERA000194	000546	J6K060215-5	JH3L61AA	9JH3L610	6311391
		000546	J6K060215-5	JH3L61AE	9JH3L610	6311393
		000546	J6K060215-5	JH3L61AD	9JH3L610	6311396
		000546	J6K060215-5	JH3L62AC	9JH3L620	6325489
		P-0778	J6K060215-1	JH3LV1AE	9JH3LV10	6311393
		P-0778	J6K060215-1	JH3LV1AD	9JH3LV10	6311396
		P-0778	J6K060215-1	JH3LV2AA	9JH3LV20	6324152
		P-0778	J6K060215-1	JH3LV2AC	9JH3LV20	6325489
		P-0779	J6K060215-2	JH3L11AA	9JH3L110	6311391
		P-0779	J6K060215-2	JH3L11AE	9JH3L110	6311393
		P-0779	J6K060215-2	JH3L11AD	9JH3L110	6311396
		P-0779	J6K060215-2	JH3L12AC	9JH3L120	6325489
		P-0780	J6K060215-3	JH3L31AA	9JH3L310	6311391
		P-0780	J6K060215-3	JH3L31AE	9JH3L310	6311393
		P-0780	J6K060215-3	JH3L31AD	9JH3L310	6311396
		P-0780	J6K060215-3	JH3L32AC	9JH3L320	6325489
		P-0781	J6K060215-4	JH3L51AA	9JH3L510	6311391
		P-0781	J6K060215-4	JH3L51AE	9JH3L510	6311393
		P-0781	J6K060215-4	JH3L51AD	9JH3L510	6311396
		P-0781	J6K060215-4	JH3L52AC	9JH3L520	6325489

SEVERN TRENT STL

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Certificate of Analysis

December 5, 2006

Brown & Caldwell
2701 Prospect Park Drive
Rancho Cordova, CA 95670

Attention: Guy Graening

Date Received at Lab	:	November 3, 2006
Project Name	:	Air Quality Monitoring Yerington Mine
Project Number	:	121243
Event Number	:	105
PO Number	:	129682.001
Sample Type	:	Five (5) Filters
SDG Number	:	32992

CASE NARRATIVE

I. Introduction

On November 3, 2006, five filter samples were received at the STL Richland (STLR) laboratory for radiochemical analysis. Upon receipt, the samples were assigned the STLR identification numbers as described on the cover page of the Analytical Data Package report form. The samples were assigned to Lot Number J6K060215.

II. Sample Receipt

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

III. Analytical Results/Methodology

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

The analysis requested was:

Alpha Spectroscopy
Thorium-228, -230, -232 by method RICH-RC-5087
Gas Proportional Counters
Gross Alpha by method STL-RICHRC5016/5014
Radium-228 by method STL RICH-RC-5005
Alpha Scintillation Counter
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

Thorium-228, -230, -232:

Sample P-0778 had a 6% recovery on the first analysis. The sample was reanalyzed with good results. Data is accepted. Except as noted, the LCS, batch blank and sample results are within analytical requirements.

Gross Alpha Analysis:

The LCS, batch blank and sample results are within analytical requirements.

Radium-228 Analysis:

The LCS in this batch was added to the blank during the prep procedure. The blank was then recalculated as the LCS. All the samples in the batch are >CRDL and can act as their own blanks. Data accepted. Except as noted, the LCS, batch blank and sample results are within analytical requirements.

Radium-226 Analysis:

The LCS vial was added to the blank and the LCS only had a 54% recovery. The samples were reanalyzed. Data is accepted. Except as noted, the LCS, batch blank and sample results are within analytical requirements.

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:

Sherryl A. Adam
Project Manager

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 = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/vn), 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) *u_c - Combined Uncertainty.*	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. *u_c the combined uncertainty.* 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 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
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 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
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)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
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

STL Richland STLR

Ordered by Client Sample ID, Batch No.

Date: 05-Dec-06

Report No. : 33894

SDG No: 32992

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC|MDA	RER2
000546	JH3L61AA	TH-228	0.134 +- 0.186	ND	pCi/sample	104%	0.323	
		TH-230	0.520 +- 0.295	=	pCi/sample	104%	0.223	
		TH-232	0.111 +- 0.135	ND	pCi/sample	104%	0.223	
000546	JH3L61AE	ALPHA	4.04 +- 3.13	ND	pCi/sample	100%	4.58	
000546	JH3L61AD	RA-228	1.13 +- 1.04	ND	pCi/sample	94%	2.21	
000546	JH3L62AC	RA-226	-0.2130 +- 0.296	ND	pCi/sample	95%	0.66	
P-0778	JH3LV1AE	ALPHA	4.08 +- 3.47	ND	pCi/sample	100%	5.71	
P-0778	JH3LV1AD	RA-228	1.55 +- 1.16	ND	pCi/sample	96%	2.4	
P-0778	JH3LV2AA	TH-228	0.158 +- 0.218	ND	pCi/sample	86%	0.379	
		TH-230	0.130 +- 0.158	ND	pCi/sample	86%	0.26	
		TH-232	0.0433 +- 0.0971	ND	pCi/sample	86%	0.26	
P-0778	JH3LV2AC	RA-226	0.174 +- 0.511	ND	pCi/sample	95%	0.923	
P-0779	JH3L11AA	TH-228	0.0996 +- 0.117	ND	pCi/sample	101%	0.159	
		TH-230	0.160 +- 0.147	=	pCi/sample	101%	0.154	
		TH-232	0.00000 +- 0.0655	ND	pCi/sample	101%	0.154	
P-0779	JH3L11AE	ALPHA	7.22 +- 3.89	=	pCi/sample	100%	4.27	
P-0779	JH3L11AD	RA-228	1.05 +- 1.08	ND	pCi/sample	94%	2.35	
P-0779	JH3L12AC	RA-226	0.130 +- 0.377	ND	pCi/sample	100%	0.698	
P-0780	JH3L31AA	TH-228	0.133 +- 0.193	ND	pCi/sample	83%	0.319	
		TH-230	0.411 +- 0.305	=	pCi/sample	83%	0.308	
		TH-232	0.0514 +- 0.115	ND	pCi/sample	83%	0.308	
P-0780	JH3L31AE	ALPHA	3.50 +- 3.24	ND	pCi/sample	100%	5.46	
P-0780	JH3L31AD	RA-228	1.33 +- 1.22	ND	pCi/sample	97%	2.61	
P-0780	JH3L32AC	RA-226	0.125 +- 0.229	ND	pCi/sample	92%	0.411	
P-0781	JH3L51AA	TH-228	0.0930 +- 0.238	ND	pCi/sample	99%	0.501	
		TH-230	0.180 +- 0.188	ND	pCi/sample	99%	0.27	
		TH-232	0.00000 +- 0.101	ND	pCi/sample	99%	0.27	
P-0781	JH3L51AE	ALPHA	6.20 +- 3.77	=	pCi/sample	100%	5.03	
P-0781	JH3L51AD	RA-228	1.62 +- 1.16	ND	pCi/sample	90%	2.41	
P-0781	JH3L52AC	RA-226	0.00000 +- 0.291	ND	pCi/sample	99%	0.591	

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

= ERPIMS - Equal To, Analyte Detected

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

Sample Results Summary

STL Richland STLR

Ordered by Client Sample ID, Batch No.

Date: 05-Dec-06

Report No. : 33894

SDG No: 32992

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC|MDA	RER2

Number of Results: 30

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

rptSTLRchSaSum
V5.0.3 A2002

QC Results Summary
STL Richland STLR

Ordered by QC Type, Batch No.

Date: 05-Dec-06

Report No. : 33894

SDG No.: 32992

QC Type	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
BLANK QC	JH5N91AA	TH-228	0.00926 +- 0.0134	N	pCi/sample	108%			0.0222
		TH-230	0.00716 +- 0.0108	N	pCi/sample	108%			0.0215
		TH-232	0.00000 +- 0.00800	N	pCi/sample	108%			0.0215
BLANK QC	JH5PQ1AA	ALPHA	0.00184 +- 0.00342	N	pCi/sample	100%			0.00707
BLANK QC	JJ3RA1AA	TH-228	0.00592 +- 0.0119	N	pCi/sample	79%			0.0237
		TH-230	0.0284 +- 0.0223	=	pCi/sample	79%			0.0227
		TH-232	0.00379 +- 0.00850	N	pCi/sample	79%			0.0227
BLANK QC	JJ7A21AA	RA-226	-0.0239 +- 0.0869	N	pCi/sample	91%			0.179
LCS	JH5N91AC	TH-230	1.80 +- 0.357	=	pCi/sample	98%	98%	0.0	0.0228
LCS	JH5PQ1AC	ALPHA	0.182 +- 0.0426	=	pCi/sample	100%	99%	0.0	0.00951
LCS	JH5QD1AC	RA-228	4.46 +- 0.723	=	pCi/sample	90%	88%	-0.1	0.435
LCS	JJ3RA1AC	TH-230	1.77 +- 0.364	=	pCi/sample	81%	97%	0.0	0.0262
LCS	JJ7A21AC	RA-226	1.19 +- 0.518	=	pCi/sample	96%	88%	-0.1	0.116

Number of Results: 13

STL Richland

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

= ERPIMS - Equal To, Analyte Detected

ND 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: 05-Dec-06

Lab Name: STL Richland
Lot-Sample No.: J6K060215-5
Client Sample ID: 000546
Yerington Air Quality - Event #105

SDG: 32992
Report No. : 33894
COC No. :

Collection Date: 10/18/2006 12:00:00 PM
Received Date: 11/3/2006 10:00:00 AM
Matrix: FILTER AIR

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6311391	**Work Order:** JH3L61AA			**Report DB ID:** 9JH3L610								
TH-228	**0.134**	ND	0.18	0.19	0.323	pCi/sample	104%	*0.42*	11/15/06 09:17 a	1.0	0.08348	ISOTH
						0.109	1.0	*(1.4)*		Sample	Sample	ALP171
TH-230	**0.520**	=	0.28	0.29	0.223	pCi/sample	104%	*(2.3)*	11/15/06 09:17 a	1.0	0.08348	ISOTH
						0.0611	1.0	*(3.5)*		Sample	Sample	ALP171
TH-232	**0.111**	ND	0.13	0.14	0.223	pCi/sample	104%	*0.5*	11/15/06 09:17 a	1.0	0.08348	ISOTH
						0.0611	1.0	*(1.6)*		Sample	Sample	ALP171
Batch: 6311393	**Work Order:** JH3L61AE			**Report DB ID:** 9JH3L610								
ALPHA	**4.04**	ND	3.0	3.1	4.58	pCi/sample	100%	*0.88*	11/20/06 12:06 p	1.0	0.02082	E900.0
						1.78	20.0	*(2.6)*		Sample	Sample	GPC10E
Batch: 6311396	**Work Order:** JH3L61AD			**Report DB ID:** 9JH3L610								
RA-228	**1.13**	ND	0.98	1.0	2.21	pCi/sample	94%	*0.51*	11/22/06 07:43 a	1.0	0.24927	E904.0
						0.998	3.1	*(2.2)*		Sample	Sample	GPC1C
Batch: 6325489	**Work Order:** JH3L62AC			**Report DB ID:** 9JH3L620								
RA-226	**-0.2130**	ND	0.29	0.30	0.66	pCi/sample	95%	*-0.32*	12/2/06 12:25 p	1.0	0.24879	E903.1
						0.288	1.0	*-(1.4)*		Sample	Sample	ASC8HC

Number of Results: 6

Comments:

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
= ERPIMS - Equal To, Analyte Detected
ND 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: 05-Dec-06

Lab Name: STL Richland
SDG: 32992
Collection Date: 10/18/2006 11:05:00 AM
Lot-Sample No.: J6K060215-1
Report No. : 33894
Received Date: 11/3/2006 10:00:00 AM
Client Sample ID: P-0778
COC No. :
Matrix: FILTER AIR

Yerington Air Quality - Event #105

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6311393	**Work Order:** JH3LV1AE			**Report DB ID:** 9JH3LV10								
ALPHA	**4.08**	ND	3.4	3.5	5.71	pCi/sample	100%	*0.71*	11/20/06 12:06 p	1.0	0.02088	E900.0
						2.36	20.0	*(2.4)*		Sample	Sample	GPC10A
Batch: 6311396	**Work Order:** JH3LV1AD			**Report DB ID:** 9JH3LV10								
RA-228	**1.55**	ND	1.2	1.2	2.4	pCi/sample	96%	*0.65*	11/22/06 07:42 a	1.0	0.24995	E904.0
						1.1	3.1	*(2.7)*		Sample	Sample	GPC7A
Batch: 6324152	**Work Order:** JH3LV2AA			**Report DB ID:** 9JH3LV20								
TH-228	**0.158**	ND	0.22	0.22	0.379	pCi/sample	86%	*0.42*	11/22/06 12:45 a	1.0	0.0833	ISOTH
						0.128	1.0	*(1.4)*		Sample	Sample	ALP171
TH-230	**0.130**	ND	0.16	0.16	0.26	pCi/sample	86%	*0.5*	11/22/06 12:45 a	1.0	0.0833	ISOTH
						0.0712	1.0	*(1.6)*		Sample	Sample	ALP171
TH-232	**0.0433**	ND	0.097	0.097	0.26	pCi/sample	86%	*0.17*	11/22/06 12:45 a	1.0	0.0833	ISOTH
						0.0712	1.0	*0.89*		Sample	Sample	ALP171
Batch: 6325489	**Work Order:** JH3LV2AC			**Report DB ID:** 9JH3LV20								
RA-226	**0.174**	ND	0.51	0.51	0.923	pCi/sample	95%	*0.19*	12/2/06 12:26 p	1.0	0.24982	E903.1
						0.419	1.0	*0.68*		Sample	Sample	ASC1RH

Number of Results: 6

Comments:

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rptSTLRchSample
V5.0.3 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
= ERPIMS - Equal To, Analyte Detected
ND 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: 05-Dec-06

Lab Name: STL Richland
Lot-Sample No.: J6K060215-2
Client Sample ID: P-0779
Yerington Air Quality - Event #105

SDG: 32992
Report No. : 33894
COC No. :

Collection Date: 10/18/2006 11:30:00 AM
Received Date: 11/3/2006 10:00:00 AM
Matrix: FILTER AIR

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6311391	**Work Order:** JH3L11AA			**Report DB ID:** 9JH3L110								
TH-228	0.0996	ND	0.12	0.12	0.159	pCi/sample	101%	*0.63*	11/15/06 12:20 a	1.0	0.08354	ISOTH
						0.0345	1.0	*(1.7)*		Sample	Sample	ALP117
TH-230	0.160	=	0.14	0.15	0.154	pCi/sample	101%	*(1.)*	11/15/06 12:20 a	1.0	0.08354	ISOTH
						0.0334	1.0	*(2.2)*		Sample	Sample	ALP117
TH-232	0.00000	ND	0.0000	0.065	0.154	pCi/sample	101%	*0.*	11/15/06 12:20 a	1.0	0.08354	ISOTH
						0.0334	1.0	*0.*		Sample	Sample	ALP117
Batch: 6311393	**Work Order:** JH3L11AE			**Report DB ID:** 9JH3L110								
ALPHA	7.22	=	3.6	3.9	4.27	pCi/sample	100%	*(1.7)*	11/20/06 12:06 p	1.0	0.02084	E900.0
						1.65	20.0	*(3.7)*		Sample	Sample	GPC10B
Batch: 6311396	**Work Order:** JH3L11AD			**Report DB ID:** 9JH3L110								
RA-228	1.05	ND	1.0	1.1	2.35	pCi/sample	94%	*0.45*	11/22/06 07:42 a	1.0	0.24991	E904.0
						1.07	3.1	*(1.9)*		Sample	Sample	GPC7B
Batch: 6325489	**Work Order:** JH3L12AC			**Report DB ID:** 9JH3L120								
RA-226	0.130	ND	0.38	0.38	0.698	pCi/sample	100%	*0.19*	12/2/06 12:25 p	1.0	0.25008	E903.1
						0.301	1.0	*0.69*		Sample	Sample	ASC2RC

Number of Results: 6

Comments:

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
= ERPIMS - Equal To, Analyte Detected
ND 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: 05-Dec-06

Lab Name: STL Richland
SDG: 32992
Collection Date: 10/18/2006 11:55:00 AM
Lot-Sample No.: J6K060215-3
Report No. : 33894
Received Date: 11/3/2006 10:00:00 AM
Client Sample ID: P-0780
COC No. :
Matrix: FILTER AIR

Yerington Air Quality - Event #105

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6311391	**Work Order:** JH3L31AA			**Report DB ID:** 9JH3L310								
TH-228	0.133	ND	0.19	0.19	0.319	pCi/sample	83%	*0.42*	11/15/06 12:20 a	1.0	0.08416	ISOTH
						0.0875	1.0	*(1.4)*		Sample	Sample	ALP119
TH-230	0.411	=	0.30	0.30	0.308	pCi/sample	83%	*(1.3)*	11/15/06 12:20 a	1.0	0.08416	ISOTH
						0.0846	1.0	*(2.7)*		Sample	Sample	ALP119
TH-232	0.0514	ND	0.11	0.12	0.308	pCi/sample	83%	*0.17*	11/15/06 12:20 a	1.0	0.08416	ISOTH
						0.0846	1.0	*0.89*		Sample	Sample	ALP119
Batch: 6311393	**Work Order:** JH3L31AE			**Report DB ID:** 9JH3L310								
ALPHA	3.50	ND	3.2	3.2	5.46	pCi/sample	100%	*0.64*	11/20/06 12:06 p	1.0	0.02077	E900.0
						2.23	20.0	*(2.2)*		Sample	Sample	GPC10C
Batch: 6311396	**Work Order:** JH3L31AD			**Report DB ID:** 9JH3L310								
RA-228	1.33	ND	1.1	1.2	2.61	pCi/sample	97%	*0.51*	11/22/06 07:42 a	1.0	0.24917	E904.0
						1.2	3.1	*(2.2)*		Sample	Sample	GPC7C
Batch: 6325489	**Work Order:** JH3L32AC			**Report DB ID:** 9JH3L320								
RA-226	0.125	ND	0.23	0.23	0.411	pCi/sample	92%	*0.31*	12/2/06 12:24 p	1.0	0.26448	E903.1
						0.163	1.0	*(1.1)*		Sample	Sample	ASC3MA

Number of Results: 6

Comments:

STL Richland
rptSTLRchSample
V5.0.3 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
= ERPIMS - Equal To, Analyte Detected
ND 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: 05-Dec-06

Lab Name: STL Richland
Lot-Sample No.: J6K060215-4
Client Sample ID: P-0781
Yerington Air Quality - Event #105

SDG: 32992
Report No. : 33894
COC No. :

Collection Date: 10/18/2006 11:10:00 AM
Received Date: 11/3/2006 10:00:00 AM
Matrix: FILTER AIR

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6311391	**Work Order:** JH3L51AA			**Report DB ID:** 9JH3L510								
TH-228	0.0930	ND	0.24	0.24	0.501	pCi/sample	99%	*0.19*	11/15/06 12:20 a	1.0	0.08413	ISOTH
						0.187	1.0	*0.78*		Sample	Sample	ALP120
TH-230	0.180	ND	0.19	0.19	0.27	pCi/sample	99%	*0.67*	11/15/06 12:20 a	1.0	0.08413	ISOTH
						0.074	1.0	*(1.9)*		Sample	Sample	ALP120
TH-232	0.00000	ND	0.0000	0.10	0.27	pCi/sample	99%	*0.*	11/15/06 12:20 a	1.0	0.08413	ISOTH
						0.074	1.0	*0.*		Sample	Sample	ALP120
Batch: 6311393	**Work Order:** JH3L51AE			**Report DB ID:** 9JH3L510								
ALPHA	6.20	=	3.6	3.8	5.03	pCi/sample	100%	*(1.2)*	11/20/06 12:06 p	1.0	0.02077	E900.0
						2.04	20.0	*(3.3)*		Sample	Sample	GPC10D
Batch: 6311396	**Work Order:** JH3L51AD			**Report DB ID:** 9JH3L510								
RA-228	1.62	ND	1.1	1.2	2.41	pCi/sample	90%	*0.67*	11/22/06 07:43 a	1.0	0.24879	E904.0
						1.09	3.1	*(2.8)*		Sample	Sample	GPC1B
Batch: 6325489	**Work Order:** JH3L52AC			**Report DB ID:** 9JH3L520								
RA-226	0.00000	ND	0.0000	0.29	0.591	pCi/sample	99%	*0.*	12/2/06 12:26 p	1.0	0.24968	E903.1
						0.25	1.0	*0.*		Sample	Sample	ASC7UA

Number of Results: 6

Comments:

STL Richland
rptSTLRchSample
V5.0.3 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
= ERPIMS - Equal To, Analyte Detected
ND 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: 05-Dec-06

Lab Name:	**STL Richland**	**SDG:**	32992	**Collection Date:**	10/18/2006 11:10:00 AM
Lot-Sample No.:	**J6K060215-4**	**Report No. :**	33894	**Received Date:**	11/3/2006 10:00:00 AM
Client Sample ID:	**P-0781**	**COC No. :**		**Matrix:**	FILTER AIR

Yerington Air Quality - Event #105

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector

STL Richland

rptSTLRchSample
V5.0.3 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
= ERPIMS - Equal To, Analyte Detected
ND 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: 05-Dec-06

Lab Name: STL Richland **SDG:** 32992

Lot-Sample No.: J6K070000-391 **Report No. :** 33894 **Matrix:** FILTER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6311391	Work Order: JH5N91AA			Report DB ID: JH5N91AB								
TH-228	0.00926	ND	0.013	0.013	0.0222	pCi/sample	108%	0.42	11/15/06 05:52 p	1.0	1.0	ISOTH
					0.00609	1.0		(1.4)		Sample	Sample	ALP119
TH-230	0.00716	ND	0.011	0.011	0.0215	pCi/sample	108%	0.33	11/15/06 05:52 p	1.0	1.0	ISOTH
					0.00589	1.0		(1.3)		Sample	Sample	ALP119
TH-232	0.00000	ND	0.0000	0.0080	0.0215	pCi/sample	108%	0.	11/15/06 05:52 p	1.0	1.0	ISOTH
					0.00589	1.0		0.		Sample	Sample	ALP119

Number of Results: 3

Comments:

STL Richland
rptSTLRchBlank
V5.0.3 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
ND 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: 05-Dec-06

Lab Name: STL Richland

SDG: 32992

Lot-Sample No.: J6K070000-393

Report No. : 33894

Matrix: FILTER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6311393	Work Order:	JH5PQ1AA		Report DB ID:	JH5PQ1AB							
ALPHA	0.00184	ND	0.0034	0.0034	0.00707	pCi/sample	100%	0.26	11/20/06 08:21 p	1.0	12.58	E900.0
					0.00273	20.0		(1.1)		Sample	Sample	GPC10B

Number of Results: 1

Comments:

STL Richland

rptSTLRchBlank
V5.0.3 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
ND 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: 05-Dec-06

Lab Name: STL Richland

SDG: 32992

Lot-Sample No.: J6K200000-152

Report No. : 33894

Matrix: FILTER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6324152	Work Order: JJ3RA1AA			Report DB ID: JJ3RA1AB								
TH-228	0.00592	ND	0.012	0.012	0.0237	pCi/sample	79%	0.25	11/22/06 12:45 a	1.0	1.0	ISOTH
					0.00649	1.0		1.		Sample	Sample	ALP172
TH-230	0.0284	=	0.022	0.022	0.0227	pCi/sample	79%	(1.3)	11/22/06 12:45 a	1.0	1.0	ISOTH
					0.00624	1.0		(2.5)		Sample	Sample	ALP172
TH-232	0.00379	ND	0.0085	0.0085	0.0227	pCi/sample	79%	0.17	11/22/06 12:45 a	1.0	1.0	ISOTH
					0.00624	1.0		0.89		Sample	Sample	ALP172

Number of Results: 3

Comments:

STL Richland

rptSTLRchBlank
V5.0.3 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
= ERPIMS - Equal To, Analyte Detected
ND 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: 05-Dec-06

Lab Name: STL Richland

SDG: 32992

Lot-Sample No.: J6K210000-489

Report No. : 33894

Matrix: FILTER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6325489	Work Order:	JJ7A21AA		Report DB ID:	JJ7A21AB							
RA-226	-0.0239	ND	0.086	0.087	0.179	pCi/sample	91%	-0.13	12/2/06 12:53 p	1.0	1.0	E903.1
					0.0781	1.0		-0.55		Sample	Sample	ASCGSB

Number of Results: 1

Comments:

STL Richland

rptSTLRchBlank
V5.0.3 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
ND 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

LCS RESULTS

Date: 05-Dec-06

Lab Name: STL Richland

SDG: 32992

Lot-Sample No.: J6K070000-391

Report No. : 33894

Matrix: FILTER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 6311391	Work Order: JH5N91AC			Report DB ID: JH5N91CS									
TH-230	1.80	=	0.17	0.36	0.0228	pCi/sample	98.23%	1.84	0.061	98%	11/15/06 05:52 p	1.0	ISOTH
							Rec Limits:	70.	130.	0.0		Sample	ALP120

Number of Results: 1

Comments:

STL Richland
rptSTLRchLcs
V5.0.3 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
= ERPIMS - Equal To, Analyte Detected

FORM II

LCS RESULTS

Date: 05-Dec-06

Lab Name: STL Richland

SDG: 32992

Lot-Sample No.: J6K070000-393

Report No. : 33894

Matrix: FILTER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 6311393	**Work Order:** JH5PQ1AC			**Report DB ID:** JH5PQ1CS									
ALPHA	0.182	=	0.021	0.043	0.00951	pCi/sample	100.00%	0.184	0.0058	99%	11/20/06 08:21 p	12.54	E900.0
						Rec Limits:				0.0		Sample	GPC10A

Number of Results: 1

Comments:

STL Richland
rptSTLRchLcs
V5.0.3 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
= ERPIMS - Equal To, Analyte Detected

FORM II

LCS RESULTS

Date: 05-Dec-06

Lab Name: STL Richland **SDG:** 32992

Lot-Sample No.: J6K070000-396 **Report No. :** 33894 **Matrix:** FILTER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 6311396	**Work Order:** JH5QD1AC			**Report DB ID:** JH5QD1CS									
RA-228	4.46	=	0.52	0.72	0.435	pCi/sample	90.13%	5.04	0.02	88%	11/22/06 07:43 a	1.0	E904.0
							Rec Limits:	70.	130.	-0.1		Sample	GPC4B

Number of Results: 1

Comments:

STL Richland
rptSTLRchLcs
V5.0.3 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
= ERPIMS - Equal To, Analyte Detected

FORM II

LCS RESULTS

Date: 05-Dec-06

Lab Name: STL Richland

SDG: 32992

Lot-Sample No.: J6K200000-152

Report No. : 33894

Matrix: FILTER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 6324152	Work Order: JJ3RA1AC			Report DB ID: JJ3RA1CS									
TH-230	1.77	=	0.18	0.36	0.0262	pCi/sample	81.50%	1.83	0.06	97%	11/22/06 12:45 a	1.0	ISOTH
							Rec Limits:	70.	130.	0.0		Sample	ALP173

Number of Results: 1

Comments:

STL Richland
rptSTLRchLcs
V5.0.3 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
= ERPIMS - Equal To, Analyte Detected

FORM II

LCS RESULTS

Date: 05-Dec-06

Lab Name: STL Richland

SDG: 32992

Lot-Sample No.: J6K210000-489

Report No. : 33894

Matrix: FILTER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 6325489	Work Order: JJ7A21AC			Report DB ID: JJ7A21CS									
RA-226	1.19	=	0.20	0.52	0.116	pCi/sample	95.90%	1.36	0.021	88%	12/2/06 12:56 p	1.0	E903.1
							Rec Limits:	70.	130.	-0.1		Sample	ASCPMA

Number of Results: 1

Comments:

STL Richland
rptSTLRchLcs
V5.0.3 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
= ERPIMS - Equal To, Analyte Detected

CHAIN OF CUSTODY

STL RICHLAND

BROWN AND CALDWELL

CHAIN OF CUSTODY RECORD

COC No._____

J6K060215
32992
Due 12/1/06

☐ 3264 Goni Road / Suite 153
Carson City, NV 89706
775-883-4118 / FAX 775-883-5108

☐ 4425 W. Spring Mountain Road / Suite 225
Las Vegas, NV 89102
702-938-4080 / FAX 702-938-4082

☐ 201 East Washington Street / Suite 500
Phoenix, AZ 85004
602-567-4000 / FAX 602-567-4001

PROJECT NAME: [illegible]

LABORATORY NAME & ADDRESS: [illegible]

PROJECT NUMBER: [illegible]

1/6 OF THE EXPOSED FILTER WAS UTILIZED FOR THE METALS ANALYSIS. SACRAMENTO LOT # G6J200154

LINE NO.	SAMPLE – I.D.	COLLECTION DATE	COLLECTION TIME	SAMPLER'S INITIALS	NUMBER OF CONTAINERS	CONTAINER SIZE AND TYPE	PRESER-VATIVE	MATRIX CODE	ANALYSES REQUESTED	FIELD FILTERED	QC – REQ	TAT	SAMPLING METHOD	DEPTH (FT.) BEGIN ---- END	PID READING (ppm)
01	[illegible]	[illegible]	[illegible]	[illegible]	1	8x10 Filter	NONE	A	PM-10, Gross Alpha, Th(228,230), Ra(226,228), Metals (Al,As,Cd,Cr,Co,Cu,Mn,Ni), Sulfate JH3LV			[illegible]		----	
02	[illegible]		11:30		1	8x10 Filter	NONE	A	PM-10, Gross Alpha, Th(228,230), Ra(226,228), Metals (Al,As,Cd,Cr,Co,Cu,Mn,Ni), Sulfate JH3L1			[illegible]		----	
03	[illegible]		11:55		1	8x10 Filter	NONE	A	PM-10, Gross Alpha, Th(228,230), Ra(226,228), Metals (Al,As,Cd,Cr,Co,Cu,Mn,Ni), Sulfate JH3L3			[illegible]		----	
04	[illegible]		11:10		1	8x10 Filter	NONE	A	PM-10, Gross Alpha, Th(228,230), Ra(226,228), Metals (Al,As,Cd,Cr,Co,Cu,Mn,Ni), Sulfate JH3L5			[illegible]		----	
05	[illegible]		[illegible]		1	8x10 Filter	NONE	A	TSP, Gross Alpha, Th(228,230), Ra(226,228), Metals (Al,As,Cd,Cr,Co,Cu,Mn,Ni), Sulfate JH3L6			[illegible]		----	
06														----	
07														----	
08														----	
09														----	
10														----	

COLLECTED & RELEASED BY:	DATE / /	TIME :	COOLER I.D.:			COMMENTS (see note on back):
RECEIVED BY:	DATE / /	TIME :	RELINQUISHED BY:	DATE / /	TIME :	
			Steven Valmores	11/2/06	1600	
S. Smith	1/13/06	1000				
RECORD RETURNED BY:	DATE / /	TIME :				
COURIER:			SHIPPING NUMBER:			

DISTRIBUTION: WHITE – PROJECT FILE • CANARY – LAB RECEIPT • PINK – DATA MANAGEMENT • GOLDENROD – FIELD

USE A BALLPOINT PEN, BLACK INK, AND PRESS FIRMLY. INSTRUCTIONS ARE ON THE BACK.

SEVERN TRENT STL

Sample Check-in List

Date/Time Received: 11.3.06 1000

Client: BRC SDG #: 32992 NA [ ] SAF #: _____ NA [X]

Work Order Number: J6K060215 Chain of Custody # Event # 105

Shipping Container ID: N/A Air Bill # N/A

1. Custody Seals on shipping container intact? NA [X] Yes [ ] No [ ]
2. Custody Seals dated and signed? NA [X] Yes [ ] No [ ]
3. Chain of Custody record present? Yes [X] No [ ]
4. Cooler temperature: _____ NA [X] 5. Vermiculite/packing materials is NA [X] Wet [ ] Dry [ ]
6. Number of samples in shipping container: 5
7. Sample holding times exceeded? NA [ ] Yes [ ] No [ ]
8. Samples have:
   _____ tape
   _____ custody seals
   _____ hazard labels
   ✓ appropriate samples labels
9. Samples are:
   ✓ in good condition
   _____ broken
   _____ leaking
   _____ have air bubbles
   (Only for samples requiring head space)
10. Sample pH taken? NA [X] pH<2 [ ] pH>2 [ ] adjusted pH [ ]
11. Sample Location, Sample Collector Listed? * Yes [X] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [X]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: Smith Date: 11.3.06 1000

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 12/05, Rev. 6

THORIUM

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

11/24/2006 9:00:36 AM

Lot No., Due Date: J6K060215,J6K060216,J6K060219; 12/01/2006

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6311391; RTHISO Thiso by ALP

SDG, Matrix: 32992,32993,32994; FILTER

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. re batch 6324452

First Level Review Pam Anderson **Date** 11.24.06

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 6311391

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 NCM

Second Level Review: Sheryl A. Adam Date: 11-24-06

11/10/2006 5:01:36 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

9N Thlso PrpRc5016, SepRC~~5084~~(5003) 5087
S1 Thorium-228,230,232 by Alpha Spec
01 STANDARD TEST SET

J.C 11/13/06
TC J.C 11/13/06

Balance Id:1120373922

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: WoodT

AnalyDueDate: 11/30/2006

Batch: 6311391 FILTER pCi/sampl PM, Quote: SA , 63174

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:
116 **1 JH3LV-1-AA** J6K060215-1-SAMP 10/18/2006 11:05	0.833sa	500.20sa	50.28g,in	0.0837g	THTF0855 10/16/06,pd 10/04/04,r	500				
			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
117 **2 JH3L1-1-AA** J6K060215-2-SAMP 10/18/2006 11:30	0.833sa	500.14sa	50.16g,in	0.0835g	THTF0856 10/16/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
119 **3 JH3L3-1-AA** J6K060215-3-SAMP 10/18/2006 11:55	0.833sa	501.73sa	50.69g,in	0.0842g	THTF0847 10/16/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
120 **4 JH3L5-1-AA** J6K060215-4-SAMP 10/18/2006 11:10	~~501.44sa~~ 0.833	502.50sa	50.75g,in	~~50.6429g~~ 0.0842885 0.08412885	THTF0848 10/16/06,pd 10/04/04,r	11/10/04 JBM				
			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
121 **5 JH3L6-1-AA** J6K060215-5-SAMP 10/18/2006 12:00	0.833sa	502.50sa	50.36g,in	0.0835g	THTF0857 10/16/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
122 **6 JH3MC-1-AA** J6K060216-1-SAMP 10/05/2006 09:50	0.833sa,g	500.06sa,g	50.00g,in	0.0833g	THTF0858 10/16/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
123 **7 JH3MJ-1-AA** J6K060216-2-SAMP 10/05/2006 10:10	0.833sa,g	500.03sa,g	50.38g,in	0.0839g	THTF0859 11/10/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 1 ISV - Insufficient Volume for Analysis WO Cnt: 7
Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added Prep_SamplePrep v4.8.24

STL RICHLAND

30

11/10/2006 5:01:37 PM

Sample Preparation/Analysis

Balance Id:1120373922

536403, Brown and Caldwell , Brown & Caldwell

9N Thlso PrpRc5016, SepRC5084(5003)
S1 Thorium-228,230,232 by Alpha Spec
01 STANDARD TEST SET

Pipet #: _____

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311391 FILTER pCi/sampl PM, Quote: SA , 63174

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WoodT

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
8 JH3MK-1-AA J6K060216-3-SAMP 10/05/2006 10:30	0.833sa,g	501.08sa,g	50.02g,in	0.0832g	THTF0860 11/10/06,pd 10/04/04,r	50 U				
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
9 JH3ML-1-AA J6K060216-4-SAMP 10/05/2006 09:55	0.833sa,g	503.05sa,g	50.01g,in	0.0828g	THTF0861 11/10/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
10 JH3MM-1-AA J6K060216-5-SAMP 10/05/2006 10:35	0.833sa,g	500.03sa,g	50.00g,in	0.0833g	THTF0862 11/10/06,pd 10/04/04,r	11/10/06				
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
11 JH3NN-1-AA J6K060219-1-SAMP 10/11/2006 10:55	0.833sa,g	500.13sa,g	50.50g,in	0.0841g	THTF0863 11/10/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
12 JH3NR-1-AA J6K060219-2-SAMP 10/11/2006 11:10	0.833sa,g	509.38sa,g	50.04g,in	0.0818g	THTF0864 11/10/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
13 JH3NT-1-AA J6K060219-3-SAMP 10/11/2006 11:35	0.833sa,g	500.67sa,g	50.31g,in	0.0837g	THTF0865 11/10/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
14 JH3NV-1-AA J6K060219-4-SAMP 10/11/2006 11:00	0.833sa	500.36sa	50.33g,in	0.0838g	THTF0866 11/10/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:

11/10/2006 5:01:38 PM

Sample Preparation/Analysis

Balance Id:1120373922

536403, Brown and Caldwell , Brown & Caldwell

9N Thlso PrpRc5016, SepRC5084(5003)
S1 Thorium-228,230,232 by Alpha Spec
01 STANDARD TEST SET

Pipet #:

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311391 FILTER pCi/sampl PM, Quote: SA , 63174

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WoodT

STL RICHLAND

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:
15 JH3NW-1-AA J6K060219-5-SAMP 10/11/2006 11:40	0.833sa,g	508.75sa,g	50.08g,in	0.082g	THTF0867 11/10/06,pd 10/04/04,r	500				
		AmtRec: FILTER	#Containers: 1					Scr:	Alpha:	Beta:
16 JH5N9-1-AA-B J6K070000-391-BLK 10/18/2006 11:05			50.55g,in	50.55g	THTF0868 11/10/06,pd 10/04/04,r	11/10/06				
		AmtRec:	#Containers: 1					Scr:	Alpha:	Beta:
17 JH5N9-1-AC-C J6K070000-391-LCS 10/18/2006 11:05			50.09g,in	50.09g	THSO0093 08/17/06,pd 10/04/04,r					
		AmtRec:	#Containers: 1					Scr:	Alpha:	Beta:

Comments:

All Clients for Batch:
536403, Brown and Caldwell Brown & Caldwell , SA , 63174

JH3LV1AA-SAMP Constituent List:

Th-228	RDL:1	pCi/sam	LCL:	UCL:	RPD:	Th-230	RDL:1	pCi/sam	LCL:	UCL:	RPD:
Th-232	RDL:1	pCi/sam	LCL:	UCL:	RPD:	Th-234	RDL:	pCi/sam	LCL:20	UCL:115	RPD:20

JH5N91AA-BLK:

Th-228	RDL:1	pCi/sam	LCL:	UCL:	RPD:	Th-230	RDL:1	pCi/sam	LCL:	UCL:	RPD:
Th-232	RDL:1	pCi/sam	LCL:	UCL:	RPD:	Th-234	RDL:	pCi/sam	LCL:20	UCL:115	RPD:20

JH5N91AC-LCS:

Th-230	RDL:1	pCi/sam	LCL:70	UCL:130	RPD:20	Th-234	RDL:	pCi/sam	LCL:20	UCL:115	RPD:20

JH3LV1AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JH5N91AA-BLK:

Sample Preparation/Analysis

9N Thlso PrpRc5016, SepRC5084(5003)
S1 Thorium-228,230,232 by Alpha Spec
01 STANDARD TEST SET

Balance Id:1120373922
Pipet #: _____

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311391 pCi/sampl

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WoodT

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:

Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

JH5N91AC-LCS:

Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

STL RICHLAND

11/22/2006 3:55:04 PM

ICOC Fraction Transfer/Status Report

ByDate: 11/22/2005, 11/27/2006, Batch: '6311391', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6311391						
AC		**Sep2C**	**WoodT**	11/10/2006 9:01:18		
SC			wagarr	IsBatched	11/7/2006 3:29:16 PM	ICOC_RADCALC v4.8.24
SC			WoodT	InPrep	11/10/2006 9:01:18 AM	RICH-RC-5013 Revision 5
SC			HarveyK	Sep1C	11/14/2006 9:12:12 AM	RICH-RC-5087 REV0
SC			FABREM	Sep1C	11/14/2006 9:13:56 AM	RICH-RC-5087 REV0
SC			FABREM	Sep1C	11/14/2006 2:52:47 PM	RICH-RC-5039 REV 4
SC			FABREM	Sep2C	11/14/2006 2:53:33 PM	RICH-RC-5039 REV 4
AC			**HarveyK**	11/14/2006 9:12:12		
AC			**FABREM**	11/14/2006 9:13:56		
AC			**FABREM**	11/14/2006 2:52:47		
AC			**FABREM**	11/14/2006 2:53:33		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Page 1

Grp Rec Cnt: 5

ICOCFractions v4.8.18

11/22/2006 3:55:04 PM

Rpt DB Transfer log (Batch Results)

SEVERN TRENT STL

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 / Mda	Units	Expected	Yield	Volumes
32992	**9JH3L110**			**J6K0602152**	P-0779	FILTER	11/3/2006 10:00:00	10/18/2006 11:30:00 AM				
ALPHA	BAS7		0	11/20/2006 12:06:48	**7.22E+00**	1.802E+00	1.944E+00	4.272E+00	PCI/SA	1.0	1.0E+0	2.084E-2
TH-228	9NS1		0	11/15/2006 12:20:29	**9.9555E-02**	5.786E-02	5.846E-02	1.589E-01	PCI/SA	1.014	1.0E+0	3.354E-2
TH-230	9NS1		0	11/15/2006 12:20:29	**1.6049E-01**	7.206E-02	7.33E-02	1.537E-01	PCI/SA	1.014	1.0E+0	3.354E-2
TH-232	9NS1		0	11/15/2006 12:20:29	**0.0E+00**	0.0E+00	3.273E-02	1.537E-01	PCI/SA	1.014	1.0E+0	3.354E-2
32992	**9JH3L310**			**J6K0602153**	P-0780	FILTER	11/3/2006 10:00:00	10/18/2006 11:55:00 AM				
ALPHA	BAS7		0	11/20/2006 12:06:48	**3.5037E+00**	1.58E+00	1.622E+00	5.463E+00	PCI/SA	1.0	1.0E+0	2.077E-2
TH-228	9NS1		0	11/15/2006 12:20:45	**1.3289E-01**	9.583E-02	9.661E-02	3.189E-01	PCI/SA	0.827	1.0E+0	3.416E-2
TH-230	9NS1		0	11/15/2006 12:20:45	**4.1132E-01**	1.477E-01	1.524E-01	3.084E-01	PCI/SA	0.827	1.0E+0	3.416E-2
TH-232	9NS1		0	11/15/2006 12:20:45	**5.1415E-02**	5.749E-02	5.768E-02	3.084E-01	PCI/SA	0.827	1.0E+0	3.416E-2
32992	**9JH3L510**			**J6K0602154**	P-0781	FILTER	11/3/2006 10:00:00	10/18/2006 11:10:00 AM				
ALPHA	BAS7		0	11/20/2006 12:06:48	**6.196E+00**	1.781E+00	1.885E+00	5.034E+00	PCI/SA	1.0	1.0E+0	2.077E-2
TH-228	9NS1		0	11/15/2006 12:20:52	**9.3038E-02**	1.186E-01	1.188E-01	5.006E-01	PCI/SA	0.989	1.0E+0	3.413E-2
TH-230	9NS1		0	11/15/2006 12:20:52	**1.7993E-01**	9.273E-02	9.406E-02	2.698E-01	PCI/SA	0.989	1.0E+0	3.413E-2
TH-232	9NS1		0	11/15/2006 12:20:52	**0.0E+00**	0.0E+00	5.029E-02	2.698E-01	PCI/SA	0.989	1.0E+0	3.413E-2
32992	**9JH3L610**			**J6K0602155**	000546	FILTER	11/3/2006 10:00:00	10/18/2006 12:00:00 PM				
ALPHA	BAS7		0	11/20/2006 12:06:48	**4.0391E+00**	1.508E+00	1.564E+00	4.578E+00	PCI/SA	1.0	1.0E+0	2.082E-2
TH-228	9NS1		0	11/15/2006 9:17:45	**1.3445E-01**	9.211E-02	9.287E-02	3.229E-01	PCI/SA	1.043	1.0E+0	3.348E-2
TH-230	9NS1		0	11/15/2006 9:17:45	**5.1997E-01**	1.402E-01	1.475E-01	2.228E-01	PCI/SA	1.043	1.0E+0	3.348E-2
TH-232	9NS1		0	11/15/2006 9:17:45	**1.1142E-01**	6.696E-02	6.767E-02	2.228E-01	PCI/SA	1.043	1.0E+0	3.348E-2
32993	**9JH3MC10**			**J6K0602161**	P-0769	FILTER	11/3/2006 10:00:00	10/5/2006 9:50:00 AM				
ALPHA	BAS7		0	11/20/2006 2:50:55 PM	**2.6223E+00**	1.517E+00	1.54E+00	5.717E+00	PCI/SA	1.0	1.0E+0	2.086E-2
TH-228	9NS1		0	11/15/2006 9:17:45	**1.3258E-01**	7.809E-02	7.889E-02	2.272E-01	PCI/SA	1.099	1.0E+0	3.329E-2
TH-230	9NS1		0	11/15/2006 9:17:45	**2.7116E-01**	1.038E-01	1.063E-01	2.169E-01	PCI/SA	1.099	1.0E+0	3.329E-2
TH-232	9NS1		0	11/15/2006 9:17:45	**7.2309E-02**	5.423E-02	5.457E-02	2.169E-01	PCI/SA	1.099	1.0E+0	3.329E-2
32993	**9JH3MJ10**			**J6K0602162**	P-0770	FILTER	11/3/2006 10:00:00	10/5/2006 10:10:00 AM				
ALPHA	BAS7		0	11/20/2006 2:50:55 PM	**1.8234E+00**	1.14E+00	1.155E+00	4.252E+00	PCI/SA	1.0	1.0E+0	2.092E-2
TH-228	9NS1		0	11/15/2006 9:17:45	**1.553E-01**	9.147E-02	9.246E-02	2.661E-01	PCI/SA	1.024	1.0E+0	3.393E-2
TH-230	9NS1		0	11/15/2006 9:17:45	**2.5409E-01**	1.059E-01	1.081E-01	2.54E-01	PCI/SA	1.024	1.0E+0	3.393E-2
TH-232	9NS1		0	11/15/2006 9:17:45	**4.2349E-02**	4.735E-02	4.749E-02	2.54E-01	PCI/SA	1.024	1.0E+0	3.393E-2
32993	**9JH3MK10**			**J6K0602163**	P-0771	FILTER	11/3/2006 10:00:00	10/5/2006 10:30:00 AM				
ALPHA	BAS7		0	11/20/2006 2:50:55 PM	**6.1E+00**	1.859E+00	1.959E+00	5.451E+00	PCI/SA	1.0	1.0E+0	2.081E-2
TH-228	9NS1		0	11/15/2006 9:17:45	**6.8692E-02**	6.869E-02	6.894E-02	2.747E-01	PCI/SA	1.114	1.0E+0	3.315E-2
TH-230	9NS1		0	11/15/2006 9:17:45	**3.0596E-01**	1.177E-01	1.206E-01	2.622E-01	PCI/SA	1.114	1.0E+0	3.315E-2
TH-232	9NS1		0	11/15/2006 9:17:45	**4.3708E-02**	4.887E-02	4.901E-02	2.622E-01	PCI/SA	1.114	1.0E+0	3.315E-2
32993	**9JH3ML10**			**J6K0602164**	P-0772	FILTER	11/3/2006 10:00:00	10/5/2006 9:55:00 AM				
ALPHA	BAS7		0	11/20/2006 2:50:55 PM	**4.0912E+00**	1.559E+00	1.612E+00	5.029E+00	PCI/SA	1.0	1.0E+0	2.076E-2
TH-228	9NS1		0	11/15/2006 9:17:45	**7.773E-02**	7.271E-02	7.3E-02	2.86E-01	PCI/SA	1.099	1.0E+0	3.281E-2
TH-230	9NS1		0	11/15/2006 9:17:45	**1.8548E-02**	6.151E-02	6.153E-02	3.118E-01	PCI/SA	1.099	1.0E+0	3.281E-2
TH-232	9NS1		0	11/15/2006 9:17:45	**7.4186E-02**	5.564E-02	5.599E-02	2.225E-01	PCI/SA	1.099	1.0E+0	3.281E-2
32993	**9JH3MM10**			**J6K0602165**	000544	FILTER	11/3/2006 10:00:00	10/5/2006 10:35:00 AM				
ALPHA	BAS7		0	11/20/2006 2:50:55 PM	**3.2885E+00**	1.411E+00	1.449E+00	4.574E+00	PCI/SA	1.0	1.0E+0	2.087E-2
TH-228	9NS1		0	11/15/2006 9:17:45	**1.8849E-01**	1.088E-01	1.1E-01	3.521E-01	PCI/SA	0.929	1.0E+0	3.33E-2
TH-230	9NS1		0	11/15/2006 9:17:45	**3.9979E-01**	1.356E-01	1.399E-01	2.942E-01	PCI/SA	0.929	1.0E+0	3.33E-2
TH-232	9NS1		0	11/15/2006 9:17:45	**7.9958E-02**	5.997E-02	6.036E-02	2.398E-01	PCI/SA	0.929	1.0E+0	3.33E-2
32994	**9JH3NN10**			**J6K0602191**	P-0773	FILTER	11/3/2006 10:00:00	10/11/2006 10:55:00 AM				
ALPHA	BAS7		0	11/20/2006 5:38:54 PM	**4.8082E+00**	1.76E+00	1.826E+00	5.718E+00	PCI/SA	1.0	1.0E+0	2.085E-2
TH-228	9NS1		0	11/15/2006 9:17:45	**6.4106E-02**	6.411E-02	6.434E-02	2.563E-01	PCI/SA	1.068	1.0E+0	3.411E-2
TH-230	9NS1		0	11/15/2006 9:17:45	**1.231E-01**	7.398E-02	7.473E-02	2.461E-01	PCI/SA	1.068	1.0E+0	3.411E-2
TH-232	9NS1		0	11/15/2006 9:17:45	**2.0517E-02**	4.588E-02	4.591E-02	2.461E-01	PCI/SA	1.068	1.0E+0	3.411E-2
32994	**9JH3NR10**			**J6K0602192**	P-0774	FILTER	11/3/2006 10:00:00	10/11/2006 11:10:00 AM				
ALPHA	BAS7		0	11/20/2006 5:38:54 PM	**1.8605E+00**	1.163E+00	1.178E+00	4.339E+00	PCI/SA	1.0	1.0E+0	2.051E-2

6311391, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 14,
**Results Inserted | ReTestInserted | Updated | NotInserted => 46 | 0 | 0 | 0.
**Diff RptDb | Qtims => *wo:JH5N91AA=> , mat:FILTER | Air *wo:JH5N91AA=> , mat:FILTER | Air *wo:JH5N91AA=> , mat:FILTER | Air.

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 / Mda	Units	Expected	Yield	Volumes	
TH-228	9NS1	0		11/15/2006 9:17:45	**-1.909E-02**	4.269E-02	4.272E-02	2.29E-01	PCI/SA		0.959	1.0E+0	3.183E-2
TH-230	9NS1	0		11/15/2006 9:17:45	**1.833E-02**	4.099E-02	4.102E-02	2.199E-01	PCI/SA		0.959	1.0E+0	3.183E-2
TH-232	9NS1	0		11/15/2006 9:17:45	**3.6659E-02**	4.099E-02	4.11E-02	2.199E-01	PCI/SA		0.959	1.0E+0	3.183E-2
32994	**9JH3NT10**			**J6K0602193**	P-0775	FILTER	11/3/2006 10:00:00	10/11/2006 11:35:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	**6.8219E+00**	1.926E+00	2.045E+00	5.434E+00	PCI/SA		1.0	1.0E+0	2.088E-2
TH-228	9NS1	0		11/15/2006 9:18:10	**0.0E+00**	0.0E+00	3.403E-02	1.598E-01	PCI/SA		1.035	1.0E+0	3.37E-2
TH-230	9NS1	0		11/15/2006 9:18:10	**2.8835E-01**	9.633E-02	9.932E-02	1.535E-01	PCI/SA		1.035	1.0E+0	3.37E-2
TH-232	9NS1	0		11/15/2006 9:18:10	**0.0E+00**	0.0E+00	3.267E-02	1.535E-01	PCI/SA		1.035	1.0E+0	3.37E-2
32994	**9JH3NV10**			**J6K0602194**	P-0776	FILTER	11/3/2006 10:00:00	10/11/2006 11:00:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	**1.9771E+00**	1.293E+00	1.308E+00	4.988E+00	PCI/SA		1.0	1.0E+0	2.094E-2
TH-228	9NS1	0		11/15/2006 9:18:18	**7.805E-02**	7.805E-02	7.835E-02	3.121E-01	PCI/SA		0.855	1.0E+0	3.379E-2
TH-230	9NS1	0		11/15/2006 9:18:18	**6.9942E-01**	1.886E-01	1.985E-01	2.996E-01	PCI/SA		0.855	1.0E+0	3.379E-2
TH-232	9NS1	0		11/15/2006 9:18:18	**0.0E+00**	0.0E+00	5.585E-02	2.996E-01	PCI/SA		0.855	1.0E+0	3.379E-2
32994	**9JH3NW10**			**J6K0602195**	000545	FILTER	11/3/2006 10:00:00	10/11/2006 11:40:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	**2.1928E+00**	1.269E+00	1.287E+00	4.627E+00	PCI/SA		1.0	1.0E+0	2.061E-2
TH-228	9NS1	0		11/15/2006 9:18:20	**1.4771E-01**	1.348E-01	1.354E-01	5.298E-01	PCI/SA		0.966	1.0E+0	3.2E-2
TH-230	9NS1	0		11/15/2006 9:18:20	**2.3632E-01**	1.083E-01	1.103E-01	2.835E-01	PCI/SA		0.966	1.0E+0	3.2E-2
TH-232	9NS1	0		11/15/2006 9:18:20	**4.7264E-02**	5.284E-02	5.3E-02	2.835E-01	PCI/SA		0.966	1.0E+0	3.2E-2
32992	**JH5N91AB**			**J6K070000391**	INTRA-LAB BLANK	FILTER	11/3/2006 10:00:00	10/18/2006 11:05:00 AM					
TH-228	9NS1	0	B	11/15/2006 5:52:53 PM	**9.2585E-03**	6.677E-03	6.725E-03	2.222E-02	PCI/SA		1.085	1.0E+0	1.0E+0
TH-230	9NS1	0	B	11/15/2006 5:52:53 PM	**7.1591E-03**	5.369E-03	5.405E-03	2.147E-02	PCI/SA		1.085	1.0E+0	1.0E+0
TH-232	9NS1	0	B	11/15/2006 5:52:53 PM	**0.0E+00**	0.0E+00	4.002E-03	2.147E-02	PCI/SA		1.085	1.0E+0	1.0E+0
32992	**JH5N91CS**			**J6K070000391**	INTRA-LAB CHECK	FILTER	11/3/2006 10:00:00	10/18/2006 11:05:00 AM					
TH-230	9NS1	0	S	11/15/2006 5:52:56 PM	**1.796E+00**	8.278E-02	1.787E-01	2.285E-02	PCI/SA	1.8355E+00	0.982	1.0E+0	1.0E+0

6311391, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 14,
**Results Inserted | ReTestInserted | Updated | NotInserted => 46 | 0 | 0 | 0.
**Diff RptDb | Qtims => *wo:JH5N91AA=> , mat:FILTER | Air *wo:JH5N91AA=> , mat:FILTER | Air *wo:JH5N91AA=> , mat:FILTER | Air.

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	FILTER	JH3LV1AA	TH-228	-3.79E-01	(8.52E-01)	U4	PCI/SA	R	1.25E+00	4.55E+00		6%	
Calc	S1	FILTER	JH3LV1AA	TH-230	3.67E-01	(8.24E-01)	U4	PCI/SA	R	1.21E+00	4.40E+00		6%	
Calc	S1	FILTER	JH3LV1AA	TH-232	0.00E+00	(8.20E-01)	U4	PCI/SA	R	1.21E+00	4.40E+00		6%	
Calc	S1	FILTER	JH3L11AA	TH-228	9.96E-02	(5.85E-02)		PCI/SA	R	3.45E-02	1.59E-01		101%	
Calc	S1	FILTER	JH3L11AA	TH-230	1.60E-01	(7.33E-02)		PCI/SA	R	3.34E-02	1.54E-01		101%	
Calc	S1	FILTER	JH3L11AA	TH-232	0.00E+00	(3.27E-02)	U4	PCI/SA	R	3.34E-02	1.54E-01		101%	
Calc	S1	FILTER	JH3L31AA	TH-228	1.33E-01	(9.66E-02)	U4	PCI/SA	R	8.75E-02	3.19E-01		83%	
Calc	S1	FILTER	JH3L31AA	TH-230	4.11E-01	(1.52E-01)		PCI/SA	R	8.46E-02	3.08E-01		83%	
Calc	S1	FILTER	JH3L31AA	TH-232	5.14E-02	(5.77E-02)	U4	PCI/SA	R	8.46E-02	3.08E-01		83%	
Calc	S1	FILTER	JH3L51AA	TH-228	9.30E-02	(1.19E-01)	U4	PCI/SA	R	1.87E-01	5.01E-01		99%	
Calc	S1	FILTER	JH3L51AA	TH-230	1.80E-01	(9.41E-02)		PCI/SA	R	7.40E-02	2.70E-01		99%	
Calc	S1	FILTER	JH3L51AA	TH-232	0.00E+00	(5.03E-02)	U4	PCI/SA	R	7.40E-02	2.70E-01		99%	
Calc	S1	FILTER	JH3L61AA	TH-228	1.34E-01	(9.29E-02)	U4	PCI/SA	R	1.09E-01	3.23E-01		104%	
Calc	S1	FILTER	JH3L61AA	TH-230	5.20E-01	(1.47E-01)		PCI/SA	R	6.11E-02	2.23E-01		104%	
Calc	S1	FILTER	JH3L61AA	TH-232	1.11E-01	(6.77E-02)		PCI/SA	R	6.11E-02	2.23E-01		104%	
Calc	S1	FILTER	JH3MC1AA	TH-228	1.33E-01	(7.89E-02)		PCI/SA	R	6.23E-02	2.27E-01		110%	
Calc	S1	FILTER	JH3MC1AA	TH-230	2.71E-01	(1.06E-01)		PCI/SA	R	5.95E-02	2.17E-01		110%	
Calc	S1	FILTER	JH3MC1AA	TH-232	7.23E-02	(5.46E-02)	U4	PCI/SA	R	5.95E-02	2.17E-01		110%	
Calc	S1	FILTER	JH3MJ1AA	TH-228	1.55E-01	(9.25E-02)		PCI/SA	R	7.30E-02	2.66E-01		102%	
Calc	S1	FILTER	JH3MJ1AA	TH-230	2.54E-01	(1.08E-01)		PCI/SA	R	6.97E-02	2.54E-01		102%	
Calc	S1	FILTER	JH3MJ1AA	TH-232	4.23E-02	(4.75E-02)	U4	PCI/SA	R	6.97E-02	2.54E-01		102%	
Calc	S1	FILTER	JH3MK1AA	TH-228	6.87E-02	(6.89E-02)	U4	PCI/SA	R	7.53E-02	2.75E-01		111%	
Calc	S1	FILTER	JH3MK1AA	TH-230	3.06E-01	(1.21E-01)		PCI/SA	R	7.19E-02	2.62E-01		111%	
Calc	S1	FILTER	JH3MK1AA	TH-232	4.37E-02	(4.90E-02)	U4	PCI/SA	R	7.19E-02	2.62E-01		111%	
Calc	S1	FILTER	JH3ML1AA	TH-228	7.77E-02	(7.30E-02)	U4	PCI/SA	R	9.04E-02	2.86E-01		110%	
Calc	S1	FILTER	JH3ML1AA	TH-230	1.85E-02	(6.15E-02)	U4	PCI/SA	R	1.06E-01	3.12E-01		110%	
Calc	S1	FILTER	JH3ML1AA	TH-232	7.42E-02	(5.60E-02)	U4	PCI/SA	R	6.10E-02	2.22E-01		110%	
Calc	S1	FILTER	JH3MM1AA	TH-228	1.88E-01	(1.10E-01)		PCI/SA	R	1.19E-01	3.52E-01		93%	
Calc	S1	FILTER	JH3MM1AA	TH-230	4.00E-01	(1.40E-01)		PCI/SA	R	9.30E-02	2.94E-01		93%	
Calc	S1	FILTER	JH3MM1AA	TH-232	8.00E-02	(6.04E-02)	U4	PCI/SA	R	6.58E-02	2.40E-01		93%	
Calc	S1	FILTER	JH3NN1AA	TH-228	6.41E-02	(6.43E-02)	U4	PCI/SA	R	7.03E-02	2.56E-01		107%	
Calc	S1	FILTER	JH3NN1AA	TH-230	1.23E-01	(7.47E-02)		PCI/SA	R	6.75E-02	2.46E-01		107%	
Calc	S1	FILTER	JH3NN1AA	TH-232	2.05E-02	(4.59E-02)	U4	PCI/SA	R	6.75E-02	2.46E-01		107%	
Calc	S1	FILTER	JH3NR1AA	TH-228	-1.91E-02	(4.27E-02)	U4	PCI/SA	R	6.28E-02	2.29E-01		96%	
Calc	S1	FILTER	JH3NR1AA	TH-230	1.83E-02	(4.10E-02)	U4	PCI/SA	R	6.03E-02	2.20E-01		96%	
Calc	S1	FILTER	JH3NR1AA	TH-232	3.67E-02	(4.11E-02)	U4	PCI/SA	R	6.03E-02	2.20E-01		96%	
Calc	S1	FILTER	JH3NT1AA	TH-228	0.00E+00	(3.40E-02)	U4	PCI/SA	R	3.47E-02	1.60E-01		103%	

CR Dr met except for B

() - (1s Uncertainities)
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 Reguardless of Significants
Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:51
RADCALC v4.8.26
STL Richland

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	S1	FILTER	**JH3NT1AA**	TH-230	**2.88E-01**	**(9.93E-02)**		PCI/SA	R	3.33E-02	1.53E-01		103%	
Calc	S1	FILTER	**JH3NT1AA**	TH-232	**0.00E+00**	**(3.27E-02)**	**U4**	PCI/SA	R	3.33E-02	1.53E-01		103%	
Calc	S1	FILTER	**JH3NV1AA**	TH-228	**7.80E-02**	**(7.84E-02)**	**U4**	PCI/SA	R	8.56E-02	3.12E-01		86%	
Calc	S1	FILTER	**JH3NV1AA**	TH-230	**6.99E-01**	**(1.99E-01)**		PCI/SA	R	8.22E-02	3.00E-01		86%	
Calc	S1	FILTER	**JH3NV1AA**	TH-232	**0.00E+00**	**(5.59E-02)**	**U4**	PCI/SA	R	8.22E-02	3.00E-01		86%	
Calc	S1	FILTER	**JH3NW1AA**	TH-228	**1.48E-01**	**(1.35E-01)**	**U4**	PCI/SA	R	1.98E-01	5.30E-01		97%	
Calc	S1	FILTER	**JH3NW1AA**	TH-230	**2.36E-01**	**(1.10E-01)**		PCI/SA	R	7.77E-02	2.83E-01		97%	
Calc	S1	FILTER	**JH3NW1AA**	TH-232	**4.73E-02**	**(5.30E-02)**	**U4**	PCI/SA	R	7.77E-02	2.83E-01		97%	
Calc	S1	FILTER	**JH5N91AA**	TH-228	**9.26E-03**	**(6.72E-03)**	**U4**	PCI/SA	R	6.09E-03	2.22E-02	**B**	108%	
Calc	S1	FILTER	**JH5N91AA**	TH-230	**7.16E-03**	**(5.41E-03)**	**U4**	PCI/SA	R	5.89E-03	2.15E-02	**B**	108%	
Calc	S1	FILTER	**JH5N91AA**	TH-232	**0.00E+00**	**(4.00E-03)**	**U4**	PCI/SA	R	5.89E-03	2.15E-02	**B**	108%	
Calc	S1	FILTER	**JH5N91AC**	TH-230	**1.80E+00**	**(1.79E-01)**		PCI/SA	R	6.27E-03	2.28E-02	**S**	98%	98%

() - (1s Uncertainities)
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 Reguardless of Significants
Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:66
RADCALC v4.8.26
STL Richland

Batch Nbr: 6311391

Alpha Spec, ThIso by ALP , Calculated Results

11/20/2006 7:59:26 AM

Detailed Report

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
1	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3LV1AA**	**PCI/SA**		10/18/06 11:05	11/15/06 00:20			1	1.00 SA	
536403,P-0778					,J6K060215-1 v4.8.26		FILTER					THTF0855 Alq		0.083733 SA	

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
0	11/14/06 20:10	TH-228	0	1	ALP116	ED	N	N	2.5523E-01		N	6%	N		1.0000E+00	4.5045E-01	1.0277E+00	
			500.2166666	1000.0166			Y		(7.657E-03)			1%			(0.000E+00)	11.942725		
1	11/14/06 20:10	TH-229	31	2	ALP116	ED	Y	N	2.5523E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.2166666	1000.0166			Y		(7.657E-03)						(0.000E+00)	11.942725		
2	11/14/06 20:10	TH-230	1	1	ALP116	ED	N	N	2.5523E-01		N	6%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.2166666	1000.0166			Y		(7.657E-03)			1%			(0.000E+00)	11.942725		
3	11/14/06 20:10	TH-232	0	0	ALP116	ED	N	N	2.5523E-01		N	6%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.2166666	1000.0166			Y		(7.657E-03)			1%			(0.000E+00)	11.942725		

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
	11/16/06	TH-228	R	**-0.379396**	**U4**	-9.99983E-04	-0.068624	-0.068624	1.00 SA	6%		4.549897		
				(0.851556)		(2.2353E-03)	(0.153978)	(0.153978)	(0.027064)			1.247954		
	11/16/06	TH-229	R	**1.264071**		5.99732E-02	0.234975	0.234975	1.00 SA	6%				
				(0.250062)		(1.1220E-02)	(0.044522)	(0.044522)	(0.027064)					
	11/16/06	TH-230	R	**0.36665**	**U4**	9.99150E-04	0.068156	0.068156	1.00 SA	6%		4.400706		
				(0.823628)		(2.2353E-03)	(0.153053)	(0.153053)	(0.027064)			1.207033		
	11/16/06	TH-232	R	**0.00E00**	**U4**	0.00000E+00	0.00E00	0.00E00	1.00 SA	6%		4.400706		
				(0.820265)		(2.2353E-03)	(0.152477)	(0.152477)	(0.027064)			1.207033		

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
2	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3L11AA**	**PCI/SA**		10/18/06 11:30	11/15/06 00:20			1	1.00 SA	
536403,P-0779					,J6K060215-2 v4.8.26		FILTER					THTF0856 Alq		0.083543 SA	

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
0	11/14/06 20:10	TH-228	3	0	ALP117	ED	N	N	3.3591E-01		N	101%	N		1.0000E+00	4.5045E-01	1.0277E+00	
			500.0833333	2500.1			Y		(1.008E-02)			6%			(0.000E+00)	11.96986		
1	11/14/06 20:10	TH-229	704	4	ALP117	ED	Y	N	3.3591E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0833333	2500.1			Y		(1.008E-02)						(0.000E+00)	11.96986		
2	11/14/06 20:10	TH-230	5	0	ALP117	ED	N	N	3.3591E-01		N	101%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0833333	2500.1			Y		(1.008E-02)			6%			(0.000E+00)	11.96986		
3	11/14/06 20:10	TH-232	0	0	ALP117	ED	N	N	3.3591E-01		N	101%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0833333	2500.1			Y		(1.008E-02)			6%			(0.000E+00)	11.96986		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:2

RADCALC v4.8.26

STL Richland

Batch Nbr: 6311391 Alpha Spec, Thlso by ALP , Calculated Results 11/20/2006 7:59:26 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	BlkLcC/MDC	StdDvMdC/LcC
	11/16/06	TH-228	R	**0.099555**		5.99900E-03	0.017967	0.017967	1.00 SA	101%		0.158946		
				(0.058458)		(3.4865E-03)	(0.010509)	(0.010509)	(0.014142)			0.034528		
	11/16/06	TH-229	R	**22.571005**		1.40617E+00	4.186155	4.186155	1.00 SA	101%				
				(1.599839)		(5.3063E-02)	(0.201806)	(0.201806)	(0.014142)					
	11/16/06	TH-230	R	**0.160488**		9.99833E-03	0.029765	0.029765	1.00 SA	101%		0.153737		
				(0.073302)		(4.4892E-03)	(0.013507)	(0.013507)	(0.014142)			0.033396		
	11/16/06	TH-232	R	**0.00E00**	**U4**	0.00000E+00	0.00E00	0.00E00	1.00 SA	101%		0.153737		
				(0.032733)		(2.0393E-03)	(0.006071)	(0.006071)	(0.014142)			0.033396		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
3	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3L31AA**	**PCI/SA**		10/18/06 11:55	11/15/06 00:20			1	1.00 SA	
536403,P-0780					,J6K060215-3 v4.8.26		FILTER					THTF0847 Alq		0.084158 SA	

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
0	11/14/06 20:10	TH-228	3	1	ALP119	ED	N	N	2.5157E-01		N	83%	N		1.0000E+00	4.5045E-01	1.0277E+00	
			500.2166666	1000.2166			Y		(7.547E-03)			5%			(0.000E+00)	11.882362		
1	11/14/06 20:10	TH-229	429	0	ALP119	ED	Y	N	2.5157E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.2166666	1000.2166			Y		(7.547E-03)						(0.000E+00)	11.882362		
2	11/14/06 20:10	TH-230	8	0	ALP119	ED	N	N	2.5157E-01		N	83%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.2166666	1000.2166			Y		(7.547E-03)			5%			(0.000E+00)	11.882362		
3	11/14/06 20:10	TH-232	1	0	ALP119	ED	N	N	2.5157E-01		N	83%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.2166666	1000.2166			Y		(7.547E-03)			5%			(0.000E+00)	11.882362		

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
	11/16/06	TH-228	R	**0.132886**	**U4**	4.99762E-03	0.024159	0.024159	1.00 SA	83%		0.318855		
				(0.096607)		(3.6040E-03)	(0.01751)	(0.01751)	(0.027064)			0.087452		
	11/16/06	TH-229	R	**18.246755**		8.57628E-01	3.409073	3.409073	1.00 SA	83%				
				(1.467115)		(4.1419E-02)	(0.193819)	(0.193819)	(0.027064)					
	11/16/06	TH-230	R	**0.411323**		1.59931E-02	0.076848	0.076848	1.00 SA	83%		0.30841		
				(0.152446)		(5.7421E-03)	(0.028145)	(0.028145)	(0.027064)			0.084588		
	11/16/06	TH-232	R	**0.051415**	**U4**	1.99913E-03	0.009606	0.009606	1.00 SA	83%		0.30841		
				(0.057681)		(2.2352E-03)	(0.010763)	(0.010763)	(0.027064)			0.084588		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
4	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3L51AA**	**PCI/SA**		10/18/06 11:10	11/15/06 00:20			1	1.00 SA	
536403,P-0781					,J6K060215-4 v4.8.26		FILTER					THTF0848 Alq		0.084129 SA	

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
0	11/14/06 20:10	TH-228	5	6	ALP120	ED	N	N	2.4073E-01		N	99%	N		1.0000E+00	4.5045E-01	1.0277E+00	
			500.0666666	1000.3			Y		(7.222E-03)			6%			(0.000E+00)	11.886529		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:4 RADCALC v4.8.26 STL Richland

Batch Nbr: 6311391

Alpha Spec, Thlso by ALP , Calculated Results

11/20/2006 7:59:26 AM

1	11/14/06 20:10	TH-229	490	1	ALP120	ED	Y	N	2.4073E-01	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0666666	1000.3			Y		(7.222E-03)					(0.000E+00)	11.886529		
2	11/14/06 20:10	TH-230	4	0	ALP120	ED	N	N	2.4073E-01	N	99%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0666666	1000.3			Y		(7.222E-03)		6%			(0.000E+00)	11.886529		
3	11/14/06 20:10	TH-232	0	0	ALP120	ED	N	N	2.4073E-01	N	99%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0666666	1000.3			Y		(7.222E-03)		6%			(0.000E+00)	11.886529		

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
	11/16/06	TH-228	R	**0.093038**	**U4**	4.00047E-03	0.016908	0.016908	1.00 SA	99%		0.500578		
				(0.118845)		(5.0981E-03)	(0.02158)	(0.02158)	(0.014142)			0.187383		
	11/16/06	TH-229	R	**21.771733**		9.78870E-01	4.066225	4.066225	1.00 SA	99%				
				(1.635929)		(4.4277E-02)	(0.220704)	(0.220704)	(0.014142)					
	11/16/06	TH-230	R	**0.179931**		7.99893E-03	0.033605	0.033605	1.00 SA	99%		0.269796		
				(0.094057)		(4.1225E-03)	(0.01748)	(0.01748)	(0.014142)			0.07399		
	11/16/06	TH-232	R	**0.00E00**	**U4**	0.00000E+00	0.00E00	0.00E00	1.00 SA	99%		0.269796		
				(0.050291)		(2.2357E-03)	(0.009393)	(0.009393)	(0.014142)			0.07399		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
5	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3L61AA**	**PCI/SA**		10/18/06 12:00	11/15/06 09:17			1	1.00 SA	
536403,000546					,J6K060215-5 v4.8.26		FILTER					THTF0857 Alq		0.083482 SA	

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
0	11/15/06 05:08	TH-228	5	3	ALP171	ED	N	N	2.9087E-01		N	104%	N		1.0000E+00	4.5045E-01	1.0280E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	11.97858		
1	11/15/06 05:08	TH-229	620	6	ALP171	ED	Y	N	2.9087E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)						(0.000E+00)	11.97858		
2	11/15/06 05:08	TH-230	14	0	ALP171	ED	N	N	2.9087E-01		N	104%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	11.97858		
3	11/15/06 05:08	TH-232	3	0	ALP171	ED	N	N	2.9087E-01		N	104%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	11.97858		

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
	11/16/06	TH-228	R	**0.134445**	**U4**	7.00752E-03	0.024237	0.024237	1.00 SA	104%		0.322859		
				(0.092868)		(4.8009E-03)	(0.016685)	(0.016685)	(0.027064)			0.109445		
	11/16/06	TH-229	R	**22.915878**		1.23532E+00	4.247023	4.247023	1.00 SA	104%				
				(1.739952)		(4.9913E-02)	(0.21373)	(0.21373)	(0.027064)					
	11/16/06	TH-230	R	**0.519971**		2.80299E-02	0.096367	0.096367	1.00 SA	104%		0.222771		
				(0.147491)		(7.5579E-03)	(0.02678)	(0.02678)	(0.027064)			0.061096		
	11/16/06	TH-232	R	**0.111422**		6.00641E-03	0.02065	0.02065	1.00 SA	104%		0.222771		
				(0.067671)		(3.6094E-03)	(0.012487)	(0.012487)	(0.027064)			0.061096		

() - (1s Uncertainities), 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 Significants. Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:6

RADCALC v4.8.26

STL Richland

Batch Nbr: 6311391

Alpha Spec, Thlso by ALP , Calculated Results

11/20/2006 7:59:26 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
6	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3MC1AA**	**PCI/SA**		10/05/06 09:50	11/15/06 09:17			1	1.00 SA	
536403,P-0769					,J6K060216-1 v4.8.26		FILTER					THTF0858 Alq		0.08329 SA	

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
0	11/15/06 05:08	TH-228	4	1	ALP172	ED	N	N	2.9949E-01		N	110%	N		1.0000E+00	4.5045E-01	1.0415E+00	
			499.4666666	998.95			Y		(8.985E-03)			6%			(0.000E+00)	12.006242		
1	11/15/06 05:08	TH-229	679	2	ALP172	ED	Y	N	2.9949E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)						(0.000E+00)	12.006242		
2	11/15/06 05:08	TH-230	8	1	ALP172	ED	N	N	2.9949E-01		N	110%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)			6%			(0.000E+00)	12.006242		
3	11/15/06 05:08	TH-232	2	0	ALP172	ED	N	N	2.9949E-01		N	110%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)			6%			(0.000E+00)	12.006242		

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
	11/16/06	TH-228	R	**0.132585**		7.00749E-03	0.023539	0.023539	1.00 SA	110%		0.227213		
				(0.078886)		(4.1275E-03)	(0.013952)	(0.013952)	(0.014142)			0.062314		
	11/16/06	TH-229	R	**24.512822**		1.35745E+00	4.532519	4.532519	1.00 SA	110%				
				(1.746818)		(5.2190E-02)	(0.221036)	(0.221036)	(0.014142)					
	11/16/06	TH-230	R	**0.27116**		1.50160E-02	0.050139	0.050139	1.00 SA	110%		0.216856		
				(0.106319)		(5.7507E-03)	(0.019485)	(0.019485)	(0.014142)			0.059474		
	11/16/06	TH-232	R	**0.072309**	**U4**	4.00427E-03	0.01337	0.01337	1.00 SA	110%		0.216856		
				(0.054571)		(3.0032E-03)	(0.010067)	(0.010067)	(0.014142)			0.059474		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
7	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3MJ1AA**	**PCI/SA**		10/05/06 10:10	11/15/06 09:17			1	1.00 SA	
536403,P-0770					,J6K060216-2 v4.8.26		FILTER					THTF0859 Alq		0.083928 SA	

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
0	11/15/06 05:08	TH-228	4	1	ALP173	ED	N	N	2.5374E-01		N	102%	N		1.0000E+00	4.5045E-01	1.0415E+00	
			499.4666666	998.95			Y		(7.612E-03)			6%			(0.000E+00)	11.914968		
1	11/15/06 05:08	TH-229	522	3	ALP173	ED	Y	N	2.5374E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)						(0.000E+00)	11.914968		
2	11/15/06 05:08	TH-230	6	0	ALP173	ED	N	N	2.5374E-01		N	102%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)			6%			(0.000E+00)	11.914968		
3	11/15/06 05:08	TH-232	1	0	ALP173	ED	N	N	2.5374E-01		N	102%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)			6%			(0.000E+00)	11.914968		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:7

RADCALC v4.8.26

STL Richland

Batch Nbr: 6311391

Alpha Spec, Thlso by ALP , Calculated Results

11/20/2006 7:59:26 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	BlkLcC/MDC	StdDvMdC/LcC
	11/16/06	TH-228	R	**0.155297**		7.00749E-03	0.027783	0.027783	1.00 SA	102%		0.266135		
				(0.092458)		(4.1275E-03)	(0.016478)	(0.016478)	(0.014142)			0.072989		
	11/16/06	TH-229	R	**22.042465**		1.04211E+00	4.106962	4.106962	1.00 SA	102%				
				(1.639096)		(4.5776E-02)	(0.218463)	(0.218463)	(0.014142)					
	11/16/06	TH-230	R	**0.254092**		1.20128E-02	0.047342	0.047342	1.00 SA	102%		0.254008		
				(0.10814)		(5.0053E-03)	(0.019998)	(0.019998)	(0.014142)			0.069663		
	11/16/06	TH-232	R	**0.042349**	**U4**	2.00214E-03	0.00789	0.00789	1.00 SA	102%		0.254008		
				(0.047489)		(2.2384E-03)	(0.008839)	(0.008839)	(0.014142)			0.069663		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3MK1AA**	**PCI/SA**		10/05/06 10:30	11/15/06 09:17			1	1.00 SA	
536403,P-0771					,J6K060216-3 v4.8.26		FILTER					THTF0860 Alq		0.083154 SA	

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
0	11/15/06 05:08	TH-228	2	1	ALP174	ED	N	N	2.4814E-01		N	111%	N		1.0000E+00	4.5045E-01	1.0414E+00	
			499.4666666	998.95			Y		(7.444E-03)			7%			(0.000E+00)	12.025922		
1	11/15/06 05:08	TH-229	556	0	ALP174	ED	Y	N	2.4814E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.444E-03)						(0.000E+00)	12.025922		
2	11/15/06 05:08	TH-230	7	0	ALP174	ED	N	N	2.4814E-01		N	111%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.444E-03)			7%			(0.000E+00)	12.025922		
3	11/15/06 05:08	TH-232	1	0	ALP174	ED	N	N	2.4814E-01		N	111%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.444E-03)			7%			(0.000E+00)	12.025922		

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
	11/16/06	TH-228	R	**0.068692**	**U4**	3.00322E-03	0.012176	0.012176	1.00 SA	111%		0.274676		
				(0.068945)		(3.0032E-03)	(0.012204)	(0.012204)	(0.014142)			0.075331		
	11/16/06	TH-229	R	**24.301792**		1.11319E+00	4.486145	4.486145	1.00 SA	111%				
				(1.785706)		(4.7220E-02)	(0.23308)	(0.23308)	(0.014142)					
	11/16/06	TH-230	R	**0.305958**		1.40149E-02	0.05648	0.05648	1.00 SA	111%		0.262163		
				(0.120591)		(5.3909E-03)	(0.022067)	(0.022067)	(0.014142)			0.071899		
	11/16/06	TH-232	R	**0.043708**	**U4**	2.00214E-03	0.008069	0.008069	1.00 SA	111%		0.262163		
				(0.049011)		(2.2384E-03)	(0.009038)	(0.009038)	(0.014142)			0.071899		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
9	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3ML1AA**	**PCI/SA**		10/05/06 09:55	11/15/06 09:17			1	1.00 SA	
536403,P-0772					,J6K060216-4 v4 8.26		FILTER					THTF0861 Alq		0.082812 SA	

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
0	11/15/06 05:08	TH-228	3	2	ALP175	ED	N	N	2.9360E-01		N	110%	N		1.0000E+00	4.5045E-01	1.0415E+00	
			499.4666666	998.95			Y		(8.808E-03)			7%			(0.000E+00)	12.075616		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:9

RADCALC v4.8.26

STL Richland

Batch Nbr: 6311391 Alpha Spec, Thlso by ALP , Calculated Results 11/20/2006 7:59:26 AM

1	11/15/06 05:08	TH-229	648	3	ALP175	ED	Y	N	2.9360E-01	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(8.808E-03)				(0.000E+00)	12.075616	
2	11/15/06 05:08	TH-230	2	3	ALP175	ED	N	N	2.9360E-01	N	110%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(8.808E-03)		7%		(0.000E+00)	12.075616	
3	11/15/06 05:08	TH-232	2	0	ALP175	ED	N	N	2.9360E-01	N	110%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(8.808E-03)		7%		(0.000E+00)	12.075616	

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
	11/16/06	TH-228	R	**0.07773**	U4	4.00430E-03	0.013721	0.013721	1.00 SA	110%		0.286041		
				(0.073005)		(3.7456E-03)	(0.012867)	(0.012867)	(0.014142)			0.090413		
	11/16/06	TH-229	R	**23.980739**		1.29438E+00	4.408661	4.408661	1.00 SA	110%				
				(1.721305)		(5.0996E-02)	(0.218314)	(0.218314)	(0.014142)					
	11/16/06	TH-230	R	**0.018548**	U4	1.00112E-03	0.00341	0.00341	1.00 SA	110%		0.311769		
				(0.061532)		(3.3202E-03)	(0.011311)	(0.011311)	(0.014142)			0.105686		
	11/16/06	TH-232	R	**0.074186**	U4	4.00427E-03	0.013639	0.013639	1.00 SA	110%		0.222486		
				(0.055992)		(3.0032E-03)	(0.010269)	(0.010269)	(0.014142)			0.061018		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3MM1AA**	**PCI/SA**		10/05/06 10:35	11/15/06 09:17			1	1.00 SA	
536403,000544					,J6K060216-5 v4.8 26		FILTER					THTF0862 Alq		0.083295 SA	

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
0	11/15/06 05:08	TH-228	6	3	ALP176	ED	N	N	2.9146E-01		N	93%	N		1.0000E+00	4.5045E-01	1.0414E+00	
			499.4666666	998.95			Y		(8.744E-03)			6%			(0.000E+00)	12.005522		
1	11/15/06 05:08	TH-229	549	4	ALP176	ED	Y	N	2.9146E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.744E-03)						(0.000E+00)	12.005522		
2	11/15/06 05:08	TH-230	11	2	ALP176	ED	N	N	2.9146E-01		N	93%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.744E-03)			6%			(0.000E+00)	12.005522		
3	11/15/06 05:08	TH-232	2	0	ALP176	ED	N	N	2.9146E-01		N	93%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.744E-03)			6%			(0.000E+00)	12.005522		

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
	11/16/06	TH-228	R	**0.188494**		9.00966E-03	0.033468	0.033468	1.00 SA	93%		0.352063		
				(0.110032)		(5.2017E-03)	(0.019459)	(0.019459)	(0.014142)			0.119345		
	11/16/06	TH-229	R	**20.320258**		1.09517E+00	3.757522	3.757522	1.00 SA	93%				
				(1.498497)		(4.6954E-02)	(0.196622)	(0.196622)	(0.014142)					
	11/16/06	TH-230	R	**0.399793**		2.00214E-02	0.073928	0.073928	1.00 SA	93%		0.294246		
				(0.139886)		(6.7896E-03)	(0.02558)	(0.02558)	(0.014142)			0.093006		
	11/16/06	TH-232	R	**0.079958**	U4	4.00427E-03	0.014786	0.014786	1.00 SA	93%		0.239796		
				(0.060363)		(3.0032E-03)	(0.011136)	(0.011136)	(0.014142)			0.065765		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:11 RADCALC v4.8.26 STL Richland

Batch Nbr: 6311391

Alpha Spec, Thlso by ALP , Calculated Results

11/20/2006 7:59:26 AM

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
11	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3NN1AA**	**PCI/SA**		10/11/06 10:55	11/15/06 09:17			1	1.00 SA	
536403,P-0773					,J6K060219-1 v4.8.26		FILTER					THTF0863 Alq		0.084111 SA	

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
0	11/15/06 05:08	TH-228	2	1	ALP177	ED	N	N	2.6130E-01		N	107%	N		1.0000E+00	4.5045E-01	1.0352E+00	
			499.4666666	998.95			Y		(7.839E-03)			7%			(0.000E+00)	11.889033		
1	11/15/06 05:08	TH-229	565	0	ALP177	ED	Y	N	2.6130E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.839E-03)						(0.000E+00)	11.889033		
2	11/15/06 05:08	TH-230	3	0	ALP177	ED	N	N	2.6130E-01		N	107%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.839E-03)			7%			(0.000E+00)	11.889033		
3	11/15/06 05:08	TH-232	1	1	ALP177	ED	N	N	2.6130E-01		N	107%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.839E-03)			7%			(0.000E+00)	11.889033		

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
	11/16/06	TH-228	R	**0.064106**	**U4**	3.00322E-03	0.011563	0.011563	1.00 SA	107%		0.256337		
				(0.064341)		(3.0032E-03)	(0.01159)	(0.01159)	(0.014142)			0.070302		
	11/16/06	TH-229	R	**23.184275**		1.13121E+00	4.329128	4.329128	1.00 SA	107%				
				(1.69906)		(4.7601E-02)	(0.223724)	(0.223724)	(0.014142)					
	11/16/06	TH-230	R	**0.123102**		6.00641E-03	0.022987	0.022987	1.00 SA	107%		0.246123		
				(0.074725)		(3.6094E-03)	(0.013902)	(0.013902)	(0.014142)			0.067501		
	11/16/06	TH-232	R	**0.020517**	**U4**	1.00108E-03	0.003831	0.003831	1.00 SA	107%		0.246123		
				(0.045911)		(2.2384E-03)	(0.008571)	(0.008571)	(0.014142)			0.067501		

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
12	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3NR1AA**	**PCI/SA**		10/11/06 11:10	11/15/06 09:17			1	1.00 SA	
536403,P-0774					,J6K060219-2 v4.8.26		FILTER					THTF0864 Alq		0.081831 SA	

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
0	11/15/06 05:08	TH-228	0	1	ALP178	ED	N	N	3.1338E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0352E+00	
			499.4666666	998.95			Y		(9.401E-03)			6%			(0.000E+00)	12.220236		
1	11/15/06 05:08	TH-229	609	1	ALP178	ED	Y	N	3.1338E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(9.401E-03)						(0.000E+00)	12.220236		
2	11/15/06 05:08	TH-230	1	1	ALP178	ED	N	N	3.1338E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(9.401E-03)			6%			(0.000E+00)	12.220236		
3	11/15/06 05:08	TH-232	1	0	ALP178	ED	N	N	3.1338E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(9.401E-03)			6%			(0.000E+00)	12.220236		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:12

RADCALC v4.8.26

STL Richland

Batch Nbr: 6311391 Alpha Spec, Thlso by ALP , Calculated Results 11/20/2006 7:59:26 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	BlkLcC/MDC	StdDvMdC/LcC
	11/16/06	TH-228	R	**-0.01909**	U4	-1.00105E-03	-0.00335	-0.00335	1.00 SA	96%		0.229002		
				(0.042717)		(2.2384E-03)	(0.007494)	(0.007494)	(0.014142)			0.062805		
	11/16/06	TH-229	R	**21.399669**		1.21830E+00	3.887594	3.887594	1.00 SA	96%				
				(1.549876)		(4.9419E-02)	(0.196137)	(0.196137)	(0.014142)					
	11/16/06	TH-230	R	**0.01833**	U4	1.00108E-03	0.00333	0.00333	1.00 SA	96%		0.219881		
				(0.041015)		(2.2384E-03)	(0.007449)	(0.007449)	(0.014142)			0.060303		
	11/16/06	TH-232	R	**0.036659**	U4	2.00214E-03	0.00666	0.00666	1.00 SA	96%		0.219881		
				(0.041104)		(2.2384E-03)	(0.007459)	(0.007459)	(0.014142)			0.060303		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
13	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3NT1AA**	**PCI/SA**		10/11/06 11:35	11/15/06 09:18			1	1.00 SA	
536403,P-0775					,J6K060219-3 v4.8.26		FILTER					THTF0865 Alq		0.083704 SA	

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
0	11/15/06 05:08	TH-228	0	0	ALP117	ED	N	N	3.3591E-01		N	103%	N		1.0000E+00	4.5045E-01	1.0352E+00	
			500.0333333	2500.1			Y		(1.008E-02)			6%			(0.000E+00)	11.946818		
1	11/15/06 05:08	TH-229	697	4	ALP117	ED	Y	N	3.3591E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	2500.1			Y		(1.008E-02)						(0.000E+00)	11.946818		
2	11/15/06 05:08	TH-230	9	0	ALP117	ED	N	N	3.3591E-01		N	103%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	2500.1			Y		(1.008E-02)			6%			(0.000E+00)	11.946818		
3	11/15/06 05:08	TH-232	0	0	ALP117	ED	N	N	3.3591E-01		N	103%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	2500.1			Y		(1.008E-02)			6%			(0.000E+00)	11.946818		

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
	11/16/06	TH-228	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 SA	103%		0.159816		
				(0.034028)		(2.0395E-03)	(0.006108)	(0.006108)	(0.014142)			0.034716		
	11/16/06	TH-229	R	**22.305539**		1.39231E+00	4.144898	4.144898	1.00 SA	103%				
				(1.583277)		(5.2804E-02)	(0.200433)	(0.200433)	(0.014142)					
	11/16/06	TH-230	R	**0.288351**		1.79988E-02	0.053582	0.053582	1.00 SA	103%		0.153453		
				(0.099317)		(6.0129E-03)	(0.018244)	(0.018244)	(0.014142)			0.033333		
	11/16/06	TH-232	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 SA	103%		0.153453		
				(0.032674)		(2.0395E-03)	(0.006072)	(0.006072)	(0.014142)			0.033333		

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	S1	FILTER	*STLE	AlpIsoWoBS	**JH3NV1AA**	**PCI/SA**		10/11/06 11:00	11/15/06 09:18			1	1.00 SA	
536403,P-0776					,J6K060219-4 v4.8.26		FILTER					THTF0866 Alq		0.083789 SA	

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
0	11/15/06 05:08	TH-228	2	1	ALP119	ED	N	N	2.5157E-01		N	86%	N		1.0000E+00	4.5045E-01	1.0352E+00	
			500.05	1000.2166			Y		(7.547E-03)			6%			(0.000E+00)	11.934677		

() - (1s Uncertainities), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU

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Batch Nbr: 6311391 Alpha Spec, ThIso by ALP , Calculated Results 11/20/2006 7:59:27 AM

1	11/15/06 05:08	TH-229	437	0	ALP119	ED	Y	N	2.5157E-01	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00
			500.05	1000.2166			Y		(7.547E-03)				(0.000E+00)	11.934677	
2	11/15/06 05:08	TH-230	14	0	ALP119	ED	N	N	2.5157E-01	N	86%	N	1.0000E+00	4.5045E-01	1.0000E+00
			500.05	1000.2166			Y		(7.547E-03)		6%		(0.000E+00)	11.934677	
3	11/15/06 05:08	TH-232	0	0	ALP119	ED	N	N	2.5157E-01	N	86%	N	1.0000E+00	4.5045E-01	1.0000E+00
			500.05	1000.2166			Y		(7.547E-03)		6%		(0.000E+00)	11.934677	

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
	11/16/06	TH-228	R	**0.07805**	U4	2.99982E-03	0.014024	0.014024	1.00 SA	86%		0.312075		
				(0.078353)		(2.9997E-03)	(0.01406)	(0.01406)	(0.014142)			0.085586		
	11/16/06	TH-229	R	**18.675076**		8.73913E-01	3.473803	3.473803	1.00 SA	86%				
				(1.4332)		(4.1817E-02)	(0.19619)	(0.19619)	(0.014142)					
	11/16/06	TH-230	R	**0.699415**		2.79972E-02	0.1301	0.1301	1.00 SA	86%		0.299642		
				(0.198543)		(7.5491E-03)	(0.036308)	(0.036308)	(0.014142)			0.082177		
	11/16/06	TH-232	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 SA	86%		0.299642		
				(0.055854)		(2.2358E-03)	(0.01039)	(0.01039)	(0.014142)			0.082177		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
15	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3NW1AA**	**PCI/SA**		10/11/06 11:40	11/15/06 09:18			1	1.00 SA	
536403,000545					,J6K060219-5 v4.8.26		FILTER					THTF0867 Alq		0.081998 Sa	

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
0	11/15/06 05:08	TH-228	6	6	ALP120	ED	N	N	2.4073E-01		N	97%	N		1.0000E+00	4.5045E-01	1.0352E+00	
			500.0333333	1000.3			Y		(7.222E-03)			6%			(0.000E+00)	12.195373		
1	11/15/06 05:08	TH-229	472	2	ALP120	ED	Y	N	2.4073E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	1000.3			Y		(7.222E-03)						(0.000E+00)	12.195373		
2	11/15/06 05:08	TH-230	5	0	ALP120	ED	N	N	2.4073E-01		N	97%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	1000.3			Y		(7.222E-03)			6%			(0.000E+00)	12.195373		
3	11/15/06 05:08	TH-232	1	0	ALP120	ED	N	N	2.4073E-01		N	97%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	1000.3			Y		(7.222E-03)			6%			(0.000E+00)	12.195373		

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
	11/16/06	TH-228	R	**0.147707**	U4	6.00100E-03	0.025973	0.025973	1.00 SA	97%		0.529805		
				(0.135423)		(5.4766E-03)	(0.023775)	(0.023775)	(0.014142)			0.198321		
	11/16/06	TH-229	R	**21.494649**		9.41938E-01	3.912809	3.912809	1.00 SA	97%				
				(1.627061)		(4.3471E-02)	(0.215379)	(0.215379)	(0.014142)					
	11/16/06	TH-230	R	**0.236322**		9.99933E-03	0.043019	0.043019	1.00 SA	97%		0.283476		
				(0.110268)		(4.5822E-03)	(0.019948)	(0.019948)	(0.014142)			0.077741		
	11/16/06	TH-232	R	**0.047264**	U4	1.99987E-03	0.008604	0.008604	1.00 SA	97%		0.283476		
				(0.053004)		(2.2358E-03)	(0.009638)	(0.009638)	(0.014142)			0.077741		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:16 RADCALC v4.8.26 STL Richland

Batch Nbr: 6311391 Alpha Spec, Thiso by ALP , Calculated Results 11/20/2006 7:59:27 AM

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	S1	FILTER	*STLE	AlpIsoWoBS	**JH5N91AA**	**PCI/SA**	**B**	10/18/06 11:05	11/15/06 17:52			1	1.00 SA	
0,INTRA-LAB BLANK					,J6K070000-391		FILTER					THTF0868 Alq		1.00 SA	

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
5	11/15/06 13:42	TH-228	3	1	ALP119	ED	N	N	2.5157E-01		N	108%	N		1.0000E+00	4.5045E-01	1.0284E+00	
			500.2166666	1000.2166			Y		(7.547E-03)			7%			(0.000E+00)	1.00		
6	11/15/06 13:42	TH-229	554	0	ALP119	ED	Y	N	2.5157E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.2166666	1000.2166			Y		(7.547E-03)						(0.000E+00)	1.00		
7	11/15/06 13:42	TH-230	2	0	ALP119	ED	N	N	2.5157E-01		N	108%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.2166666	1000.2166			Y		(7.547E-03)			7%			(0.000E+00)	1.00		
8	11/15/06 13:42	TH-232	0	0	ALP119	ED	N	N	2.5157E-01		N	108%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.2166666	1000.2166			Y		(7.547E-03)			7%			(0.000E+00)	1.00		

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	BlkLcC/MDC	StdDvMdC/LcC
	11/20/06	TH-228	R	**0.009259**	**U4**	4.99762E-03	0.019985	0.019985	1.00 SA	108%		0.022215		
				(0.006725)		(3.6040E-03)	(0.014477)	(0.014477)	(0.017321)			0.006093		
	11/20/06	TH-229	R	**1.983058**		1.10752E+00	4.402392	4.402392	1.00 SA	108%				
				(0.147146)		(4.7065E-02)	(0.229004)	(0.229004)	(0.017321)					
	11/20/06	TH-230	R	**0.007159**	**U4**	3.99827E-03	0.015893	0.015893	1.00 SA	108%		0.021471		
				(0.005405)		(2.9988E-03)	(0.01197)	(0.01197)	(0.017321)			0.005889		
	11/20/06	TH-232	R	**0.00E00**	**U4**	0.00000E+00	0.00E00	0.00E00	1.00 SA	108%		0.021471		
				(0.004002)		(2.2352E-03)	(0.008885)	(0.008885)	(0.017321)			0.005889		

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	S1	FILTER	*STLE	AlpIsoWoBS	**JH5N91AC**	**PCI/SA**	**S**	10/18/06 11:05	11/15/06 17:52		THSO0093	1	1.00 SA	
0,INTRA-LAB CHECK					,J6K070000-391		FILTER					THSO0093 Alq		1.00 SA	

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	11/15/06 13:42	TH-229	481	1	ALP120	ED	Y	N	2.4073E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0833333	1000.3			Y		(7.222E-03)						(0.000E+00)	1.00		
2	11/15/06 13:42	TH-230	472	1	ALP120	ED	N	N	2.4073E-01		N	98%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0833333	1000.3			Y		(7.222E-03)			6%			(0.000E+00)	1.00		

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	BlkLcC/MDC	StdDvMdC/LcC
	11/16/06	TH-229	R	**1.797894**		9.60840E-01	3.991329	3.991329	1.00 SA	98%				
				(0.136739)		(4.3868E-02)	(0.218045)	(0.218045)	(0.017321)					
	11/16/06	TH-230	R	**1.795955**		9.42843E-01	3.987024	3.987024	1.00 SA	98%	98%	0.022846		
				(0.178674)		(4.3455E-02)	(0.335897)	(0.335897)	(0.017321)			0.006265		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:17 RADCALC v4.8.26
STL Richland

SEVERN TRENT **STL**

THORIUM ISOTOPIC COUNTING REQUEST

C.R. Technician VB
Date Counted 11/15
C.R. Analyst [illegible]
Date Analyzed 11/15/06

Counting Time
Sample 5W Minutes
Background See Alpha Analysis Report

SOP's
Operating: RICHRD008
Review: RICHRD0016

2202
BRC 1914 6311391

WorkOrder #	Th-229 (4845 KeV) Tracer from Th-234 Beta Count (7)				TOTAL COUNTS			Det #	Comment
					Th-228 (5423 KeV)	Th-230 (4688 KeV)	Th-232 (4010 KeV)		
	ID	Activity	ROI Cts	BKG	(6)	(8)	(9)		
JH5N91AA		10		0	See Alpha Analysis Report for ROI Information			119	
JH5N91AC		10		0	See Alpha Analysis Report for ROI Information			120	
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				

Comments:

Form No: RC-012, 10/02, Rev 9

Approved by: [illegible]

Date: 11/15/06

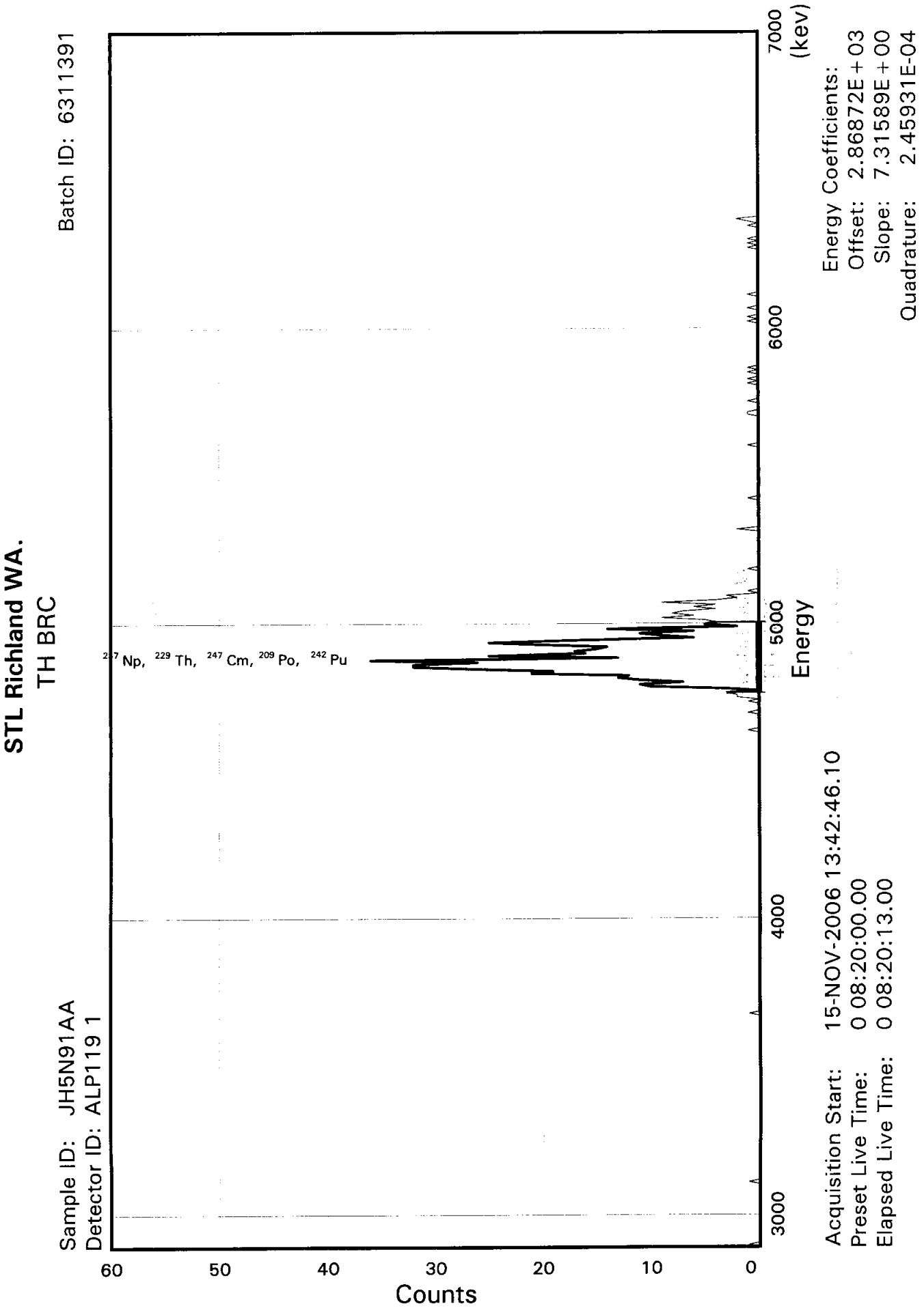
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH5N91AA

Detector: ALP119 1
Report Date: 15-Nov-06 10:08 PM
Acquire Date: 15-NOV-2006 13:42:46.10
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	3	1	0.005	5423.2	149.7	330	350
TH-229	554	0	1.108	4845.3	387.6	253	305
TH-230	2	0	0.004	4687.7	148.7	232	252
TH-232	0	0	0.000	4013.0	147.8	141	161

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6311391
Sample ID: JH5N91AA
Detector ID: ALP119 1
237 Np, 229 Th, 247 Cm, 209 Po, 242 Pu
Counts
60
50
40
30
20
10
0
3000
4000
5000
6000
7000
(kev)
Energy
Acquisition Start: 15-NOV-2006 13:42:46.10
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:13.00
Energy Coefficients:
Offset: 2.86872E+03
Slope: 7.31589E+00
Quadrature: 2.45931E-04

SAMPLE IDENTIITY: JH5N91AA

TITLE : TH BRC

DETECTOR : ALP119 1
CONFIGURATION NAME : RDND06$DKA100:[ALP119.SAMPLE]JH5N91AA_151161
342.CNF;1
ACQUIRE DATE of BACKGROUND: 11-NOV-2006 10:02:28

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 13:42:46 CALIB DATE : 11-NOV-2006 01:39:18

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:13

OFFSET : 2868.72 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 7.31589 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 2.459310E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH5N91AA

Detector: ALP119 1
Report Date: 15-Nov-06 10:03 PM
Acquire Date: 15-NOV-2006 13:42:46.10
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-9.993	5152.3	239.0	293	325	0.00	0.00	M
PO-209	483	0	0	0.966	4920.6	238.4	257	289	0.00	0.00	P
PO-210	-9999	-9999	0	-9.993	5341.8	231.9	319	350	0.00	0.00	M
AC-227	-9999	-9999	0	-9.993	6075.4	240.9	416	448	0.00	0.00	M
TH-227	-9999	-9999	0	-9.993	6075.4	240.9	416	448	0.00	0.00	M
TH-228	-9999	-9999	0	-9.993	5460.6	239.6	334	366	0.00	0.00	M
TH-229	483	0	0	0.966	4882.7	238.4	257	289	0.00	0.00	P
TH-230	-9999	-9999	0	-9.993	4725.1	238.1	236	268	0.00	0.00	S I
TH-232	0	0	0	0.000	4050.4	236.6	145	177	0.00	0.00	S
U-232	-9999	-9999	0	-9.993	5357.6	239.4	321	353	0.00	0.00	M
U-234	-9999	-9999	0	-9.993	4812.0	245.7	247	280	0.00	0.00	S I
U-235	0	0	0	0.000	4435.2	237.5	197	229	0.00	0.00	S
PU-236	5	2	5	0.007	5805.1	240.3	380	412	0.00	0.00	S
NP-237	483	0	0	0.966	4825.4	238.4	257	289	0.00	0.00	P
PU-238	-9999	-9999	0	-9.993	5536.5	232.3	345	376	0.00	0.00	M
U-238	-9999	-9999	0	-9.993	4235.4	237.0	170	202	0.00	0.00	M
PU-239	-9999	-9999	0	-9.993	5194.0	239.1	299	331	0.00	0.00	M
AM-241	-9999	-9999	0	-9.993	5523.0	239.8	343	375	0.00	0.00	M
AM-242M	-9999	-9999	0	-9.993	5244.2	239.2	305	337	0.00	0.00	M
CM-242	-9999	-9999	0	-9.993	6150.2	241.1	426	458	0.00	0.00	M
PU-242	483	0	0	0.966	4937.9	238.4	257	289	0.00	0.00	P
AM-243	-9999	-9999	0	-9.993	5312.7	239.3	315	347	0.00	0.00	M
CM-244	-9999	-9999	0	-9.993	5842.3	240.4	385	417	0.00	0.00	M
CM-246	-9999	-9999	0	-9.993	5423.9	232.1	330	361	0.00	0.00	M
CM-247	483	0	0	0.966	4907.8	238.4	257	289	0.00	0.00	P
CM-248	-9999	-9999	0	-9.993	5116.0	238.9	288	320	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29 Jun-92)

Sample Identity: JH5N91AA
Detector: ALP119 1
Report Date: 15 Nov-06 10:03 PM
Acquire Date: 15-NOV-2006 13:42:46.10

Flags Key

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

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0		101	0	+	151	0	@	201	0	@	251	3	@	301	0	@	351	0	@	401	0		451	0		501
		2	0		52	0		102	0	+	152	0	@	202	0	@	252	0	@	302	0	@	352	1	@	402	0	-	452	0		502
0		3	0		53	0		103	0	+	153	0	+	203	1	@	253	1	@	303	0	@	353	0	@	403	0	-	453	0		503
1		4	0		54	0		104	0	+	154	0	+	204	0	@	254	0	@	304	0	@	354	1	@	404	0		454	0		504
0		5	0		55	0		105	0	+	155	0	+	205	2	@	255	0	@	305	0	@	355	0	@	405	0	-	455	0		505
0		6	0		56	0		106	0	+	156	0	+	206	2	@	256	0	@	306	0	@	356	0	@	406	0	-	456	0		506
0		7	0		57	0		107	0	+	157	0	+	207	3	-	257	0	@	307	0	@	357	0	@	407	0	-	457	0		507
0		8	0		58	0		108	0	+	158	0	+	208	0	@	258	0	@	308	0	@	358	0	@	408	1	-	458	0		508
0		9	0		59	0		109	0	+	159	0	+	209	3	@	259	0	@	309	0	@	359	0	@	409	0		459	0		509
0		10	0		60	1		110	0	+	160	0	+	210	10	@	260	0	@	310	0	@	360	0	@	410	1		460	0		510
0		11	0		61	0		111	0	+	161	0	+	211	11	@	261	0	@	311	0	@	361	0	@	411	0		461	0		511
0		12	0		62	0		112	0	+	162	0	+	212	7	@	262	0	@	312	0	@	362	0	@	412	1		462	0		512
0		13	0		63	0		113	0	+	163	0	+	213	11	@	263	1	@	313	0	@	363	0	-	413	0		463			
0		14	0		64	0		114	0	+	164	0	+	214	13	@	264	0	@	314	0	@	364	0	-	414	0		464			
0		15	0		65	0		115	0	+	165	0	+	215	12	@	265	0	@	315	0	@	365	0	-	415	0		465			
0		16	0		66	0		116	0	+	166	0	+	216	21	@	266	0	@	316	0	@	366	0	@	416	0		466			
0		17	0		67	0		117	0	+	167	0	+	217	19	@	267	0	@	317	0	@	367	0	@	417	0		467			
0		18	0		68	0		118	0	+	168	0	+	218	26	@	268	0	@	318	0	@	368	0	@	418	1		468			
0		19	0		69	0		119	0	+	169	0	+	219	32	@	269	0	@	319	1	@	369	0	@	419	0		469			
0		20	0		70	0		120	0	@	170	0	+	220	32	@	270	0	@	320	0	@	370	0	@	420	1		470			
0		21	0		71	0		121	0	@	171	0	+	221	26	@	271	0	@	321	0	@	371	0	@	421	2		471			
0		22	0		72	0		122	0	@	172	0	+	222	36	@	272	0	@	322	0	@	372	0	@	422	0		472			
0		23	0		73	0		123	0	@	173	0	+	223	13	@	273	0	@	323	0	@	373	0	@	423	0		473			
0		24	0		74	0		124	0	@	174	0	+	224	25	@	274	0	@	324	0	@	374	0	@	424	0		474			
0		25	0		75	0		125	0	@	175	0	+	225	16	@	275	0	@	325	0	@	375	1	@	425	0		475			
0		26	0		76	0		126	0	@	176	0	+	226	17	@	276	0	@	326	0	+	376	0	-	426	0		476			
0		27	0		77	0		127	0	@	177	0	+	227	15	@	277	0	@	327	0		377	1	@	427	0		477			
0		28	0		78	0		128	0	-	178	0	+	228	14	@	278	0	@	328	0		378	0	@	428	0		478			
0		29	0		79	0		129	0	-	179	0	+	229	20	@	279	0	@	329	0		379	0	@	429	0		479			
0		30	0		80	0		130	0	-	180	0		230	25	@	280	0	-	330	0	+	380	0	@	430	0		480			
0		31	0		81	0		131	0	-	181	0		231	17	@	281	2	@	331	0	+	381	1	@	431	0		481			
0		32	0		82	0		132	0	-	182	0		232	6	@	282	0	@	332	0	+	382	0	@	432	0		482			
1		33	0		83	0		133	0	-	183	0		233	9	@	283	0	@	333	1	+	383	0	@	433	0		483			
0		34	0		84	0		134	0	-	184	0		234	11	@	284	0	@	334	1	+	384	0	@	434	0		484			
0		35	0		85	0		135	0	-	185	0		235	6	@	285	0	@	335	0	@	385	0	@	435	0		485			
0		36	0		86	0		136	0	-	186	0	+	236	14	@	286	0	@	336	0	@	386	0	@	436	0		486			
0		37	0		87	0		137	0	-	187	0	+	237	2	@	287	0	@	337	0	@	387	1	@	437	0		487			
0		38	0		88	0		138	0	-	188	0	+	238	5	-	288	0	@	338	0	@	388	0	@	438	0		488			
0		39	0		89	0		139	0	-	189	0	+	239	4	+	289	0	@	339	1	@	389	0	@	439	0		489			
0		40	0		90	0		140	0	-	190	1	+	240	5	+	290	0	@	340	0	@	390	0	@	440	0		490			
0		41	0		91	0		141	0	-	191	0	+	241	9	+	291	0	@	341	0	@	391	0	@	441	0		491			
0		42	0		92	0		142	0	-	192	0	+	242	6	+	292	0	@	342	0	@	392	0	@	442	0		492			
0		43	0		93	0		143	0	-	193	0	+	243	8	@	293	0	@	343	0	@	393	0	@	443	0		493			
0		44	0		94	0		144	0	-	194	0	+	244	7	@	294	0	@	344	0	@	394	0	@	444	0		494			
0		45	0		95	0	+	145	0	-	195	0	+	245	4	@	295	1	@	345	0	@	395	0	@	445	0		495			
0		46	0		96	0	+	146	0	-	196	0	+	246	6	@	296	0	@	346	0	@	396	0	@	446	0		496			
0		47	0		97	0	+	147	0	@	197	0	@	247	4	@	297	0	@	347	1	@	397	0	@	447	0		497			
0		48	0		98	0	+	148	0	@	198	1	@	248	9	@	298	0	@	348	0	@	398	0	@	448	0		498			
0		49	0		99	0	+	149	0	@	199	0	@	249	4	@	299	0	@	349	1	@	399	0	-	449	0		499			
0		50	0		100	0	+	150	0	@	200	0	@	250	2	@	300	0	@	350	0	@	400	0	-	450	0		500			

VMS Peak Search Report V1.9 Generated 15-NOV-2006 22:02:59

```
Configuration     : RDND06$DKA100:[ALP119.SAMPLE]JH5N91AA_151161342.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 13:42:46
Sample ID         : JH5N91AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP119               Detector geometry:
Elapsed live time: 0 08:20:13.00         Elapsed real time: 0 08:20:13.00   0.0%
Start energy      :  2890.67 kev         End energy       :  6678.93 kev
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4882.74	483	0117.05		272.79	257	32	1.61E-02	4.6	

VMS Nuclide Identification Report V3.1 Generated 15-NOV-2006 22:03:01

```
Configuration     : RDND06$DKA100:[ALP119.SAMPLE]JH5N91AA_151161342.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 13:42:46
Sample ID         : JH5N91AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP119               Detector geometry:
Elapsed live time: 0 08:20:13.00         Elapsed real time: 0 08:20:13.00   0.0%
Energy tolerance :   100.00 kev          Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :     0.00
```

Summary of Nuclide Activity

```
 Total number of lines in spectrum                 1
 Number of unidentified lines                      0
 Number of lines tentatively identified by NID     1      100.00%
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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
```

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

Configuration: RDND06$DKA100:[ALP119.SAMPLE]JH5N91AA_151161342.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4882.73	257	289	483	481	0.09		

End of Report

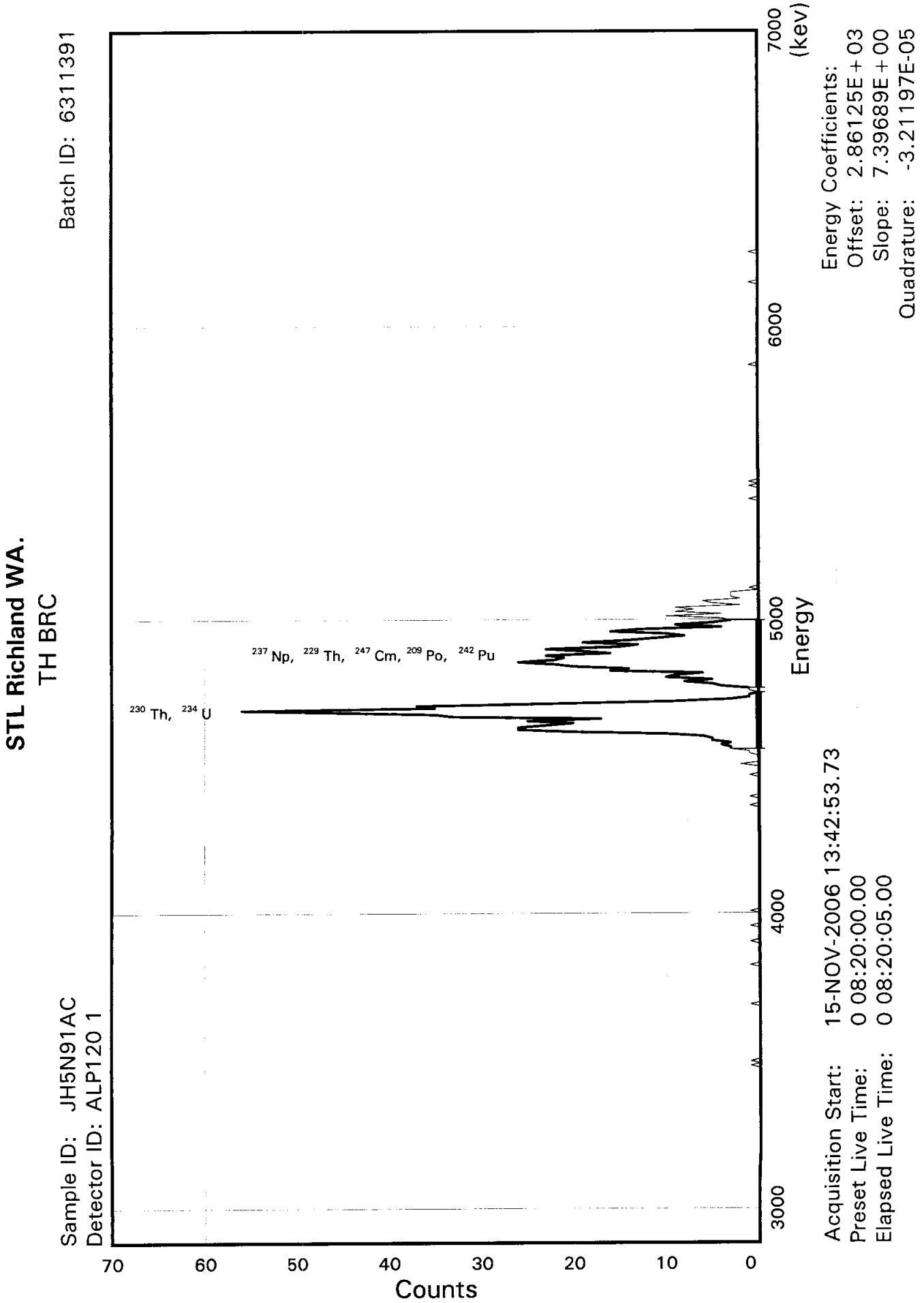
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH5N91AC

Detector: ALP120 1
Report Date: 15-Nov-06 10:09 PM
Acquire Date: 15-NOV-2006 13:42:53.73
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	3	7	-0.001	5423.2	162.2	332	354
TH-229	481	1	0.961	4845.3	376.3	254	305
TH-230	472	1	0.943	4687.7	177.2	229	253
TH-232	3	0	0.006	4013.0	155.1	140	161

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6311391
Sample ID: JH5N91AC
Detector ID: ALP120 1
^{237}Np, ^{229}Th, ^{247}Cm, ^{209}Po, ^{242}Pu
^{230}Th, ^{234}U
Counts
70
60
50
40
30
20
10
0
Energy
3000
4000
5000
6000
7000
(kev)
Acquisition Start: 15-NOV-2006 13:42:53.73
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:05.00
Energy Coefficients:
Offset: 2.86125E+03
Slope: 7.39689E+00
Quadrature: -3.21197E-05

SAMPLE IDENTIITY: JH5N91AC

TITLE : TH BRC

DETECTOR : ALP120 1
CONFIGURATION NAME : RDND06$DKA100:[ALP120.SAMPLE]JH5N91AC_151161
342.CNF;1
ACQUIRE DATE of BACKGROUND: 12-NOV-2006 06:47:35

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 13:42:53 CALIB DATE : 11-NOV-2006 01:39:14

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

OFFSET : 2861.25 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 7.39689 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.321197E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH5N91AC

Detector: ALP120 1
Report Date: 15-Nov-06 10:03 PM
Acquire Date: 15-NOV-2006 13:42:53.73
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-9.999	5151.0	228.7	295	326	0.00	0.00	M
PO-209	411	1	0	0.821	4919.3	228.8	258	289	0.00	0.00	P
PO-210	-9999	-9999	0	-9.999	5340.5	228.6	320	351	0.00	0.00	M
AC-227	1	1	1	0.000	6074.1	228.4	420	451	0.00	0.00	S
TH-227	1	1	1	0.000	6074.1	228.4	420	451	0.00	0.00	S
TH-228	-9999	-9999	0	-9.999	5459.3	228.6	336	367	0.00	0.00	M
TH-229	411	1	0	0.821	4881.4	228.8	258	289	0.00	0.00	P
TH-230	474	1	0	0.947	4723.8	191.9	230	256	0.00	0.00	P
TH-232	2	0	0	0.004	4049.1	229.0	145	176	0.00	0.00	S
U-232	-9999	-9999	0	-9.999	5356.3	228.6	322	353	0.00	0.00	M
U-234	474	1	0	0.947	4810.7	191.9	230	256	0.00	0.00	P
U-235	6	0	0	0.012	4433.9	228.9	197	228	0.00	0.00	S
PU-236	1	3	1	-0.002	5803.8	228.5	383	414	0.00	0.00	S
NP-237	411	1	0	0.821	4824.1	228.8	258	289	0.00	0.00	P
PU-238	-9999	-9999	0	-9.999	5535.1	228.6	347	378	0.00	0.00	M
U-238	-9999	-9999	0	-9.999	4234.1	228.9	170	201	0.00	0.00	M
PU-239	-9999	-9999	0	-9.999	5192.7	228.7	300	331	0.00	0.00	M
AM-241	-9999	-9999	0	-9.999	5521.7	228.6	345	376	0.00	0.00	M
AM-242M	-9999	-9999	0	-9.999	5242.9	228.7	307	338	0.00	0.00	M
CM-242	-9999	-9999	0	-9.999	6148.8	228.4	430	461	0.00	0.00	M
PU-242	411	1	0	0.821	4936.6	228.8	258	289	0.00	0.00	P
AM-243	-9999	-9999	0	-9.999	5311.4	228.6	316	347	0.00	0.00	M
CM-244	1	3	1	-0.002	5840.9	228.5	388	419	0.00	0.00	S
CM-246	-9999	-9999	0	-9.999	5422.6	228.6	331	362	0.00	0.00	M
CM-247	411	1	0	0.821	4906.5	228.8	258	289	0.00	0.00	P
CM-248	-9999	-9999	0	-9.999	5114.7	228.7	290	321	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun 92)

Sample Identity: JH5N91AC
Detector: ALP120 1
Report Date: 15 Nov 06 10:03 PM
Acquire Date: 15-NOV-2006 13:42:53.73

Flags Key

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

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0		101	0	+	151	0	@	201	22	@	251	3	@	301	1	@	351	0	@	401	0	@	451
		2	0		52	0		102	0	+	152	0	+	202	9	@	252	3	@	302	0	@	352	0	@	402	0	-	452
0		3	0		53	0		103	0	+	153	0	+	203	3	@	253	0	@	303	1	@	353	0	@	403	0		453
0		4	0		54	0		104	0	+	154	1	+	204	1	@	254	1	@	304	0	@	354	0	@	404	0		454
0		5	0		55	0		105	1	+	155	0	+	205	1	@	255	0	@	305	0	@	355	0	@	405	0	-	455
0		6	0		56	0		106	0	+	156	0	+	206	0		256	0	@	306	0	@	356	0	@	406	0	-	456
0		7	0		57	0		107	0	+	157	0	+	207	1		257	0	@	307	0	@	357	1	@	407	0	-	457
0		8	0		58	0		108	0	+	158	1	+	208	1	+	258	0	@	308	0	@	358	0	@	408	0	-	458
0		9	0		59	0		109	0	+	159	0	+	209	4	@	259	0	@	309	0	@	359	0	@	409	1	-	459
0		10	0		60	0		110	0	+	160	0	+	210	5	@	260	0	@	310	0	@	360	0	@	410	0	-	460
0		11	0		61	0		111	0	+	161	0	+	211	8	@	261	0	@	311	0	@	361	0	@	411	0	-	461
0		12	0		62	1		112	0	+	162	0	+	212	5	@	262	0	@	312	0	@	362	0	@	412	0		462
0		13	0		63	0		113	0	+	163	0	+	213	10	@	263	0	@	313	0	@	363	0	@	413	0		463
0		14	0		64	0		114	0	+	164	0	+	214	9	@	264	0	@	314	0	@	364	0	@	414	0		464
0		15	0		65	0		115	0	+	165	0	+	215	6	@	265	0	@	315	0	@	365	0	-	415	0		465
0		16	0		66	0		116	0	+	166	0	+	216	16	@	266	0	@	316	0	@	366	0	-	416	0		466
0		17	0		67	0		117	0	+	167	0	+	217	14	@	267	0	@	317	0	@	367	0	-	417	0		467
0		18	0		68	0		118	0	+	168	1	+	218	20	@	268	0	@	318	0	@	368	0	-	418	0		468
0		19	0		69	0		119	0	+	169	0	+	219	22	@	269	0	@	319	0	@	369	0	-	419	0		469
0		20	0		70	0		120	0	@	170	0	+	220	26	@	270	0	@	320	0	@	370	0	@	420	0		470
0		21	0		71	0		121	0	@	171	0	+	221	22	@	271	0	@	321	0	@	371	0	@	421	0		471
0		22	0		72	0		122	0	@	172	0	+	222	21	@	272	0	@	322	0	@	372	0	@	422	0		472
0		23	0		73	0		123	0	@	173	2	+	223	23	@	273	0	@	323	0	@	373	0	@	423	0		473
0		24	0		74	0		124	0	@	174	0	+	224	16	@	274	0	@	324	0	@	374	0	@	424	0		474
0		25	0		75	0		125	0	@	175	0	+	225	19	@	275	0	@	325	0	@	375	0	@	425	0		475
0		26	0		76	0		126	0	@	176	0	+	226	23	@	276	0	@	326	0	@	376	0	@	426	0		476
0		27	0		77	0		127	0	-	177	0	+	227	15	@	277	0	@	327	0	+	377	0	@	427	0		477
0		28	0		78	0		128	0	-	178	1	+	228	13	@	278	0	@	328	0	+	378	0	@	428	0		478
0		29	0		79	0		129	0	-	179	1		229	19	@	279	0	@	329	0		379	0	@	429	0		479
0		30	0		80	1		130	0	-	180	3	@	230	14	@	280	0	@	330	0		380	0	-	430	0		480
0		31	0		81	0		131	0	-	181	3	@	231	11	@	281	0	-	331	0		381	0	@	431	0		481
0		32	0		82	0		132	0	-	182	4	@	232	8	@	282	0	@	332	0		382	0	@	432	0		482
0		33	0		83	0		133	0	-	183	3	@	233	10	@	283	0	@	333	0	+	383	0	@	433	0		483
0		34	1		84	0		134	0	-	184	5	@	234	16	@	284	0	@	334	0	+	384	0	@	434	0		484
0		35	0		85	0		135	0	-	185	5	@	235	13	@	285	0	@	335	0	+	385	0	@	435	0		485
0		36	1		86	0		136	0	-	186	6	@	236	4	@	286	0	@	336	0	+	386	0	@	436	0		486
0		37	0		87	0		137	0	-	187	10	@	237	9	@	287	0	@	337	0	+	387	0	@	437	0		487
0		38	0		88	0		138	0	-	188	20	@	238	5	@	288	0	@	338	0	@	388	0	@	438	0		488
0		39	0		89	0		139	0	-	189	26	@	239	3		289	0	@	339	0	@	389	0	@	439	0		489
0		40	0		90	0		140	0	-	190	26	@	240	4	+	290	0	@	340	0	@	390	0	@	440	0		490
0		41	0		91	1		141	0	-	191	23	@	241	10	+	291	0	@	341	0	@	391	0	@	441	0		491
0		42	0		92	0		142	0	-	192	20	@	242	4	+	292	0	@	342	0	@	392	0	@	442	0		492
0		43	0		93	0		143	0	-	193	25	@	243	9	+	293	0	@	343	0	@	393	0	@	443	0		493
0		44	0		94	0		144	0	-	194	17	@	244	7	+	294	0	@	344	0	@	394	0	@	444	0		494
0		45	0		95	0	+	145	0	-	195	33	@	245	9	@	295	1	@	345	0	@	395	1	@	445	0		495
0		46	0		96	0	+	146	0	-	196	35	@	246	2	@	296	0	@	346	0	@	396	0	@	446	0		496
0		47	0		97	0	+	147	0	@	197	45	@	247	5	@	297	0	@	347	0	@	397	0	@	447	0		497
0		48	0		98	1	+	148	0	@	198	56	@	248	6	@	298	0	@	348	0	@	398	0	@	448	0		498
0		49	0		99	0	+	149	0	@	199	35	@	249	2	@	299	0	@	349	0	@	399	0	@	449	0		499
0		50	0		100	0	+	150	0	@	200	37	@	250	3	@	300	0	@	350	0	@	400	0	@	450	0		500

VMS Peak Search Report V1.9 Generated 15-NOV-2006 22:03:03

```
Configuration     : RDND06$DKA100:[ALP120.SAMPLE]JH5N91AC_151161342.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 13:42:53
Sample ID         : JH5N91AC             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP120               Detector geometry:
Elapsed live time: 0 08:20:05.00         Elapsed real time: 0 08:20:05.00   0.0%
Start energy      :  2883.44 kev         End energy       :  6640.03 kev
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4687.84	474	0	51.78	247.21	230	26	1.58E-02	4.6	
2	0	4881.40	411	0	125.75	273.43	258	31	1.37E-02	4.9	

VMS Nuclide Identification Report V3.1 Generated 15-NOV-2006 22:03:05

Configuration : RDND06$DKA100:[ALP120.SAMPLE]JH5N91AC_151161342.CNF;1
Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title : TH BRC
Sample date : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 13:42:53
Sample ID : JH5N91AC Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP120 Detector geometry:
Elapsed live time: 0 08:20:05.00 Elapsed real time: 0 08:20:05.00 0.0%
Energy tolerance : 100.00 kev Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Spline Efficiencies at : Peak Energy
Abundance limit : 0.00

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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	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	
U-234	2.45E+05Y	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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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

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

Configuration: RDND06$DKA100:[ALP120.SAMPLE]JH5N91AC_151161342.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4687.83	230	256	474	473	0.05		
4881.40	258	289	411	410	0.05		

End of Report

SEVERN TRENT STL

THORIUM ISOTOPIC COUNTING REQUEST

11/15 0430

C.R. Technician: OR
Date Counted: 11/14/06

C.R. Analyst: CS
Date Analyzed: 11/15/06

Counting Time
Sample: 500 Minutes

Background: See Alpha Analysis Report
BRC 10/18/06

SOP's
Operating: RICHRD008
Review: RICHRD0016
631139/

WorkOrder #	Th-229 (4845 KeV) Tracer from Th-234 Beta Count (7)				TOTAL COUNTS			Det #	Comment
					Th-228 (5423 KeV)	Th-230 (4688 KeV)	Th-232 (4010 KeV)		
	ID	Activity	ROI Cts	BKG	(6)	(8)	(9)		
JH3LV1AA		10		0	See Alpha Analysis Report for ROI Information			116	
JH3L11AA		10		0	See Alpha Analysis Report for ROI Information			117	
JH3L31AA		10		0	See Alpha Analysis Report for ROI Information			119	
JH3L51AA		10		0	See Alpha Analysis Report for ROI Information			120	
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				

Comments:

Form No: RC-012, 10/02, Rev 9

Approved by: S

Date: 11/15/06

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3LV1AA

Detector: ALP116 1
Report Date: 15-Nov-06 06:01 AM
Acquire Date: 14-NOV-2006 20:10:18.77
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	0	1	-0.001	5423.2	150.4	327	347
TH-229	31	2	0.060	4845.3	368.8	250	299
TH-230	1	1	0.001	4687.7	150.6	229	249
TH-232	0	0	0.000	4013.0	150.8	140	160

End of Alpha Region Report
(Produced by ANAL Report)

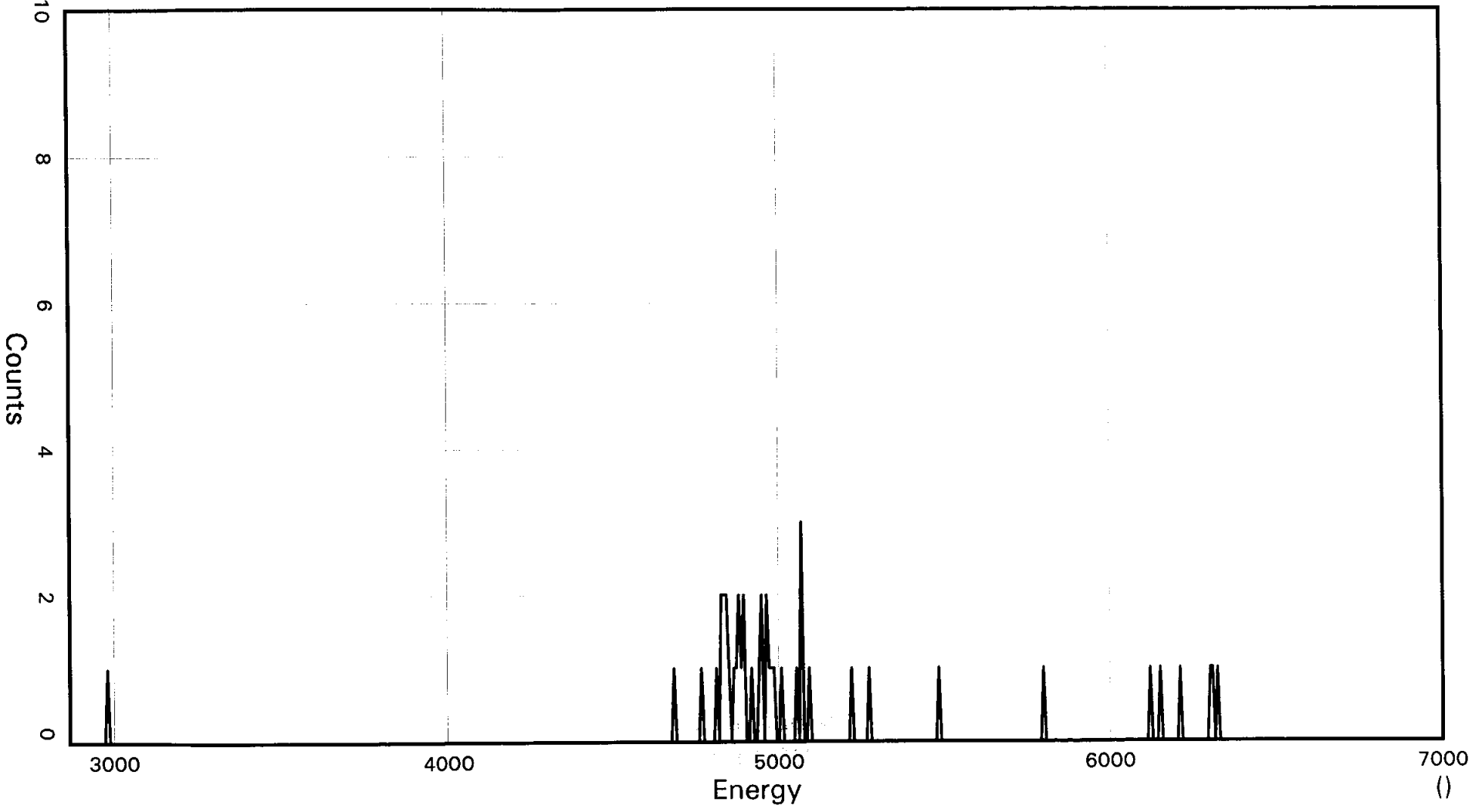
STL Richland WA.

TH BRC

Sample ID: JH3LV1AA

Detector ID: ALP116 1

Batch ID: 6311391



Acquisition Start: 14-NOV-2006 20:10:18.77

Preset Live Time: 0 08:20:00.00

Elapsed Live Time: 0 08:20:13.00

Energy Coefficients:

Offset: 2.84440E+03

Slope: 7.56024E+00

Quadrature: -6.10703E-05

SAMPLE IDENTIITY: JH3LV1AA

TITLE : TH BRC

DETECTOR : ALP116 1
CONFIGURATION NAME : RDND06$DKA100:[ALP116.SAMPLE]JH3LV1AA_141162
010.CNF;1
ACQUIRE DATE of BACKGROUND: 11-NOV-2006 10:02:22

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 14-NOV-2006 20:10:18 CALIB DATE : 11-NOV-2006 01:39:09

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:13

OFFSET : 2844.40 keV CONSTANT FWHM : 8.66667 Channels
SLOPE : 7.56024 keV/C SENSITIVITY : 6.00000 Std Dev's
QUAD COEFF : -.610703E-04 keV/C^2 SUM SENSITIVITY: 0.10000 %

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

Sample Identity: JH3LV1AA
Detector: ALP116 1
Report Date: 15 Nov 06 04:30 AM
Acquire Date: 14 NOV 2006 20:10:18.77

Flags Key

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

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

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

VMS Peak Search Report V1.9 Generated 15-NOV-2006 04:30:33

```
Configuration     : RDND06$DKA100:[ALP116.SAMPLE]JH3LV1AA_141162010.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 14-NOV-2006 20:10:18
Sample ID         : JH3LV1AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP116               Detector geometry:
Elapsed live time: 0 08:20:13.00         Elapsed real time: 0 08:20:13.00   0.0%
Start energy      :  2867.08             End energy       :  6699.23
Sensitivity       :     6.00             Sum Sensitivity  :     0.10
No peaks were found
```

VMS Nuclide Identification Report V3.1 Generated 15-NOV-2006 04:30:34

```
Configuration     : RDND06$DKA100:[ALP116.SAMPLE]JH3LV1AA_141162010.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 14-NOV-2006 20:10:18
Sample ID         : JH3LV1AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP116               Detector geometry:
Elapsed live time: 0 08:20:13.00         Elapsed real time: 0 08:20:13.00   0.0%
Energy tolerance :    80.00              Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :     0.00
```

Summary of Nuclide Activity

**** There are no nuclides meeting summary criteria ****

```
Flags: "K" = Keyline not found          "M" = Manually accepted
       "E" = Manually edited            "A" = Nuclide specific abn. limit
```

```
  Error Report  (Date: 15-Nov-06  04:30 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
```

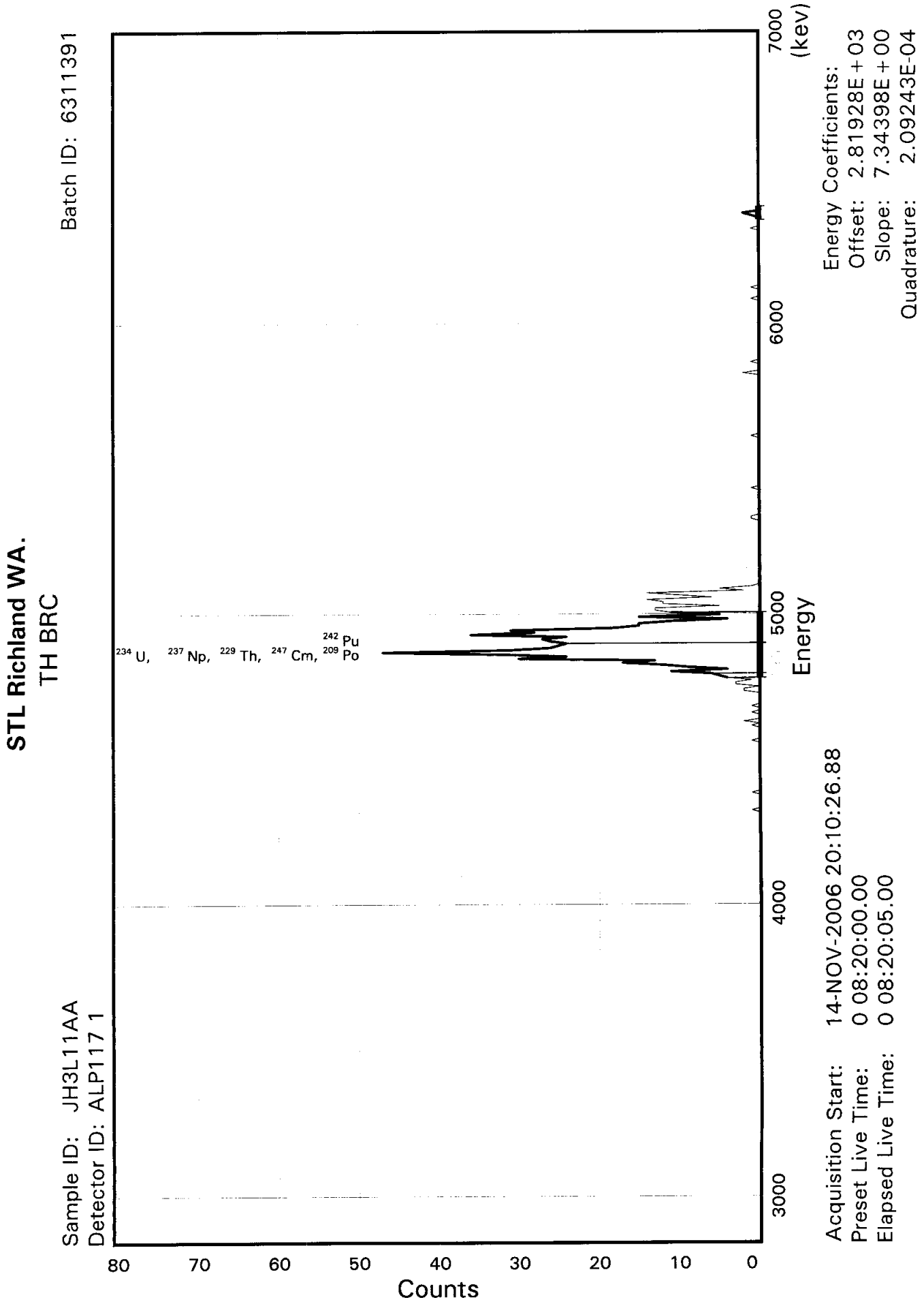
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3L11AA

Detector: ALP117 1
Report Date: 15-Nov-06 06:02 AM
Acquire Date: 14-NOV-2006 20:10:26.88
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 2500 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	3	0	0.006	5423.2	149.8	336	356
TH-229	704	4	1.406	4845.3	365.7	259	308
TH-230	5	0	0.010	4687.7	149.0	238	258
TH-232	0	0	0.000	4013.0	148.2	147	167

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6311391
Sample ID: JH3L11AA
Detector ID: ALP117 1
234 U, 237 Np, 229 Th, 247 Cm, 242 Pu 209 Po
Counts
80
70
60
50
40
30
20
10
0
3000
4000
5000
6000
7000
Energy
(kev)
Acquisition Start: 14-NOV-2006 20:10:26.88
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:05.00
Energy Coefficients:
Offset: 2.81928E+03
Slope: 7.34398E+00
Quadrature: 2.09243E-04

SAMPLE IDENTIITY: JH3L11AA

TITLE : TH BRC

DETECTOR : ALP117 1
CONFIGURATION NAME : RDND06$DKA100:[ALP117.SAMPLE]JH3L11AA_141162
010.CNF;1
ACQUIRE DATE of BACKGROUND: 12-NOV-2006 07:03:42

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 14-NOV-2006 20:10:26 CALIB DATE : 12-NOV-2006 02:41:33

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

OFFSET : 2819.28 keV CONSTANT FWHM : 7.33333 Channels
SLOPE : 7.34398 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 2.092430E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3L11AA

Detector: ALP117 1
Report Date: 15-Nov-06 04:30 AM
Acquire Date: 14-NOV-2006 20:10:26.88
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 2500 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-15.995	5133.2	119.6	301	317	0.00	0.00	M
PO-209	306	2	0	0.611	4901.5	119.3	265	281	0.00	0.00	P
PO-210	-9999	-9999	0	-15.995	5322.7	119.7	326	342	0.00	0.00	M
AC-227	1	1	1	0.001	6056.3	120.4	424	440	0.00	0.00	S
TH-227	1	1	1	0.001	6056.3	120.4	424	440	0.00	0.00	S
TH-228	-9999	-9999	0	-15.995	5441.5	119.8	342	358	0.00	0.00	M
TH-229	306	2	0	0.611	4863.6	119.3	265	281	0.00	0.00	P
TH-230	8	0	0	0.016	4706.0	119.2	244	260	0.00	0.00	
TH-232	0	0	0	0.000	4031.3	118.6	153	169	0.00	0.00	
U-232	-9999	-9999	0	-15.995	5338.5	119.8	329	345	0.00	0.00	M
U-234	306	2	0	0.611	4792.9	119.3	265	281	0.00	0.00	P
U-235	1	0	0	0.002	4416.1	118.9	205	221	0.00	0.00	
PU-236	0	6	0	-0.002	5786.0	120.2	388	404	0.00	0.00	S
NP-237	306	2	0	0.611	4806.3	119.3	265	281	0.00	0.00	P
PU-238	-9999	-9999	0	-15.995	5517.3	119.9	352	368	0.00	0.00	M
U-238	0	0	0	0.000	4216.3	118.7	178	194	0.00	0.00	
PU-239	-9999	-9999	0	-15.995	5174.9	119.6	307	323	0.00	0.00	M
AM-241	-9999	-9999	0	-15.995	5503.9	119.9	351	367	0.00	0.00	M
AM-242M	-9999	-9999	0	-15.995	5225.1	119.7	313	329	0.00	0.00	M
CM-242	-9999	-9999	0	-15.995	6131.0	120.5	434	450	0.00	0.00	M
PU-242	265	3	0	0.529	4918.8	208.9	267	295	0.00	0.00	P
AM-243	-9999	-9999	0	-15.995	5293.6	119.7	323	339	0.00	0.00	M
CM-244	2	12	0	-0.001	5823.1	120.2	393	409	0.00	0.00	S
CM-246	-9999	-9999	0	-15.995	5404.8	119.8	337	353	0.00	0.00	M
CM-247	306	2	0	0.611	4888.7	119.3	265	281	0.00	0.00	P
CM-248	-9999	-9999	0	-15.995	5096.9	119.5	296	312	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JH3111AA
Detector: ALP117 1
Report Date: 15-Nov-06 04:30 AM
Acquire Date: 14-NOV-2006 20:10:26.88

Flags Key

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

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0		101	0		151	0		201	0	+	251	14	@	301	0	@	351	0	@	401	0		451	0		501
		2	0		52	0		102	0		152	0		202	1	+	252	6	@	302	1	@	352	0	@	402	0		452	0		502
0		3	0		53	0		103	0	+	153	0		203	0	+	253	10	@	303	0	@	353	0	@	403	0		453	0		503
0		4	0		54	0		104	0	+	154	1		204	0	+	254	14	@	304	0	@	354	0	@	404	0		454	0		504
0		5	0		55	0		105	0	+	155	0	+	205	0	+	255	2	@	305	0	@	355	2	-	405	0		455	0		505
0		6	0		56	0		106	0	+	156	0	+	206	0	+	256	5	@	306	0	@	356	0	-	406	0		456	0		506
0		7	0		57	0		107	0	+	157	0	+	207	0	+	257	1	@	307	0	@	357	0	-	407	0		457	0		507
0		8	0		58	0		108	0	+	158	0	+	208	0	+	258	0	@	308	0	@	358	0	-	408	0		458	0		508
0		9	0		59	0		109	0	+	159	0	+	209	2	+	259	0	@	309	0	@	359	0	-	409	0		459	0		509
0		10	0		60	0		110	0	+	160	0	+	210	2	+	260	0	@	310	0	@	360	1		410	0		460	0		510
0		11	0		61	0		111	0	+	161	0	+	211	0		261	0	@	311	0	@	361	0		411	0		461	0		511
0		12	0		62	0		112	0	+	162	1	+	212	3		262	0	@	312	0	@	362	0		412	0		462	0		512
0		13	0		63	0		113	0	+	163	0	+	213	3		263	0	+	313	0	@	363	0		413	0		463			
0		14	0		64	0		114	0	+	164	0	+	214	1		264	0	@	314	0	@	364	0		414	0		464			
0		15	0		65	0		115	0	+	165	0	+	215	4	+	265	0	@	315	0	@	365	0		415	0		465			
0		16	0		66	0		116	0	+	166	0	+	216	5	@	266	0	@	316	0	@	366	0		416	0		466			
0		17	0		67	0		117	0	+	167	0	+	217	6	@	267	0	@	317	0	@	367	0		417	0		467			
0		18	0		68	0		118	0	+	168	0	+	218	11	@	268	0	@	318	0	+	368	0		418	0		468			
0		19	0		69	0		119	0	+	169	0	+	219	4	@	269	0	@	319	0		369	0		419	0		469			
0		20	0		70	0		120	0		170	0	+	220	9	@	270	0	@	320	0		370	0		420	0		470			
0		21	0		71	0		121	0		171	0	+	221	12	@	271	0	@	321	0		371	0		421	1		471			
0		22	0		72	0		122	0		172	0		222	17	@	272	0	@	322	0		372	0		422	0		472			
0		23	0		73	0		123	0		173	0		223	13	@	273	0	-	323	0		373	0		423	0		473			
0		24	0		74	0		124	0		174	0		224	30	@	274	0	@	324	0		374	0	@	424	0		474			
0		25	0		75	0		125	0		175	0		225	24	@	275	0	@	325	0		375	0	@	425	0		475			
0		26	0		76	0		126	0		176	0		226	32	@	276	0	@	326	1		376	0	@	426	0		476			
0		27	0		77	0		127	0		177	0		227	47	@	277	0	@	327	0		377	0	@	427	1		477			
0		28	0		78	0		128	0	+	178	0		228	31	@	278	0	@	328	0		378	0	@	428	2		478			
0		29	0		79	0		129	0	+	179	0		229	26	@	279	0	@	329	0		379	0	@	429	0		479			
0		30	0		80	0		130	0	+	180	0		230	25	@	280	0	@	330	0		380	0	@	430	0		480			
0		31	0		81	0		131	0	+	181	0		231	24	+	281	0	@	331	0		381	0	@	431	0		481			
0		32	0		82	0		132	0	+	182	0		232	26	+	282	0	@	332	0		382	0	@	432	0		482			
0		33	0		83	0		133	0	+	183	0		233	27	+	283	0	@	333	0		383	0	@	433	0		483			
0		34	0		84	0		134	0	+	184	0		234	24	+	284	0	@	334	0		384	0	-	434	0		484			
0		35	0		85	0		135	0	+	185	0		235	36	+	285	0	@	335	0		385	0	@	435	0		485			
0		36	0		86	0		136	0	+	186	1		236	28	+	286	0	@	336	0		386	0	@	436	0		486			
0		37	0		87	0		137	0	+	187	0		237	31	+	287	0	-	337	0		387	0	@	437	0		487			
0		38	0		88	0		138	0	+	188	0		238	18	+	288	1	@	338	0	+	388	0	@	438	0		488			
0		39	0		89	0		139	0	+	189	0		239	15	+	289	1	@	339	0	+	389	1	@	439	0		489			
0		40	0		90	0		140	0	+	190	0		240	15	+	290	0	@	340	0	+	390	0	@	440	0		490			
0		41	0		91	0		141	0	+	191	0		241	11	+	291	0	@	341	0	+	391	0	-	441	0		491			
0		42	0		92	0		142	0	+	192	0		242	4	+	292	0	@	342	0	+	392	0	-	442	0		492			
0		43	0		93	0		143	0	+	193	1		243	15	+	293	0	@	343	0	@	393	0	-	443	0		493			
0		44	0		94	0		144	0	+	194	0	+	244	5	+	294	0	@	344	0	@	394	1	-	444	0		494			
0		45	0		95	0		145	0		195	2	+	245	11		295	0	@	345	0	@	395	0	-	445	0		495			
0		46	0		96	0		146	0		196	0	+	246	13	+	296	0	@	346	0	@	396	0	-	446	0		496			
0		47	0		97	0		147	0		197	0	+	247	13	+	297	0	@	347	0	@	397	0	-	447	0		497			
0		48	0		98	0		148	0		198	0	+	248	5	+	298	0	@	348	0	@	398	0	-	448	0		498			
0		49	0		99	0		149	0		199	1	+	249	12	+	299	0	@	349	0	@	399	0	-	449	0		499			
0		50	0		100	0		150	0		200	0	+	250	12	+	300	0	@	350	0	@	400	0	-	450	0		500			

VMS Peak Search Report V1.9 Generated 15-NOV-2006 04:30:35

Configuration : RDND06$DKA100:[ALP117.SAMPLE]JH3L11AA_141162010.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 18-OCT-2006 12:00:00 Acquisition date : 14-NOV-2006 20:10:26
Sample ID : JH3L11AA Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP117 Detector geometry:
Elapsed live time: 0 08:20:05.00 Elapsed real time: 0 08:20:05.00 0.0%
Start energy : 2841.31 kev End energy : 6634.24 kev
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4863.62	306	0	36.72	276.20	265	16	1.02E-02	5.7	
2	0	4911.73	265	0	80.78	282.65	267	28	8.83E-03	6.1	
3	0	6373.73	4	0	29.38	477.50	475	6	1.33E-04	50.0	

VMS Nuclide Identification Report V3.1 Generated 15-NOV-2006 04:30:37

```
Configuration     : RDND06$DKA100:[ALP117.SAMPLE]JH3L11AA_141162010.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 14-NOV-2006 20:10:26
Sample ID         : JH3L11AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP117               Detector geometry:
Elapsed live time: 0 08:20:05.00         Elapsed real time: 0 08:20:05.00   0.0%
Energy tolerance :   100.00 kev          Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :     0.00
```

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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-234	2.45E+05Y	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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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
```

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

Configuration: RDND06$DKA100:[ALP117.SAMPLE]JH3L11AA_141162010.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4863.61	265	281	306	320	-0.80		
4911.73	267	295	265	577	-19.17	311	-0.63
6373.73	475	481	4	3	0.50		

End of Report

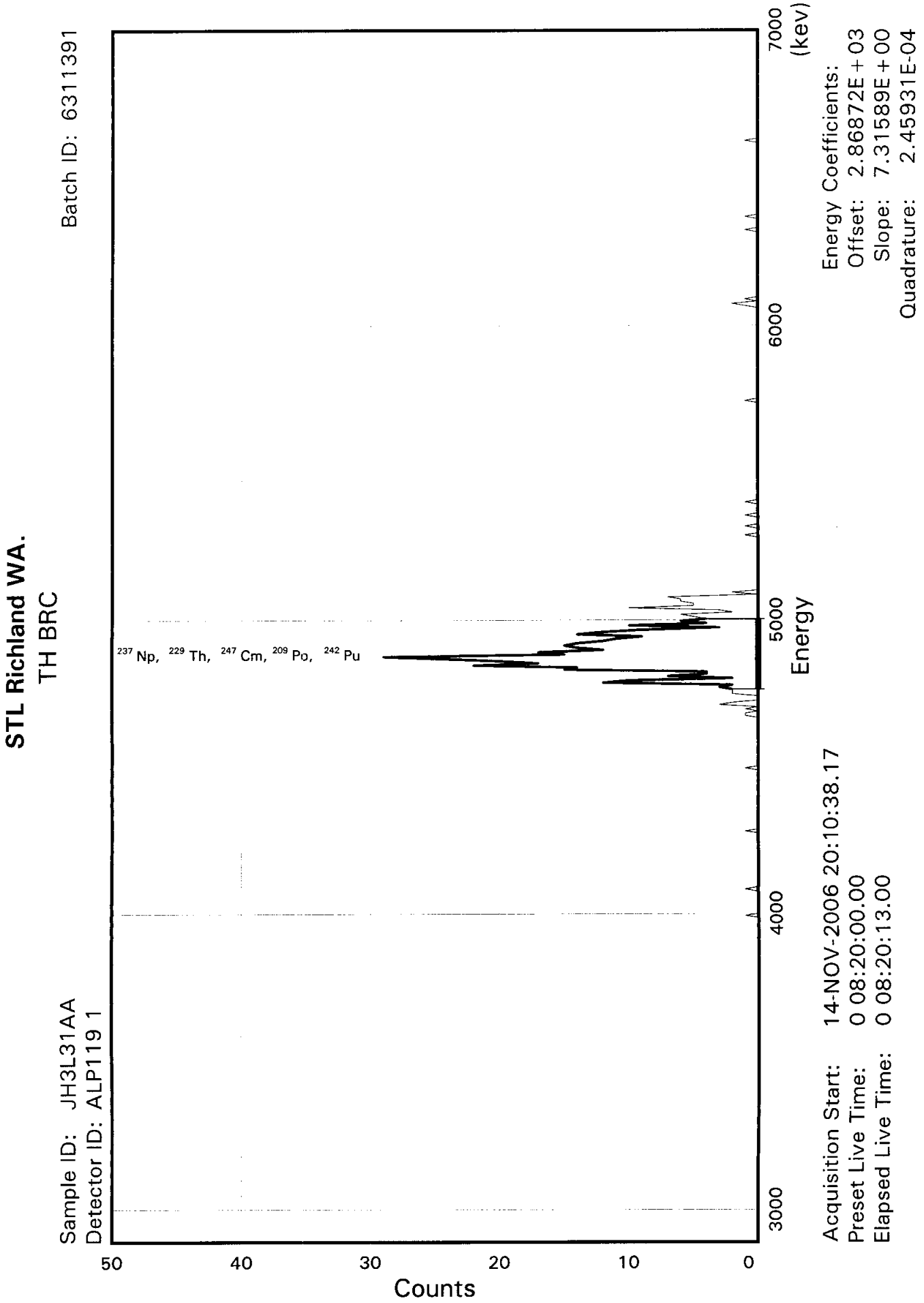
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3L31AA

Detector: ALP119 1
Report Date: 15-Nov-06 06:02 AM
Acquire Date: 14-NOV-2006 20:10:38.17
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	3	1	0.005	5423.2	149.7	330	350
TH-229	429	0	0.858	4845.3	365.2	253	302
TH-230	8	0	0.016	4687.7	148.7	232	252
TH-232	1	0	0.002	4013.0	147.8	141	161

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6311391
Sample ID: JH3L31AA
Detector ID: ALP119 1
237 Np, 229 Th, 247 Cm, 209 Po, 242 Pu
Counts
50
40
30
20
10
0
Energy
3000
4000
5000
6000
7000
(kev)
Acquisition Start: 14-NOV-2006 20:10:38.17
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:13.00
Energy Coefficients:
Offset: 2.86872E+03
Slope: 7.31589E+00
Quadrature: 2.45931E-04

SAMPLE IDENTIITY: JH3L31AA

TITLE : TH BRC

DETECTOR : ALP119 1
CONFIGURATION NAME : RDND06$DKA100:[ALP119.SAMPLE]JH3L31AA_141162
010.CNF;1
ACQUIRE DATE of BACKGROUND: 11-NOV-2006 10:02:28

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 14-NOV-2006 20:10:38 CALIB DATE : 11-NOV-2006 01:39:18

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:13

OFFSET : 2868.72 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 7.31589 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 2.459310E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3L31AA

Detector: ALP119 1
Report Date: 15-Nov-06 04:31 AM
Acquire Date: 14-NOV-2006 20:10:38.17
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-9.993	5153.5	239.0	293	325	0.00	0.00	M
PO-209	369	0	0	0.738	4921.8	238.4	257	289	0.00	0.00	P
PO-210	-9999	-9999	0	-9.993	5342.9	231.9	319	350	0.00	0.00	M
AC-227	-9999	-9999	0	-9.993	6076.6	240.9	416	448	0.00	0.00	M
TH-227	-9999	-9999	0	-9.993	6076.6	240.9	416	448	0.00	0.00	M
TH-228	-9999	-9999	0	-9.993	5461.8	239.6	334	366	0.00	0.00	M
TH-229	369	0	0	0.738	4883.9	238.4	257	289	0.00	0.00	P
TH-230	-9999	-9999	0	-9.993	4726.3	238.1	236	268	0.00	0.00	S I
TH-232	2	0	0	0.004	4051.6	236.6	145	177	0.00	0.00	S
U-232	-9999	-9999	0	-9.993	5358.7	239.4	321	353	0.00	0.00	M
U-234	-9999	-9999	0	-9.993	4813.2	245.7	247	280	0.00	0.00	S I
U-235	1	0	0	0.002	4436.4	237.5	197	229	0.00	0.00	S
PU-236	1	2	1	-0.001	5806.2	240.3	380	412	0.00	0.00	S
NP-237	369	0	0	0.738	4826.6	238.4	257	289	0.00	0.00	P
PU-238	-9999	-9999	0	-9.993	5537.6	232.3	345	376	0.00	0.00	M
U-238	-9999	-9999	0	-9.993	4236.6	237.0	170	202	0.00	0.00	M
PU-239	-9999	-9999	0	-9.993	5195.1	239.1	299	331	0.00	0.00	M
AM-241	-9999	-9999	0	-9.993	5524.2	239.8	343	375	0.00	0.00	M
AM-242M	-9999	-9999	0	-9.993	5245.4	239.2	305	337	0.00	0.00	M
CM-242	-9999	-9999	0	-9.993	6151.3	241.1	426	458	0.00	0.00	M
PU-242	369	0	0	0.738	4939.1	238.4	257	289	0.00	0.00	P
AM-243	-9999	-9999	0	-9.993	5313.9	239.3	315	347	0.00	0.00	M
CM-244	-9999	-9999	0	-9.993	5843.4	240.4	385	417	0.00	0.00	M
CM-246	-9999	-9999	0	-9.993	5425.1	232.1	330	361	0.00	0.00	M
CM-247	369	0	0	0.738	4909.0	238.4	257	289	0.00	0.00	P
CM-248	-9999	-9999	0	-9.993	5117.2	238.9	288	320	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JH3L31AA
Detector: ALP119 1
Report Date: 15-Nov 06 04:31 AM
Acquire Date: 14 NOV 2006 20:10:38.17

Flags Key
Intersect Region: ③
Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0		101	0	+	151	0	@	201	2	@	251	2	@	301	0	@	351	0	@	401	0	-	451	0		501
		2	0		52	0		102	0	+	152	0	@	202	0	@	252	0	@	302	0	@	352	0	@	402	0	-	452	0		502
0		3	0		53	0		103	1	+	153	0	+	203	0	@	253	0	@	303	0	@	353	0	@	403	0	-	453	0		503
0		4	0		54	0		104	0	+	154	0	+	204	0	@	254	0	@	304	0	@	354	0	@	404	0	-	454	0		504
0		5	0		55	0		105	0	+	155	0	+	205	2	@	255	0	@	305	0	@	355	0	@	405	0		455	1		505
0		6	0		56	0		106	0	+	156	0	+	206	2	@	256	0	@	306	0	@	356	0	@	406	0	-	456	0		506
0		7	0		57	0		107	0	+	157	0	+	207	2	-	257	0	@	307	0	@	357	0	@	407	0	-	457	0		507
0		8	0		58	0		108	0	+	158	0	+	208	3	@	258	0	@	308	0	@	358	0	@	408	0	-	458	0		508
0		9	0		59	0		109	0	+	159	0	+	209	2	@	259	0	@	309	0	@	359	0	@	409	0		459	0		509
0		10	0		60	0		110	0	+	160	0	+	210	12	@	260	0	@	310	0	@	360	0	@	410	0		460	0		510
0		11	0		61	0		111	0	+	161	0	+	211	10	@	261	0	@	311	0	@	361	0	@	411	0		461	0		511
0		12	0		62	0		112	0	+	162	0	+	212	2	@	262	0	@	312	0	@	362	0	@	412	0		462	0		512
0		13	0		63	0		113	0	+	163	0	+	213	7	@	263	0	@	313	0	@	363	0	-	413	0		463			
0		14	0		64	0		114	0	+	164	0	+	214	4	@	264	0	@	314	0	@	364	0	-	414	0		464			
0		15	0		65	0		115	1	+	165	0	+	215	4	@	265	0	@	315	0	@	365	0	-	415	1		465			
0		16	0		66	0		116	0	+	166	0	+	216	15	@	266	0	@	316	0	@	366	0	@	416	0		466			
0		17	0		67	0		117	0	+	167	0	+	217	14	@	267	0	@	317	0	@	367	0	@	417	0		467			
0		18	0		68	0		118	0	+	168	0	+	218	22	@	268	0	@	318	0	@	368	0	@	418	0		468			
0		19	0		69	0		119	0	+	169	0	+	219	17	@	269	0	@	319	0	@	369	0	@	419	0		469			
0		20	0		70	0		120	0	@	170	0	+	220	20	@	270	0	@	320	0	@	370	0	@	420	0		470			
0		21	0		71	0		121	0	@	171	1	+	221	24	@	271	0	@	321	0	@	371	0	@	421	1		471			
0		22	0		72	0		122	0	@	172	0	+	222	29	@	272	0	@	322	0	@	372	0	@	422	0		472			
0		23	0		73	0		123	0	@	173	0	+	223	15	@	273	0	@	323	0	@	373	0	@	423	0		473			
0		24	0		74	0		124	0	@	174	0	+	224	17	@	274	0	@	324	0	@	374	0	@	424	0		474			
0		25	0		75	0		125	0	@	175	0	+	225	12	@	275	0	@	325	0	@	375	0	@	425	0		475			
0		26	0		76	0		126	0	@	176	0	+	226	14	@	276	0	@	326	0	+	376	0	-	426	0		476			
0		27	0		77	0		127	0	@	177	0	+	227	15	@	277	1	@	327	0		377	0	@	427	0		477			
0		28	0		78	0		128	0	-	178	0	+	228	14	@	278	0	@	328	0		378	0	@	428	0		478			
0		29	0		79	0		129	0	-	179	0	+	229	12	@	279	0	@	329	0		379	0	@	429	0		479			
0		30	0		80	0		130	0	-	180	0		230	11	@	280	0	-	330	0	+	380	0	@	430	0		480			
0		31	0		81	0		131	0	-	181	0		231	9	@	281	1	@	331	0	+	381	1	@	431	0		481			
0		32	0		82	0		132	0	-	182	0		232	14	@	282	0	@	332	0	+	382	2	@	432	0		482			
0		33	0		83	0		133	0	-	183	0		233	12	@	283	0	@	333	0	+	383	0	@	433	0		483			
0		34	0		84	0		134	0	-	184	0		234	9	@	284	0	@	334	0	+	384	1	@	434	0		484			
0		35	0		85	0		135	0	-	185	0		235	3	@	285	0	@	335	0	@	385	0	@	435	0		485			
0		36	0		86	0		136	0	-	186	0	+	236	10	@	286	1	@	336	0	@	386	0	@	436	0		486			
0		37	0		87	0		137	0	-	187	0	+	237	4	@	287	0	@	337	0	@	387	0	@	437	0		487			
0		38	0		88	0		138	0	-	188	0	+	238	6	-	288	0	@	338	1	@	388	0	@	438	0		488			
0		39	0		89	0		139	0	-	189	0	+	239	4	+	289	0	@	339	0	@	389	0	@	439	0		489			
0		40	0		90	0		140	0	-	190	0	+	240	5	+	290	0	@	340	0	@	390	0	@	440	0		490			
0		41	0		91	0		141	0	-	191	0	+	241	6	+	291	0	@	341	0	@	391	0	@	441	0		491			
0		42	0		92	0		142	1	-	192	0	+	242	2	+	292	1	@	342	0	@	392	0	@	442	0		492			
0		43	0		93	0		143	0	-	193	0	+	243	3	@	293	0	@	343	0	@	393	0	@	443	0		493			
0		44	0		94	0		144	0	-	194	0	+	244	10	@	294	0	@	344	0	@	394	0	@	444	0		494			
0		45	0		95	0	+	145	0	-	195	1	+	245	5	@	295	0	@	345	0	@	395	0	@	445	0		495			
0		46	0		96	0	+	146	0	-	196	1	+	246	5	@	296	0	@	346	0	@	396	0	@	446	0		496			
0		47	0		97	0	+	147	0	@	197	0	@	247	6	@	297	0	@	347	0	@	397	0	@	447	0		497			
0		48	0		98	0	+	148	0	@	198	1	@	248	6	@	298	0	@	348	0	@	398	0	@	448	0		498			
0		49	0		99	0	+	149	0	@	199	0	@	249	7	@	299	0	@	349	0	@	399	0	-	449	0		499			
0		50	0		100	0	+	150	0	@	200	3	@	250	0	@	300	0	@	350	0	@	400	0	-	450	0		500			

VMS Peak Search Report V1.9 Generated 15-NOV-2006 04:31:03

```
Configuration     : RDND06$DKA100:[ALP119.SAMPLE]JH3L31AA_141162010.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 14-NOV-2006 20:10:38
Sample ID         : JH3L31AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP119               Detector geometry:
Elapsed live time: 0 08:20:13.00         Elapsed real time: 0 08:20:14.00   0.0%
Start energy      :  2890.67 kev         End energy       :  6678.93 kev
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4883.86	369	0117.05	272.94		257	32	1.23E-02	5.2	

VMS Nuclide Identification Report V3.1 Generated 15-NOV-2006 04:31:05

```
Configuration     : RDND06$DKA100:[ALP119.SAMPLE]JH3L31AA_141162010.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 14-NOV-2006 20:10:38
Sample ID         : JH3L31AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP119               Detector geometry:
Elapsed live time: 0 08:20:13.00         Elapsed real time: 0 08:20:14.00   0.0%
Energy tolerance :   100.00 kev          Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :     0.00
```

Summary of Nuclide Activity

```
 Total number of lines in spectrum                1
 Number of unidentified lines                     0
 Number of lines tentatively identified by NID    1      100.00%
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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

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

Configuration: RDND06$DKA100:[ALP119.SAMPLE]JH3L31AA_141162010.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4883.85	257	289	369	368	0.05		

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3L51AA

Detector: ALP120 1
Report Date: 15-Nov-06 06:03 AM
Acquire Date: 14-NOV-2006 20:10:50.30
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	5	6	0.004	5423.2	147.5	332	352
TH-229	490	1	0.979	4845.3	376.3	254	305
TH-230	4	0	0.008	4687.7	147.6	232	252
TH-232	0	0	0.000	4013.0	147.7	141	161

End of Alpha Region Report
(Produced by ANAL Report)

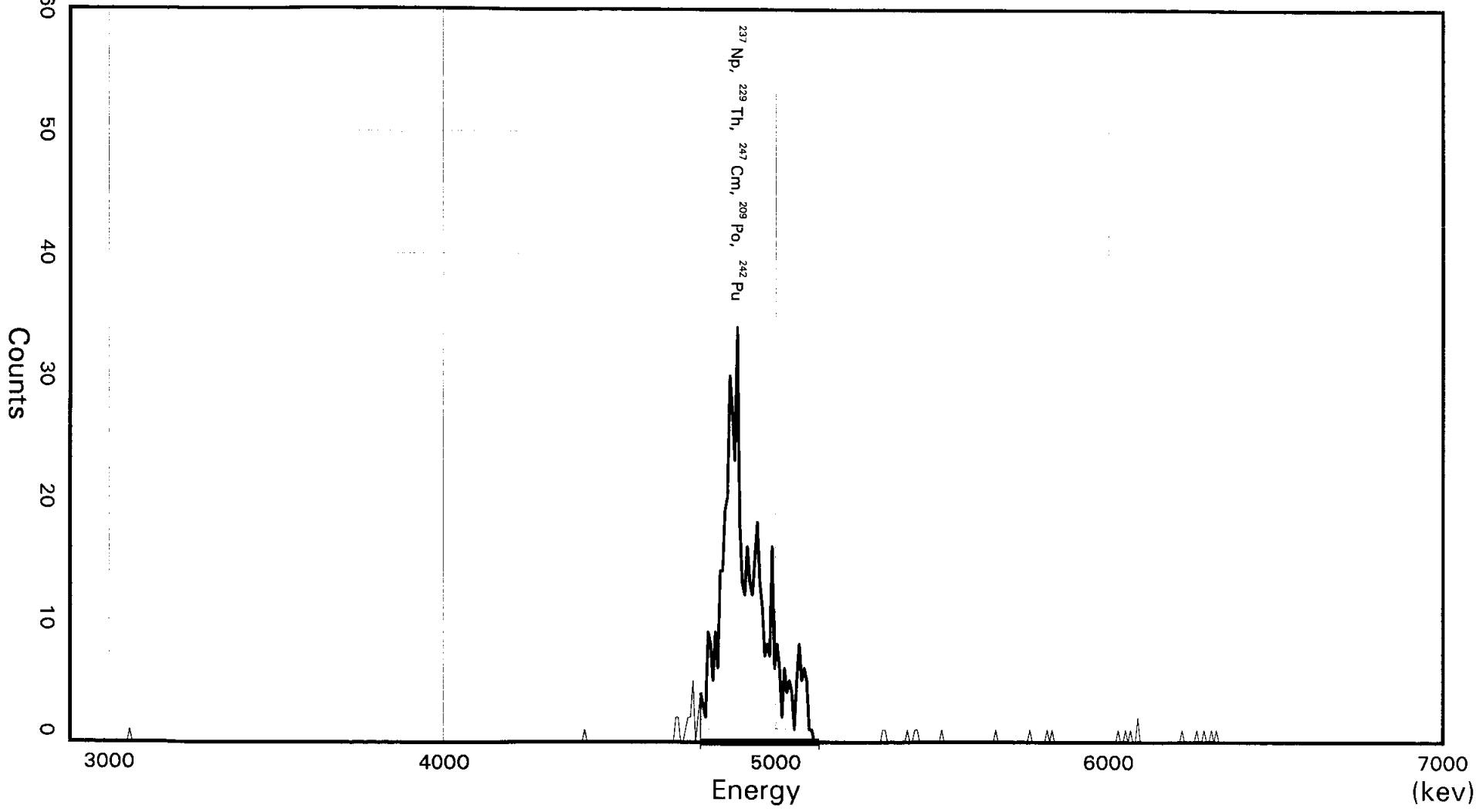
STL Richland WA.

TH BRC

Sample ID: JH3L51AA

Detector ID: ALP120 1

Batch ID: 6311391



Acquisition Start: 14-NOV-2006 20:10:50.30

Preset Live Time: 0 08:20:00.00

Elapsed Live Time: 0 08:20:04.00

Energy Coefficients:

Offset: 2.86125E+03

Slope: 7.39689E+00

Quadrature: -3.21197E-05

SAMPLE IDENTIITY: JH3L51AA

TITLE : TH BRC

DETECTOR : ALP120 1
CONFIGURATION NAME : RDND06$DKA100:[ALP120.SAMPLE]JH3L51AA_141162
010.CNF;1
ACQUIRE DATE of BACKGROUND: 12-NOV-2006 06:47:35

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 14-NOV-2006 20:10:50 CALIB DATE : 11-NOV-2006 01:39:14

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:04

OFFSET : 2861.25 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 7.39689 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.321197E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3L51AA

Detector: ALP120 1
Report Date: 15-Nov-06 04:31 AM
Acquire Date: 14-NOV-2006 20:10:50.30
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-9.999	5154.2	354.1	296	344	0.00	0.00	M I
PO-209	476	1	0	0.951	4922.5	354.2	259	307	0.00	0.00	P
PO-210	-9999	-9999	0	-9.999	5343.7	354.0	321	369	0.00	0.00	M
AC-227	-9999	-9999	0	-9.999	6077.3	353.7	421	469	0.00	0.00	M
TH-227	-9999	-9999	0	-9.999	6077.3	353.7	421	469	0.00	0.00	M
TH-228	-9999	-9999	0	-9.999	5462.5	353.9	337	385	0.00	0.00	M
TH-229	476	1	0	0.951	4884.6	354.2	259	307	0.00	0.00	P
TH-230	-9999	-9999	0	-9.999	4727.0	354.2	238	286	0.00	0.00	M I
TH-232	0	0	0	0.000	4052.3	354.5	146	194	0.00	0.00	S
U-232	-9999	-9999	0	-9.999	5359.5	354.0	323	371	0.00	0.00	M
U-234	-9999	-9999	0	-9.999	4813.9	354.2	249	297	0.00	0.00	M I
U-235	-9999	-9999	0	-9.999	4437.1	354.4	198	246	0.00	0.00	M
PU-236	-9999	-9999	0	-9.999	5807.0	353.8	384	432	0.00	0.00	M
NP-237	476	1	0	0.951	4827.3	354.2	259	307	0.00	0.00	P
PU-238	-9999	-9999	0	-9.999	5538.4	353.9	348	396	0.00	0.00	M
U-238	-9999	-9999	0	-9.999	4237.3	354.4	171	219	0.00	0.00	M
PU-239	-9999	-9999	0	-9.999	5195.9	354.0	301	349	0.00	0.00	M I
AM-241	-9999	-9999	0	-9.999	5524.9	353.9	346	394	0.00	0.00	M
AM-242M	-9999	-9999	0	-9.999	5246.1	354.0	308	356	0.00	0.00	M
CM-242	-9999	-9999	0	-9.999	6152.1	353.6	431	479	0.00	0.00	M
PU-242	476	1	0	0.951	4939.8	354.2	259	307	0.00	0.00	P
AM-243	-9999	-9999	0	-9.999	5314.6	354.0	317	365	0.00	0.00	M
CM-244	-9999	-9999	0	-9.999	5844.2	353.8	389	437	0.00	0.00	M
CM-246	-9999	-9999	0	-9.999	5425.8	354.0	332	380	0.00	0.00	M
CM-247	476	1	0	0.951	4909.7	354.2	259	307	0.00	0.00	P
CM-248	-9999	-9999	0	-9.999	5117.9	354.1	291	339	0.00	0.00	M I

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JH3L51AA
Detector: ALP120 1
Report Date: 15 Nov-06 04:31 AM
Acquire Date: 14 NOV-2006 20:10:50.30

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

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0		101	0	+	151	0	@	201	0	@	251	6	@	301	0	@	351	0	@	401
		2	0		52	0		102	0	+	152	0	@	202	0	@	252	5	@	302	0	@	352	1	@	402
0		3	0		53	0		103	0	+	153	0	@	203	1	@	253	1	@	303	0	@	353	0	@	403
0		4	0		54	0		104	0	+	154	0	@	204	2	@	254	1	@	304	0	@	354	0	@	404
0		5	0		55	0		105	0	+	155	0	@	205	2	@	255	0	@	305	0	@	355	0	@	405
0		6	0		56	0		106	0	+	156	0	@	206	5	@	256	0	@	306	0	@	356	0	@	406
0		7	0		57	0		107	0	+	157	0	@	207	0	@	257	0	@	307	1	@	357	0	@	407
0		8	0		58	0		108	0	+	158	0	@	208	2	@	258	0	@	308	0	@	358	0	@	408
0		9	0		59	0		109	0	+	159	0	@	209	4	-	259	0	@	309	0	@	359	0	@	409
0		10	0		60	0		110	0	+	160	0	@	210	3	@	260	0	@	310	0	@	360	0	@	410
0		11	0		61	0		111	0	+	161	0	@	211	2	@	261	0	@	311	0	@	361	0	@	411
0		12	0		62	0		112	0	+	162	1	@	212	9	@	262	0	@	312	0	@	362	0	@	412
0		13	0		63	0		113	0	+	163	0	@	213	8	@	263	0	@	313	0	@	363	0	@	413
0		14	0		64	0		114	0	+	164	0	@	214	5	@	264	0	@	314	0	@	364	0	@	414
0		15	0		65	0		115	0	+	165	0	@	215	9	@	265	0	@	315	0	@	365	0	@	415
0		16	0		66	0		116	0	+	166	0	@	216	6	@	266	0	@	316	0	@	366	0	@	416
0		17	0		67	0		117	0	+	167	0	@	217	14	@	267	0	@	317	0	@	367	0	@	417
0		18	0		68	0		118	0	+	168	0	@	218	14	@	268	0	@	318	0	@	368	0	@	418
0		19	0		69	0		119	0	+	169	0	@	219	19	@	269	0	@	319	0	@	369	0	@	419
0		20	0		70	0		120	0	+	170	0	+	220	20	@	270	0	@	320	0	@	370	0	@	420
0		21	0		71	0		121	0	@	171	0	+	221	30	@	271	0	@	321	0	@	371	0	@	421
0		22	0		72	0		122	0	@	172	0	+	222	27	@	272	0	@	322	0	@	372	0	@	422
0		23	0		73	0		123	0	@	173	0	+	223	23	@	273	0	@	323	0	@	373	0	@	423
0		24	0		74	0		124	0	@	174	0	+	224	34	@	274	0	@	324	0	@	374	0	@	424
0		25	0		75	0		125	0	@	175	0	+	225	18	@	275	0	@	325	0	@	375	0	@	425
0		26	0		76	0		126	0	@	176	0	+	226	13	@	276	0	@	326	0	@	376	0	@	426
1		27	0		77	0		127	0	@	177	0	+	227	12	@	277	0	@	327	0	@	377	0	@	427
0		28	0		78	0		128	0	@	178	0	+	228	16	@	278	0	@	328	0	@	378	0	@	428
0		29	0		79	0		129	0	@	179	0	+	229	13	@	279	0	@	329	1	@	379	1	@	429
0		30	0		80	0		130	0	@	180	0	+	230	12	@	280	0	@	330	0	@	380	0	@	430
0		31	0		81	0		131	0	@	181	0	+	231	15	@	281	0	@	331	0	@	381	0	@	431
0		32	0		82	0		132	0	@	182	0	+	232	18	@	282	0	@	332	0	@	382	1	@	432
0		33	0		83	0		133	0	@	183	0	+	233	13	@	283	1	@	333	0	@	383	0	@	433
0		34	0		84	0		134	0	@	184	0	+	234	11	@	284	1	@	334	0	@	384	1	@	434
0		35	0		85	0		135	0	@	185	0	+	235	7	@	285	0	@	335	0	@	385	0	@	435
0		36	0		86	0		136	0	@	186	0	+	236	8	@	286	0	@	336	0	@	386	0	@	436
0		37	0		87	0		137	0	@	187	0	+	237	7	@	287	0	@	337	0	@	387	2	@	437
0		38	0		88	0		138	0	@	188	0	@	238	16	@	288	0	@	338	0	@	388	0	@	438
0		39	0		89	0		139	0	@	189	0	@	239	6	@	289	0	@	339	0	-	389	0	@	439
0		40	0		90	0		140	0	@	190	0	@	240	8	@	290	0	@	340	0	@	390	0	@	440
0		41	0		91	0		141	0	@	191	0	@	241	6	-	291	0	@	341	0	@	391	0	@	441
0		42	0		92	0		142	0	@	192	0	@	242	2	@	292	0	@	342	0	@	392	0	@	442
0		43	0		93	0		143	0	@	193	0	@	243	6	@	293	1	@	343	1	@	393	0	@	443
0		44	0		94	0		144	0	@	194	0	@	244	4	@	294	0	@	344	0	@	394	0	@	444
0		45	0		95	0		145	0	-	195	0	@	245	5	@	295	0	@	345	0	@	395	0	@	445
0		46	0		96	0	+	146	0	-	196	0	@	246	4	@	296	1	@	346	0	@	396	0	@	446
0		47	0		97	0	+	147	0	-	197	0	+	247	1	@	297	1	@	347	0	@	397	0	@	447
0		48	0		98	0	+	148	0	@	198	0	+	248	5	@	298	0	@	348	0	@	398	0	@	448
0		49	0		99	0	+	149	0	@	199	2	@	249	8	@	299	0	@	349	0	@	399	0	@	449
0		50	0		100	0	+	150	0	@	200	2	@	250	5	@	300	0	@	350	1	@	400	0	@	450

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0	@	451	0		501																					
0	@	452	0		502																					
0	@	453	0		503																					
0	@	454	0		504																					
1	@	455	0		505																					
0	@	456	0		506																					
0	@	457	0		507																					
0	@	458	0		508																					
0	@	459	0		509																					
0	@	460	0		510																					
1	@	461	0		511																					
0	@	462	0		512																					
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VMS Peak Search Report V1.9 Generated 15-NOV-2006 04:31:18

```
Configuration     : RDND06$DKA100:[ALP120.SAMPLE]JH3L51AA_141162010.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 14-NOV-2006 20:10:50
Sample ID         : JH3L51AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP120               Detector geometry:
Elapsed live time: 0 08:20:04.00         Elapsed real time: 0 08:20:04.00   0.0%
Start energy      :  2883.44 kev         End energy       :  6640.03 kev
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4884.64	476	0103.56		273.87	259	48	1.59E-02	4.6	

VMS Nuclide Identification Report V3.1 Generated 15-NOV-2006 04:31:20

Configuration : RDND06$DKA100:[ALP120.SAMPLE]JH3L51AA_141162010.CNF;1
Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title : TH BRC
Sample date : 18-OCT-2006 12:00:00 Acquisition date : 14-NOV-2006 20:10:50
Sample ID : JH3L51AA Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP120 Detector geometry:
Elapsed live time: 0 08:20:04.00 Elapsed real time: 0 08:20:04.00 0.0%
Energy tolerance : 100.00 kev Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Spline Efficiencies at : Peak Energy
Abundance limit : 0.00

Summary of Nuclide Activity

Total number of lines in spectrum 1
Number of unidentified lines 0
Number of lines tentatively identified by NID 1 100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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

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

Configuration: RDND06$DKA100:[ALP120.SAMPLE]JH3L51AA_141162010.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4884.63	259	307	476	479	-0.14		

End of Report

SEVERN TRENT **STL**

THORIUM ISOTOPIC COUNTING REQUEST

BJV

C.R. Technician: [illegible]
Date Counted: 11/15
C.R. Analyst: [illegible]
Date Analyzed: 11/15/06

Counting Time
Sample: 500 Minutes
Background: See Alpha Analysis Report
PORC 10/18/06

SOP's
Operating: RICHRD008
Review: RICHRD0016
631139

WorkOrder #	Th-229 (4845 KeV) Tracer from Th-234 Beta Count (7)				TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV) (6)	Th-230 (4688 KeV) (8)	Th-232 (4010 KeV) (9)		
JH3L61AA		10		0	See Alpha Analysis Report for ROI Information			171	
JH3MC1AA		10		0	See Alpha Analysis Report for ROI Information			172	
JH3MJ1AA		10		0	See Alpha Analysis Report for ROI Information			173	
JH3MK1AA		10		0	See Alpha Analysis Report for ROI Information			174	
JH3ML1AA		10		0	See Alpha Analysis Report for ROI Information			175	
JH3MM1AA		10		0	See Alpha Analysis Report for ROI Information			176	
JH3MN1AA		10		0	See Alpha Analysis Report for ROI Information			177	
JH3NR1AA		10		0	See Alpha Analysis Report for ROI Information			178	
		10		0	See Alpha Analysis Report for ROI Information				

Comments:

Form No: RC-012, 10/02, Rev 9

Approved by: [illegible]

Date: 11/15/06

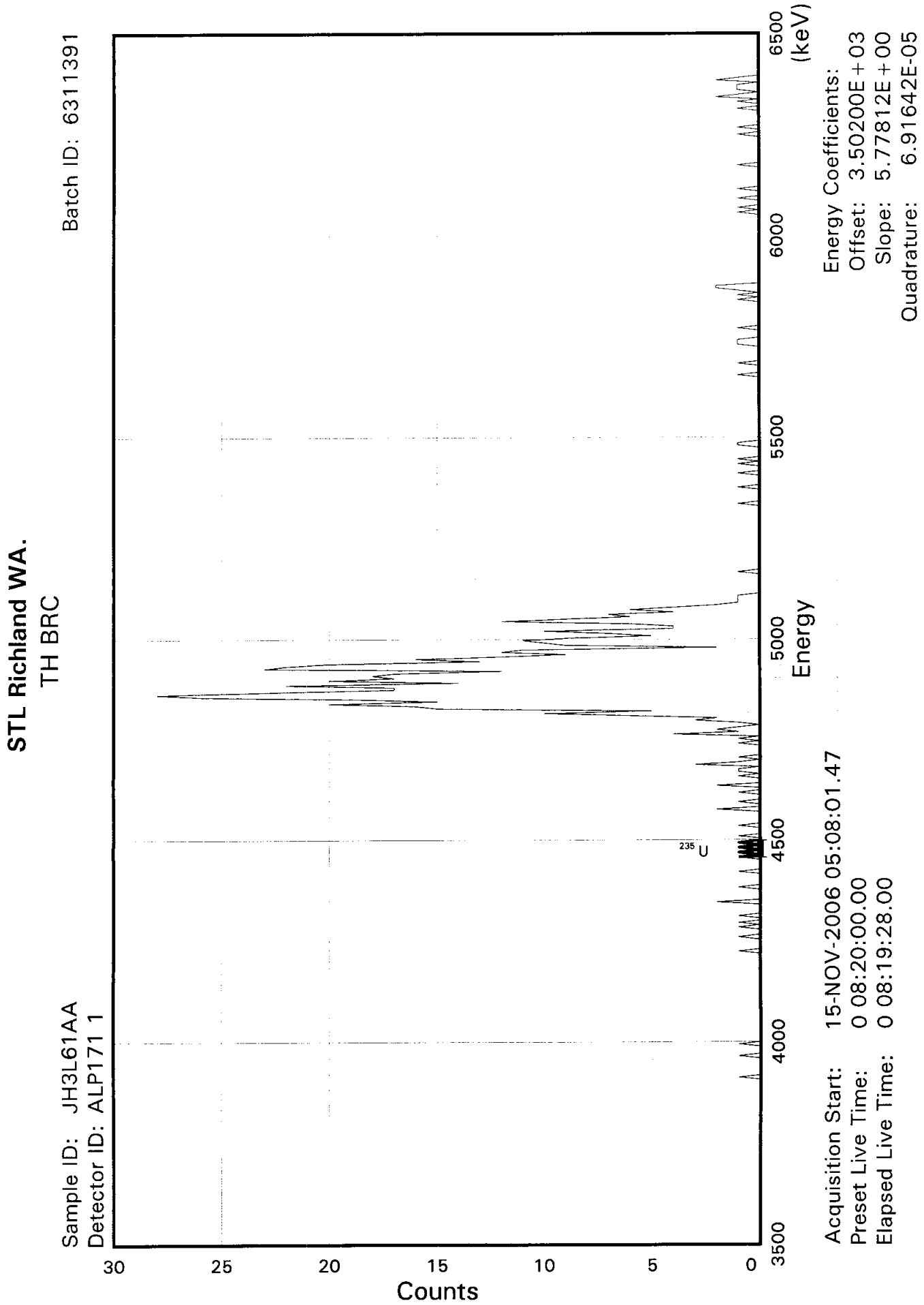
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3L61AA

Detector: ALP171 1
Report Date: 15-Nov-06 01:58 PM
Acquire Date: 15-NOV-2006 05:08:01.47
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	Rght Chnl
TH-228	5	3	0.007	5423.2	122.3	315	336
TH-229	620	6	1.235	4845.3	360.4	217	279
TH-230	14	0	0.028	4687.7	145.1	185	210
TH-232	3	0	0.006	4013.0	133.2	70	93

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6311391
Sample ID: JH3L61AA
Detector ID: ALP171 1
Counts
30
25
20
15
10
5
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
235U
Acquisition Start: 15-NOV-2006 05:08:01.47
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.50200E+03
Slope: 5.77812E+00
Quadrature: 6.91642E-05

SAMPLE IDENTIITY: JH3L61AA

TITLE : TH BRC

DETECTOR : ALP171 1
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JH3L61AA_151160508A.CN
F;1
ACQUIRE DATE of BACKGROUND: 09-NOV-2006 06:43:11

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 05:08:01 CALIB DATE : 08-NOV-2006 23:57:55

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

OFFSET : 3502.00 keV CONSTANT FWHM : 9.00000 Channels
SLOPE : 5.77812 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 6.916420E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JH3L61AA
Detector: ALP171 1
Report Date: 15-Nov-06 01:28 PM
Acquire Date: 15-NOV-2006 05:08:01.47

Flags Key

Intersect Region: *
Non-Intersect Region: +, -

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

0 50 0 100 0 150 1 200 16 250 0 300 0 350 0 400 1 450 0 500

VMS Peak Search Report V1.9 Generated 15-NOV-2006 13:28:34

Configuration	: $DISK1:[ALP171.SAMPLE]JH3L61AA_151160508A.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 18-OCT-2006 12:00:00	Acquisition date	: 15-NOV-2006 05:08:01
Sample ID	: JH3L61AA	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	: 3519.34 keV	End energy	: 6478.53 keV
Sensitivity	: 3.00	Sum Sensitivity	: 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4471.78	4	0	23.11	167.50	165	7	1.33E-04	50.0	

VMS Nuclide Identification Report V3.0 Generated 15-NOV-2006 13:28:37

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3L61AA_151160508A.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID         : JH3L61AA             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%
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                  1
 Number of unidentified lines                       0
 Number of lines tentatively identified by NID      1      100.00%
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
U-235	7.08E+08Y	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: 15-Nov-06  01:28 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
```

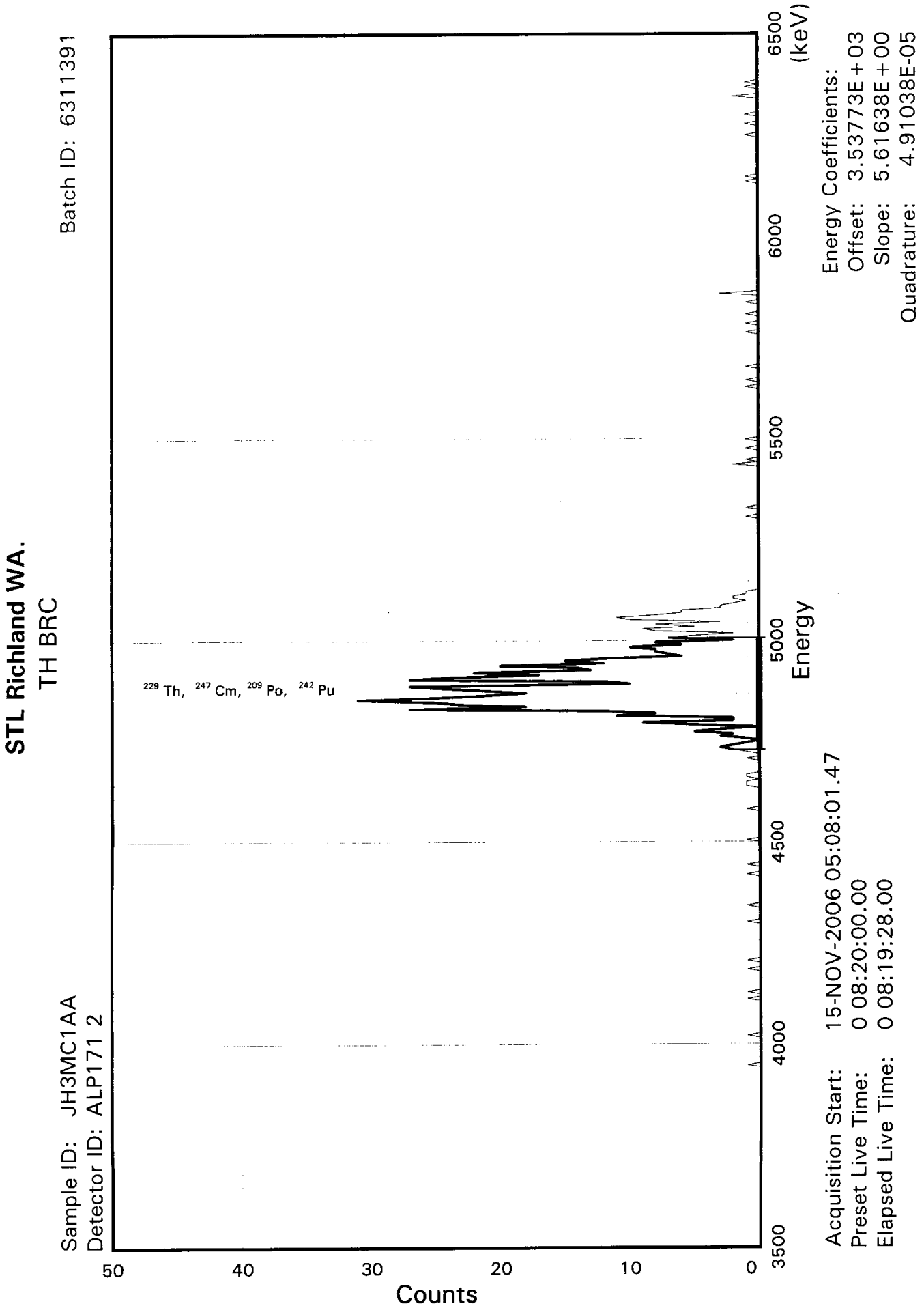
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3MC1AA

Detector: ALP171 2
Report Date: 15-Nov-06 01:59 PM
Acquire Date: 15-NOV-2006 05:08:01.47
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	Rght Chnl
TH-228	4	1	0.007	5423.2	135.6	317	341
TH-229	679	2	1.357	4845.3	372.3	216	282
TH-230	8	1	0.015	4687.7	146.5	185	211
TH-232	2	0	0.004	4013.0	112.5	70	90

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6311391
Sample ID: JH3MC1AA
Detector ID: ALP171 2
229 Th, 247 Cm, 209 Po, 242 Pu
Counts
50
40
30
20
10
0
3500
4000
4500
5000
5500
6000
6500
Energy
(keV)
Acquisition Start: 15-NOV-2006 05:08:01.47
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.53773E+03
Slope: 5.61638E+00
Quadrature: 4.91038E-05

SAMPLE IDENTIITY: JH3MC1AA

TITLE : TH BRC

DETECTOR : ALP171 2
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JH3MC1AA_151160508B.CN
F;1
ACQUIRE DATE of BACKGROUND: 09-NOV-2006 06:43:11

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 05:08:01 CALIB DATE : 08-NOV-2006 23:58:09

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

OFFSET : 3537.73 keV CONSTANT FWHM : 10.33330 Channels
SLOPE : 5.61638 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 4.910380E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3MC1AA

Detector: ALP171 2
Report Date: 15-Nov-06 01:28 PM
Acquire Date: 15-NOV-2006 05:08:01.47
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-10.010	5152.0	276.6	260	309	0.00	0.00	M
PO-209	588	2	0	1.175	4920.3	276.3	212	261	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5341.5	276.7	293	342	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6075.1	277.4	423	472	0.00	0.00	M
TH-227	-9999	-9999	0	-10.010	6075.1	277.4	423	472	0.00	0.00	M
TH-228	-9999	-9999	0	-10.010	5460.3	276.8	314	363	0.00	0.00	M
TH-229	588	2	0	1.175	4882.4	276.3	212	261	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4724.8	276.2	184	233	0.00	0.00	M I
TH-232	3	1	2	0.006	4050.1	275.6	64	113	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5357.3	276.7	296	345	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4811.7	276.3	199	248	0.00	0.00	M I
U-235	4	4	2	0.005	4434.9	276.0	133	182	0.00	0.00	S
PU-236	-9999	-9999	0	-10.010	5804.8	277.1	375	424	0.00	0.00	M
NP-237	-9999	-9999	0	-10.010	4825.1	276.3	202	251	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5536.1	276.9	328	377	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4235.1	275.8	97	146	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5193.7	276.6	267	316	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5522.7	276.9	325	374	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5243.9	276.6	276	325	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6149.8	277.4	436	485	0.00	0.00	M
PU-242	588	2	0	1.175	4937.6	276.3	212	261	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5312.4	276.7	288	337	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5841.9	277.2	382	431	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5423.6	276.8	308	357	0.00	0.00	M
CM-247	588	2	0	1.175	4907.5	276.3	212	261	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5115.7	276.5	253	302	0.00	0.00	M I

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JH3MC1AA
Detector: ALP171 2
Report Date: 15 Nov-06 01:28 PM
Acquire Date: 15-NOV 2006 05:08:01.47

Flags Key

Intersect Region: @
Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0	@	101	0	+	151	1	@	201	15	@	251	0	@	301	0	@	351	0	@	401	0	@	451
		2	0		52	1	@	102	0	+	152	0	-	202	12	@	252	0	@	302	0	@	352	0	@	402	0	@	452
0		3	0		53	0	@	103	0	+	153	0	@	203	6		253	0	@	303	0	@	353	1	@	403	0	@	453
0		4	0		54	0	@	104	0	+	154	0	@	204	7	@	254	0	@	304	0	@	354	0	@	404	0	@	454
0		5	0		55	1	@	105	0	+	155	0	@	205	8	@	255	0	@	305	0	@	355	0	@	405	0	@	455
0		6	0		56	0	@	106	0	+	156	0	@	206	8	@	256	0	@	306	0	@	356	0	@	406	0	@	456
0		7	0		57	0	@	107	1	+	157	0	@	207	10	@	257	0	@	307	0	@	357	0	@	407	0	@	457
0		8	0		58	0	@	108	0	+	158	1	@	208	6	@	258	0	-	308	0	@	358	1	@	408	0	@	458
0		9	0		59	0	@	109	0	+	159	0	@	209	8	@	259	0	@	309	0	@	359	0	@	409	0	@	459
0		10	0		60	0	@	110	0	+	160	0	@	210	2	@	260	0	@	310	0	@	360	0	@	410	0	@	460
0		11	0		61	0	@	111	1	+	161	1	@	211	7	@	261	0	@	311	0	@	361	0	@	411	1	@	461
0		12	0		62	0	@	112	0	+	162	2	@	212	5	@	262	0	@	312	0	@	362	3	@	412	0	@	462
0		13	0		63	0	@	113	0	+	163	3	@	213	2	@	263	0	@	313	0	@	363	0	@	413	1	@	463
0		14	0	+	64	0	-	114	0	+	164	2	@	214	8	@	264	1	@	314	0	@	364	0	@	414	0	@	464
0		15	0	+	65	1	-	115	0	+	165	1	@	215	9	@	265	0	@	315	0	@	365	0	@	415	0	@	465
0		16	0	+	66	0	-	116	0	+	166	0	@	216	5	@	266	0	@	316	0	@	366	0	@	416	0	@	466
0		17	0	+	67	0	-	117	0	+	167	1	@	217	8	@	267	0	@	317	0	@	367	0	@	417	0	@	467
0		18	0	+	68	0	-	118	0	+	168	3	@	218	3	@	268	1	@	318	0	@	368	0	@	418	0	@	468
0		19	0	+	69	1	-	119	0	+	169	2	@	219	10	@	269	0	@	319	0	@	369	0	@	419	0	@	469
0		20	0	+	70	0	-	120	0	+	170	5	@	220	11	@	270	0	@	320	0	@	370	0	@	420	0	@	470
0		21	0	+	71	0	-	121	0	+	171	3	@	221	8	@	271	0	@	321	1	@	371	0	@	421	0	@	471
0		22	0	+	72	0	-	122	1	+	172	0	@	222	6	@	272	0	@	322	0	@	372	0	@	422	0	@	472
0		23	1	+	73	0	-	123	0	+	173	5	@	223	6	@	273	0	@	323	0	@	373	0	@	423	0	-	473
0		24	0	+	74	0	-	124	0	+	174	9	@	224	3	@	274	0	@	324	1	@	374	0	@	424	0	-	474
0		25	0	+	75	0	-	125	0	+	175	2	@	225	3	@	275	0	@	325	0	@	375	0	@	425	0	-	475
0		26	0	+	76	0	-	126	0	+	176	2	@	226	2	@	276	0	@	326	0	@	376	0	@	426	0	-	476
0		27	0	+	77	0	-	127	0	+	177	11	@	227	1	@	277	0	@	327	0	@	377	0	@	427	0	-	477
0		28	0	+	78	0	-	128	0	+	178	8	@	228	2	@	278	0	@	328	0	+	378	0	@	428	0	-	478
0		29	0	+	79	0	-	129	0	+	179	12	@	229	2	@	279	0	@	329	0	+	379	0	@	429	0	-	479
0		30	0	+	80	0	-	130	0	+	180	27	@	230	1	@	280	0	@	330	1	+	380	0	@	430	0	-	480
0		31	0	+	81	0	-	131	0	+	181	18	@	231	1	@	281	0	@	331	0	+	381	0	@	431	1	-	481
0		32	0	+	82	0	-	132	0	+	182	23	@	232	0	@	282	0	@	332	0	@	382	0	@	432	0	-	482
0		33	0	+	83	0	@	133	0		183	25	@	233	0	@	283	0	@	333	0	@	383	0	@	433	0	-	483
0		34	0	+	84	0	@	134	0	+	184	31	@	234	0	@	284	0	@	334	0	@	384	0	@	434	0	-	484
0		35	0	+	85	0	@	135	0	+	185	25	@	235	0	@	285	0	@	335	0	@	385	0	@	435	0	-	485
0		36	1	+	86	1	@	136	1	+	186	21	@	236	0	@	286	0	@	336	0	@	386	0	-	436	1		486
0		37	0	+	87	0	@	137	0	+	187	18	@	237	0	@	287	2	@	337	0	@	387	0	@	437	0		487
0		38	0	+	88	0	@	138	0	+	188	21	@	238	0	@	288	0	@	338	0	@	388	0	@	438	0		488
0		39	0	+	89	0	@	139	0	+	189	24	@	239	0	@	289	1	@	339	0	@	389	0	@	439	0		489
0		40	0	+	90	0	@	140	0	+	190	27	@	240	0	@	290	0	@	340	0	@	390	0	@	440	1		490
0		41	0	+	91	0	@	141	0	+	191	10	@	241	0	@	291	0	@	341	0	@	391	0	@	441	0		491
0		42	0	+	92	0	@	142	0	+	192	12	@	242	0	@	292	0	@	342	0	@	392	0	@	442	0		492
0		43	0	+	93	1	@	143	0	+	193	27	@	243	0	@	293	0	@	343	0	@	393	0	@	443	0		493
0		44	0	+	94	0	@	144	0	+	194	24	@	244	0	@	294	1	@	344	0	@	394	0	@	444	0		494
0		45	0	+	95	0	@	145	0	+	195	17	@	245	0	@	295	0	@	345	1	@	395	0	@	445	0		495
0		46	0	+	96	0	@	146	1	+	196	22	@	246	0	@	296	0	@	346	0	@	396	0	@	446	0		496
0		47	0	@	97	0	+	147	1	+	197	13	@	247	0	@	297	0	@	347	0	@	397	0	@	447	0		497
0		48	0	@	98	0	+	148	1	+	198	14	@	248	0	@	298	1	@	348	0	@	398	0	@	448	2		498
0		49	0	@	99	0	+	149	0	@	199	20	@	249	0	@	299	0	@	349	1	@	399	0	@	449	0		499
0		50	0	@	100	0	+	150	1	@	200	12	@	250	0	@	300	0	@	350	0	@	400	0	@	450	0		500

VMS Peak Search Report V1.9 Generated 15-NOV-2006 13:28:40

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3MC1AA_151160508B.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID         : JH3MC1AA             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      :  3554.58 keV         End energy       :  6426.19 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4882.39	588	0123.56	238.92		212	49	1.96E-02	4.1	

VMS Nuclide Identification Report V3.0 Generated 15-NOV-2006 13:28:43

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3MC1AA_151160508B.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID         : JH3MC1AA             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%
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                  1
 Number of unidentified lines                       0
 Number of lines tentatively identified by NID      1      100.00%
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	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 PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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

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

Configuration: $DISK1:[ALP171.SAMPLE]JH3MC1AA_151160508B.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4882.39	212	261	588	591	-0.12		

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3MJ1AA

Detector: ALP171 3
Report Date: 15-Nov-06 02:00 PM
Acquire Date: 15-NOV-2006 05:08:01.47
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	Rght Chnl
TH-228	4	1	0.007	5423.2	143.4	304	328
TH-229	522	3	1.042	4845.3	357.6	209	269
TH-230	6	0	0.012	4687.7	136.9	183	206
TH-232	1	0	0.002	4013.0	118.7	71	91

End of Alpha Region Report
(Produced by ANAL Report)

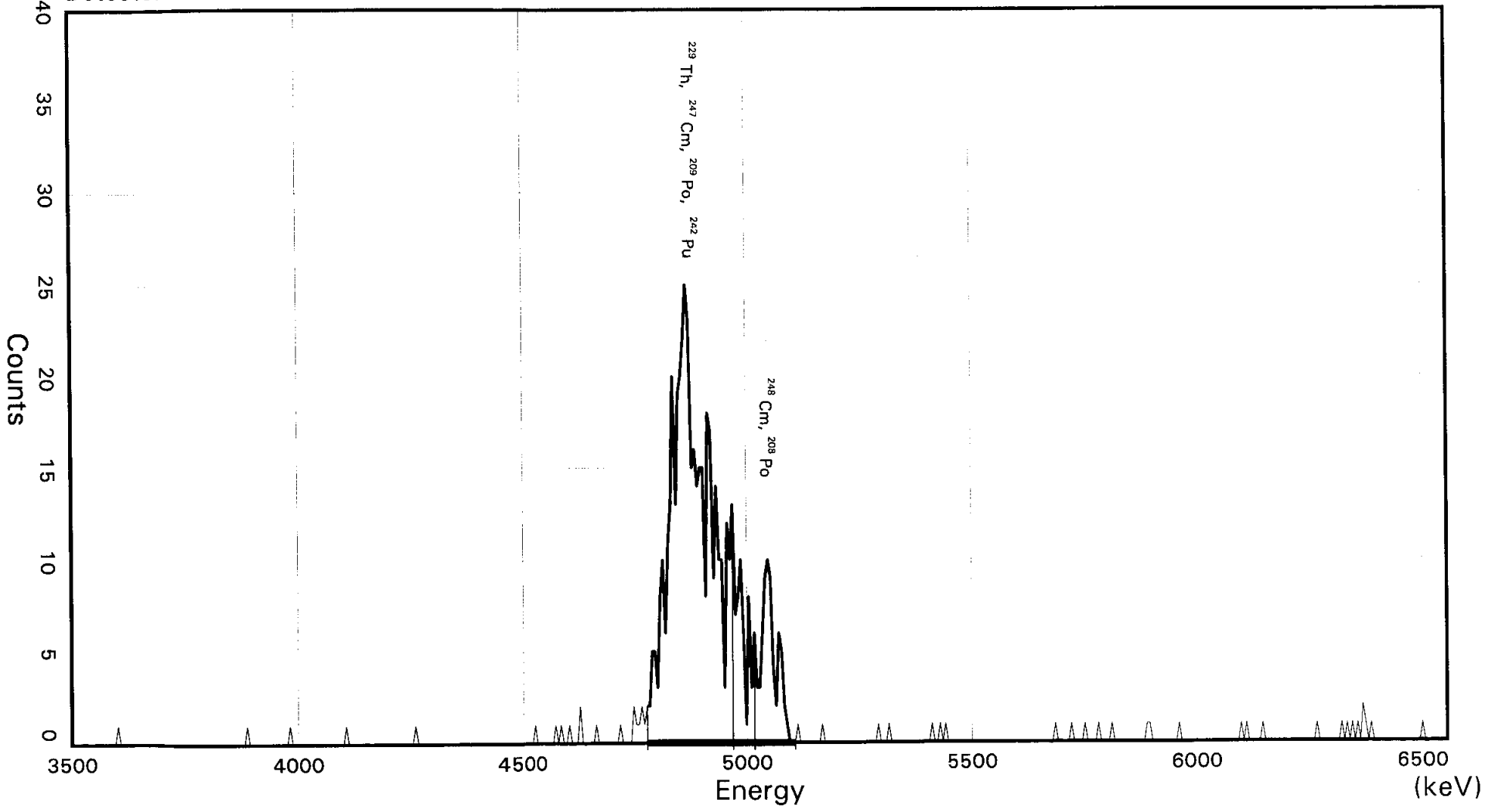
STL Richland WA.

TH BRC

Sample ID: JH3MJ1AA

Detector ID: ALP171 3

Batch ID: 6311391



Acquisition Start: 15-NOV-2006 05:08:01.47

Preset Live Time: 0 08:20:00.00

Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:

Offset: 3.50167E+03

Slope: 5.91899E+00

Quadrature: 8.54274E-05

SAMPLE IDENTIITY: JH3MJ1AA

TITLE : TH BRC

DETECTOR : ALP171 3
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JH3MJ1AA_151160508C.CN
F;1
ACQUIRE DATE of BACKGROUND: 09-NOV-2006 06:43:11

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 05:08:01 CALIB DATE : 08-NOV-2006 23:58:22

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

OFFSET : 3501.67 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 5.91899 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 8.542740E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3MJ1AA

Detector: ALP171 3
Report Date: 15-Nov-06 01:28 PM
Acquire Date: 15-NOV-2006 05:08:01.47
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	67	1	0	0.133	5146.8	137.2	247	270	0.00	0.00	P
PO-209	450	2	0	0.899	4915.1	238.4	215	255	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5336.3	238.9	292	332	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6069.9	233.7	415	454	0.00	0.00	M
TH-227	-9999	-9999	0	-10.010	6069.9	233.7	415	454	0.00	0.00	M
TH-228	-9999	-9999	0	-10.010	5455.1	239.0	312	352	0.00	0.00	M
TH-229	450	2	0	0.899	4877.2	238.4	215	255	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4719.6	238.2	189	229	0.00	0.00	M I
TH-232	2	0	0	0.004	4044.9	237.4	75	115	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5352.1	238.9	295	335	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4806.5	238.3	203	243	0.00	0.00	M I
U-235	1	0	0	0.002	4429.7	237.9	140	180	0.00	0.00	S
PU-236	4	6	5	0.001	5799.6	233.4	370	409	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4819.9	238.3	205	245	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5530.9	233.1	325	364	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4229.9	237.6	106	146	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5188.5	238.7	267	307	0.00	0.00	M I
AM-241	-9999	-9999	0	-10.010	5517.5	239.1	322	362	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5238.7	238.8	276	316	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6144.6	239.8	427	467	0.00	0.00	M
PU-242	450	2	0	0.899	4932.4	238.4	215	255	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5307.2	238.9	287	327	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5836.7	239.5	376	416	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5418.4	239.0	306	346	0.00	0.00	M
CM-247	450	2	0	0.899	4902.3	238.4	215	255	0.00	0.00	P
CM-248	67	1	0	0.133	5110.5	137.2	247	270	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29 Jun 92)

Sample Identity: JH3MJ1AA
Detector: ALP171 3
Report Date: 15 Nov-06 01:28 PM
Acquire Date: 15 NOV-2006 05:08:01.47

Flags Key

Intersect Region: @
Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0	+	101	0	+	151	0	+	201	6	@	251	1	@	301	0	@	351	1	@	401
		2	0		52	1	+	102	0	+	152	0	+	202	1	@	252	0	@	302	0	@	352	1	@	402
0		3	0		53	0	+	103	0	+	153	0	@	203	8	@	253	0	@	303	0	@	353	0	@	403
0		4	0		54	0	+	104	0	+	154	0	@	204	3	@	254	0	@	304	0	@	354	0	@	404
0		5	0		55	0	+	105	0	+	155	1	-	205	6	@	255	1	@	305	0	@	355	0	@	405
0		6	0		56	0	@	106	0	+	156	0	@	206	3	@	256	0	-	306	0	@	356	0	@	406
0		7	0		57	0	@	107	0	+	157	0	@	207	3	@	257	0	@	307	0	@	357	0	@	407
0		8	0		58	0	@	108	0	+	158	0	@	208	6	@	258	0	@	308	0	@	358	0	@	408
0		9	0		59	0	@	109	0	+	159	0	@	209	9	@	259	0	@	309	0	@	359	0	@	409
0		10	0		60	0	@	110	0	+	160	2	@	210	10	@	260	0	@	310	0	@	360	0	-	410
0		11	0		61	0	@	111	0	+	161	1	@	211	9	@	261	0	@	311	0	@	361	0	-	411
0		12	0		62	0	@	112	0	+	162	1	@	212	4	@	262	0	@	312	0	@	362	0	-	412
0		13	0		63	0	@	113	0	+	163	2	@	213	2	@	263	0	@	313	0	+	363	1	-	413
0		14	0		64	0	@	114	0	+	164	1	@	214	6	@	264	0	@	314	0	+	364	0	-	414
0		15	1		65	0	@	115	0	+	165	2	@	215	5	@	265	0	@	315	0		365	0	@	415
0		16	0		66	0	-	116	0	+	166	2	@	216	2	@	266	0	@	316	0		366	0	@	416
1		17	0		67	0	-	117	0	+	167	5	@	217	1	@	267	0	@	317	1		367	0	@	417
0		18	0		68	0	-	118	0	+	168	5	@	218	0	@	268	0	@	318	0		368	0	@	418
0		19	0		69	0	-	119	0	+	169	3	@	219	0	@	269	0	@	319	0		369	0	@	419
0		20	0		70	0	-	120	0	+	170	8	@	220	0	+	270	0	@	320	0	+	370	0	@	420
0		21	0		71	0	-	121	0	+	171	10	@	221	1	+	271	1	@	321	0	+	371	0	@	421
0		22	0		72	0	-	122	0	+	172	6	@	222	0	+	272	0	@	322	0	+	372	0	@	422
0		23	0		73	0	-	123	1	+	173	11	@	223	0	+	273	0	@	323	1	+	373	0	@	423
0		24	0		74	0	-	124	0	+	174	13	@	224	0	+	274	1	@	324	0	+	374	0	@	424
0		25	0	+	75	0	-	125	0	+	175	20	@	225	0	+	275	0	@	325	0	+	375	0	@	425
0		26	0	+	76	0	-	126	0	+	176	13	@	226	0	@	276	1	@	326	0	@	376	0	@	426
0		27	0	+	77	0	-	127	0	+	177	19	@	227	0	@	277	0	@	327	0	@	377	0	-	427
0		28	0	+	78	1	-	128	0	+	178	20	@	228	0	@	278	0	@	328	1	@	378	0	@	428
0		29	0	+	79	0	-	129	0	+	179	22	@	229	0	@	279	0	@	329	0	@	379	0	@	429
0		30	0	+	80	0	-	130	0	+	180	25	@	230	1	@	280	0	@	330	0	@	380	0	@	430
0		31	1	+	81	0	-	131	1		181	23	@	231	0	@	281	0	@	331	0	@	381	0	@	431
0		32	0	+	82	0	-	132	0		182	15	@	232	0	@	282	0	@	332	0	@	382	0	@	432
0		33	0	+	83	0	-	133	1		183	16	@	233	0	@	283	0	@	333	1	@	383	0	@	433
0		34	0	+	84	0	-	134	0		184	14	@	234	0	@	284	0	@	334	0	@	384	0	@	434
0		35	0	+	85	0	-	135	0		185	15	@	235	0	@	285	0	@	335	0	@	385	0	@	435
0		36	0	+	86	0	-	136	1		186	15	@	236	0	@	286	0	@	336	0	@	386	1	@	436
0		37	0	+	87	0	-	137	0		187	8	@	237	0	-	287	0	@	337	0	@	387	0	@	437
0		38	0	+	88	0	-	138	0		188	18	@	238	0	@	288	0	@	338	1	@	388	1	@	438
0		39	0	+	89	0	-	139	0	+	189	17	@	239	0	@	289	0	@	339	0	@	389	0	@	439
0		40	0	+	90	0	@	140	2	+	190	9	@	240	0	@	290	0	@	340	0	@	390	0	@	440
0		41	0	+	91	0	@	141	0	+	191	14	@	241	0	@	291	0	@	341	0	@	391	0	@	441
0		42	0	+	92	0	@	142	0	+	192	10	@	242	0	@	292	0	@	342	0	@	392	0	@	442
0		43	0	+	93	0	@	143	0	+	193	10	@	243	0	@	293	0	@	343	0	@	393	0	@	443
0		44	0	+	94	0	@	144	0	+	194	3	@	244	0	@	294	0	@	344	0	@	394	1	@	444
0		45	0	+	95	0	@	145	0	+	195	12	@	245	0	@	295	0	@	345	0	@	395	0	@	445
0		46	0	+	96	0	@	146	1	+	196	10	@	246	0	@	296	0	@	346	0	@	396	0	@	446
0		47	0	+	97	0	+	147	0	+	197	13	-	247	0	@	297	0	@	347	0	@	397	0	@	447
0		48	0	+	98	0	+	148	0	+	198	7	@	248	0	@	298	0	@	348	0	@	398	0	@	448
0		49	0	+	99	0	+	149	0	+	199	8	@	249	0	@	299	0	@	349	0	@	399	0	@	449
0		50	0	+	100	0	+	150	0	+	200	10	@	250	0	@	300	0	@	350	0	@	400	0	@	450

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
0		451	0		501
0		452	0		502
0		453	1		503
0		454	0		504
0		455	0		505
0		456	0		506
0		457	0		507
0	-	458	0		508
0		459	0		509
0	-	460	0		510
0	-	461	0		511
0	-	462	0		512
0	-	463			
1	-	464			
0	-	465			
0	-	466			
0	-	467			
0		468			
0		469			
0		470			
0		471			
0		472			
1		473			
0		474			
1		475			
0		476			
1		477			
0		478			
1		479			
0		480			
2		481			
1		482			
0		483			
1		484			
0		485			
0		486			
0		487			
0		488			
0		489			
0		490			
0		491			
0		492			
0		493			
0		494			
0		495			
0		496			
0		497			
0		498			
0		499			
0		500			

VMS Peak Search Report V1.9 Generated 15-NOV-2006 13:28:47

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3MJ1AA_151160508C.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID         : JH3MJ1AA             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      :  3519.42 keV         End energy       :  6554.58 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4877.20	450	0	112.46	231.62	215	40	1.50E-02	4.7	
2	0	5046.05	67	0	53.27	259.94	247	23	2.24E-03	12.2	

VMS Nuclide Identification Report V3.0 Generated 15-NOV-2006 13:28:49

Configuration	: $DISK1:[ALP171.SAMPLE]JH3MJ1AA_151160508C.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 18-OCT-2006 12:00:00	Acquisition date	: 15-NOV-2006 05:08:01
Sample ID	: JH3MJ1AA	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%
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 PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.02	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	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 PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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

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

Configuration: $DISK1:[ALP171.SAMPLE]JH3MJ1AA_151160508C.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4877.19	215	255	450	455	-0.24		
5046.04	247	270	67	122	-6.72	62	0.09

End of Report

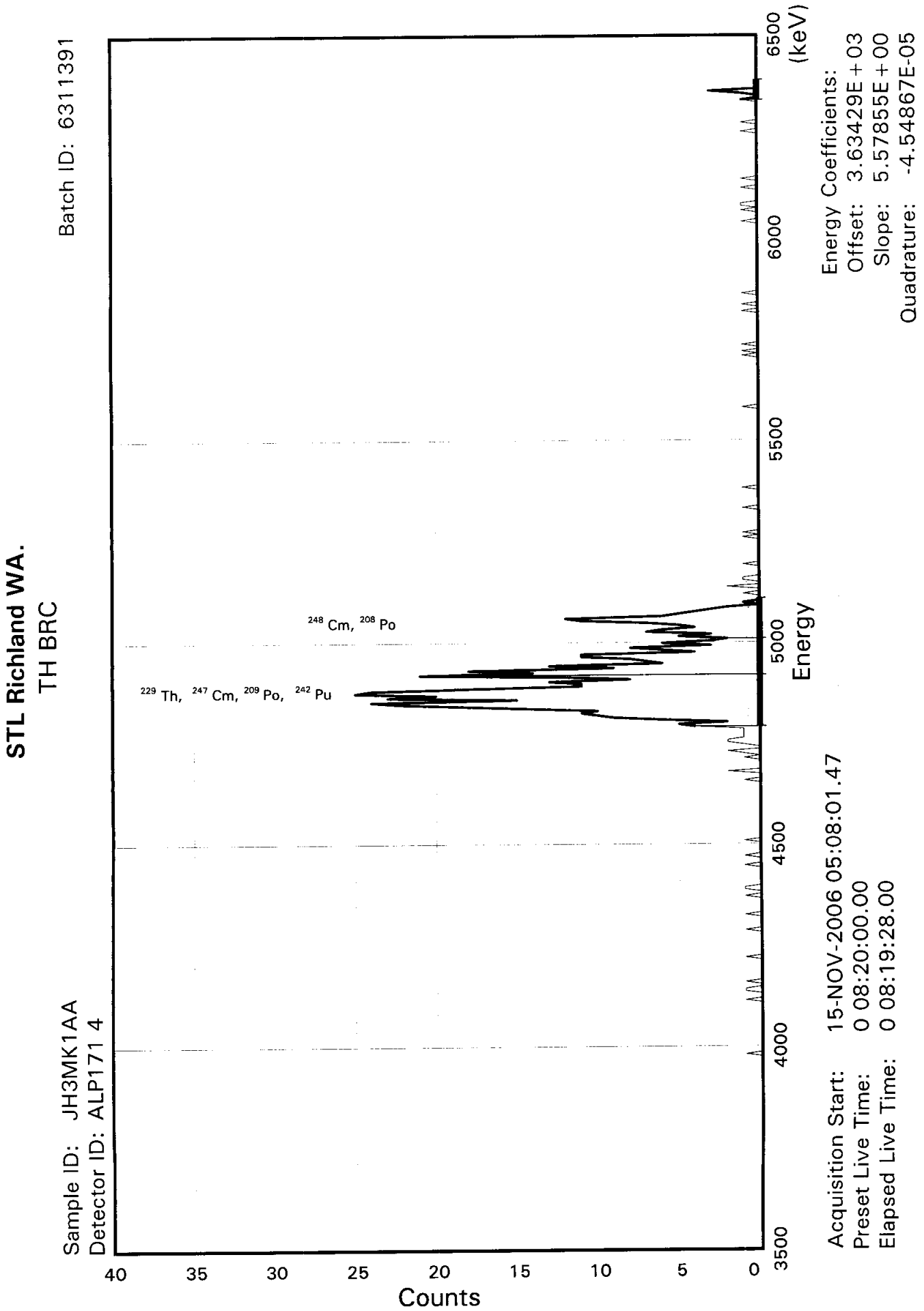
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3MK1AA

Detector: ALP171 4
Report Date: 15-Nov-06 02:02 PM
Acquire Date: 15-NOV-2006 05:08:01.47
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	Rght Chnl
TH-228	2	1	0.003	5423.2	127.6	304	327
TH-229	556	0	1.113	4845.3	355.7	200	264
TH-230	7	0	0.014	4687.7	133.5	174	198
TH-232	1	0	0.002	4013.0	111.5	53	73

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6311391
Sample ID: JH3MK1AA
Detector ID: ALP171 4
248 Cm, 208 Po
229 Th, 247 Cm, 209 Po, 242 Pu
Counts
40
35
30
25
20
15
10
5
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 15-NOV-2006 05:08:01.47
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.63429E+03
Slope: 5.57855E+00
Quadrature: -4.54867E-05

SAMPLE IDENTIITY: JH3MK1AA

TITLE : TH BRC

DETECTOR : ALP171 4
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JH3MK1AA_151160508D.CN
F;1
ACQUIRE DATE of BACKGROUND: 09-NOV-2006 06:43:11

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 05:08:01 CALIB DATE : 08-NOV-2006 23:58:31

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

OFFSET : 3634.29 keV CONSTANT FWHM : 11.33330 Channels
SLOPE : 5.57855 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.454867E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3MK1AA

Detector: ALP171 4
Report Date: 15-Nov-06 01:28 PM
Acquire Date: 15-NOV-2006 05:08:01.47
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	96	0	0	0.192	5148.5	188.9	231	265	0.00	0.00	P
PO-209	450	0	0	0.901	4916.8	216.8	208	247	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5338.0	216.5	291	330	0.00	0.00	M
AC-227	4	1	5	0.006	6071.6	216.0	423	462	0.00	0.00	S
TH-227	4	1	5	0.006	6071.6	216.0	423	462	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5456.8	216.4	312	351	0.00	0.00	M
TH-229	450	0	0	0.901	4878.9	216.8	208	247	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4721.3	216.9	180	219	0.00	0.00	M I
TH-232	5	1	1	0.008	4046.6	217.3	58	97	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5353.8	222.0	293	333	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4808.2	216.8	195	234	0.00	0.00	M I
U-235	6	0	0	0.012	4431.4	217.0	128	167	0.00	0.00	S
PU-236	4	7	3	0.001	5801.3	216.2	374	413	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4821.6	216.8	198	237	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5532.6	216.3	326	365	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4231.6	217.2	92	131	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5190.2	216.6	264	303	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5519.2	216.3	323	362	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5240.4	216.5	273	312	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6146.3	221.5	436	476	0.00	0.00	M
PU-242	450	0	0	0.901	4934.1	216.8	208	247	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5308.9	216.5	285	324	0.00	0.00	M
CM-244	2	5	3	-0.002	5838.4	216.1	381	420	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5420.1	216.4	305	344	0.00	0.00	M
CM-247	450	0	0	0.901	4904.0	216.8	208	247	0.00	0.00	P
CM-248	96	0	0	0.192	5112.2	188.9	231	265	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JH3MK1AA
Detector: ALP171 4
Report Date: 15 Nov-06 01:28 PM
Acquire Date: 15-NOV 2006 05:08:01.47

Flags Key

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

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0		101	0	+	151	2	@	201	6	@	251	0	@	301	0	@	351	1	@	401	0	@	451
		2	0		52	0		102	0	+	152	2	@	202	4	@	252	0	@	302	0	@	352	0	@	402	1	@	452
	0	3	0		53	0		103	0	+	153	1	@	203	5	@	253	0	@	303	0	@	353	0	@	403	0	@	453
	0	4	0		54	0		104	0	+	154	1	@	204	7	@	254	0	@	304	0	@	354	0	@	404	0	@	454
	0	5	0		55	1		105	0	+	155	1	@	205	11	@	255	1	-	305	0	@	355	0	@	405	0	@	455
	0	6	0		56	0	-	106	0	+	156	1	@	206	12	@	256	0	@	306	0	@	356	0	@	406	0	@	456
	0	7	0		57	0	-	107	1	+	157	1	@	207	6	@	257	0	@	307	0	@	357	0	@	407	0	@	457
	0	8	0	+	58	0	-	108	0	+	158	4	@	208	5	@	258	0	@	308	0	@	358	0	@	408	0	@	458
	0	9	0	+	59	0	-	109	0	+	159	5	@	209	4	@	259	0	@	309	0	@	359	0	@	409	0	@	459
	0	10	0	+	60	0	-	110	0	+	160	2	@	210	3	@	260	0	@	310	0	@	360	0	@	410	0	@	460
	0	11	0	+	61	0	-	111	0	+	161	6	@	211	2	@	261	0	@	311	0	@	361	0	@	411	0	@	461
	0	12	1	+	62	0	-	112	0	+	162	9	@	212	0	@	262	0	@	312	0	@	362	0	@	412	0	@	462
	0	13	0	+	63	0	-	113	0	+	163	10	@	213	1	@	263	0	@	313	0	+	363	0	@	413	0	-	463
	0	14	0	+	64	0	-	114	0	+	164	11	@	214	0	@	264	1	@	314	0	+	364	0	-	414	0	-	464
	0	15	0	+	65	0	-	115	0	+	165	10	@	215	0	+	265	0	@	315	0	+	365	0	-	415	0	-	465
	0	16	0	+	66	0	-	116	0	+	166	14	@	216	0	+	266	0	@	316	0		366	0	-	416	0	-	466
	0	17	0	+	67	1	-	117	0	+	167	18	@	217	1	+	267	0	@	317	0		367	0	-	417	0	-	467
	0	18	0	+	68	0	-	118	0		168	22	@	218	0	+	268	0	@	318	0		368	0	-	418	0	-	468
	0	19	0	+	69	0	-	119	0		169	24	@	219	0	+	269	0	@	319	0		369	0	-	419	0	-	469
	0	20	0	+	70	0	-	120	0		170	15	@	220	2	+	270	0	@	320	0		370	0	-	420	0	-	470
	0	21	0	+	71	0	-	121	0		171	23	@	221	0	+	271	0	@	321	0		371	0		421	0	-	471
	0	22	0	+	72	0	-	122	0		172	20	@	222	0	+	272	0	@	322	0		372	0		422	0	-	472
	0	23	0	+	73	0	-	123	0		173	25	@	223	1	@	273	0	@	323	1		373	0	@	423	1	-	473
	0	24	0	+	74	1	-	124	0		174	24	@	224	1	@	274	0	@	324	0	+	374	0	@	424	0	-	474
	0	25	0	+	75	0	-	125	0		175	18	@	225	0	@	275	0	@	325	1	+	375	0	@	425	0	-	475
	0	26	0	+	76	0	-	126	0		176	11	@	226	0	@	276	0	@	326	0	+	376	0	@	426	0	-	476
	0	27	0	+	77	0	-	127	0		177	11	@	227	0	@	277	0	@	327	0	+	377	0	@	427	1		477
	0	28	0	+	78	0	@	128	0		178	13	@	228	0	@	278	0	@	328	1	+	378	0	@	428	0		478
	0	29	0	+	79	0	@	129	0		179	8	@	229	0	@	279	0	@	329	0	+	379	0	@	429	0		479
	0	30	0	+	80	0	@	130	0	+	180	12	@	230	1	@	280	0	@	330	0	+	380	0	@	430	0		480
	0	31	0	+	81	0	@	131	0	+	181	21	-	231	0	@	281	0	@	331	0	@	381	0	@	431	0		481
	0	32	0	+	82	1	+	132	0	+	182	14	@	232	0	@	282	0	@	332	0	@	382	0	@	432	0		482
	0	33	0	+	83	0	+	133	0	+	183	18	@	233	0	@	283	0	@	333	0	@	383	1	@	433	0		483
	0	34	0	+	84	0	+	134	1	+	184	9	@	234	0	@	284	0	@	334	0	@	384	0	@	434	0		484
	0	35	0	+	85	1	+	135	0	+	185	13	@	235	0	-	285	0	@	335	0	@	385	0	@	435	0		485
	0	36	1	+	86	1	+	136	0	+	186	6	@	236	0	@	286	0	@	336	0	@	386	0	-	436	0		486
	0	37	0	+	87	0	+	137	0	+	187	7	@	237	0	@	287	0	@	337	0	@	387	0	@	437	1		487
	0	38	0	+	88	0	+	138	2	+	188	8	@	238	0	@	288	0	@	338	0	@	388	1	@	438	0		488
	0	39	0	+	89	0	+	139	0	+	189	11	@	239	0	@	289	0	@	339	0	@	389	0	@	439	0		489
	0	40	1	+	90	0	+	140	0	+	190	11	@	240	0	@	290	0	@	340	0	@	390	1	@	440	1		490
	0	41	1	+	91	0	+	141	0	+	191	4	@	241	0	@	291	0	@	341	0	@	391	1	@	441	3		491
	0	42	0	@	92	0	+	142	0	+	192	6	@	242	1	@	292	0	@	342	0	@	392	0	@	442	0		492
	0	43	0	@	93	0	+	143	0	+	193	8	@	243	0	@	293	0	@	343	1	@	393	0	@	443	0		493
	0	44	1	@	94	0	+	144	1	+	194	3	@	244	1	@	294	0	@	344	0	@	394	0	@	444	0		494
	0	45	0	@	95	0	+	145	0	@	195	6	@	245	0	@	295	0	@	345	0	@	395	0	@	445	0		495
	0	46	0	@	96	1	+	146	1	@	196	3	@	246	0	@	296	0	@	346	1	@	396	0	@	446	0		496
	0	47	0	@	97	0	+	147	2	@	197	2	@	247	0	@	297	0	@	347	0	@	397	0	@	447	0		497
	0	48	0	-	98	0	+	148	0	-	198	5	@	248	0	@	298	0	@	348	0	@	398	1	@	448	0		498
	0	49	0	-	99	0	+	149	0	@	199	3	@	249	0	@	299	0	@	349	0	@	399	0	@	449	0		499
	0	50	0	-	100	1	+	150	1	@	200	7	@	250	0	@	300	1	@	350	0	@	400	0	@	450	0		500

VMS Peak Search Report V1.9 Generated 15-NOV-2006 13:28:52

Configuration : $DISK1:[ALP171.SAMPLE]JH3MK1AA_151160508D.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID : JH3MK1AA 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 : 3651.03 keV End energy : 6478.59 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4878.91	450	0	117.15	223.51	208	39	1.50E-02	4.7	
2	0	5050.37	96	0	50.21	254.37	231	34	3.20E-03	10.2	
3	0	6359.63	6	0	33.47	490.50	487	9	2.00E-04	40.8	

VMS Nuclide Identification Report V3.0 Generated 15-NOV-2006 13:28:54

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3MK1AA_151160508D.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID         : JH3MK1AA             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%
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 PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.02	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	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 PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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

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

Configuration: $DISK1:[ALP171.SAMPLE]JH3MK1AA_151160508D.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4878.90	208	247	450	465	-0.71		
5050.37	231	265	96	231	-13.78	150	0.00
6359.62	487	496	6	5	0.41		

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3ML1AA

Detector: ALP171 5
Report Date: 15-Nov-06 02:16 PM
Acquire Date: 15-NOV-2006 05:08:01.47
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	Rght Chnl
TH-228	3	2	0.004	5423.2	130.0	299	321
TH-229	648	3	1.294	4845.3	377.6	203	267
TH-230	2	3	0.001	4687.7	117.9	176	196
TH-232	2	0	0.004	4013.0	129.4	61	83

End of Alpha Region Report
(Produced by ANAL Report)

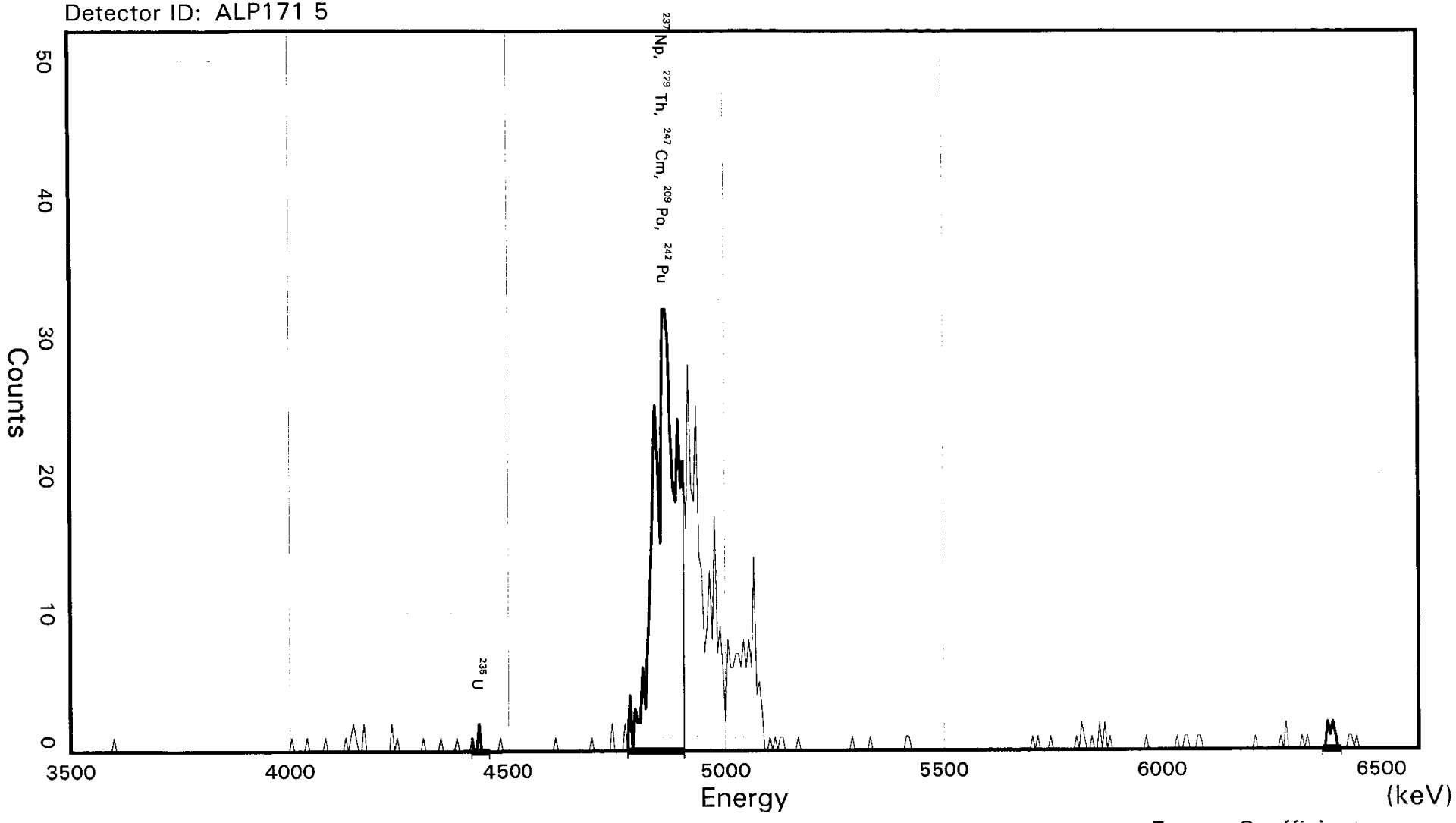
STL Richland WA.

TH BRC

Sample ID: JH3ML1AA

Detector ID: ALP171 5

Batch ID: 6311391



Acquisition Start: 15-NOV-2006 05:08:01.47

Preset Live Time: 0 08:20:00.00

Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:

Offset: 3.56406E+03

Slope: 5.87195E+00

Quadrature: 5.86236E-05

SAMPLE IDENTIITY: JH3ML1AA

TITLE : TH BRC

DETECTOR : ALP171 5
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JH3ML1AA_151160508E.CN
F;1
ACQUIRE DATE of BACKGROUND: 09-NOV-2006 06:43:11

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 05:08:01 CALIB DATE : 08-NOV-2006 23:58:43

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

OFFSET : 3564.06 keV CONSTANT FWHM : 7.83333 Channels
SLOPE : 5.87195 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 5.862360E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3ML1AA

Detector: ALP171 5
Report Date: 15-Nov-06 01:29 PM
Acquire Date: 15-NOV-2006 05:08:01.47
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-10.010	5131.8	129.9	252	274	0.00	0.00	M
PO-209	282	1	0	0.564	4900.1	129.7	206	228	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5321.2	129.9	284	306	0.00	0.00	M
AC-227	3	0	4	0.006	6054.9	130.3	408	430	0.00	0.00	S
TH-227	3	0	4	0.006	6054.9	130.3	408	430	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5440.1	130.0	304	326	0.00	0.00	M
TH-229	282	1	0	0.564	4862.2	129.7	206	228	0.00	0.00	P
TH-230	2	4	2	0.001	4704.6	129.7	179	201	0.00	0.00	S
TH-232	2	0	0	0.004	4029.9	129.4	65	87	0.00	0.00	
U-232	-9999	-9999	0	-10.010	5337.0	129.9	286	308	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4791.5	129.7	194	216	0.00	0.00	S I
U-235	4	0	0	0.008	4414.7	41.2	145	152	0.00	0.00	P
PU-236	5	2	5	0.007	5784.5	130.1	362	384	0.00	0.00	S
NP-237	282	1	0	0.564	4804.9	129.7	206	228	0.00	0.00	P
PU-238	-9999	-9999	0	-10.010	5515.9	130.0	317	339	0.00	0.00	M
U-238	10	1	0	0.019	4214.9	129.5	96	118	0.00	0.00	
PU-239	-9999	-9999	0	-10.010	5173.4	129.9	259	281	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5502.5	130.0	314	336	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5223.7	129.9	267	289	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6129.6	124.4	421	442	0.00	0.00	M
PU-242	282	1	0	0.564	4917.4	129.7	206	228	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5292.2	129.9	279	301	0.00	0.00	M
CM-244	6	9	5	0.002	5821.7	130.2	368	390	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5403.4	130.0	298	320	0.00	0.00	M
CM-247	282	1	0	0.564	4887.3	129.7	206	228	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5095.5	129.8	246	268	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JH3ML1AA
Detector: ALP171 5
Report Date: 15-Nov-06 01:29 PM
Acquire Date: 15 NOV 2006 05:08:01.47

Flags Key

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

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0	+	101	0	+	151	0	@	201	8	+	251	0	@	301	0		351	0		401	0		451	0		501
		2	0		52	0	+	102	0		152	0		202	6	@	252	0	@	302	0		352	0		402	0		452	0		502
0		3	0		53	2	+	103	0		153	0	-	203	8	@	253	0	@	303	0		353	0		403	0		453	0		503
0		4	0		54	0	+	104	0		154	0	-	204	6	@	254	0	@	304	0		354	0		404	0		454	0		504
0		5	0		55	0	+	105	0		155	2	-	205	14	@	255	0	@	305	0		355	0		405	0		455	0		505
1		6	0		56	0	+	106	1		156	0	-	206	4	@	256	0	@	306	0		356	0		406	0		456	0		506
0		7	0		57	0	+	107	0		157	4	@	207	5	@	257	0	@	307	0		357	1		407	0		457	0		507
0		8	0		58	0	+	108	0		158	0	@	208	3	@	258	0	@	308	0		358	0	@	408	0		458	0		508
0		9	0		59	0	+	109	0		159	3	@	209	0	@	259	0	@	309	0		359	0	@	409	1		459	0		509
0		10	0		60	0	+	110	0		160	2	@	210	0	@	260	0	@	310	0		360	0	@	410	0		460	0		510
0		11	0		61	0	+	111	0		161	2	@	211	1	@	261	0	@	311	0		361	0	@	411	2		461	0		511
0		12	0		62	0	+	112	0		162	6	@	212	0	@	262	0	@	312	0	+	362	0	@	412	0		462	1		512
0		13	0		63	0	+	113	0		163	3	@	213	1	@	263	0	@	313	1	+	363	0	@	413	0		463			
0		14	0		64	2	+	114	0		164	8	@	214	0	@	264	1	@	314	0	+	364	0	@	414	0		464			
0		15	0	+	65	0	+	115	0		165	12	@	215	1	@	265	1	@	315	1	+	365	0	@	415	0		465			
0		16	0	+	66	1	+	116	0		166	18	@	216	1	@	266	0	@	316	0	+	366	0	@	416	0		466			
0		17	0	+	67	0	+	117	0		167	25	@	217	0	@	267	0	@	317	0	+	367	0	@	417	1		467			
0		18	0	+	68	0	+	118	0		168	21	@	218	0	@	268	0	@	318	0	@	368	0	@	418	0		468			
0		19	0	+	69	0		119	0		169	15	@	219	0	@	269	0	@	319	0	@	369	1	@	419	1		469			
0		20	0	+	70	0		120	0		170	32	@	220	0	@	270	0	@	320	1	@	370	0	@	420	0		470			
0		21	0	+	71	0		121	0		171	32	@	221	0	@	271	0	@	321	0	@	371	0	-	421	0		471			
0		22	0	+	72	0		122	0		172	30	@	222	1	@	272	0	@	322	0	@	372	1	@	422	0		472			
0		23	0	+	73	0		123	0		173	23	@	223	0	@	273	0	@	323	0	@	373	1	@	423	0		473			
0		24	0	+	74	0		124	0		174	19	@	224	0	@	274	0	@	324	0	@	374	0	@	424	0		474			
0		25	1	+	75	0		125	0		175	18	@	225	0	@	275	0	@	325	0	@	375	0	@	425	0		475			
0		26	0	+	76	1		126	0		176	24	@	226	0	@	276	0	@	326	0	@	376	0	@	426	0		476			
0		27	0	+	77	0		127	0		177	19	@	227	0	@	277	0	@	327	0	@	377	1	@	427	2		477			
0		28	0	+	78	0		128	1		178	21		228	0	@	278	0	@	328	0	@	378	1	@	428	1		478			
0		29	0	+	79	0		129	0	+	179	16		229	0	-	279	0	@	329	0	@	379	0	@	429	2		479			
0		30	0	+	80	0		130	0	+	180	28		230	0	@	280	0	@	330	1	@	380	0	@	430	1		480			
0		31	1	+	81	0		131	0	+	181	19		231	0	@	281	0	@	331	0	@	381	0	-	431	0		481			
0		32	0	+	82	0		132	0	+	182	18		232	0	@	282	0	@	332	2	@	382	0	-	432	0		482			
0		33	0	+	83	1		133	0	+	183	25		233	0	@	283	0	@	333	1	@	383	0	-	433	0		483			
0		34	0	+	84	0		134	0	+	184	14		234	0	@	284	0	@	334	0	@	384	0	-	434	0		484			
0		35	0	+	85	0		135	0	+	185	13		235	0	@	285	0	@	335	0	-	385	0	-	435	1		485			
0		36	0	+	86	0		136	0	+	186	7		236	0	@	286	0	@	336	1	-	386	0	-	436	1		486			
0		37	0	+	87	0		137	0	+	187	9		237	0	@	287	0	+	337	0	-	387	0	-	437	0		487			
0		38	1		88	0		138	0	+	188	13		238	0	@	288	0	+	338	0	-	388	0	-	438	1		488			
0		39	0		89	1		139	0	+	189	8		239	0	@	289	0	+	339	2	-	389	0	-	439	0		489			
0		40	0		90	0		140	0	+	190	17		240	0	@	290	0		340	0	-	390	0	-	440	0		490			
0		41	0		91	0		141	0	+	191	7		241	0	@	291	0		341	2		391	0	-	441	0		491			
0		42	0		92	0		142	1	+	192	9		242	0	@	292	0		342	0		392	0	-	442	0		492			
0		43	0		93	0		143	0	+	193	6		243	1	@	293	0		343	1		393	0		443	0		493			
0		44	0		94	0		144	0	@	194	2		244	0	@	294	0		344	0		394	0		444	0		494			
0		45	0		95	1	+	145	0	@	195	8		245	0	@	295	0		345	0		395	0		445	0		495			
0		46	1	+	96	0	+	146	0	@	196	6	+	246	0	@	296	0		346	0		396	0		446	0		496			
0		47	0	+	97	0	+	147	0	@	197	6	+	247	0	@	297	0		347	0		397	0		447	0		497			
0		48	1	+	98	2	+	148	0	@	198	7	+	248	0	-	298	0		348	0		398	0		448	0		498			
0		49	2	+	99	0	+	149	0	@	199	7	+	249	0	@	299	0		349	0		399	1		449	0		499			
0		50	1	+	100	0	+	150	2	@	200	6	+	250	1	@	300	0		350	0		400	0		450	0		500			

VMS Peak Search Report V1.9 Generated 15-NOV-2006 13:28:57

Configuration : $DISK1:[ALP171.SAMPLE]JH3ML1AA_151160508E.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID : JH3ML1AA 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 : 3581.67 keV End energy : 6585.87 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4431.45	4	0	23.49	147.50	145	7	1.33E-04	50.0	
2	0	4862.15	282	0	58.72	220.58	206	22	9.41E-03	6.0	
3	0	6383.26	7	0	23.49	477.83	475	7	2.34E-04	37.8	

VMS Nuclide Identification Report V3.0 Generated 15-NOV-2006 13:28:59

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3ML1AA_151160508E.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID         : JH3ML1AA             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%
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 PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-235	7.08E+08Y	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 PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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

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

Configuration: $DISK1:[ALP171.SAMPLE]JH3ML1AA_151160508E.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4431.44	145	152	4	3	0.50		
4862.15	206	228	282	337	-3.28		
6383.25	475	482	7	6	0.38		

***** WARNING: Possible PEAK/ALPHA Error *****
Review Spectrum on Screen

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3MM1AA

Detector: ALP171 6
Report Date: 15-Nov-06 02:17 PM
Acquire Date: 15-NOV-2006 05:08:01.47
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	Rght Chnl
TH-228	6	3	0.009	5423.2	132.9	321	343
TH-229	549	4	1.095	4845.3	362.6	222	282
TH-230	11	2	0.020	4687.7	120.9	200	220
TH-232	2	0	0.004	4013.0	139.2	85	108

End of Alpha Region Report
(Produced by ANAL Report)

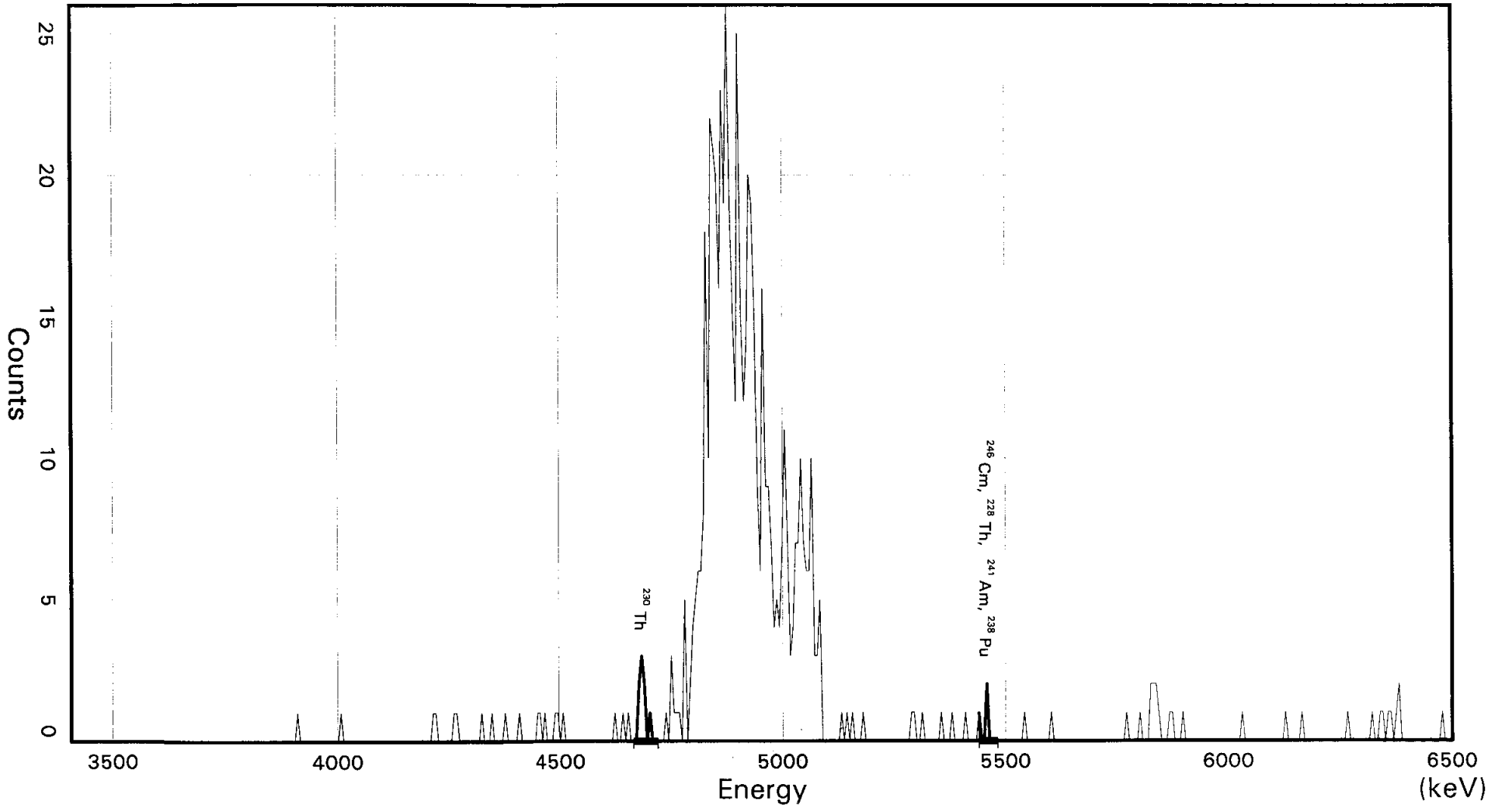
STL Richland WA.

TH BRC

Sample ID: JH3MM1AA

Detector ID: ALP171 6

Batch ID: 6311391



Acquisition Start: 15-NOV-2006 05:08:01.47

Preset Live Time: 0 08:20:00.00

Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:

Offset: 3.38986E+03

Slope: 6.05485E+00

Quadrature: -2.23075E-05

SAMPLE IDENTITY: JH3MM1AA

TITLE : TH BRC

DETECTOR : ALP171 6
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JH3MM1AA_151160508F.CN
F;1
ACQUIRE DATE of BACKGROUND: 09-NOV-2006 06:43:11

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 05:08:01 CALIB DATE : 08-NOV-2006 23:58:55

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

OFFSET : 3389.86 keV CONSTANT FWHM : 8.00000 Channels
SLOPE : 6.05485 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.223075E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JH3MM1AA
Detector: ALP171 6
Report Date: 15-Nov-06 01:29 PM
Acquire Date: 15-NOV 2006 05:08:01.47

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

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

0 50 0 100 0 150 0 200 25 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 15-NOV-2006 13:29:02

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3MM1AA_151160508F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID         : JH3MM1AA             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      :  3408.03 keV         End energy       :  6484.10 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4682.85	8	0	24.22	213.71	211	9	2.67E-04	35.4	
2	0	5454.99	4	0	24.22	341.50	339	7	1.33E-04	50.0	

VMS Nuclide Identification Report V3.0 Generated 15-NOV-2006 13:29:04

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3MM1AA_151160508F.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID         : JH3MM1AA             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%
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 PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-228	1.91Y	1.03	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	
CM-246	8500.00Y	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 PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PU-238	87.74Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
AM-241	432.20Y	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: 15-Nov-06  01:29 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: 7-Feb-98)

Sample Identity: JH3NN1AA

Detector: ALP171 7
Report Date: 15-Nov-06 02:19 PM
Acquire Date: 15-NOV-2006 05:08:01.47
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	Rght Chnl
TH-228	2	1	0.003	5423.2	118.3	309	330
TH-229	565	0	1.131	4845.3	332.4	206	265
TH-230	3	0	0.006	4687.7	129.6	180	203
TH-232	1	1	0.001	4013.0	112.7	60	80

End of Alpha Region Report
(Produced by ANAL Report)

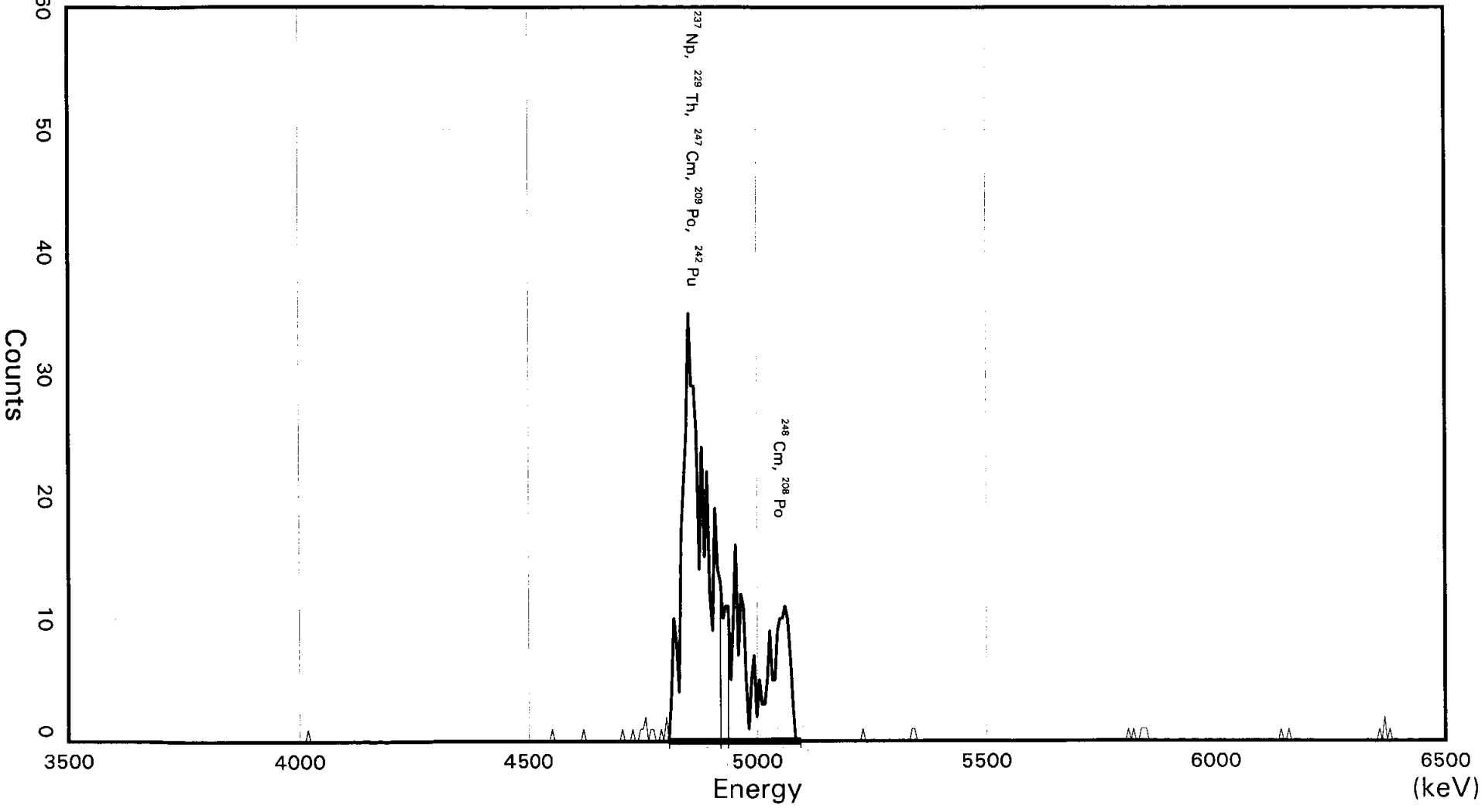
STL Richland WA.

TH BRC

Sample ID: JH3NN1AA

Detector ID: ALP171 7

Batch ID: 6311391



Acquisition Start: 15-NOV-2006 05:08:01.47

Preset Live Time: 0 08:20:00.00

Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:

Offset: 3.59008E+03

Slope: 5.63582E+00

Quadrature: -5.59400E-06

SAMPLE IDENTIITY: JH3NN1AA

TITLE : TH BRC

DETECTOR : ALP171 7
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JH3NN1AA_151160508G.CN
F;1
ACQUIRE DATE of BACKGROUND: 09-NOV-2006 06:43:11

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 05:08:01 CALIB DATE : 08-NOV-2006 23:59:12

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

OFFSET : 3590.08 keV CONSTANT FWHM : 6.50000 Channels
SLOPE : 5.63582 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.559400E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3NN1AA

Detector: ALP171 7
Report Date: 15-Nov-06 01:29 PM
Acquire Date: 15-NOV-2006 05:08:01.47
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	132	0	0	0.264	5133.6	174.6	236	267	0.00	0.00	P
PO-209	426	0	0	0.853	4901.9	129.6	216	239	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5323.1	135.2	297	321	0.00	0.00	M
AC-227	0	0	0	0.000	6056.7	129.5	428	451	0.00	0.00	S
TH-227	0	0	0	0.000	6056.7	129.5	428	451	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5441.9	129.5	319	342	0.00	0.00	M
TH-229	426	0	0	0.853	4864.0	129.6	216	239	0.00	0.00	P
TH-230	5	0	6	0.010	4706.4	129.6	188	211	0.00	0.00	S
TH-232	1	0	0	0.002	4031.7	129.6	68	91	0.00	0.00	
U-232	-9999	-9999	0	-10.010	5338.9	129.5	300	323	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4793.3	129.6	203	226	0.00	0.00	S I
U-235	0	0	0	0.000	4416.5	129.6	137	160	0.00	0.00	
PU-236	3	5	5	0.001	5786.3	129.5	380	403	0.00	0.00	S
NP-237	426	0	0	0.853	4806.7	129.6	216	239	0.00	0.00	P
PU-238	-9999	-9999	0	-10.010	5517.7	129.5	332	355	0.00	0.00	M
U-238	0	0	0	0.000	4216.7	129.6	101	124	0.00	0.00	
PU-239	-9999	-9999	0	-10.010	5175.3	129.6	271	294	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5504.3	129.5	330	353	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5225.5	129.5	280	303	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6131.4	129.5	441	464	0.00	0.00	M
PU-242	426	0	0	0.853	4919.2	129.6	216	239	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5294.0	129.5	292	315	0.00	0.00	M
CM-244	3	5	5	0.001	5823.5	129.5	386	409	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5405.2	129.5	312	335	0.00	0.00	M
CM-247	426	0	0	0.853	4889.1	129.6	216	239	0.00	0.00	P
CM-248	132	0	0	0.264	5097.3	174.6	236	267	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29 Jun-92)

Sample Identity: JH3NN1AA
Detector: ALP171 7
Report Date: 15-Nov-06 01:29 PM
Acquire Date: 15-NOV-2006 05:08:01.47

Flags Key

Intersect Region: *
Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0	+	101	0	+	151	0	+	201	5	@	251	0	@	301	0	@	351	1	@	401	0	@	451
		2	0		52	0	+	102	0	+	152	1	+	202	3	@	252	0	@	302	0	@	352	0	@	402	0	-	452
0		3	0		53	0	+	103	0	+	153	0	@	203	3	@	253	0	@	303	0	@	353	0	@	403	1		453
0		4	0		54	0	+	104	0	+	154	0	@	204	5	@	254	0	@	304	0	+	354	0	-	404	0		454
0		5	0		55	0	+	105	0	+	155	1	@	205	9	@	255	0	@	305	0	+	355	0		405	0		455
0		6	0		56	0	+	106	0	+	156	1	@	206	5	@	256	0	@	306	0		356	0	-	406	1	-	456
0		7	0		57	0	+	107	0	+	157	2	@	207	5	@	257	0	@	307	0		357	0	-	407	0		457
0		8	0		58	0	+	108	0	+	158	0	@	208	9	@	258	0	@	308	0		358	0	-	408	0	-	458
0		9	0		59	0	+	109	0	+	159	1	@	209	10	@	259	0	@	309	0		359	0	-	409	0	-	459
0		10	0		60	0	+	110	0	+	160	1	@	210	10	@	260	1	@	310	0		360	0		410	0	-	460
0		11	0		61	0	+	111	0		161	0	@	211	11	@	261	1	@	311	0		361	0		411	0	-	461
0		12	0		62	0	+	112	0		162	0	-	212	10	@	262	0	-	312	0		362	0		412	0	-	462
0		13	0		63	0	+	113	0		163	1	-	213	7	@	263	0	@	313	0		363	0		413	0	-	463
0		14	0		64	0	+	114	0		164	0	-	214	3	@	264	0	@	314	0		364	0		414	0	-	464
0		15	0		65	0	+	115	0		165	2	-	215	0	@	265	0	@	315	0		365	0		415	0		465
0		16	0		66	0	+	116	0		166	0	-	216	0	@	266	0	@	316	0		366	0		416	0		466
0		17	0		67	0	+	117	0		167	4	@	217	0		267	0	@	317	0		367	0		417	0		467
0		18	0	+	68	0	+	118	0		168	10	@	218	0		268	0	@	318	0		368	0		418	0		468
0		19	0	+	69	0	+	119	0		169	8	@	219	0		269	0	@	319	0		369	0		419	0		469
0		20	0	+	70	0	+	120	0		170	4	@	220	0		270	0	@	320	0		370	0		420	0		470
0		21	0	+	71	0	+	121	1		171	17	@	221	0	+	271	0	@	321	0		371	0		421	0		471
0		22	0	+	72	0	+	122	0		172	21	@	222	0	+	272	0	@	322	0		372	0		422	0		472
0		23	0	+	73	0	+	123	0		173	25	@	223	0	+	273	0	@	323	0		373	0		423	0		473
0		24	0	+	74	0	+	124	0		174	35	@	224	0	+	274	0	@	324	0		374	0		424	0		474
0		25	0	+	75	0		125	0		175	29	@	225	0	+	275	0	@	325	0		375	0		425	0		475
0		26	1	+	76	0		126	0		176	29	@	226	0	+	276	0	@	326	0		376	0		426	0		476
0		27	0	+	77	0		127	0		177	25	@	227	0	+	277	0	@	327	0		377	0		427	0		477
0		28	0	+	78	0		128	0		178	14	@	228	0	+	278	0	@	328	0		378	0	@	428	0		478
0		29	0	+	79	0		129	0		179	24	@	229	0	+	279	0	@	329	0		379	0	@	429	0		479
0		30	0	+	80	0		130	0		180	15	@	230	0	@	280	0	@	330	0	+	380	0	@	430	0		480
0		31	0	+	81	0		131	0		181	22	@	231	0	@	281	0	@	331	0	+	381	0	@	431	0		481
0		32	0	+	82	0		132	0		182	12	@	232	0	@	282	0	@	332	0	+	382	0	@	432	0		482
0		33	0	+	83	0		133	1		183	9	@	233	0	@	283	0	@	333	0	+	383	0	@	433	0		483
0		34	0	+	84	0		134	0		184	19	@	234	0	@	284	0	@	334	0	+	384	0	@	434	0		484
0		35	0	+	85	0		135	0		185	14	@	235	0	@	285	0	@	335	0	+	385	0	@	435	0		485
0		36	0	+	86	0		136	0		186	13	-	236	0	@	286	0	@	336	0	@	386	0	@	436	0		486
0		37	0	+	87	0	+	137	0		187	10	@	237	0	@	287	0	@	337	0	@	387	0	@	437	0		487
0		38	0	+	88	0	+	138	0	+	188	11	@	238	0	@	288	0	@	338	0	@	388	0	@	438	0		488
0		39	0	+	89	0	+	139	0	+	189	11	@	239	0	@	289	0	@	339	0	@	389	0	@	439	0		489
0		40	0	+	90	0	+	140	0	+	190	5	@	240	0	@	290	0	@	340	0	@	390	0	@	440	0		490
0		41	0	+	91	0	+	141	0	+	191	10	@	241	1	@	291	0	@	341	0	@	391	0	-	441	1		491
0		42	0		92	0	+	142	0	+	192	16	@	242	0	-	292	0	@	342	0	@	392	0	@	442	0		492
0		43	0		93	0	+	143	0	+	193	7	@	243	0	@	293	0	@	343	0	@	393	0	@	443	2		493
0		44	0		94	0	+	144	0	+	194	12	@	244	0	@	294	0	@	344	1	@	394	0	@	444	0		494
0		45	0		95	0	+	145	0	+	195	11	@	245	0	@	295	0	@	345	0	@	395	0	@	445	1		495
0		46	0		96	0	+	146	0	+	196	5	@	246	0	@	296	0	@	346	1	@	396	0	@	446	0		496
0		47	0		97	0	+	147	0	+	197	1	@	247	0	@	297	0	@	347	0	@	397	0	@	447	0		497
0		48	0		98	0	+	148	1	+	198	5	@	248	0	@	298	0	@	348	0	@	398	0	@	448	0		498
0		49	0		99	0	+	149	0	+	199	7	@	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	0		500

VMS Peak Search Report V1.9 Generated 15-NOV-2006 13:29:06

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3NN1AA_151160508G.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID         : JH3NN1AA             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      :  3606.98 keV         End energy       :  6474.15 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4863.99	426	0	56.36	226.09	216	23	1.42E-02	4.8	
2	0	5051.18	132	0	50.72	259.32	236	31	4.40E-03	8.7	

VMS Nuclide Identification Report V3.0 Generated 15-NOV-2006 13:29:08

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3NN1AA_151160508G.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID         : JH3NN1AA             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%
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 PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.02	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	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 PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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

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

Configuration: $DISK1:[ALP171.SAMPLE]JH3NN1AA_151160508G.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4863.98	216	239	426	381	2.18		
5051.18	236	267	132	221	-7.75	45	0.04

***** WARNING: Possible PEAK/ALPHA Error *****
Review Spectrum on Screen

End of Report

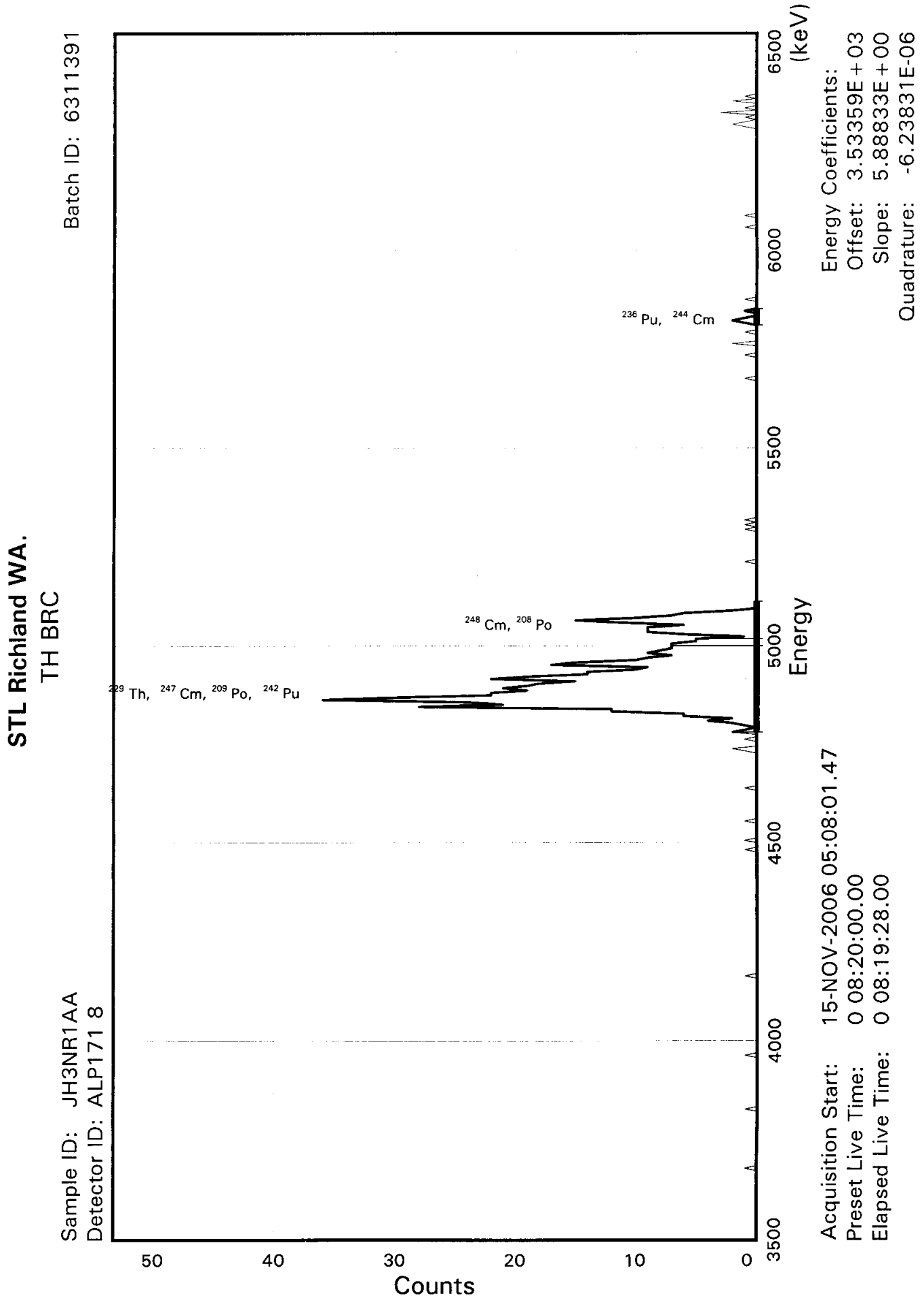
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3NR1AA

Detector: ALP171 8
Report Date: 15-Nov-06 02:19 PM
Acquire Date: 15-NOV-2006 05:08:01.47
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	Rght Chnl
TH-228	0	1	-0.001	5423.2	117.7	306	326
TH-229	609	1	1.218	4845.3	341.4	208	266
TH-230	1	1	0.001	4687.7	117.7	181	201
TH-232	1	0	0.002	4013.0	117.7	66	86

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6311391
Sample ID: JH3NR1AA
Detector ID: ALP171 8
229 Th, 247 Cm, 209 Po, 242 Pu
248 Cm, 208 Po
236 Pu, 244 Cm
Counts
50
40
30
20
10
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 15-NOV-2006 05:08:01.47
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.53359E+03
Slope: 5.88833E+00
Quadrature: -6.23831E-06

SAMPLE IDENTIITY: JH3NR1AA

TITLE : TH BRC

DETECTOR : ALP171 8
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JH3NR1AA_151160508H.CN
F;1
ACQUIRE DATE of BACKGROUND: 09-NOV-2006 06:43:11

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 05:08:01 CALIB DATE : 08-NOV-2006 23:59:31

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

OFFSET : 3533.59 keV CONSTANT FWHM : 7.66667 Channels
SLOPE : 5.88833 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.623831E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3NR1AA

Detector: ALP171 8
Report Date: 15-Nov-06 01:29 PM
Acquire Date: 15-NOV-2006 05:08:01.47
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	99	0	0	0.198	5151.3	111.8	249	268	0.00	0.00	P
PO-209	510	1	0	1.020	4919.6	235.4	212	252	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5340.8	235.4	290	330	0.00	0.00	M
AC-227	1	1	2	0.002	6074.4	235.3	415	455	0.00	0.00	S
TH-227	1	1	2	0.002	6074.4	235.3	415	455	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5459.6	235.4	310	350	0.00	0.00	M
TH-229	510	1	0	1.020	4881.7	235.4	212	252	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4724.1	235.4	185	225	0.00	0.00	M I
TH-232	2	0	1	0.003	4049.4	235.5	71	111	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5356.5	235.4	293	333	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4811.0	235.4	200	240	0.00	0.00	M I
U-235	3	1	0	0.005	4434.2	235.5	136	176	0.00	0.00	S
PU-236	4	8	0	0.000	5804.0	41.2	387	394	0.00	0.00	P
NP-237	-9999	-9999	0	-10.010	4824.4	235.4	202	242	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5535.4	235.4	323	363	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4234.4	235.5	102	142	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5193.0	235.4	265	305	0.00	0.00	M I
AM-241	-9999	-9999	0	-10.010	5522.0	235.4	321	361	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5243.2	235.4	273	313	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6149.1	235.3	427	467	0.00	0.00	M
PU-242	510	1	0	1.020	4936.9	235.4	212	252	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5311.7	235.4	285	325	0.00	0.00	M
CM-244	4	8	0	0.000	5841.2	41.2	387	394	0.00	0.00	P
CM-246	-9999	-9999	0	-10.010	5422.9	235.4	304	344	0.00	0.00	M
CM-247	510	1	0	1.020	4906.8	235.4	212	252	0.00	0.00	P
CM-248	99	0	0	0.198	5115.0	111.8	249	268	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29 Jun 92)

Sample Identity: JH3NR1AA
Detector: ALP171 8
Report Date: 15 Nov 06 01:29 PM
Acquire Date: 15 NOV 2006 05:08:01.47

Flags Key

Intersect Region: %
Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0	+	101	0	+	151	0	@	201	5	@	251	1	@	301	0	@	351	0		401	0	*	451	0		501
		2	0		52	0	@	102	0	+	152	0	-	202	5	@	252	0	@	302	0	@	352	0		402	0	*	452	0		502
0		3	0		53	0	@	103	0	+	153	0	@	203	1	@	253	1	@	303	0	@	353	0		403	0	*	453	0		503
0		4	0		54	0	@	104	0	+	154	1	@	204	6	@	254	0	-	304	0	@	354	0		404	0	*	454	0		504
0		5	0		55	0	@	105	0	+	155	2	@	205	9	@	255	0	@	305	0	@	355	0		405	0	*	455	0		505
0		6	0		56	0	@	106	0	+	156	0	@	206	9	@	256	0	@	306	0	@	356	0		406	0	-	456	0		506
0		7	0		57	1	@	107	0	+	157	0	@	207	9	@	257	0	@	307	0	@	357	0		407	0	-	457	0		507
0		8	0		58	0	@	108	0	+	158	0	@	208	6	@	258	0	@	308	0	@	358	0		408	0	-	458	0		508
0		9	0		59	0	@	109	0	+	159	1	@	209	11	@	259	0	@	309	0	@	359	0		409	0	-	459	0		509
0		10	0		60	0	@	110	0	+	160	0	@	210	15	@	260	0	@	310	0	@	360	0		410	0	-	460	0		510
0		11	0		61	0	@	111	1	+	161	0	@	211	10	@	261	0	@	311	0	@	361	0		411	0	-	461	0		511
0		12	0		62	0	-	112	0	+	162	2	@	212	7	@	262	0	@	312	0	+	362	0		412	0	-	462	0		512
0		13	0		63	0	-	113	0	+	163	1	@	213	6	@	263	0	@	313	0	+	363	0		413	0	-	463			
0		14	0		64	0	-	114	0	+	164	0	@	214	2	@	264	0	@	314	1		364	0		414	0	-	464			
0		15	0		65	0	-	115	1	+	165	1	@	215	0	@	265	0	@	315	0		365	0	@	415	0	-	465			
0		16	0		66	0	-	116	0	+	166	2	@	216	0	@	266	0	@	316	0		366	0	@	416	0	-	466			
0		17	0		67	0	-	117	0	+	167	4	@	217	0	@	267	0	@	317	0		367	0	@	417	0	-	467			
0		18	0		68	0	-	118	0	+	168	2	@	218	0	+	268	0	@	318	0		368	0	@	418	0		468			
0		19	0		69	0	-	119	0	+	169	6	@	219	0	+	269	0	@	319	0		369	0	@	419	0		469			
0		20	0		70	0	-	120	0	+	170	6	@	220	0	+	270	0	@	320	0		370	0	@	420	0		470			
0		21	0	+	71	0	-	121	0	+	171	12	@	221	0	+	271	0	@	321	0		371	0	@	421	0		471			
0		22	0	+	72	0	-	122	0	+	172	12	@	222	0	+	272	0	@	322	0		372	0	@	422	1		472			
0		23	1	+	73	0	-	123	0	+	173	28	@	223	0	@	273	0	@	323	0		373	0	@	423	2		473			
0		24	0	+	74	0	-	124	1	+	174	21	@	224	0	@	274	0	@	324	1		374	0	@	424	1		474			
1		25	0	+	75	0	-	125	0	+	175	24	@	225	0	@	275	0	@	325	0		375	0	@	425	0		475			
0		26	0	+	76	0	-	126	0	+	176	36	@	226	0	@	276	0	@	326	0		376	0	@	426	1		476			
0		27	0	+	77	0	-	127	0		177	30	@	227	0	@	277	0	@	327	0		377	0	-	427	0		477			
0		28	0	+	78	0	-	128	0		178	22	@	228	0	@	278	0	@	328	0		378	0	@	428	3		478			
0		29	0	+	79	0	-	129	0		179	22	@	229	0	@	279	0	@	329	2		379	1	@	429	0		479			
0		30	0	+	80	0	-	130	0		180	19	@	230	0	@	280	0	@	330	0		380	0	@	430	1		480			
0		31	0	+	81	0	-	131	0		181	21	@	231	0	@	281	0	@	331	0		381	0	@	431	0		481			
0		32	0	+	82	0	-	132	0		182	19	@	232	0	@	282	0	@	332	0		382	0	@	432	0		482			
0		33	0	+	83	0	-	133	0		183	18	@	233	0	@	283	0	@	333	0		383	0	@	433	2		483			
0		34	0	+	84	0	-	134	0		184	15	@	234	0	@	284	0	@	334	1		384	1	@	434	0		484			
0		35	0	+	85	0	-	135	0	+	185	22	@	235	1	-	285	0	@	335	0		385	0	@	435	1		485			
0		36	0	+	86	0	@	136	0	+	186	19	@	236	0	@	286	0	@	336	0		386	0	@	436	0		486			
0		37	0	+	87	0	@	137	0	+	187	14	@	237	0	@	287	0	@	337	0	@	387	0	@	437	0		487			
0		38	0	+	88	0	@	138	1	+	188	14	@	238	0	@	288	0	@	338	1	@	388	0	@	438	0		488			
0		39	0	+	89	0	@	139	0	+	189	10	@	239	0	@	289	0	@	339	2	@	389	0	@	439	0		489			
0		40	0	+	90	0	@	140	0	+	190	9	@	240	0	@	290	0	@	340	1	@	390	0	@	440	0		490			
0		41	0	+	91	0	@	141	0	+	191	17	@	241	0	@	291	0	@	341	0	@	391	0	@	441	0		491			
0		42	0	+	92	0	@	142	0	+	192	15	@	242	0	@	292	0	@	342	0	@	392	0	@	442	0		492			
0		43	0	+	93	0	+	143	0	+	193	10	@	243	0	@	293	0	@	343	1	@	393	0	@	443	0		493			
0		44	0	+	94	0	+	144	0	+	194	9	@	244	0	@	294	0	@	344	0		394	0	@	444	0		494			
0		45	0	+	95	0	+	145	0	+	195	7	@	245	0	@	295	0	@	345	0		395	0	@	445	0		495			
0		46	0	+	96	0	+	146	0	+	196	9	@	246	0	@	296	0	@	346	0		396	0	@	446	0		496			
0		47	0	+	97	0	+	147	0	+	197	8	@	247	0	@	297	0	@	347	0		397	0	@	447	0		497			
0		48	0	+	98	0	+	148	0	+	198	7	@	248	0	@	298	0	@	348	1		398	0	@	448	0		498			
0		49	0	+	99	0	+	149	0	+	199	7	-	249	1	@	299	0	@	349	0		399	0	@	449	0		499			
1		50	0	+	100	0	+	150	0	@	200	7	@	250	0	@	300	0	@	350	0		400	0	@	450	0		500			

VMS Peak Search Report V1.9 Generated 15-NOV-2006 13:29:11

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3NR1AA_151160508H.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID         : JH3NR1AA             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      :  3551.26 keV         End energy       :  6546.78 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4881.67	510	0	94.21	229.00	212	40	1.70E-02	4.4	
2	0	5054.11	99	0	52.99	258.30	249	19	3.30E-03	10.1	
3	0	5826.15	4	0	23.55	389.50	387	7	1.33E-04	50.0	

VMS Nuclide Identification Report V3.0 Generated 15-NOV-2006 13:29:13

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3NR1AA_151160508H.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:01
Sample ID         : JH3NR1AA             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%
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                     0
 Number of lines tentatively identified by NID    3      100.00%
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.02	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	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 PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-236	2.86Y	1.02	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-244	18.10Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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
```

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

Configuration: $DISK1:[ALP171.SAMPLE]JH3NR1AA_151160508H.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4881.67	212	252	510	517	-0.31		
5054.10	249	268	99	115	-1.61	24	0.04
5826.14	387	394	4	5	-0.50		

End of Report

SEVERN TRENT **STL**

THORIUM ISOTOPIC COUNTING REQUEST

BDR

C.R. Technician: CP
Date Counted: 11/15/06
C.R. Analyst: AD
Date Analyzed: 11/15/06

Counting Time
Sample: 500 Minutes

Background: See Alpha Analysis Report

SOP's
Operating: RICHRD008
Review: RICHRD0016

BRC 11/16 631139

WorkOrder #	Th-229 (4845 KeV) Tracer from Th-234 Beta Count (7)				TOTAL COUNTS			Det #	Comment
					Th-228 (5423 KeV)	Th-230 (4688 KeV)	Th-232 (4010 KeV)		
	ID	Activity	ROI Cts	BKG	(6)	(8)	(9)		
JH3NJ1AA		10		0	See Alpha Analysis Report for ROI Information			117	
JH3NJ1AA		10		0	See Alpha Analysis Report for ROI Information			119	
JH3NW1AA		10		0	See Alpha Analysis Report for ROI Information			120	
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				

Comments:

Form No: RC-012, 10/02, Rev 9

Approved by: AD

Date: 11/15/06

STL RICHLAND

170

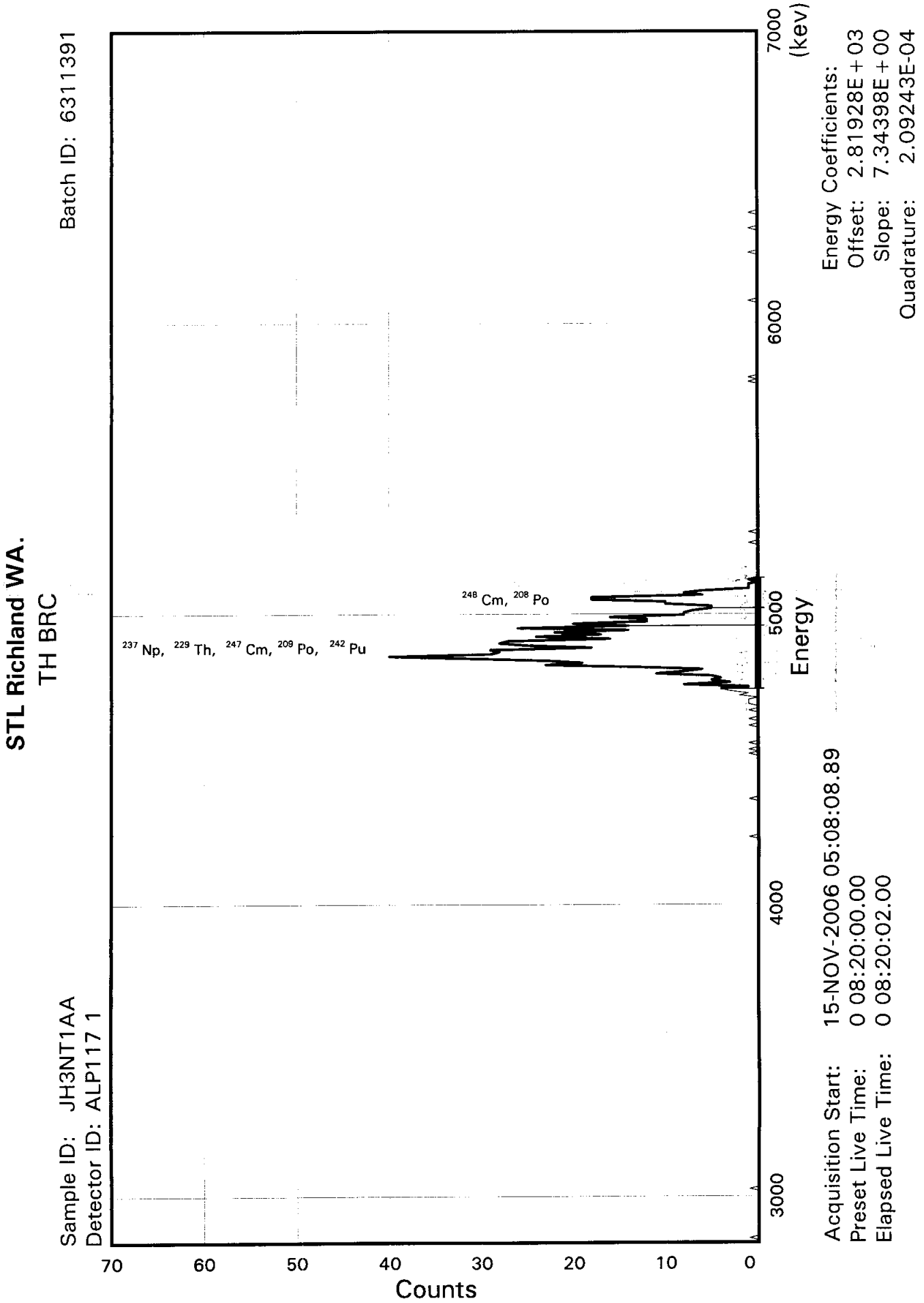
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3NT1AA

Detector: ALP117 1
Report Date: 15-Nov-06 02:22 PM
Acquire Date: 15-NOV-2006 05:08:08.89
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 2500 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	0	0	0.000	5423.2	149.8	336	356
TH-229	697	4	1.392	4845.3	388.1	259	311
TH-230	9	0	0.018	4687.7	149.0	238	258
TH-232	0	0	0.000	4013.0	148.2	147	167

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6311391
Sample ID: JH3NT1AA
Detector ID: ALP117 1
^{237}Np, ^{229}Th, ^{247}Cm, ^{209}Po, ^{242}Pu
^{248}Cm, ^{208}Po
Counts
70
60
50
40
30
20
10
0
Energy
3000
4000
5000
6000
7000
(kev)
Acquisition Start: 15-NOV-2006 05:08:08.89
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:02.00
Energy Coefficients:
Offset: 2.81928E+03
Slope: 7.34398E+00
Quadrature: 2.09243E-04

SAMPLE IDENTIITY: JH3NT1AA

TITLE : TH BRC

DETECTOR : ALP117 1
CONFIGURATION NAME : RDND06$DKA100:[ALP117.SAMPLE]JH3NT1AA_151160
508.CNF;1
ACQUIRE DATE of BACKGROUND: 12-NOV-2006 07:03:42

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 05:08:08 CALIB DATE : 12-NOV-2006 02:41:33

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:02

OFFSET : 2819.28 keV CONSTANT FWHM : 7.33333 Channels
SLOPE : 7.34398 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 2.092430E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3NT1AA

Detector: ALP117 1
Report Date: 15-Nov-06 01:28 PM
Acquire Date: 15-NOV-2006 05:08:08.89
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 2500 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	107	1	0	0.214	5154.2	164.3	289	311	0.00	0.00	P
PO-209	586	3	0	1.171	4922.5	276.0	260	297	0.00	0.00	P
PO-210	-9999	-9999	0	-15.997	5343.7	277.0	321	358	0.00	0.00	M
AC-227	-9999	-9999	0	-15.997	6077.3	278.5	419	456	0.00	0.00	M
TH-227	-9999	-9999	0	-15.997	6077.3	278.5	419	456	0.00	0.00	M
TH-228	-9999	-9999	0	-15.997	5462.5	277.2	337	374	0.00	0.00	M
TH-229	586	3	0	1.171	4884.6	276.0	260	297	0.00	0.00	P
TH-230	-9999	-9999	0	-15.997	4727.0	275.7	239	276	0.00	0.00	S I
TH-232	0	0	0	0.000	4052.3	274.3	148	185	0.00	0.00	S
U-232	-9999	-9999	0	-15.997	5359.5	269.5	324	360	0.00	0.00	M
U-234	-9999	-9999	0	-15.997	4813.9	275.9	251	288	0.00	0.00	S I
U-235	4	0	1	0.007	4437.1	275.1	200	237	0.00	0.00	S
PU-236	-9999	-9999	0	-15.997	5807.0	277.9	383	420	0.00	0.00	M
NP-237	586	3	0	1.171	4827.3	276.0	260	297	0.00	0.00	P
PU-238	-9999	-9999	0	-15.997	5538.3	269.9	348	384	0.00	0.00	M
U-238	-9999	-9999	0	-15.997	4237.3	274.7	173	210	0.00	0.00	M
PU-239	-9999	-9999	0	-15.997	5195.9	276.7	302	339	0.00	0.00	M I
AM-241	-9999	-9999	0	-15.997	5524.9	277.4	346	383	0.00	0.00	M
AM-242M	-9999	-9999	0	-15.997	5246.1	276.8	308	345	0.00	0.00	M I
CM-242	-9999	-9999	0	-15.997	6152.0	278.7	429	466	0.00	0.00	M
PU-242	586	3	0	1.171	4939.8	276.0	260	297	0.00	0.00	P
AM-243	-9999	-9999	0	-15.997	5314.6	269.4	318	354	0.00	0.00	M
CM-244	-9999	-9999	0	-15.997	5844.1	278.0	388	425	0.00	0.00	M
CM-246	-9999	-9999	0	-15.997	5425.8	277.2	332	369	0.00	0.00	M
CM-247	586	3	0	1.171	4909.7	276.0	260	297	0.00	0.00	P
CM-248	107	1	0	0.214	5117.9	164.3	289	311	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29 Jun-92)

Sample Identity: JH3NT1AA
Detector: ALP117 1
Report Date: 15 Nov-06 01:28 PM
Acquire Date: 15-NOV 2006 05:08:08.89

Flags Key

Intersect Region: @
Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0		101	0	+	151	0	@	201	0	@	251	18	@	301	0	@	351	1	@	401	0	@	451
		2	0		52	0		102	0	+	152	0	@	202	0	@	252	18	@	302	0	@	352	0	@	402	0	@	452
0		3	0		53	0		103	0	+	153	0	@	203	1	@	253	6	@	303	0	@	353	1	@	403	0	@	453
0		4	0		54	0		104	0	+	154	0	@	204	1	@	254	8	@	304	0	@	354	0	@	404	0	@	454
1		5	0		55	0		105	0	+	155	0	@	205	1	@	255	6	@	305	0	@	355	0	@	405	0	@	455
0		6	0		56	0		106	0	+	156	0	@	206	0	@	256	1	@	306	0	@	356	0	@	406	0	@	456
0		7	0		57	0		107	0	+	157	0	@	207	2	@	257	1	@	307	0	@	357	0	@	407	0	-	457
0		8	0		58	0		108	0	+	158	0	@	208	1	@	258	1	@	308	0	@	358	0	@	408	0	-	458
0		9	0		59	0		109	0	+	159	1	@	209	3	@	259	0	@	309	0	@	359	0	@	409	0	-	459
0		10	0		60	0		110	0	+	160	0	@	210	4	-	260	1	@	310	0	@	360	0	@	410	1	-	460
0		11	0		61	0		111	0	+	161	0	+	211	1	@	261	0	@	311	0	@	361	0	@	411	0	-	461
0		12	0		62	0		112	0	+	162	0	+	212	8	@	262	0	@	312	0	@	362	0	@	412	0	-	462
0		13	0		63	0		113	0	+	163	0	+	213	3	@	263	0	@	313	0	@	363	0	@	413	0	-	463
0		14	0		64	0		114	0	+	164	0	+	214	5	@	264	0	@	314	0	@	364	0	@	414	0	-	464
0		15	0		65	0		115	0	+	165	0	+	215	4	@	265	0	@	315	0	@	365	0	@	415	0	-	465
0		16	0		66	0		116	0	+	166	0	+	216	5	@	266	0	@	316	0	@	366	0	@	416	0	-	466
0		17	0		67	0		117	0	+	167	0	+	217	11	@	267	0	@	317	0	@	367	0	@	417	0		467
0		18	0		68	0		118	0	+	168	0	+	218	8	@	268	0	-	318	0	@	368	0	@	418	0		468
0		19	0		69	0		119	0	+	169	0	+	219	6	@	269	0	@	319	0	@	369	0	@	419	0		469
0		20	0		70	0		120	0	+	170	0	+	220	13	@	270	0	@	320	0	@	370	0	@	420	0		470
0		21	0		71	0		121	0	+	171	0	+	221	23	@	271	0	@	321	0	@	371	0	@	421	1		471
0		22	0		72	0		122	0	+	172	0	+	222	19	@	272	0	@	322	0	@	372	0	@	422	0		472
0		23	0		73	0		123	0	@	173	0	+	223	23	@	273	0	@	323	0	@	373	0	@	423	0		473
0		24	0		74	0		124	0	@	174	0	+	224	31	@	274	0	@	324	0	@	374	0	@	424	0		474
0		25	0		75	0		125	0	@	175	0	+	225	40	@	275	0	@	325	0	@	375	0	@	425	0		475
0		26	0		76	0		126	0	@	176	0	+	226	29	@	276	0	@	326	0	@	376	0	@	426	0		476
0		27	0		77	0		127	0	@	177	0	+	227	28	@	277	1	@	327	0	@	377	0	@	427	0		477
1		28	0		78	0		128	0	@	178	0	+	228	29	@	278	0	@	328	0	@	378	0	@	428	1		478
0		29	0		79	0		129	0	@	179	0	+	229	18	@	279	0	@	329	0	@	379	0	-	429	0		479
0		30	0		80	0		130	0	@	180	1	+	230	25	@	280	0	@	330	0	@	380	0	@	430	0		480
0		31	0		81	0		131	0	@	181	0	+	231	28	@	281	0	@	331	0	@	381	0	@	431	0		481
0		32	0		82	0		132	0	@	182	1	+	232	27	@	282	1	-	332	0	@	382	0	@	432	0		482
0		33	0		83	0		133	0	@	183	0	+	233	16	@	283	0	@	333	0	@	383	0	@	433	0		483
0		34	0		84	0		134	0	@	184	0	+	234	24	@	284	0	@	334	0	@	384	0	@	434	0		484
0		35	0		85	0		135	0	@	185	1	+	235	17	@	285	0	@	335	0	+	385	0	@	435	0		485
0		36	0		86	0		136	0	-	186	0	+	236	22	@	286	0	@	336	0	+	386	0	@	436	0		486
0		37	0		87	0		137	0	-	187	0	+	237	14	@	287	0	@	337	0	+	387	0	@	437	0		487
0		38	0		88	0		138	0	-	188	0		238	26	@	288	0	@	338	0	@	388	1	@	438	0		488
0		39	0		89	0		139	0	-	189	0	+	239	14	-	289	0	@	339	0	@	389	0	@	439	0		489
0		40	0		90	0		140	0	-	190	0	+	240	20	@	290	0	@	340	0	@	390	0	@	440	0		490
0		41	0		91	0		141	1	-	191	0	+	241	12	@	291	0	@	341	0	@	391	0	@	441	0		491
0		42	0		92	0		142	0	-	192	0	+	242	12	@	292	0	@	342	0	@	392	0	@	442	0		492
0		43	0		93	0		143	0	-	193	1	+	243	16	@	293	0	@	343	0	@	393	0	@	443	0		493
0		44	0		94	0		144	0	-	194	0	+	244	8	@	294	0	@	344	0	@	394	0	@	444	0		494
0		45	0		95	0		145	0	-	195	0	+	245	8	@	295	0	@	345	0	@	395	0	@	445	0		495
0		46	0		96	0		146	0	-	196	1	+	246	7	@	296	0	@	346	0	@	396	0	@	446	0		496
0		47	0		97	0		147	0	-	197	0	+	247	5	@	297	0	@	347	0	@	397	0	@	447	0		497
0		48	0		98	0	+	148	0	-	198	0	+	248	5	@	298	0	@	348	0	@	398	0	@	448	0		498
0		49	0		99	0	+	149	0	-	199	0	+	249	10	@	299	0	@	349	0	@	399	0	@	449	0		499
0		50	0		100	0	+	150	0	@	200	1	+	250	10	@	300	0	@	350	0	@	400	0	@	450	0		500

VMS Peak Search Report V1.9 Generated 15-NOV-2006 13:28:14

```
Configuration     : RDND06$DKA100:[ALP117.SAMPLE]JH3NT1AA_151160508.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:08
Sample ID         : JH3NT1AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP117               Detector geometry:
Elapsed live time: 0 08:20:02.00         Elapsed real time: 0 08:20:02.00   0.0%
Start energy      :  2841.31 kev         End energy       :  6634.24 kev
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4884.62	586	0	132.19	279.01	260	37	1.95E-02	4.1	
2	0	5049.47	107	0	36.72	301.09	289	22	3.57E-03	9.7	

VMS Nuclide Identification Report V3.1 Generated 15-NOV-2006 13:28:15

```
Configuration     : RDND06$DKA100:[ALP117.SAMPLE]JH3NT1AA_151160508.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:08
Sample ID         : JH3NT1AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP117               Detector geometry:
Elapsed live time: 0 08:20:02.00         Elapsed real time: 0 08:20:02.00   0.0%
Energy tolerance :   100.00 kev          Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :     0.00
```

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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.02	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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
```

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

Configuration: RDND06$DKA100:[ALP117.SAMPLE]JH3NT1AA_151160508.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4884.61	260	297	586	609	-0.95		
5049.47	289	311	107	187	-7.73	102	-0.04

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3NV1AA

Detector: ALP119 1
Report Date: 15-Nov-06 02:24 PM
Acquire Date: 15-NOV-2006 05:08:16.05
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	2	1	0.003	5423.2	179.6	329	353
TH-229	437	0	0.874	4845.3	357.7	253	301
TH-230	14	0	0.028	4687.7	148.7	232	252
TH-232	0	0	0.000	4013.0	147.8	141	161

End of Alpha Region Report
(Produced by ANAL Report)

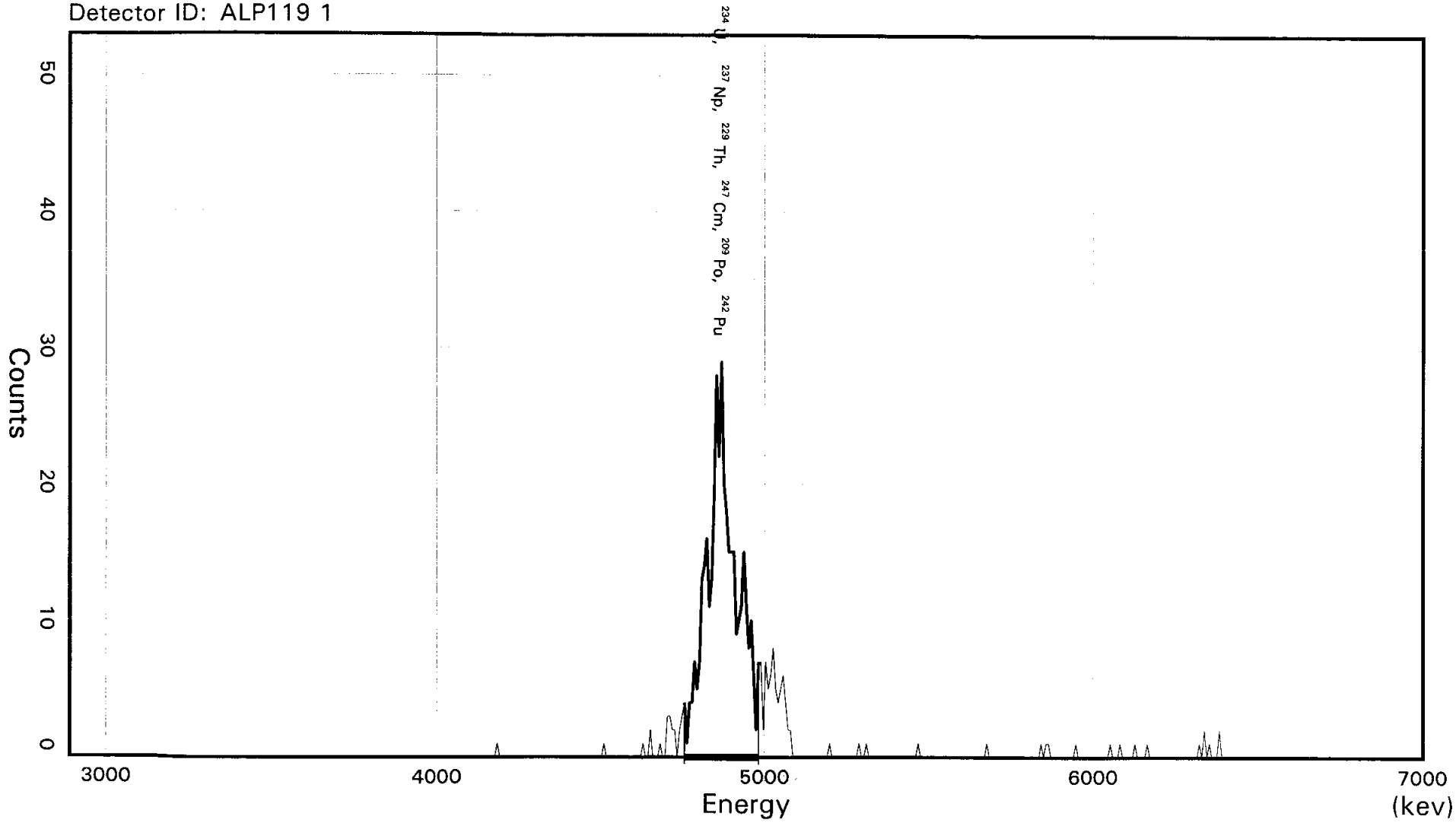
STL Richland WA.

TH BRC

Sample ID: JH3NV1AA

Detector ID: ALP119 1

Batch ID: 6311391



Acquisition Start: 15-NOV-2006 05:08:16.05

Preset Live Time: 0 08:20:00.00

Elapsed Live Time: 0 08:20:03.00

Energy Coefficients:

Offset: 2.86872E+03

Slope: 7.31589E+00

Quadrature: 2.45931E-04

SAMPLE IDENTIITY: JH3NV1AA

TITLE : TH BRC

DETECTOR : ALP119 1
CONFIGURATION NAME : RDND06$DKA100:[ALP119.SAMPLE]JH3NV1AA_151160
508.CNF;1
ACQUIRE DATE of BACKGROUND: 11-NOV-2006 10:02:28

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 05:08:16 CALIB DATE : 11-NOV-2006 01:39:18

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

OFFSET : 2868.72 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 7.31589 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 2.459310E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3NV1AA

Detector: ALP119 1
Report Date: 15-Nov-06 01:28 PM
Acquire Date: 15-NOV-2006 05:08:16.05
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-9.999	5132.5	224.0	292	322	0.00	0.00	M
PO-209	370	0	0	0.740	4900.8	223.5	256	286	0.00	0.00	P
PO-210	-9999	-9999	0	-9.999	5322.0	216.9	318	347	0.00	0.00	M
AC-227	3	1	4	0.005	6055.6	225.8	415	445	0.00	0.00	S
TH-227	3	1	4	0.005	6055.6	225.8	415	445	0.00	0.00	S
TH-228	-9999	-9999	0	-9.999	5440.8	224.6	333	363	0.00	0.00	M
TH-229	370	0	0	0.740	4862.9	223.5	256	286	0.00	0.00	P
TH-230	-9999	-9999	0	-9.999	4705.3	223.2	235	265	0.00	0.00	I
TH-232	0	0	0	0.000	4030.6	221.8	144	174	0.00	0.00	S
U-232	-9999	-9999	0	-9.999	5337.8	224.4	320	350	0.00	0.00	M
U-234	370	0	0	0.740	4792.2	223.5	256	286	0.00	0.00	P
U-235	1	0	0	0.002	4415.4	222.6	196	226	0.00	0.00	S
PU-236	3	2	3	0.003	5785.3	225.3	379	409	0.00	0.00	S
NP-237	370	0	0	0.740	4805.6	223.5	256	286	0.00	0.00	P
PU-238	-9999	-9999	0	-9.999	5516.7	217.3	344	373	0.00	0.00	M
U-238	-9999	-9999	0	-9.999	4215.6	222.2	169	199	0.00	0.00	M
PU-239	-9999	-9999	0	-9.999	5174.2	224.1	298	328	0.00	0.00	M
AM-241	-9999	-9999	0	-9.999	5503.2	224.7	342	372	0.00	0.00	M
AM-242M	-9999	-9999	0	-9.999	5224.4	224.2	304	334	0.00	0.00	M
CM-242	-9999	-9999	0	-9.999	6130.4	226.0	425	455	0.00	0.00	M
PU-242	370	0	0	0.740	4918.1	223.5	256	286	0.00	0.00	P
AM-243	-9999	-9999	0	-9.999	5292.9	224.3	314	344	0.00	0.00	M
CM-244	2	2	3	0.002	5822.5	225.4	384	414	0.00	0.00	S
CM-246	-9999	-9999	0	-9.999	5404.1	217.1	329	358	0.00	0.00	M
CM-247	370	0	0	0.740	4888.0	223.5	256	286	0.00	0.00	P
CM-248	-9999	-9999	0	-9.999	5096.2	223.9	287	317	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JH3NV1AA
Detector: ALP119 1
Report Date: 15-Nov-06 01:28 PM
Acquire Date: 15-NOV 2006 05:08:16.05

Flags Key

Intersect Region: @
Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0		101	0	+	151	0	+	201	2	+	251	0	@	301	1	@	351	1	@	401	0	-	451
		2	0		52	0		102	0	+	152	0	+	202	2	+	252	0	@	302	0	@	352	0	@	402	0	-	452
0		3	0		53	0		103	0	+	153	0	+	203	0	+	253	0	@	303	0	@	353	1	@	403	0	-	453
0		4	0		54	0		104	0	+	154	0	+	204	2	+	254	0	@	304	0	@	354	1	@	404	0	-	454
0		5	0		55	0		105	0	+	155	0	+	205	3	+	255	0	@	305	0	@	355	0	@	405	0	-	455
0		6	0		56	0		106	0	+	156	0	+	206	4	@	256	0	@	306	0	@	356	0	@	406	0		456
0		7	0		57	0		107	0	+	157	0	+	207	1	@	257	0	@	307	0	@	357	0	@	407	0		457
0		8	0		58	0		108	0	+	158	0	+	208	4	@	258	0	@	308	0	@	358	0	@	408	0		458
0		9	0		59	0		109	0	+	159	0	+	209	4	@	259	0	@	309	0	@	359	0	@	409	0		459
0		10	0		60	0		110	0	+	160	0	+	210	7	@	260	0	@	310	0	@	360	0	-	410	0		460
0		11	0		61	0		111	0	+	161	0	+	211	5	@	261	0	@	311	0	@	361	0	-	411	0		461
0		12	0		62	0		112	0	+	162	0	+	212	7	@	262	0	@	312	0	@	362	0	-	412	0		462
0		13	0		63	0		113	0	+	163	0	+	213	13	@	263	0	@	313	0	@	363	0	-	413	0		463
0		14	0		64	0		114	0	+	164	0	+	214	14	@	264	0	@	314	0	@	364	0	-	414	0		464
0		15	0		65	0		115	0	+	165	0	+	215	16	@	265	1	@	315	0	@	365	1	@	415	1		465
0		16	0		66	0		116	0	+	166	0	+	216	11	@	266	0	@	316	0	@	366	0	@	416	0		466
0		17	0		67	0		117	0	+	167	0	+	217	13	@	267	0	@	317	0	@	367	0	@	417	2		467
0		18	0		68	0		118	0	+	168	0	+	218	19	@	268	0	@	318	0	@	368	0	@	418	0		468
0		19	0		69	0		119	0	@	169	0	+	219	28	@	269	0	@	319	0	@	369	0	@	419	1		469
0		20	0		70	0		120	0	@	170	0	+	220	22	@	270	0	@	320	0	@	370	0	@	420	0		470
0		21	0		71	0		121	0	@	171	0	+	221	29	@	271	0	@	321	0	@	371	0	@	421	0		471
0		22	0		72	0		122	0	@	172	0	+	222	20	@	272	0	@	322	0	@	372	0	@	422	0		472
0		23	0		73	0		123	0	@	173	1	+	223	18	@	273	0	@	323	0	+	373	0	@	423	2		473
0		24	0		74	0		124	0	@	174	0	+	224	15	@	274	0	@	324	0		374	0	@	424	0		474
0		25	0		75	0		125	0	-	175	0	+	225	15	@	275	0	@	325	0		375	0	-	425	0		475
0		26	0		76	0		126	0	-	176	0	+	226	15	@	276	0	@	326	0		376	0	@	426	0		476
0		27	0		77	0		127	0	-	177	0		227	9	@	277	1	@	327	0		377	0	@	427	0		477
0		28	0		78	0		128	0	-	178	0		228	10	@	278	0	@	328	0		378	0	@	428	0		478
0		29	0		79	0		129	1	-	179	0		229	11	@	279	0	-	329	1	+	379	1	@	429	0		479
0		30	0		80	0		130	0	-	180	0		230	15	@	280	1	@	330	0	+	380	0	@	430	0		480
0		31	0		81	0		131	0	-	181	0		231	11	@	281	0	@	331	0	+	381	0	@	431	0		481
0		32	0		82	0		132	0	-	182	0		232	8	@	282	0	@	332	0	+	382	0	@	432	0		482
0		33	0		83	0		133	0	-	183	0		233	10	@	283	0	@	333	0	+	383	1	@	433	0		483
0		34	0		84	0		134	0	-	184	0		234	6	@	284	0	@	334	0	@	384	0	@	434	0		484
0		35	0		85	0		135	0	-	185	0	+	235	2	@	285	0	@	335	0	@	385	0	@	435	0		485
0		36	0		86	0		136	0	-	186	0	+	236	7		286	0	@	336	0	@	386	0	@	436	0		486
0		37	0		87	0		137	0	-	187	0	+	237	7	+	287	0	@	337	0	@	387	0	@	437	0		487
0		38	0		88	0		138	0	-	188	0	+	238	2	+	288	0	@	338	0	@	388	0	@	438	0		488
0		39	0		89	0		139	0	-	189	1	+	239	7	+	289	0	@	339	0	@	389	1	@	439	0		489
0		40	0		90	0		140	0	-	190	0	+	240	5	+	290	0	@	340	0	@	390	0	@	440	0		490
0		41	0		91	0		141	0	-	191	0	+	241	6	+	291	0	@	341	0	@	391	0	@	441	0		491
0		42	0		92	0		142	0	-	192	2	+	242	8	@	292	0	@	342	0	@	392	0	@	442	0		492
0		43	0		93	0		143	0	-	193	0	+	243	5	@	293	0	@	343	0	@	393	0	@	443	0		493
0		44	0		94	0	+	144	0	-	194	0	+	244	4	@	294	0	@	344	0	@	394	1	@	444	0		494
0		45	0		95	0	+	145	0	-	195	0	+	245	5	@	295	0	@	345	0	@	395	0	@	445	0		495
0		46	0		96	0	+	146	0	@	196	1	+	246	6	@	296	0	@	346	0	@	396	0	-	446	0		496
0		47	0		97	0	+	147	0	@	197	0	+	247	4	@	297	0	@	347	0	@	397	0	-	447	0		497
0		48	0		98	0	+	148	0	@	198	0	+	248	2	@	298	0	@	348	0	@	398	0	-	448	0		498
0		49	0		99	0	+	149	0	@	199	3	+	249	2	@	299	0	@	349	0	@	399	0	-	449	0		499
0		50	0		100	0	+	150	0	+	200	3	+	250	0	@	300	0	@	350	0	@	400	0	-	450	0		500

VMS Peak Search Report V1.9 Generated 15-NOV-2006 13:28:21

Configuration : RDND06$DKA100:[ALP119.SAMPLE]JH3NV1AA_151160508.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:16
Sample ID : JH3NV1AA Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP119 Detector geometry:
Elapsed live time: 0 08:20:03.00 Elapsed real time: 0 08:20:03.00 0.0%
Start energy : 2890.67 kev End energy : 6678.93 kev
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4862.94	370	0	80.47	270.13	256	30	1.23E-02	5.2	

VMS Nuclide Identification Report V3.1 Generated 15-NOV-2006 13:28:23

```
Configuration     : RDND06$DKA100:[ALP119.SAMPLE]JH3NV1AA_151160508.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:16
Sample ID         : JH3NV1AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP119               Detector geometry:
Elapsed live time: 0 08:20:03.00         Elapsed real time: 0 08:20:03.00   0.0%
Energy tolerance :   100.00 kev          Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :     0.00
```

Summary of Nuclide Activity

```
 Total number of lines in spectrum                  1
 Number of unidentified lines                       0
 Number of lines tentatively identified by NID      1      100.00%
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-234	2.45E+05Y	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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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
```

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

Configuration: RDND06$DKA100:[ALP119.SAMPLE]JH3NV1AA_151160508.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4862.93	256	286	370	369	0.05		

End of Report

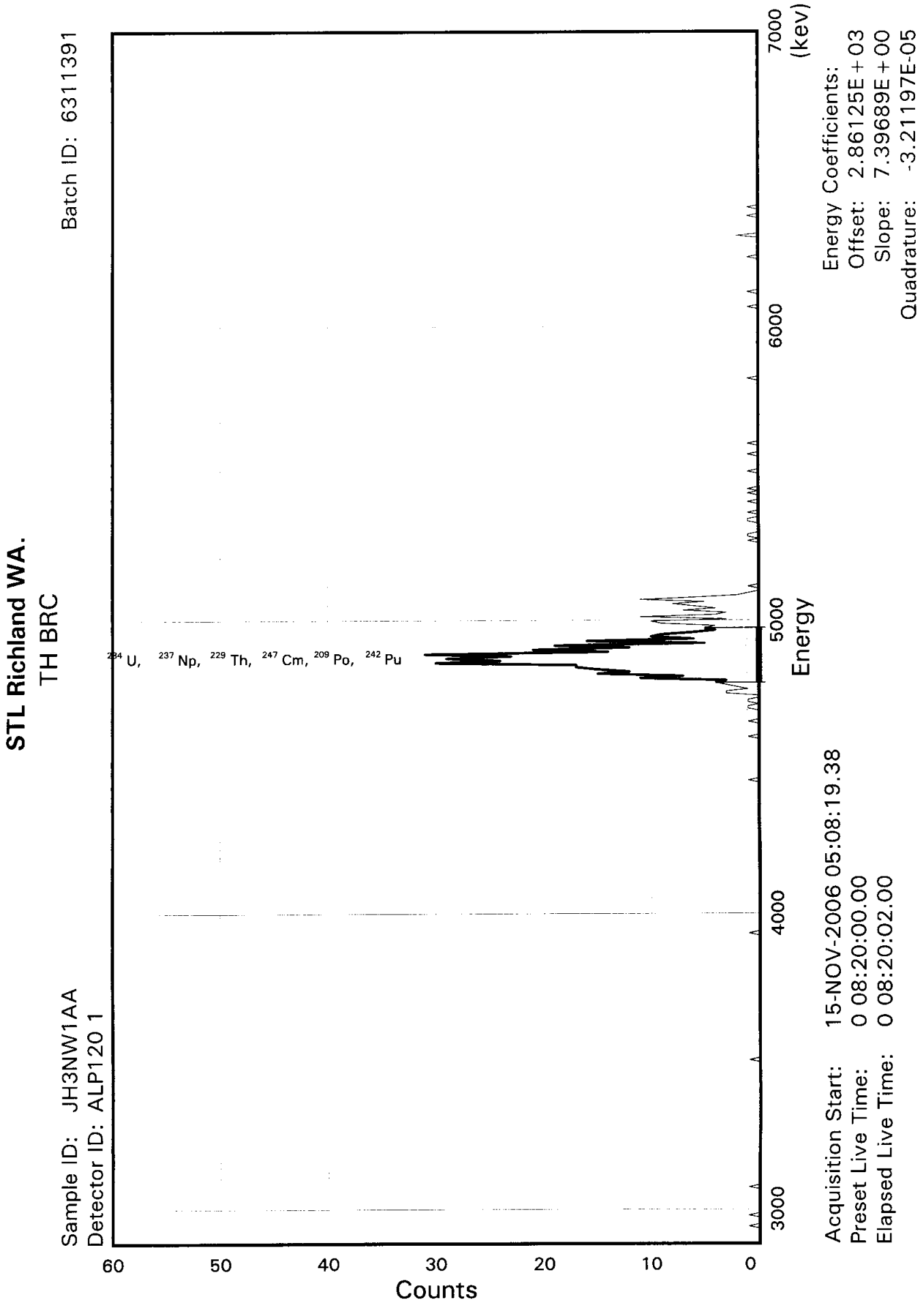
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3NW1AA

Detector: ALP120 1
Report Date: 15-Nov-06 02:24 PM
Acquire Date: 15-NOV-2006 05:08:19.38
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	6	6	0.006	5423.2	147.5	332	352
TH-229	472	2	0.942	4845.3	391.1	254	307
TH-230	5	0	0.010	4687.7	147.6	232	252
TH-232	1	0	0.002	4013.0	147.7	141	161

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6311391
Sample ID: JH3NW1AA
Detector ID: ALP120 1
234 U, 237 Np, 229 Th, 247 Cm, 209 Po, 242 Pu
Counts
60
50
40
30
20
10
0
3000
4000
5000
6000
7000
(kev)
Energy
Acquisition Start: 15-NOV-2006 05:08:19.38
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:02.00
Energy Coefficients:
Offset: 2.86125E+03
Slope: 7.39689E+00
Quadrature: -3.21197E-05

SAMPLE IDENTIITY: JH3NW1AA

TITLE : TH BRC

DETECTOR : ALP120 1
CONFIGURATION NAME : RDND06$DKA100:[ALP120.SAMPLE]JH3NW1AA_151160508.CNF;1
ACQUIRE DATE of BACKGROUND: 12-NOV-2006 06:47:35

REPORT DATE : 15-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 15-NOV-2006 05:08:19 CALIB DATE : 11-NOV-2006 01:39:14

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:02

OFFSET : 2861.25 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 7.39689 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.321197E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3NW1AA

Detector: ALP120 1
Report Date: 15-Nov-06 01:28 PM
Acquire Date: 15-NOV-2006 05:08:19.38
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-10.001	5140.5	184.4	298	323	0.00	0.00	M
PO-209	365	1	0	0.729	4908.8	184.5	261	286	0.00	0.00	P
PO-210	-9999	-9999	0	-10.001	5330.0	184.4	323	348	0.00	0.00	M
AC-227	1	1	2	0.002	6063.7	184.2	423	448	0.00	0.00	S
TH-227	1	1	2	0.002	6063.7	184.2	423	448	0.00	0.00	S
TH-228	-9999	-9999	0	-10.001	5448.8	184.4	339	364	0.00	0.00	M
TH-229	365	1	0	0.729	4870.9	184.5	261	286	0.00	0.00	P
TH-230	-9999	-9999	0	-10.001	4713.3	184.5	240	265	0.00	0.00	I
TH-232	0	0	0	0.000	4038.6	184.7	148	173	0.00	0.00	
U-232	-9999	-9999	0	-10.001	5345.8	184.4	325	350	0.00	0.00	M
U-234	365	1	0	0.729	4800.2	184.5	261	286	0.00	0.00	P
U-235	1	0	0	0.002	4423.4	184.6	200	225	0.00	0.00	
PU-236	1	3	1	-0.002	5793.3	184.3	386	411	0.00	0.00	S
NP-237	365	1	0	0.729	4813.6	184.5	261	286	0.00	0.00	P
PU-238	-9999	-9999	0	-10.001	5524.7	184.3	350	375	0.00	0.00	M
U-238	0	0	0	0.000	4223.6	184.6	173	198	0.00	0.00	
PU-239	-9999	-9999	0	-10.001	5182.2	184.4	303	328	0.00	0.00	M
AM-241	-9999	-9999	0	-10.001	5511.2	184.3	348	373	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.001	5232.4	184.4	310	335	0.00	0.00	M
CM-242	-9999	-9999	0	-10.001	6138.4	184.2	433	458	0.00	0.00	M
PU-242	365	1	0	0.729	4926.1	184.5	261	286	0.00	0.00	P
AM-243	-9999	-9999	0	-10.001	5300.9	184.4	319	344	0.00	0.00	M
CM-244	1	3	1	-0.002	5830.5	184.3	391	416	0.00	0.00	S
CM-246	-9999	-9999	0	-10.001	5412.1	184.4	334	359	0.00	0.00	M
CM-247	365	1	0	0.729	4896.0	184.5	261	286	0.00	0.00	P
CM-248	-9999	-9999	0	-10.001	5104.2	184.4	293	318	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29 Jun 92)

Sample Identity: JH3NW1AA
Detector: ALP120 1
Report Date: 15-Nov 06 01:28 PM
Acquire Date: 15 NOV 2006 05:08:19.33

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	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0		101	0	+	151	0	+	201	0	+	251	2	@	301	0	@	351	1	@	401	0	-	451
		2	0		52	0		102	0	+	152	0	+	202	1	+	252	1	@	302	0	@	352	0	@	402	0		452
0		3	0		53	0		103	0	+	153	0	+	203	1	+	253	0	@	303	0	@	353	0	@	403	0		453
0		4	0		54	0		104	0	+	154	0	+	204	0	+	254	0	@	304	0	@	354	0	@	404	0		454
0		5	0		55	0		105	0	+	155	0	+	205	0	+	255	1	@	305	0	@	355	0	@	405	0		455
0		6	0		56	0		106	0	+	156	0	+	206	3	+	256	0	@	306	0	@	356	0	@	406	0	-	456
0		7	0		57	0		107	0	+	157	0	+	207	3	+	257	0	@	307	0	@	357	0	@	407	1	-	457
0		8	0		58	0		108	0	+	158	0	+	208	1	+	258	0	@	308	1	@	358	0	@	408	0	-	458
0		9	0		59	0		109	0	+	159	0	+	209	2	+	259	0	@	309	0	@	359	0	@	409	0		459
0		10	0		60	0		110	0	+	160	0	+	210	3	+	260	0	@	310	0	@	360	0	@	410	0		460
1		11	0		61	0		111	0	+	161	0	+	211	4	@	261	0	@	311	0	@	361	0	@	411	0		461
0		12	0		62	0		112	0	+	162	0	+	212	3	@	262	0	@	312	0	@	362	0	-	412	0		462
0		13	0		63	0		113	0	+	163	0	+	213	11	@	263	0	@	313	0	@	363	0	-	413	0		463
0		14	0		64	0		114	0	+	164	0	+	214	7	@	264	0	@	314	0	@	364	0	-	414	0		464
0		15	0		65	0		115	0	+	165	0	+	215	15	@	265	0	@	315	0	@	365	0	-	415	0		465
1		16	0		66	0		116	0	+	166	1	+	216	12	@	266	0	@	316	1	@	366	0	-	416	0		466
0		17	0		67	0		117	0	+	167	0	+	217	15	@	267	0	@	317	0	@	367	0		417	2		467
0		18	0		68	0		118	0	+	168	0	+	218	17	@	268	0	@	318	0	@	368	0		418	0		468
0		19	0		69	0		119	0	+	169	0	+	219	17	@	269	0	+	319	0	@	369	0		419	0		469
0		20	0		70	0		120	0	+	170	0	+	220	30	@	270	0	@	320	0	@	370	0		420	0		470
0		21	0		71	0		121	0	+	171	0	+	221	24	@	271	0	@	321	1	@	371	0		421	0		471
0		22	0		72	0		122	0	+	172	0	+	222	29	@	272	0	@	322	0	@	372	0		422	0		472
0		23	0		73	0		123	0	@	173	0	+	223	23	@	273	0	@	323	0	@	373	0	@	423	0		473
0		24	0		74	0		124	0	+	174	0	+	224	31	@	274	0	@	324	0	+	374	0	@	424	0		474
0		25	0		75	0		125	0	+	175	0	+	225	14	@	275	0	@	325	0	+	375	0	@	425	0		475
0		26	0		76	0		126	0	+	176	0		226	21	@	276	1	@	326	0		376	0	@	426	1		476
0		27	0		77	0		127	0	+	177	0		227	12	@	277	0	@	327	0		377	0	@	427	0		477
0		28	0		78	0		128	0	+	178	0		228	19	@	278	1	@	328	0		378	0	@	428	0		478
1		29	0		79	0		129	0	+	179	0		229	5	@	279	1	@	329	0		379	0	@	429	0		479
0		30	0		80	0		130	0	+	180	0		230	16	@	280	0	@	330	0		380	0	@	430	1		480
0		31	0		81	0		131	0	+	181	0		231	6	@	281	0	@	331	0		381	0	@	431	0		481
0		32	0		82	0		132	0	+	182	0		232	10	@	282	0	@	332	0		382	0	@	432	0		482
0		33	0		83	0		133	0	+	183	0		233	9	@	283	0	@	333	0		383	0	-	433	0		483
0		34	0		84	0		134	0	+	184	0		234	6	@	284	0	-	334	0		384	1	@	434	0		484
0		35	0		85	0		135	0	+	185	0		235	4	@	285	1	@	335	0		385	0	@	435	0		485
0		36	0		86	0		136	0	+	186	1		236	5		286	1	@	336	0	+	386	0	@	436	0		486
0		37	1		87	0		137	0	+	187	0		237	4		287	0	@	337	0	+	387	0	@	437	0		487
0		38	0		88	0		138	0	+	188	0		238	9		288	0	@	338	0	+	388	0	@	438	0		488
0		39	0		89	0		139	0	+	189	0		239	10		289	1	@	339	0	+	389	0	@	439	0		489
0		40	0		90	0		140	0	+	190	0	+	240	3		290	0	@	340	0	+	390	0	@	440	0		490
0		41	0		91	0		141	0	+	191	0	+	241	11		291	0	@	341	0	@	391	1	@	441	0		491
0		42	0		92	0		142	0	+	192	0	+	242	4		292	0	@	342	0	@	392	0	@	442	0		492
0		43	0		93	0		143	0	+	193	1	+	243	3	+	293	0	@	343	0	@	393	0	@	443	0		493
0		44	0		94	0		144	0	+	194	0	+	244	7	+	294	1	@	344	0	@	394	0	@	444	0		494
0		45	0		95	1		145	0	+	195	0	+	245	4	+	295	0	@	345	0	@	395	0	@	445	0		495
0		46	0		96	0		146	0	+	196	0	+	246	6	+	296	0	@	346	0	@	396	0	@	446	0		496
0		47	0		97	0		147	0	+	197	0	+	247	8	+	297	0	@	347	0	@	397	0	@	447	0		497
0		48	0		98	0	+	148	0	+	198	0	+	248	5	@	298	1	@	348	0	@	398	0	@	448	0		498
0		49	0		99	0	+	149	0		199	1	+	249	11	@	299	0	@	349	0	@	399	0	-	449	0		499
0		50	0		100	0	+	150	0	+	200	1	+	250	6	@	300	1	@	350	0	@	400	0	-	450	0		500

VMS Peak Search Report V1.9 Generated 15-NOV-2006 13:28:30

```
Configuration     : RDND06$DKA100:[ALP120.SAMPLE]JH3NW1AA_151160508.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:19
Sample ID         : JH3NW1AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP120               Detector geometry:
Elapsed live time: 0 08:20:02.00         Elapsed real time: 0 08:20:02.00   0.0%
Start energy      :  2883.44 kev         End energy       :  6640.03 kev
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4870.95	365	0	81.37	272.02	261	25	1.22E-02	5.2	

VMS Nuclide Identification Report V3.1 Generated 15-NOV-2006 13:28:32

```
Configuration     : RDND06$DKA100:[ALP120.SAMPLE]JH3NW1AA_151160508.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 15-NOV-2006 05:08:19
Sample ID         : JH3NW1AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP120               Detector geometry:
Elapsed live time: 0 08:20:02.00         Elapsed real time: 0 08:20:02.00   0.0%
Energy tolerance :   100.00 kev          Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :     0.00
```

Summary of Nuclide Activity

```
 Total number of lines in spectrum                 1
 Number of unidentified lines                      0
 Number of lines tentatively identified by NID     1      100.00%
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-234	2.45E+05Y	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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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
```

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

Configuration: RDND06$DKA100:[ALP120.SAMPLE]JH3NW1AA_151160508.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4870.94	261	286	365	365	0.00		

End of Report

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

11/24/2006 8:59:06 AM

Lot No., Due Date: J6K060215; 12/01/2006

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6324152; RTHISO Thlso by ALP

SDG, Matrix: 32992; FILTER

1.0 COC

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

2.0 QC Batch

	Yes	No	N/A
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2.2 Are the QC appropriate for the analysis included in the batch?	✓		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓		
2.4 Does the Worksheets include a Tracer Vial label for each sample?	✓		

3.0 QC & Samples

	Yes	No	N/A
3.1 Is the blank results, yield, and MDA within contract limits?	✓		
3.2 Is the LCS result, yield, and MDA within contract limits?	✓		
3.3 Are the MS/MSD results, yields, and MDA within contract limits?			✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?			✓
3.5 Are the sample yields and MDAs within contract limits?	✓		

4.0 Raw Data

	Yes	No	N/A
4.1 Were results calculated in the correct units?	✓		
4.2 Were analysis volumes entered correctly?	✓		
4.3 Were Yields entered correctly?			✓
4.4 Were spectra reviewed/meet contractual requirements?	✓		
4.5 Were raw counts reviewed for anomalies?	✓		

5.0 Other

	Yes	No	N/A
5.1 Are all nonconformances included and noted?	✓		
5.2 Are all required forms filled out?	✓		
5.3 Was the correct methodology used?	✓		
5.4 Was transcription checked?	✓		
5.5 Were all calculations checked at a minimum frequency?	✓		
5.6 Are worksheet entries complete and correct?	✓		

6.0 Comments on any No response:

See NCM. 10-09031

First Level Review Pam Anderson **Date** 11-24-06

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 63Z4152

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 NCM

Second Level Review: Sherryl A Adam Date: 11-24-06

STL RICHLAND

11/20/2006 4:15:50 PM

536403, Brown and Caldwell , Brown & Caldwell

AnalyDueDate: 11/30/2006

Sample Preparation/Analysis

9N Thlso PrpRc5016, SepRC~~5084~~(5003) 5087 JC 11/21/06
S1 Thorium-228,230,232 by Alpha Spec
01 STANDARD TEST SET

Balance Id:1120373922

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: WoodT

Batch: 6324152 FILTER pCi/sampl PM, Quote: SA , 63174
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:
171 **1 JH3LV-2-AA** J6K060215-1-SAMP	0.833sa	500.20sa	50.02g,in	0.0833g	THTF0869 11/10/06,pd 10/04/04,r	200				
10/18/2006 11:05		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
172 **2 JJ3RA-1-AA-B** J6K200000-152-BLK			51.20g,in	51.20g	THTF0870 11/10/06,pd 10/04/04,r	11/20/06 JBM				
10/18/2006 11:05		AmtRec:		#Containers: 1			Scr:	Alpha:		Beta:
173 **3 JJ3RA-1-AC-C** J6K200000-152-LCS			50.25g,in	50.25g	THSO0094 08/17/06,pd 10/04/04,r					
10/18/2006 11:05		AmtRec:		#Containers: 1			Scr:	Alpha:		Beta:

Comments:

All Clients for Batch:
536403, Brown and Caldwell Brown & Caldwell , SA , 63174

JH3LV2AA-SAMP Constituent List:

Th-228	RDL:1	pCi/sam	LCL:	UCL:	RPD:	Th-230	RDL:1	pCi/sam	LCL:	UCL:	RPD:
Th-232	RDL:1	pCi/sam	LCL:	UCL:	RPD:	Th-234	RDL:	pCi/sam	LCL:20	UCL:115	RPD:20

JJ3RA1AA-BLK Constituent List:

Th-228	RDL:1	pCi/sam	LCL:	UCL:	RPD:	Th-230	RDL:1	pCi/sam	LCL:	UCL:	RPD:
Th-232	RDL:1	pCi/sam	LCL:	UCL:	RPD:	Th-234	RDL:	pCi/sam	LCL:20	UCL:115	RPD:20

JJ3RA1AC-LCS:

Th-230	RDL:1	pCi/sam	LCL:70	UCL:130	RPD:20	Th-234	RDL:	pCi/sam	LCL:20	UCL:115	RPD:20

JH3LV2AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JJ3RA1AA-BLK Calc Info:

SEVERN TRENT STL

*** RE-ANALYSIS REQUEST ***

DUE DATE 11-30-06

CUSTOMER B&C

ANALYSIS Th

MATRIX filter

LOT NUMBER J6K060215

SAMPLE DELIVERY GROUP NA

OLD BATCH NUMBER 6311391

NEW BATCH NUMBER 6324152

LAB SAMPLE ID	REASON FOR REQUEST & ANALYSIS COMMENTS
1) JH3LV1AA	6% yield
2)	
3)	
4)	
5)	
6)	
7)	
8)	
9)	
10)	
11)	
12)	
13)	
14)	
15)	
16)	
17)	
18)	
19)	
20)	
LAB QC ID	Assigned with new batch.

RC-048, 10/03, Rev 7

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #: **10-09031**
NCM Initiated By: Pam Anderson
Date Opened: 11/24/2006
Date Closed:

Classification: **Anomaly**
Status: **GLREVIEW**
Production Area: Environmental - Sep
Tests: Thlso by ALP
Lot #'s (Sample #'s): J6K060215 (1), J6K200000 (152),
QC Batches: 6324152

Nonconformance: Other (describe in detail)
Subcategory: Other (explanation required)

Problem Description / Root Cause

Name	Date	Description
Pam Anderson	11/24/2006	This sample is a reanalysis of a Th iso in filter that failed its\'s first analysis in batch 6311391. The reanalysis is acceptable.

Corrective Action

Name	Date	Corrective Action
Pam Anderson	11/24/2006	The sample was successfully reanalyzed.

Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note	Response	Response Note

Quality Assurance Verification

Verified By	Due Date	Status	Notes
		This section not yet completed by QA.	

Approval History

Date Approved	Approved By	Position

Date Printed: 11/24/2006

11/22/2006 3:45:49 PM

ICOC Fraction Transfer/Status Report

ByDate: 11/22/2005, 11/27/2006, Batch: '6324152', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6324152						
AC		**CalcC**	**HarveyK**	11/21/2006 1:54:56		
SC			andersonp	IsBatched	11/20/2006 7:51:05 AM	ICOC_RADCALC v4.8.24
SC			HarveyK	Sep1C	11/21/2006 1:54:56 PM	RICH-RC-5087 REV0
SC			FABREM	Sep2C	11/21/2006 7:44:30 PM	RICH-RC-5039 REV 5
SC			DAWKINSO	InCnt1	11/21/2006 8:04:37 PM	RICH-RD-0008 REVISION 4
SC			BlackCL	CalcC	11/22/2006 7:32:32 AM	RICH-RD-0008 REVISION 4
AC			**FABREM**	11/21/2006 7:44:30		
AC			**DAWKINSO**	11/21/2006 8:04:37		
AC			**BlackCL**	11/22/2006 7:32:32		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 4

ICOCFractions v4.8.18

11/22/2006 3:45:48 PM

Rpt DB Transfer log (Batch Results)

SEVERN TRENT STL

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 / Mda	Units	Expected	Yield	Volumes	
32992	**9JH3LV20**			**J6K0602151**	P-0778	FILTER	11/3/2006 10:00:00	10/18/2006 11:05:00 AM					
TH-228	9NS1	1		11/22/2006 12:45:29	**1.5777E-01**	1.081E-01	1.09E-01	3.789E-01	PCI/SA		0.86	1.0E+0	3.33E-2
TH-230	9NS1	1		11/22/2006 12:45:29	**1.2989E-01**	7.805E-02	7.892E-02	2.597E-01	PCI/SA		0.86	1.0E+0	3.33E-2
TH-232	9NS1	1		11/22/2006 12:45:29	**4.3295E-02**	4.841E-02	4.856E-02	2.597E-01	PCI/SA		0.86	1.0E+0	3.33E-2
32992	**JJ3RA1AB**			**J6K200000152**	INTRA-LAB BLANK	FILTER	11/3/2006 10:00:00	10/18/2006 11:05:00 AM					
TH-228	9NS1	0	B	11/22/2006 12:45:29	**5.9211E-03**	5.921E-03	5.944E-03	2.368E-02	PCI/SA		0.794	1.0E+0	1.0E+0
TH-230	9NS1	0	B	11/22/2006 12:45:29	**2.8436E-02**	1.089E-02	1.117E-02	2.274E-02	PCI/SA		0.794	1.0E+0	1.0E+0
TH-232	9NS1	0	B	11/22/2006 12:45:29	**3.7915E-03**	4.239E-03	4.252E-03	2.274E-02	PCI/SA		0.794	1.0E+0	1.0E+0
32992	**JJ3RA1CS**			**J6K200000152**	INTRA-LAB CHECK	FILTER	11/3/2006 10:00:00	10/18/2006 11:05:00 AM					
TH-230	9NS1	0	S	11/22/2006 12:45:29	**1.7706E+00**	8.79E-02	1.818E-01	2.616E-02	PCI/SA	1.8287E+00	0.815	1.0E+0	1.0E+0

6324152, **Samples Inserted | Updated | NotUpdated => 3 | 0 | 0,
**Results Inserted | ReTestInserted | Updated | NotInserted => 7 | 0 | 0 | 0.
**Diff RptDb | Qtims => *wo:JJ3RA1AA=> , mat:FILTER | Air *wo:JJ3RA1AA=> , mat:FILTER | Air *wo:JJ3RA1AA=> , mat:FILTER | Air.

Batch Nbr: 6324152

Alpha Spec, ThIso by ALP , Results

11/22/2006 7:31:18 AM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
ThIso by ALP				Richland Standard AlpIso Wo Blk Subt.										
Calc	S1	FILTER	**JH3LV2AA**	TH-228	**1.58E-01**	**(1.09E-01)**	**U4**	PCI/SA	R	1.28E-01	3.79E-01	CRDL	86%	
Calc	S1	FILTER	**JH3LV2AA**	TH-230	**1.30E-01**	**(7.89E-02)**		PCI/SA	R	7.12E-02	2.60E-01		86%	
Calc	S1	FILTER	**JH3LV2AA**	TH-232	**4.33E-02**	**(4.86E-02)**	**U4**	PCI/SA	R	7.12E-02	2.60E-01		86%	
Calc	S1	FILTER	**JJ3RA1AA**	TH-228	**5.92E-03**	**(5.94E-03)**	**U4**	PCI/SA	R	6.49E-03	2.37E-02	**B**	79%	
Calc	S1	FILTER	**JJ3RA1AA**	TH-230	**2.84E-02**	**(1.12E-02)**		PCI/SA	R	6.24E-03	2.27E-02	**B**	79%	
Calc	S1	FILTER	**JJ3RA1AA**	TH-232	**3.79E-03**	**(4.25E-03)**	**U4**	PCI/SA	R	6.24E-03	2.27E-02	**B**	79%	
Calc	S1	FILTER	**JJ3RA1AC**	TH-230	**1.77E+00**	**(1.82E-01)**		PCI/SA	R	7.17E-03	2.62E-02	**S**	81%	97%

P Anderson
11-22-06

() - (1s Uncertainities)
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 Reguardless of Significants
Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:10
RADCALC v4.8.26
STL Richland

Batch Nbr: 6324152

Alpha Spec, ThIso by ALP , Calculated Results

11/22/2006 7:31:18 AM

Detailed Report

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
1	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JH3LV2AA**	**PCI/SA**		10/18/06 11:05	11/22/06 00:45			1	1.00 SA	
536403,P-0778					,J6K060215-1 v4.8.26		FILTER					THTF0869 Alq		0.0833 SA	

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
0	11/21/06 20:35	TH-228	5	3	ALP171	ED	N	N	2.9087E-01		N	86%	N		1.0000E+00	4.5045E-01	1.0349E+00	
			499.4666666	998.95			Y		(8.726E-03)			5%			(0.000E+00)	12.004802		
1	11/21/06 20:35	TH-229	514	5	ALP171	ED	Y	N	2.9087E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)						(0.000E+00)	12.004802		
2	11/21/06 20:35	TH-230	3	0	ALP171	ED	N	N	2.9087E-01		N	86%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)			5%			(0.000E+00)	12.004802		
3	11/21/06 20:35	TH-232	1	0	ALP171	ED	N	N	2.9087E-01		N	86%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)			5%			(0.000E+00)	12.004802		

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
	11/22/06	TH-228	R	**0.157765**	**U4**	7.00752E-03	0.028192	0.028192	1.00 SA	86%		0.37886		
				(0.109014)		(4.8009E-03)	(0.019414)	(0.019414)	(0.027064)			0.128429		
	11/22/06	TH-229	R	**19.039109**		1.02409E+00	3.52083	3.52083	1.00 SA	86%				
				(1.487225)		(4.5447E-02)	(0.188598)	(0.188598)	(0.027064)					
	11/22/06	TH-230	R	**0.129885**		6.00641E-03	0.024019	0.024019	1.00 SA	86%		0.259685		
				(0.078921)		(3.6094E-03)	(0.01453)	(0.01453)	(0.027064)			0.07122		
	11/22/06	TH-232	R	**0.043295**	**U4**	2.00214E-03	0.008006	0.008006	1.00 SA	86%		0.259685		
				(0.048562)		(2.2384E-03)	(0.008969)	(0.008969)	(0.027064)			0.07122		

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
2	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JJ3RA1AA**	**PCI/SA**	**B**	10/18/06 11:05	11/22/06 00:45			1	1.00 SA	
0,INTRA-LAB BLANK					,J6K200000-152		FILTER					THTF0870 Alq		1.00 SA	

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
0	11/21/06 20:35	TH-228	2	1	ALP172	ED	N	N	2.9949E-01		N	79%	N		1.0000E+00	4.5045E-01	1.0349E+00	
			499.4666666	998.95			Y		(8.985E-03)			5%			(0.000E+00)	1.00		
1	11/21/06 20:35	TH-229	485	2	ALP172	ED	Y	N	2.9949E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)						(0.000E+00)	1.00		
2	11/21/06 20:35	TH-230	8	1	ALP172	ED	N	N	2.9949E-01		N	79%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)			5%			(0.000E+00)	1.00		
3	11/21/06 20:35	TH-232	1	0	ALP172	ED	N	N	2.9949E-01		N	79%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)			5%			(0.000E+00)	1.00		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:2

RADCALC v4.8.26

STL Richland

Batch Nbr: 6324152

Alpha Spec, ThIso by ALP , Calculated Results

11/22/2006 7:31:19 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	BlkLcC/MDC	StdDvMdC/LcC
	11/22/06	TH-228	R	**0.005921**	U4	3.00322E-03	0.012702	0.012702	1.00 SA	79%		0.023676		
				(0.005944)		(3.0032E-03)	(0.012733)	(0.012733)	(0.017321)			0.006493		
	11/22/06	TH-229	R	**1.457478**		9.69034E-01	3.235603	3.235603	1.00 SA	79%				
				(0.110735)		(4.4115E-02)	(0.176408)	(0.176408)	(0.017321)					
	11/22/06	TH-230	R	**0.028436**		1.50160E-02	0.063128	0.063128	1.00 SA	79%		0.022741		
				(0.011175)		(5.7507E-03)	(0.024582)	(0.024582)	(0.017321)			0.006237		
	11/22/06	TH-232	R	**0.003791**	U4	2.00214E-03	0.008417	0.008417	1.00 SA	79%		0.022741		
				(0.004252)		(2.2384E-03)	(0.009429)	(0.009429)	(0.017321)			0.006237		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
3	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JJ3RA1AC**	**PCI/SA**	**S**	10/18/06 11:05	11/22/06 00:45		THSO0094	1	1.00 SA	
0,INTRA-LAB CHECK					,J6K200000-152		FILTER					THSO0094 Alq		1.00 SA	

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	11/21/06 20:35	TH-229	422	2	ALP173	ED	Y	N	2.5374E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)						(0.000E+00)	1.00		
2	11/21/06 20:35	TH-230	406	0	ALP173	ED	N	N	2.5374E-01		N	81%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)			5%			(0.000E+00)	1.00		

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	BlkLcC/MDC	StdDvMdC/LcC
	11/22/06	TH-229	R	**1.496334**		8.42899E-01	3.321865	3.321865	1.00 SA	81%				
				(0.116712)		(4.1154E-02)	(0.190357)	(0.190357)	(0.017321)					
	11/22/06	TH-230	R	**1.770611**		8.12867E-01	3.930761	3.930761	1.00 SA	81%	97%	0.026158		
				(0.181756)		(4.0354E-02)	(0.345757)	(0.345757)	(0.017321)			0.007174		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:3

RADCALC v4.8.26

STL Richland

SEVERN TRENT STL

THORIUM ISOTOPIC COUNTING REQUEST

0455

C.R. Technician: OD
Date Counted: 11/21/06
C.R. Analyst: CS
Date Analyzed: 11/22/06

Counting Time
Sample: 500 Minutes

Background: See Alpha Analysis Report
BRC 10/18/06

SOP's
Operating: RICHRD008
Review: RICHRD0016
6324152

WorkOrder #	Th-229 (4845 KeV) Tracer from Th-234 Beta Count (7)				TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV) (6)	Th-230 (4688 KeV) (8)	Th-232 (4010 KeV) (9)		
JH3LV2AA		10		0	See Alpha Analysis Report for ROI Information			171	
JJ3RA1AA		10		0	See Alpha Analysis Report for ROI Information			172	
JJ3RA1AC		10		0	See Alpha Analysis Report for ROI Information			173	
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				

Comments:

Form No: RC-012, 10/02, Rev 9

Approved by: CS

Date: 11/22/06

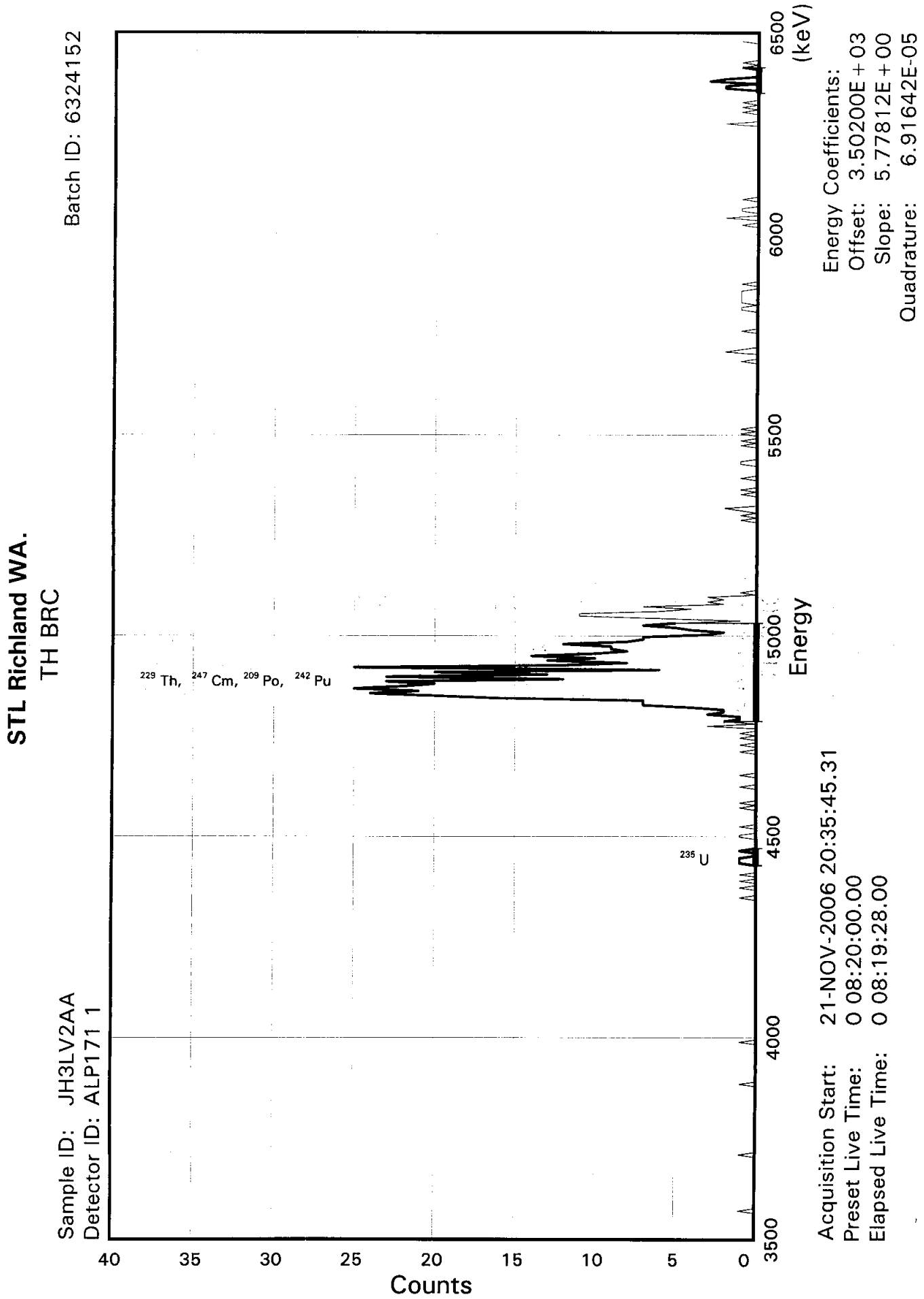
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JH3LV2AA

Detector: ALP171 1
Report Date: 22-Nov-06 05:25 AM
Acquire Date: 21-NOV-2006 20:35:45.31
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	Rght Chnl
TH-228	5	3	0.007	5423.2	116.5	316	336
TH-229	514	5	1.024	4845.3	325.5	223	279
TH-230	3	0	0.006	4687.7	116.1	190	210
TH-232	1	0	0.002	4013.0	115.8	73	93

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6324152
Sample ID: JH3LV2AA
Detector ID: ALP171 1
229 Th, 247 Cm, 209 Po, 242 Pu
235 U
Counts
40
35
30
25
20
15
10
5
0
3500
4000
4500
5000
5500
6000
6500
Energy
(keV)
Acquisition Start: 21-NOV-2006 20:35:45.31
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.50200E+03
Slope: 5.77812E+00
Quadrature: 6.91642E-05

SAMPLE IDENTIITY: JH3LV2AA

TITLE : TH BRC

DETECTOR : ALP171 1
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JH3LV2AA_211162035A.CNF;1
ACQUIRE DATE of BACKGROUND: 09-NOV-2006 06:43:11

REPORT DATE : 22-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 21-NOV-2006 20:35:45 CALIB DATE : 08-NOV-2006 23:57:55

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

OFFSET : 3502.00 keV CONSTANT FWHM : 9.00000 Channels
SLOPE : 5.77812 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 6.916420E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JH3LV2AA

Detector: ALP171 1
Report Date: 22-Nov-06 04:56 AM
Acquire Date: 21-NOV-2006 20:35:45.31
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-10.010	5158.1	244.4	268	310	0.00	0.00	M
PO-209	452	5	0	0.900	4926.4	244.1	222	264	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5347.5	244.6	301	343	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6081.2	245.3	427	469	0.00	0.00	M
TH-227	-9999	-9999	0	-10.010	6081.2	245.3	427	469	0.00	0.00	M
TH-228	-9999	-9999	0	-10.010	5466.4	244.7	321	363	0.00	0.00	M
TH-229	452	5	0	0.900	4888.5	244.1	222	264	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4730.9	243.9	195	237	0.00	0.00	M I
TH-232	1	0	0	0.002	4056.2	249.1	78	121	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5363.3	244.6	304	346	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4817.8	244.0	210	252	0.00	0.00	M I
U-235	4	0	0	0.008	4441.0	40.6	160	167	0.00	0.00	P
PU-236	8	16	10	0.001	5810.8	245.0	380	422	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4831.2	244.0	212	254	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5542.2	244.7	334	376	0.00	0.00	M
U-238	3	1	0	0.005	4241.2	249.2	110	153	0.00	0.00	S
PU-239	-9999	-9999	0	-10.010	5199.7	244.4	276	318	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5528.8	244.7	332	374	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5250.0	244.5	284	326	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6155.9	239.5	440	481	0.00	0.00	M
PU-242	452	5	0	0.900	4943.7	244.1	222	264	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5318.5	244.5	296	338	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5848.0	245.1	387	429	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5429.7	244.6	315	357	0.00	0.00	M
CM-247	452	5	0	0.900	4913.6	244.1	222	264	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5121.8	244.3	262	304	0.00	0.00	M I

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JH3LV2AA
Detector: ALP171 1
Report Date: 22-Nov-06 04:56 AM
Acquire Date: 21-NOV-2006 20:35:45.31

Flags Key

Intersect Region: @
Non-Intersect Region: +,

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0	+	101	0	-	151	0	+	201	10	@	251	0	@	301	0	@	351	1	@	401	0	@	451
		2	0		52	0	+	102	0	-	152	0	+	202	8	@	252	0	@	302	0	@	352	1	@	402	0	@	452
0		3	0		53	0	+	103	1	-	153	0	+	203	9	@	253	0	@	303	0	@	353	1	@	403	0	@	453
0		4	0		54	0	+	104	0		154	0	+	204	9	@	254	0	@	304	0	@	354	1	@	404	0	@	454
0		5	0		55	0	+	105	0		155	0	+	205	12	@	255	0	@	305	0	@	355	1	@	405	0	@	455
0		6	0		56	0	+	106	1		156	0	+	206	8	@	256	0	@	306	0	@	356	1	@	406	0	@	456
0		7	0		57	0	+	107	0		157	0	+	207	7	@	257	0	@	307	0	@	357	0	@	407	0	@	457
0		8	0		58	0	+	108	0		158	0	+	208	7	@	258	1	@	308	0	@	358	0	@	408	0	@	458
0		9	0		59	0	+	109	0		159	1	+	209	3	@	259	0	@	309	0	@	359	1	@	409	0	@	459
0		10	0		60	0	@	110	0	+	160	0	@	210	2	@	260	1	@	310	0	@	360	0	@	410	0	@	460
0		11	0		61	0	@	111	1	+	161	0	@	211	4	@	261	0	@	311	0	@	361	0	@	411	0	@	461
1		12	0		62	0	@	112	1	+	162	1	-	212	5	-	262	1	@	312	0	@	362	0	@	412	0	@	462
0		13	0		63	0	@	113	1	+	163	0	@	213	7	@	263	2	@	313	0	@	363	0	@	413	0	@	463
0		14	0		64	0	@	114	0	+	164	0	@	214	5	-	264	0	@	314	0	@	364	0	@	414	0	@	464
0		15	0		65	0	@	115	0	+	165	1	@	215	1	-	265	0	-	315	0	@	365	0	@	415	0	@	465
0		16	1		66	0	@	116	1	+	166	0	@	216	6	-	266	0	@	316	0	@	366	0	@	416	0	@	466
0		17	0		67	0	@	117	0		167	1	@	217	11	-	267	0	@	317	0	@	367	0	@	417	0	@	467
0		18	0		68	0	@	118	0		168	0	@	218	11	@	268	0	@	318	0	@	368	0	@	418	0	@	468
0		19	0		69	0	@	119	0		169	0	@	219	6	@	269	1	@	319	0	@	369	0	@	419	0	@	469
0		20	0		70	0	@	120	0		170	3	@	220	4	@	270	0	@	320	0	@	370	0	@	420	0	-	470
0		21	0		71	0	@	121	0		171	0	@	221	7	@	271	1	@	321	0	@	371	0	@	421	0	-	471
0		22	0		72	0	-	122	1		172	2	@	222	2	@	272	0	@	322	0	@	372	0	@	422	0	-	472
0		23	0		73	0	-	123	1		173	1	@	223	3	@	273	0	@	323	0	@	373	0	-	423	0	-	473
0		24	0		74	0	-	124	0		174	1	@	224	2	@	274	0	@	324	0	@	374	0	-	424	0	-	474
0		25	0		75	0	-	125	0		175	3	@	225	3	@	275	0	@	325	0	+	375	0	-	425	0	-	475
0		26	0		76	0	-	126	0		176	2	@	226	0	@	276	1	@	326	1	+	376	0	-	426	0	-	476
0		27	0		77	0	-	127	1		177	2	@	227	1	@	277	0	@	327	0		377	0	@	427	2	-	477
0		28	0	+	78	0	-	128	0		178	4	@	228	0	@	278	0	@	328	0		378	0	@	428	0	-	478
0		29	0	+	79	0	-	129	0		179	7	@	229	0	@	279	0	@	329	0		379	0	@	429	0	-	479
0		30	0	+	80	0	-	130	0		180	7	@	230	0	@	280	0	@	330	2	+	380	0	@	430	0	-	480
0		31	0	+	81	0	-	131	0		181	7	@	231	0	@	281	0	@	331	1	+	381	0	@	431	0	-	481
0		32	0	+	82	0	-	132	0		182	16	@	232	0	@	282	1	@	332	0	+	382	0	@	432	1		482
0		33	0	+	83	0	-	133	0		183	20	@	233	0	@	283	1	@	333	0	+	383	0	@	433	0		483
0		34	1	+	84	0	-	134	0		184	24	@	234	0	@	284	0	@	334	0	+	384	1	@	434	1		484
0		35	0	+	85	0	-	135	1		185	21	@	235	0	@	285	0	@	335	0	+	385	0	@	435	0		485
1		36	0	+	86	0	-	136	0		186	25	@	236	0	@	286	0	@	336	0	+	386	0	@	436	1		486
0		37	0	+	87	0	-	137	1		187	22	@	237	0	@	287	0	@	337	0	@	387	2	@	437	0		487
0		38	0	+	88	0	-	138	0		188	20	@	238	0	@	288	0	@	338	0	@	388	0	@	438	0		488
0		39	0	+	89	0	-	139	0		189	23	@	239	0	@	289	0	@	339	1	@	389	0	@	439	0		489
0		40	0	+	90	0	-	140	0		190	12	@	240	0	@	290	1	@	340	0	@	390	1	-	440	0		490
0		41	0	+	91	0	-	141	0		191	23	@	241	0	@	291	0	@	341	0	@	391	1	@	441	0		491
0		42	0	+	92	0	-	142	0		192	13	@	242	0	@	292	1	@	342	0	@	392	0	@	442	2		492
0		43	0	+	93	0	-	143	0		193	20	@	243	0	@	293	0	@	343	0	@	393	0	@	443	2		493
0		44	0	+	94	0	-	144	1		194	6	@	244	0	@	294	0	@	344	0	@	394	0	@	444	0		494
0		45	0	+	95	0	-	145	0	+	195	25	@	245	0	@	295	1	@	345	0	@	395	1	@	445	3		495
0		46	0	+	96	1	-	146	0	+	196	12	@	246	0	@	296	0	@	346	0	@	396	0	@	446	2		496
0		47	0	+	97	0	-	147	0	+	197	8	@	247	0	@	297	1	@	347	0	@	397	0	@	447	0		497
0		48	0	+	98	0	-	148	0	+	198	13	@	248	0	@	298	0	@	348	1	@	398	0	@	448	0		498
0		49	0	+	99	0	-	149	1	+	199	10	@	249	0	@	299	0	@	349	1	@	399	0	@	449	0		499
0		50	0	+	100	1	-	150	0	+	200	14	@	250	0	@	300	0	@	350	0	@	400	0	@	450	0		500

VMS Peak Search Report V1.9 Generated 22-NOV-2006 04:56:17

Configuration : $DISK1:[ALP171.SAMPLE]JH3LV2AA_211162035A.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 18-OCT-2006 12:00:00 Acquisition date : 21-NOV-2006 20:35:45
Sample ID : JH3LV2AA Sample quantity : 0.00000E+00 SAMPLE
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 : 3519.34 keV End energy : 6478.53 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4442.77	4	0	23.11	162.50	160	7	1.33E-04	50.0	
2	0	4888.45	452	0	98.23	239.26	222	42	1.51E-02	4.7	
3	0	6369.62	11	0	28.89	493.37	490	11	3.67E-04	30.2	

VMS Nuclide Identification Report V3.0 Generated 22-NOV-2006 04:56:21

```
Configuration     : $DISK1:[ALP171.SAMPLE]JH3LV2AA_211162035A.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 21-NOV-2006 20:35:45
Sample ID         : JH3LV2AA             Sample quantity  : 0.00000E+00 SAMPLE
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%
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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-235	7.08E+08Y	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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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
```

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

Configuration: $DISK1:[ALP171.SAMPLE]JH3LV2AA_211162035A.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4442.77	160	167	4	4	0.00		
4888.45	222	264	452	459	-0.33		
6369.61	490	501	11	10	0.30		

End of Report

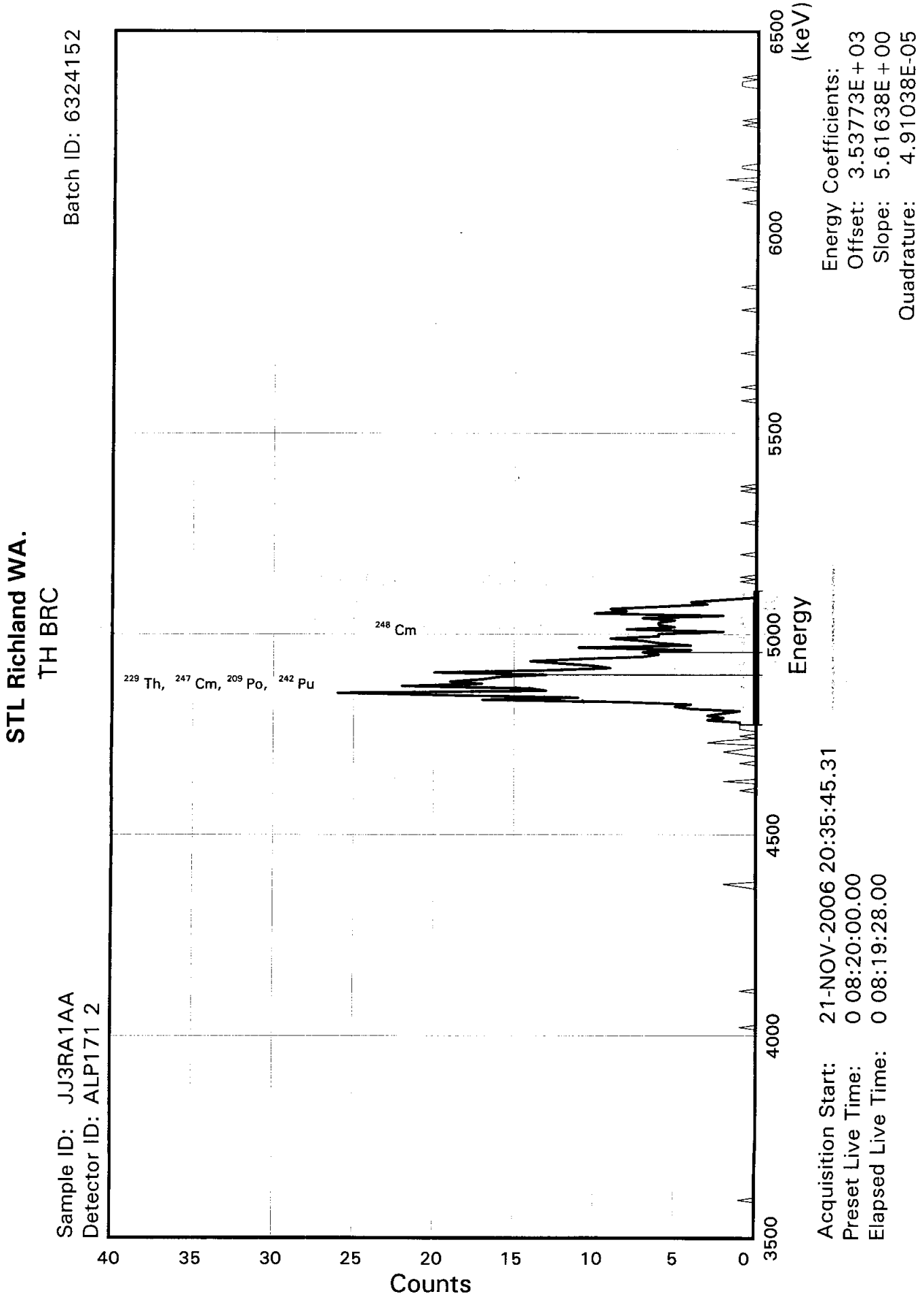
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JJ3RA1AA

Detector: ALP171 2
Report Date: 22-Nov-06 05:25 AM
Acquire Date: 21-NOV-2006 20:35:45.31
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	Rght Chnl
TH-228	2	1	0.003	5423.2	113.0	320	340
TH-229	485	2	0.969	4845.3	338.4	217	277
TH-230	8	1	0.015	4687.7	112.7	189	209
TH-232	1	0	0.002	4013.0	112.5	70	90

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6324152
Sample ID: JJ3RA1AA
Detector ID: ALP171 2
229 Th, 247 Cm, 209 Po, 242 Pu
248 Cm
Counts
40
35
30
25
20
15
10
5
0
3500
4000
4500
5000
5500
6000
6500
Energy
(keV)
Acquisition Start: 21-NOV-2006 20:35:45.31
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.53773E+03
Slope: 5.61638E+00
Quadrature: 4.91038E-05

SAMPLE IDENTIITY: JJ3RA1AA

TITLE : TH BRC

DETECTOR : ALP171 2
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JJ3RA1AA_211162035B.CN
F;1
ACQUIRE DATE of BACKGROUND: 09-NOV-2006 06:43:11

REPORT DATE : 22-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 21-NOV-2006 20:35:45 CALIB DATE : 08-NOV-2006 23:58:09

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

OFFSET : 3537.73 keV CONSTANT FWHM : 10.33330 Channels
SLOPE : 5.61638 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 4.910380E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JJ3RA1AA

Detector: ALP171 2
Report Date: 22-Nov-06 04:56 AM
Acquire Date: 21-NOV-2006 20:35:45.31
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-10.010	5146.7	180.6	268	300	0.00	0.00	M I
PO-209	354	2	0	0.707	4915.0	180.5	220	252	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5336.1	180.7	301	333	0.00	0.00	M
AC-227	2	1	4	0.003	6069.8	181.1	431	463	0.00	0.00	S
TH-227	2	1	4	0.003	6069.8	181.1	431	463	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5455.0	180.8	322	354	0.00	0.00	M
TH-229	354	2	0	0.707	4877.1	180.5	220	252	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4719.5	180.4	192	224	0.00	0.00	M I
TH-232	2	1	0	0.003	4044.8	180.0	72	104	0.00	0.00	
U-232	-9999	-9999	0	-10.010	5351.9	180.7	304	336	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4806.4	180.4	207	239	0.00	0.00	M I
U-235	3	2	0	0.004	4429.6	180.2	141	173	0.00	0.00	
PU-236	2	5	2	-0.001	5799.4	181.0	383	415	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4819.8	180.4	210	242	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5530.8	180.8	336	368	0.00	0.00	M
U-238	0	1	0	-0.001	4229.8	180.1	105	137	0.00	0.00	
PU-239	-9999	-9999	0	-10.010	5188.3	180.6	275	307	0.00	0.00	M I
AM-241	-9999	-9999	0	-10.010	5517.4	180.8	333	365	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5238.6	180.7	284	316	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6144.5	181.2	444	476	0.00	0.00	M
PU-242	354	2	0	0.707	4932.3	180.5	220	252	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5307.1	180.7	296	328	0.00	0.00	M
CM-244	1	5	2	-0.003	5836.6	181.0	390	422	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5418.3	180.8	316	348	0.00	0.00	M
CM-247	354	2	0	0.707	4902.2	180.5	220	252	0.00	0.00	P
CM-248	127	1	0	0.253	5110.4	208.8	242	279	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29 Jun 92)

Sample Identity: JJ3RA1AA
Detector: ALP171 2
Report Date: 22-Nov-06 04:56 AM
Acquire Date: 21-NOV-2006 20:35:45.31

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

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0	+	101	0	+	151	0	+	201	6	@	251	0	@	301	0	@	351	0	@	401
		2	0		52	1	+	102	0	+	152	0	+	202	7		252	0	@	302	0	@	352	0	@	402
0		3	0		53	0	+	103	0	+	153	1	+	203	4	-	253	0	@	303	0	@	353	1	@	403
0		4	0		54	0	+	104	0	+	154	0	+	204	11	-	254	0	@	304	0	@	354	0	@	404
0		5	0		55	0	-	105	0	+	155	0	+	205	4	-	255	0	@	305	0	@	355	0	@	405
0		6	0		56	0	-	106	0	+	156	0	+	206	6	-	256	0	@	306	0	@	356	0	@	406
0		7	0		57	0	-	107	0	+	157	1	@	207	7	-	257	0	@	307	0	@	357	0	@	407
0		8	0		58	0	-	108	0	+	158	2	@	208	9	-	258	0	@	308	0	@	358	0	@	408
0		9	0		59	0	-	109	0	+	159	1	@	209	6	-	259	1	@	309	0	@	359	0	@	409
1		10	0		60	0	-	110	0	+	160	0	-	210	6	-	260	0	@	310	0	@	360	0	@	410
0		11	0		61	0	-	111	0	+	161	0	@	211	2	-	261	0	@	311	0	@	361	0	@	411
0		12	0		62	0	-	112	0	+	162	3	@	212	8	-	262	0	@	312	0	@	362	0	@	412
0		13	0		63	0	-	113	0	+	163	2	@	213	5	-	263	0	@	313	1	@	363	1	@	413
0		14	0		64	0	-	114	0	+	164	0	@	214	6	-	264	0	@	314	0	@	364	0	@	414
0		15	0		65	0	-	115	0	+	165	1	@	215	6	-	265	0	@	315	0	@	365	0	@	415
0		16	0		66	0	-	116	0	+	166	0	@	216	5	-	266	0	-	316	0	+	366	0	-	416
0		17	0		67	0	-	117	0	+	167	0	@	217	7	-	267	0	@	317	0	+	367	0	-	417
0		18	0		68	0	-	118	0	+	168	1	@	218	2	@	268	0	@	318	0	+	368	0	-	418
0		19	0		69	0	-	119	0	+	169	1	@	219	10	@	269	0	@	319	1		369	0	-	419
0		20	0		70	0	-	120	0	+	170	1	@	220	8	@	270	0	@	320	0		370	0	-	420
0		21	0		71	0	-	121	0	+	171	1	@	221	9	@	271	0	@	321	0		371	0	-	421
0		22	0	+	72	0	-	122	0	+	172	3	@	222	6	@	272	0	@	322	0		372	0	-	422
0		23	0	+	73	0	-	123	0	+	173	2	@	223	3	@	273	1	@	323	0		373	0		423
0		24	0	+	74	0	-	124	0		174	3	@	224	4	@	274	0	@	324	0		374	0		424
0		25	0	+	75	0	-	125	0		175	2	@	225	2	@	275	1	@	325	0		375	0		425
0		26	0	+	76	0	-	126	0		176	1	@	226	0	@	276	0	@	326	0		376	0		426
0		27	0	+	77	0	-	127	0		177	4	@	227	0	@	277	0	@	327	0		377	0		427
0		28	0	+	78	0	-	128	0		178	5	@	228	0	@	278	0	@	328	0		378	0		428
0		29	0	+	79	0	-	129	0		179	4	@	229	0	@	279	0	@	329	0		379	0		429
0		30	0	+	80	0	-	130	0		180	8	@	230	0	@	280	0	@	330	0		380	0		430
0		31	0	+	81	0	-	131	0		181	17	@	231	0	@	281	0	@	331	0		381	0	@	431
0		32	0	+	82	0	-	132	0		182	11	@	232	0	@	282	0	@	332	0		382	0	@	432
0		33	0	+	83	0	-	133	0		183	19	@	233	1	@	283	0	@	333	0	+	383	0	@	433
0		34	0	+	84	0	-	134	0		184	26	@	234	0	-	284	0	@	334	1	+	384	0	@	434
0		35	0	+	85	0	-	135	0		185	13	@	235	1	@	285	0	@	335	0	+	385	0	@	435
0		36	1	+	86	0	-	136	0		186	14	@	236	0	@	286	0	@	336	0	+	386	0	@	436
0		37	0	+	87	0	-	137	0		187	22	@	237	0	@	287	0	@	337	0	+	387	0	@	437
0		38	0	+	88	0		138	0		188	17	@	238	0	@	288	0	@	338	0	+	388	0	@	438
0		39	0	+	89	0		139	0		189	19	@	239	0	@	289	0	@	339	0	+	389	0	@	439
0		40	0	+	90	0		140	0		190	17	@	240	0	@	290	0	@	340	0	@	390	0	@	440
0		41	0	+	91	0	+	141	1		191	16	@	241	0	@	291	0	@	341	0	@	391	0	@	441
0		42	0	+	92	0	+	142	0	+	192	13	-	242	0	@	292	0	@	342	0	@	392	0	@	442
0		43	0	+	93	0	+	143	0	+	193	20	@	243	0	@	293	0	@	343	0	@	393	0	@	443
0		44	0	+	94	0	+	144	0	+	194	13	@	244	0	@	294	0	@	344	0	@	394	0	-	444
0		45	0	+	95	0	+	145	2	+	195	9	@	245	1	@	295	0	@	345	0	@	395	0	@	445
0		46	0	+	96	0	+	146	0	+	196	10	@	246	0	-	296	0	@	346	0	@	396	0	@	446
0		47	0	+	97	0	+	147	0	+	197	12	@	247	0	@	297	0	@	347	0	@	397	0	@	447
0		48	0	+	98	1	+	148	0	+	198	14	@	248	0	@	298	0	@	348	0	@	398	0	@	448
0		49	0	+	99	2	+	149	0	+	199	11	@	249	0	@	299	0	@	349	0	@	399	0	@	449
0		50	0	+	100	0	+	150	0	+	200	7	@	250	0	@	300	0	@	350	0	@	400	1	@	450

VMS Peak Search Report V1.9 Generated 22-NOV-2006 04:56:24

```
Configuration     : $DISK1:[ALP171.SAMPLE]JJ3RA1AA_211162035B.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 21-NOV-2006 20:35:45
Sample ID         : JJ3RA1AA             Sample quantity  : 0.00000E+00 SAMPLE
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      :  3554.58 keV         End energy       :  6426.19 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4877.06	354	0	89.86	237.97	220	32	1.18E-02	5.3	
2	0	5011.01	127	0	123.56	261.72	242	37	4.24E-03	8.9	

VMS Nuclide Identification Report V3.0 Generated 22-NOV-2006 04:56:26

```
Configuration     : $DISK1:[ALP171.SAMPLE]JJ3RA1AA_211162035B.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 21-NOV-2006 20:35:45
Sample ID         : JJ3RA1AA             Sample quantity  : 0.00000E+00 SAMPLE
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%
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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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

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

Configuration: $DISK1:[ALP171.SAMPLE]JJ3RA1AA_211162035B.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4877.05	220	252	354	347	0.37		
5011.00	242	279	127	258	-11.62	122	-0.09

***** WARNING: Possible PEAK/ALPHA Error *****
Review Spectrum on Screen

End of Report

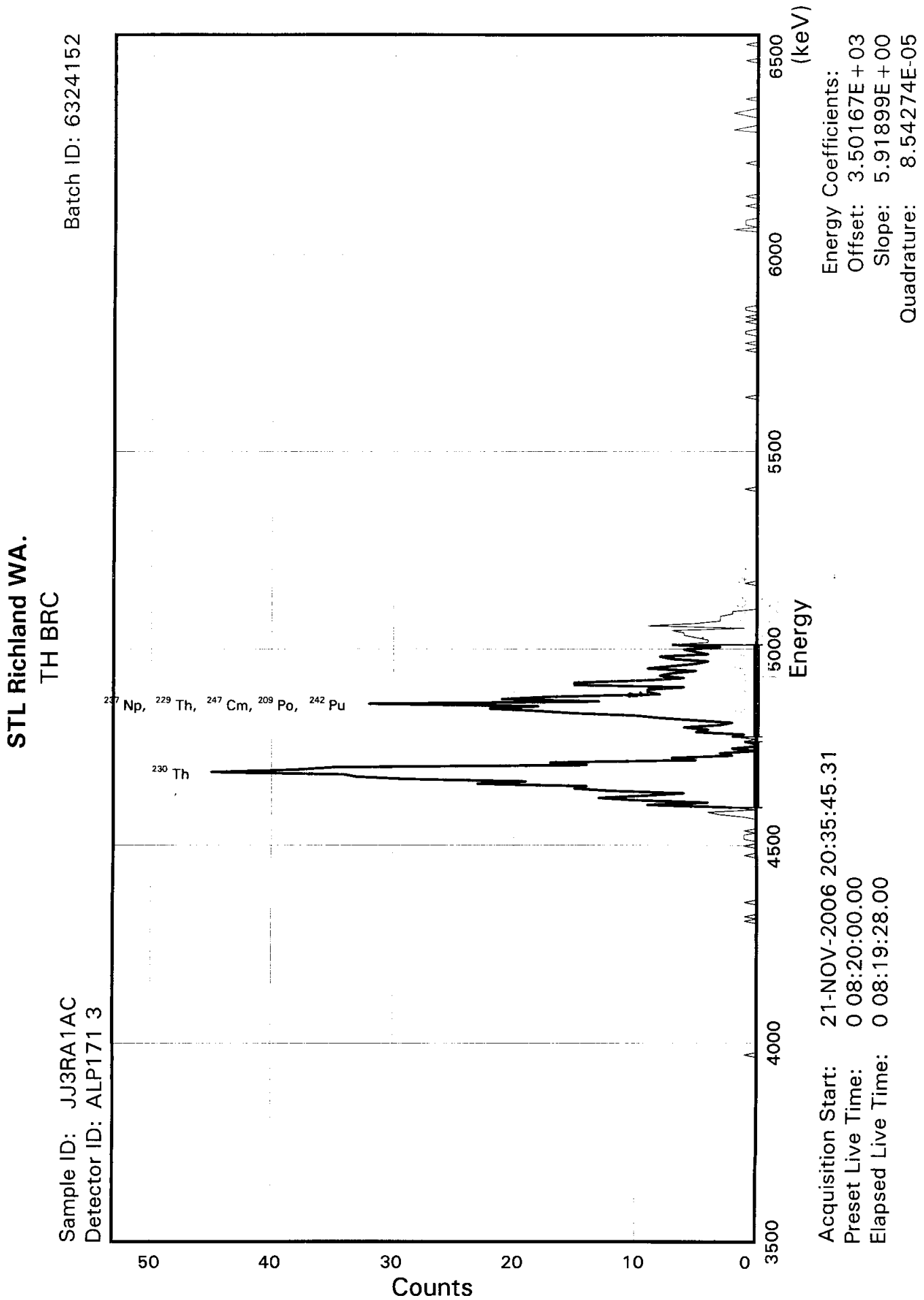
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JJ3RA1AC

Detector: ALP171 3
Report Date: 22-Nov-06 05:25 AM
Acquire Date: 21-NOV-2006 20:35:45.31
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	Rght Chnl
TH-228	1	1	0.001	5423.2	119.5	308	328
TH-229	422	2	0.843	4845.3	315.9	216	269
TH-230	406	0	0.813	4687.7	172.6	180	209
TH-232	1	0	0.002	4013.0	118.7	71	91

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6324152
Sample ID: JJ3RA1AC
Detector ID: ALP171 3
237 Np, 229 Th, 247 Cm, 209 Po, 242 Pu
230 Th
Counts
50
40
30
20
10
0
3500
4000
4500
5000
5500
6000
6500
Energy
(keV)
Acquisition Start: 21-NOV-2006 20:35:45.31
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.50167E+03
Slope: 5.91899E+00
Quadrature: 8.54274E-05

SAMPLE IDENTIITY: JJ3RA1AC

TITLE : TH BRC

DETECTOR : ALP171 3
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JJ3RA1AC_211162035C.CN
F;1
ACQUIRE DATE of BACKGROUND: 09-NOV-2006 06:43:11

REPORT DATE : 22-Nov-06 SAMPLE DATE: 18-OCT-2006 12:00:00
ACQUIRE DATE: 21-NOV-2006 20:35:45 CALIB DATE : 08-NOV-2006 23:58:22

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

OFFSET : 3501.67 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 5.91899 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 8.542740E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JJ3RA1AC

Detector: ALP171 3
Report Date: 22-Nov-06 04:56 AM
Acquire Date: 21-NOV-2006 20:35:45.31
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-10.010	5128.3	232.7	260	299	0.00	0.00	M
PO-209	365	1	0	0.730	4896.6	232.4	215	254	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5317.8	232.9	292	331	0.00	0.00	M
AC-227	4	2	7	0.005	6051.4	227.7	415	453	0.00	0.00	S
TH-227	4	2	7	0.005	6051.4	227.7	415	453	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5436.6	233.0	312	351	0.00	0.00	M
TH-229	365	1	0	0.730	4858.7	232.4	215	254	0.00	0.00	P
TH-230	398	0	0	0.797	4701.1	166.7	185	213	0.00	0.00	P
TH-232	1	0	0	0.002	4026.4	231.5	75	114	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5333.5	232.9	295	334	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4788.0	232.3	203	242	0.00	0.00	I
U-235	7	0	1	0.013	4411.2	231.9	140	179	0.00	0.00	S
PU-236	4	6	8	0.002	5781.0	227.4	370	408	0.00	0.00	S
NP-237	365	1	0	0.730	4801.4	232.4	215	254	0.00	0.00	P
PU-238	-9999	-9999	0	-10.010	5512.4	227.2	325	363	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4211.4	231.7	106	145	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5170.0	232.7	267	306	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5499.0	233.1	322	361	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5220.2	232.8	276	315	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6126.1	233.8	427	466	0.00	0.00	M
PU-242	365	1	0	0.730	4913.9	232.4	215	254	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5288.7	232.9	287	326	0.00	0.00	M
CM-244	4	8	8	0.000	5818.2	233.5	376	415	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5399.9	233.0	306	345	0.00	0.00	M
CM-247	365	1	0	0.730	4883.8	232.4	215	254	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5092.0	232.7	254	293	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29 Jun 92)

Sample Identity: JJ3RA1AC
Detector: ALP171 3
Report Date: 22 Nov 06 04:56 AM
Acquire Date: 21-NOV 2006 20:35:45.31

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

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		1	0		51	0	+	101	0	+	151	38	+	201	5	@	251	0	@	301	0	@	351	0	@	401	0	@	451
		2	0		52	0	+	102	0	+	152	35	+	202	6	@	252	0	@	302	0	@	352	0	@	402	0	@	452
0		3	0		53	0	+	103	0	+	153	14	@	203	3	@	253	0	@	303	0	@	353	0	@	403	0	@	453
0		4	0		54	0	+	104	0	+	154	17	@	204	7	+	254	0	@	304	0	@	354	0	@	404	0	-	454
0		5	0		55	0	+	105	0	+	155	5	@	205	4	+	255	0	@	305	0	@	355	0	@	405	0	-	455
0		6	0		56	0	@	106	0	+	156	7	@	206	4	+	256	0	-	306	0	@	356	0	@	406	0	-	456
0		7	0		57	0	@	107	0	+	157	2	@	207	5	+	257	0	@	307	0	@	357	0	@	407	0	-	457
0		8	0		58	0	@	108	0	+	158	3	@	208	6	+	258	0	@	308	0	@	358	0	@	408	1	-	458
0		9	0		59	0	@	109	0	+	159	0	@	209	6	+	259	0	@	309	1	@	359	0	-	409	0	-	459
0		10	0		60	0	@	110	0	+	160	2	@	210	7	@	260	0	@	310	0	@	360	0	-	410	0	-	460
0		11	0		61	0	@	111	0	+	161	0	@	211	1	@	261	0	@	311	0	@	361	0	-	411	0	-	461
0		12	0		62	0	@	112	0	+	162	0	@	212	9	@	262	0	@	312	0	+	362	0	-	412	0	-	462
0		13	0		63	0	@	113	0	+	163	1	-	213	5	@	263	0	@	313	0	+	363	0	-	413	0	-	463
0		14	0		64	0	@	114	1	+	164	0	-	214	3	@	264	0	@	314	0		364	0	-	414	0	-	464
0		15	0		65	0	-	115	0	+	165	2	-	215	3	@	265	0	@	315	0		365	0	@	415	0	-	465
0		16	0		66	0	-	116	0	+	166	1	@	216	3	@	266	0	@	316	0		366	0	@	416	0	-	466
0		17	0		67	0	-	117	0	+	167	5	@	217	2	@	267	0	@	317	0		367	0	@	417	0		467
0		18	0		68	0	-	118	1	+	168	4	@	218	2	@	268	0	@	318	0		368	0	@	418	0		468
0		19	0		69	0	-	119	0	+	169	6	@	219	0	@	269	0	@	319	0		369	0	@	419	0		469
0		20	0		70	0	-	120	0	+	170	3	@	220	0	@	270	1	@	320	0	+	370	0	@	420	0		470
0		21	0		71	0	-	121	1	+	171	2	@	221	0	@	271	0	@	321	0	+	371	0	@	421	0		471
0		22	0		72	0	-	122	1	+	172	5	@	222	0	@	272	0	@	322	0	+	372	0	@	422	2		472
0		23	0		73	0	-	123	1	+	173	8	@	223	0	@	273	0	@	323	0	+	373	0	@	423	1		473
0		24	0		74	0	-	124	0	+	174	10	@	224	0	@	274	0	@	324	0	+	374	0	@	424	0		474
0		25	0	+	75	0	-	125	1	+	175	15	@	225	0	@	275	0	@	325	0	+	375	0	@	425	0		475
0		26	0	+	76	0	-	126	0	+	176	18	@	226	0	@	276	0	@	326	0	@	376	0	@	426	0		476
0		27	0	+	77	0	-	127	0	+	177	22	@	227	0	@	277	0	@	327	0	@	377	0	-	427	0		477
0		28	0	+	78	0	-	128	0	+	178	18	@	228	0	@	278	0	@	328	0	@	378	0	@	428	1		478
0		29	1	+	79	0	-	129	0	+	179	32	@	229	0	@	279	0	@	329	1	@	379	0	@	429	2		479
0		30	0	+	80	0	-	130	0		180	13	@	230	1	@	280	0	@	330	0	@	380	2	@	430	1		480
0		31	0	+	81	0	-	131	1		181	21	@	231	0	@	281	0	@	331	0	@	381	0	@	431	0		481
0		32	0	+	82	0	-	132	3		182	17	@	232	0	@	282	0	@	332	1	@	382	1	@	432	0		482
0		33	0	+	83	0	-	133	4		183	8	@	233	0	@	283	0	@	333	0	@	383	1	@	433	0		483
0		34	0	+	84	0	-	134	0		184	9	@	234	0	@	284	0	@	334	0	@	384	1	@	434	0		484
0		35	0	+	85	0	-	135	2	+	185	9	@	235	0	@	285	0	@	335	0	@	385	0	@	435	1		485
0		36	0	+	86	1	-	136	9	+	186	6	@	236	0	@	286	0	@	336	1	@	386	0	@	436	0		486
0		37	0	+	87	0	-	137	4	+	187	15	@	237	0	@	287	0	@	337	1	@	387	0	@	437	0		487
0		38	0	+	88	1	-	138	10	+	188	15	@	238	0	@	288	0	@	338	0	@	388	0	@	438	0		488
0		39	0	+	89	0	-	139	13	+	189	9	@	239	0	@	289	0	@	339	0	@	389	0	@	439	0		489
0		40	0	+	90	0	@	140	9	+	190	6	@	240	0	@	290	0	@	340	0	@	390	1	@	440	0		490
0		41	0	+	91	0	@	141	6	+	191	8	@	241	0	@	291	0	@	341	1	@	391	0	@	441	0		491
0		42	0	+	92	0	@	142	12	+	192	7	@	242	0	@	292	0	@	342	0	@	392	0	@	442	0		492
0		43	0	+	93	0	@	143	15	+	193	5	@	243	0	@	293	0	@	343	1	@	393	0	@	443	0		493
0		44	0	+	94	1	@	144	14	+	194	9	@	244	0	@	294	0	@	344	0	@	394	1	@	444	0		494
0		45	0	+	95	0	@	145	23	+	195	7	@	245	0	@	295	0	@	345	0	@	395	0	@	445	0		495
0		46	0	+	96	0	+	146	19	+	196	5	@	246	0	@	296	0	@	346	1	@	396	0	@	446	0		496
0		47	0	+	97	0	+	147	29	+	197	4	@	247	0	@	297	0	@	347	1	@	397	0	@	447	0		497
0		48	0	+	98	0	+	148	33	+	198	7	@	248	0	@	298	0	@	348	0	@	398	0	@	448	0		498
0		49	0	+	99	0	+	149	34	+	199	8	@	249	0	@	299	0	@	349	0	@	399	0	@	449	0		499
0		50	0	+	100	0	+	150	45	+	200	4	@	250	0	@	300	0	@	350	0	@	400	0	@	450	0		500

VMS Peak Search Report V1.9 Generated 22-NOV-2006 04:56:29

Configuration : $DISK1:[ALP171.SAMPLE]JJ3RA1AC_211162035C.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 18-OCT-2006 12:00:00 Acquisition date : 21-NOV-2006 20:35:45
Sample ID : JJ3RA1AC Sample quantity : 0.00000E+00 SAMPLE
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 : 3519.42 keV End energy : 6554.58 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4684.14	398	0	53.27	199.20	185	28	1.33E-02	5.0	
2	0	4858.67	365	0	47.35	228.51	215	39	1.22E-02	5.2	

VMS Nuclide Identification Report V3.0 Generated 22-NOV-2006 04:56:32

```
Configuration     : $DISK1:[ALP171.SAMPLE]JJ3RA1AC_211162035C.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 18-OCT-2006 12:00:00 Acquisition date : 21-NOV-2006 20:35:45
Sample ID         : JJ3RA1AC             Sample quantity  : 0.00000E+00 SAMPLE
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%
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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	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 PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	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
```

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

Configuration: $DISK1:[ALP171.SAMPLE]JJ3RA1AC_211162035C.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4684.14	185	213	398	401	-0.15		
4858.67	215	254	365	364	0.05		

End of Report

ALPHA

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

11/21/2006 10:06:43 AM

Lot No., Due Date: J6K060215,J6K060216,J6K060219; 12/01/2006

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6311393; RALPHA-A Alpha by GPC-Am

SDG, Matrix: 32992,32993,32994; FILTER

1.0 COC

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

2.0 QC Batch

	Yes	No	N/A
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2.2 Are the QC appropriate for the analysis included in the batch?	✓		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓		
2.4 Does the Worksheets include a Tracer Vial label for each sample?			✓

3.0 QC & Samples

	Yes	No	N/A
3.1 Is the blank results, yield, and MDA within contract limits?	✓		
3.2 Is the LCS result, yield, and MDA within contract limits?	✓		
3.3 Are the MS/MSD results, yields, and MDA within contract limits?			✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?			✓
3.5 Are the sample yields and MDAs within contract limits?	✓		

4.0 Raw Data

	Yes	No	N/A
4.1 Were results calculated in the correct units?	✓		
4.2 Were analysis volumes entered correctly?	✓		
4.3 Were Yields entered correctly?			✓
4.4 Were spectra reviewed/meet contractual requirements?			✓
4.5 Were raw counts reviewed for anomalies?	✓		

5.0 Other

	Yes	No	N/A
5.1 Are all nonconformances included and noted?			✓
5.2 Are all required forms filled out?	✓		
5.3 Was the correct methodology used?	✓		
5.4 Was transcription checked?	✓		
5.5 Were all calculations checked at a minimum frequency?	✓		
5.6 Are worksheet entries complete and correct?	✓		

6.0 Comments on any No response:

First Level Review Pam Anderson **Date** 11-21-06

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 6311393

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: Sherryl R Adam Date: 11-21-06

11/10/2006 11:42:51 AM

Sample Preparation/Analysis

Balance Id:1120373922

536403, Brown and Caldwell , Brown & Caldwell

BA Gross Alpha PrpRC5016/5014
S7 Gross Alpha by GPC using Am-241 curve
01 STANDARD TEST SET

Pipet #: _____

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311393 FILTER pCi/sampl PM, Quote: SA , 63174

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WoodT / APA

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 JH3LV-1-AE J6K060215-1-SAMP 10/18/2006 11:05	0.833sa	12.54g,in AmtRec: FILTER	#Containers: 1	1.5	0.6	150	/UA	322	11/20/06	
2 JH3L1-1-AE J6K060215-2-SAMP 10/18/2006 11:30	0.833sa	12.51g,in AmtRec: FILTER	#Containers: 1		0.6		/UB			
3 JH3L3-1-AE J6K060215-3-SAMP 10/18/2006 11:55	0.833sa	12.51g,in AmtRec: FILTER	#Containers: 1		0.6		/UC			
4 JH3L5-1-AE J6K060215-4-SAMP 10/18/2006 11:10	501.44sa	12.53g,in AmtRec: FILTER	#Containers: 1		0.8	11/10/06 JSU	/UD			
5 JH3L6-1-AE J6K060215-5-SAMP 10/18/2006 12:00	0.833sa	12.56g,in AmtRec: FILTER	#Containers: 1		0.4		/UE			
6 JH3MC-1-AE J6K060216-1-SAMP 10/05/2006 09:50	0.833sa,g	12.52g,in AmtRec: FILTER	#Containers: 1		0.5		/UA	1606	11/20/06	
7 JH3MJ-1-AE J6K060216-2-SAMP 10/05/2006 10:10	0.833sa,g	12.56g,in AmtRec: FILTER	#Containers: 1		0.5		/UA			

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 1 ISV - Insufficient Volume for Analysis WO Cnt: 7

Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added Prep_SamplePrep v4.8.24

STL RICHLAND

236

11/10/2006 11:42:52 AM

Sample Preparation/Analysis

Balance Id:1120373922

536403, Brown and Caldwell , Brown & Caldwell

BA Gross Alpha PrpRC5016/5014
S7 Gross Alpha by GPC using Am-241 curve
01 STANDARD TEST SET

Pipet #: _____

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311393 FILTER pCi/sampl PM, Quote: SA , 63174

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WoodT

STL RICHLAND

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
8 JH3MK-1-AE J6K060216-3-SAMP 10/05/2006 10:30	0.833sa,g	12.52g,in AmtRec: FILTER	#Containers: 1	1.5	0.6	~~70~~ 150 11/10/06	10E Scr:	1606 Alpha:	11/10/06 Beta:	
9 JH3ML-1-AE J6K060216-4-SAMP 10/05/2006 09:55	0.833sa,g	12.54g,in AmtRec: FILTER	#Containers: 1		0.5		10D Scr:	Alpha:	Beta:	
10 JH3MM-1-AE J6K060216-5-SAMP 10/05/2006 10:35	0.833sa,g	12.53g,in AmtRec: FILTER	#Containers: 1		0.8	11/10/06	10E Scr:	Alpha:	Beta:	
11 JH3NN-1-AE J6K060219-1-SAMP 10/11/2006 10:55	0.833sa,g	12.52g,in AmtRec: FILTER	#Containers: 1		0.5		10A Scr:	1854 Alpha:	11/20/06 0000 Beta:	
12 JH3NR-1-AE J6K060219-2-SAMP 10/11/2006 11:10	0.833sa,g	12.54g,in AmtRec: FILTER	#Containers: 1		0.5		10B Scr:	Alpha:	Beta:	
13 JH3NT-1-AE J6K060219-3-SAMP 10/11/2006 11:35	0.833sa,g	12.55g,in AmtRec: FILTER	#Containers: 1		0.6		10C Scr:	Alpha:	Beta:	
14 JH3NV-1-AE J6K060219-4-SAMP 10/11/2006 11:00	0.833sa	12.58g,in AmtRec: FILTER	#Containers: 1		0.6		10D Scr:	Alpha:	Beta:	

STL RICHLAND

11/10/2006 11:42:52 AM

Sample Preparation/Analysis

Balance Id:1120373922

536403, Brown and Caldwell , Brown & Caldwell

BA Gross Alpha PrpRC5016/5014
S7 Gross Alpha by GPC using Am-241 curve
01 STANDARD TEST SET

Pipet #: _____

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311393 FILTER pCi/sampl PM, Quote: SA , 63174

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WoodT

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
15 JH3NW-1-AE J6K060219-5-SAMP 10/11/2006 11:40	0.833sa,g	12.59g,in AmtRec: FILTER	#Containers: 1	1.5	0.6	150	10E	1854	11/20/06 AP	Scr: Alpha: Beta:
16 JH5PQ-1-AA-B J6K070000-393-BLK 10/18/2006 11:05		12.58g,in AmtRec:	#Containers: 1		0.3	11/10/06	10B	2137		Scr: Alpha: Beta:
17 JH5PQ-1-AC-C J6K070000-393-LCS 10/18/2006 11:05		12.54g,in AmtRec:	ASC0422 10/23/06,pd 02/09/06,r #Containers: 1		0.5		10A			Scr: Alpha: Beta:

Comments:

1% collodion added to ea. Samp. 11/20/06 APA

All Clients for Batch:
536403, Brown and Caldwell Brown & Caldwell , SA , 63174

JH3LV1AE-SAMP Constituent List:
ALPHA RDL:20 pCi/sam LCL: UCL: RPD:
JH5PQ1AA-BLK:
ALPHA RDL:20 pCi/sam LCL: UCL: RPD:
JH5PQ1AC-LCS:

JH3LV1AE-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JH5PQ1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JH5PQ1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

11/21/2006 9:29:13 AM

ICOC Fraction Transfer/Status Report

ByDate: 11/21/2005, 11/26/2006, Batch: '6311393', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6311393						
AC		**CalcC**	**WoodT**	11/10/2006 11:40:03		
SC			wagarr	IsBatched	11/7/2006 3:29:16 PM	ICOC_RADCALC v4.8.24
SC			WoodT	InPrep	11/10/2006 11:40:03 AM	RICH-RC-5013 Revision 5
SC			AshworthA	Sep2C	11/20/2006 10:37:25 AM	RICH-RC-5014 REVISION 6
SC			BlackCL	InCnt1	11/20/2006 10:40:03 AM	RICH-RD-0003 REVISION 4
SC			DAWKINSO	CalcC	11/20/2006 9:52:25 PM	RICH-RD-0003 REVISION 4
AC			**AshworthA**	11/20/2006 10:37:25		
AC			**BlackCL**	11/20/2006 10:40:03		
AC			**DAWKINSO**	11/20/2006 9:52:25		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 4

ICOCFractions v4.8.18

11/21/2006 9:29:13 AM

Rpt DB Transfer log (Batch Results)

SEVERN TRENT STL

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 / Mda	Units	Expected	Yield	Volumes	
32992	9JH3L110			J6K0602152	P-0779	FILTER	11/3/2006 10:00:00	10/18/2006 11:30:00 AM					
ALPHA	BAS7	0		11/20/2006 12:06:48	7.22E+00	1.802E+00	1.944E+00	4.272E+00	PCI/SA		1.0	1.0E+0	2.084E-2
32992	9JH3L310			J6K0602153	P-0780	FILTER	11/3/2006 10:00:00	10/18/2006 11:55:00 AM					
ALPHA	BAS7	0		11/20/2006 12:06:48	3.5037E+00	1.58E+00	1.622E+00	5.463E+00	PCI/SA		1.0	1.0E+0	2.077E-2
32992	9JH3L510			J6K0602154	P-0781	FILTER	11/3/2006 10:00:00	10/18/2006 11:10:00 AM					
ALPHA	BAS7	0		11/20/2006 12:06:48	6.196E+00	1.781E+00	1.885E+00	5.034E+00	PCI/SA		1.0	1.0E+0	2.077E-2
32992	9JH3L610			J6K0602155	000546	FILTER	11/3/2006 10:00:00	10/18/2006 12:00:00 PM					
ALPHA	BAS7	0		11/20/2006 12:06:48	4.0391E+00	1.508E+00	1.564E+00	4.578E+00	PCI/SA		1.0	1.0E+0	2.082E-2
32992	9JH3LV10			J6K0602151	P-0778	FILTER	11/3/2006 10:00:00	10/18/2006 11:05:00 AM					
ALPHA	BAS7	0		11/20/2006 12:06:48	4.076E+00	1.681E+00	1.734E+00	5.712E+00	PCI/SA		1.0	1.0E+0	2.088E-2
32993	9JH3MC10			J6K0602161	P-0769	FILTER	11/3/2006 10:00:00	10/5/2006 9:50:00 AM					
ALPHA	BAS7	0		11/20/2006 2:50:55 PM	2.6223E+00	1.517E+00	1.54E+00	5.717E+00	PCI/SA		1.0	1.0E+0	2.086E-2
32993	9JH3MJ10			J6K0602162	P-0770	FILTER	11/3/2006 10:00:00	10/5/2006 10:10:00 AM					
ALPHA	BAS7	0		11/20/2006 2:50:55 PM	1.8234E+00	1.14E+00	1.155E+00	4.252E+00	PCI/SA		1.0	1.0E+0	2.092E-2
32993	9JH3MK10			J6K0602163	P-0771	FILTER	11/3/2006 10:00:00	10/5/2006 10:30:00 AM					
ALPHA	BAS7	0		11/20/2006 2:50:55 PM	6.1E+00	1.859E+00	1.959E+00	5.451E+00	PCI/SA		1.0	1.0E+0	2.081E-2
32993	9JH3ML10			J6K0602164	P-0772	FILTER	11/3/2006 10:00:00	10/5/2006 9:55:00 AM					
ALPHA	BAS7	0		11/20/2006 2:50:55 PM	4.0912E+00	1.559E+00	1.612E+00	5.029E+00	PCI/SA		1.0	1.0E+0	2.076E-2
32993	9JH3MM10			J6K0602165	000544	FILTER	11/3/2006 10:00:00	10/5/2006 10:35:00 AM					
ALPHA	BAS7	0		11/20/2006 2:50:55 PM	3.2885E+00	1.411E+00	1.449E+00	4.574E+00	PCI/SA		1.0	1.0E+0	2.087E-2
32994	9JH3NN10			J6K0602191	P-0773	FILTER	11/3/2006 10:00:00	10/11/2006 10:55:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	4.8082E+00	1.76E+00	1.826E+00	5.718E+00	PCI/SA		1.0	1.0E+0	2.085E-2
32994	9JH3NR10			J6K0602192	P-0774	FILTER	11/3/2006 10:00:00	10/11/2006 11:10:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	1.8605E+00	1.163E+00	1.178E+00	4.339E+00	PCI/SA		1.0	1.0E+0	2.051E-2
32994	9JH3NT10			J6K0602193	P-0775	FILTER	11/3/2006 10:00:00	10/11/2006 11:35:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	6.8219E+00	1.926E+00	2.045E+00	5.434E+00	PCI/SA		1.0	1.0E+0	2.088E-2
32994	9JH3NV10			J6K0602194	P-0776	FILTER	11/3/2006 10:00:00	10/11/2006 11:00:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	1.9771E+00	1.293E+00	1.308E+00	4.988E+00	PCI/SA		1.0	1.0E+0	2.094E-2
32994	9JH3NW10			J6K0602195	000545	FILTER	11/3/2006 10:00:00	10/11/2006 11:40:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	2.1928E+00	1.269E+00	1.287E+00	4.627E+00	PCI/SA		1.0	1.0E+0	2.061E-2
32992	JH5PQ1AB			J6K070000393	INTRA-LAB BLANK	FILTER	11/3/2006 10:00:00	10/18/2006 11:05:00 AM					
ALPHA	BAS7	0	B	11/20/2006 8:21:42 PM	1.8418E-03	1.698E-03	1.708E-03	7.066E-03	PCI/SA		1.0	1.0E+0	1.258E+1
32992	JH5PQ1CS			J6K070000393	INTRA-LAB CHECK	FILTER	11/3/2006 10:00:00	10/18/2006 11:05:00 AM					
ALPHA	BAS7	0	S	11/20/2006 8:21:42 PM	1.8184E-01	1.067E-02	2.131E-02	9.508E-03	PCI/SA	1.8359E-01	1.0	1.0E+0	1.254E+1

6311393, **Samples Inserted | Updated | NotUpdated => 17 | 0 | 0,
**Results Inserted | ReTestInserted | Updated | NotInserted => 17 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 6311393

Alpha Beta, Alpha by GPC-Am , Results

11/20/2006 9:48:18 PM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Alpha by GPC-Am				Richland Standard Gross Alpha/Beta Wo Blk Subt										
Calc	S7	FILTER	JH3LV1AE	ALPHA	4.08E+00	(1.73E+00)		PCI/SA	R	2.36E+00	5.71E+00		100%	
Calc	S7	FILTER	JH3L11AE	ALPHA	7.22E+00	(1.94E+00)		PCI/SA	R	1.65E+00	4.27E+00		100%	
Calc	S7	FILTER	JH3L31AE	ALPHA	3.50E+00	(1.62E+00)		PCI/SA	R	2.23E+00	5.46E+00		100%	
Calc	S7	FILTER	JH3L51AE	ALPHA	6.20E+00	(1.89E+00)		PCI/SA	R	2.04E+00	5.03E+00		100%	
Calc	S7	FILTER	JH3L61AE	ALPHA	4.04E+00	(1.56E+00)		PCI/SA	R	1.78E+00	4.58E+00		100%	
Calc	S7	FILTER	JH3MC1AE	ALPHA	2.62E+00	(1.54E+00)		PCI/SA	R	2.37E+00	5.72E+00		100%	
Calc	S7	FILTER	JH3MJ1AE	ALPHA	1.82E+00	(1.16E+00)	U4	PCI/SA	R	1.64E+00	4.25E+00		100%	
Calc	S7	FILTER	JH3MK1AE	ALPHA	6.10E+00	(1.96E+00)		PCI/SA	R	2.22E+00	5.45E+00		100%	
Calc	S7	FILTER	JH3ML1AE	ALPHA	4.09E+00	(1.61E+00)		PCI/SA	R	2.04E+00	5.03E+00		100%	
Calc	S7	FILTER	JH3MM1AE	ALPHA	3.29E+00	(1.45E+00)		PCI/SA	R	1.78E+00	4.57E+00		100%	
Calc	S7	FILTER	JH3NN1AE	ALPHA	4.81E+00	(1.83E+00)		PCI/SA	R	2.37E+00	5.72E+00		100%	
Calc	S7	FILTER	JH3NR1AE	ALPHA	1.86E+00	(1.18E+00)	U4	PCI/SA	R	1.68E+00	4.34E+00		100%	
Calc	S7	FILTER	JH3NT1AE	ALPHA	6.82E+00	(2.05E+00)		PCI/SA	R	2.22E+00	5.43E+00		100%	
Calc	S7	FILTER	JH3NV1AE	ALPHA	1.98E+00	(1.31E+00)	U4	PCI/SA	R	2.03E+00	4.99E+00		100%	
Calc	S7	FILTER	JH3NW1AE	ALPHA	2.19E+00	(1.29E+00)		PCI/SA	R	1.80E+00	4.63E+00		100%	
Calc	S7	FILTER	JH5PQ1AA	ALPHA	1.84E-03	(1.71E-03)	U4	PCI/SA	R	2.73E-03	7.07E-03	B	100%	
Calc	S7	FILTER	JH5PQ1AC	ALPHA	1.82E-01	(2.13E-02)		PCI/SA	R	3.94E-03	9.51E-03	S	100%	99%

CRDL met

P Anderson
11-21-06

() - (1s Uncertainities)
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 Reguardless of Significants
Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:17
RADCALC v4.8.24
STL Richland

Batch Nbr: 6311393

Alpha Beta, Alpha by GPC-Am , Calculated Results

Detailed Report

11/20/2006 9:48:19 PM

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
1	Calc	S7	FILTER	*STLE	GabWoBS	**JH3LV1AE**	**PCI/SA**		10/18/06 11:05	11/20/06 12:06			1	1.00 Sa	
536403,P-0778					,J6K060215-1 v4.8.24		FILTER			00.6				0.020883 Sa	

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
0	11/20/06 13:21	ALPHA	19	26	GPC10A	1.5	N	N	3.9513E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.365E-02)	(0.000E+00)		8%			(0.000E+00)	47.885183		

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
	11/20/06	ALPHA	R	**4.075967**		7.46667E-02	0.188966	0.188966	1.00 Sa	100%		5.712447		
				(1.733836)		(3.0797E-02)	(0.079661)	(0.079661)	(0.027097)			2.364508		

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
2	Calc	S7	FILTER	*STLE	GabWoBS	**JH3L11AE**	**PCI/SA**		10/18/06 11:30	11/20/06 12:06			1	1.00 Sa	
536403,P-0779					,J6K060215-2 v4.8.24		FILTER			00.6				0.020836 Sa	

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
0	11/20/06 13:21	ALPHA	24	13	GPC10B	1.5	N	N	4.0124E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.347E-02)	(0.000E+00)		8%			(0.000E+00)	47.994258		

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
	11/20/06	ALPHA	R	**7.220031**		1.34000E-01	0.333967	0.333967	1.00 Sa	100%		4.272036		
				(1.94442)		(3.3446E-02)	(0.08825)	(0.08825)	(0.014142)			1.650275		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
3	Calc	S7	FILTER	*STLE	GabWoBS	**JH3L31AE**	**PCI/SA**		10/18/06 11:55	11/20/06 12:06			1	1.00 Sa	
536403,P-0780					,J6K060215-3 v4.8.24		FILTER			00.6				0.02077 Sa	

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
0	11/20/06 13:21	ALPHA	16	22	GPC10C	1.5	N	N	3.8791E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.292E-02)	(0.000E+00)		8%			(0.000E+00)	48.146837		

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
	11/20/06	ALPHA	R	**3.503655**		6.26667E-02	0.16155	0.16155	1.00 Sa	100%		5.462745		
				(1.621662)		(2.8269E-02)	(0.074207)	(0.074207)	(0.027097)			2.227647		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
4	Calc	S7	FILTER	*STLE	GabWoBS	**JH3L51AE**	**PCI/SA**		10/18/06 11:10	11/20/06 12:06			1	1.00 Sa	
536403,P-0781					,J6K060215-4 v4.8.24		FILTER			00.8				0.020771 Sa	

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
0	11/20/06 13:21	ALPHA	24	21	GPC10D	1.5	N	N	4.1301E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.201E-02)	(0.000E+00)		8%			(0.000E+00)	48.143759		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:4

RADCALC v4.8.24
STL Richland

Batch Nbr: 6311393

Alpha Beta, Alpha by GPC-Am , Calculated Results

11/20/2006 9:48:19 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	BlkLcC/MDC	StdDvMdC/LcC
	11/20/06	ALPHA	R	**6.195982**		1.18000E-01	0.285709	0.285709	1.00 Sa	100%		5.03429		
				(1.885303)		(3.3921E-02)	(0.085658)	(0.085658)	(0.014142)			2.044034		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
5	Calc	S7	FILTER	*STLE	GabWoBS	**JH3L61AE**	**PCI/SA**		10/18/06 12:00	11/20/06 12:06			1	1.00 Sa	
536403,000546					,J6K060215-5 v4.8.24		FILTER			00.4				0.020821 Sa	

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
0	11/20/06 13:21	ALPHA	15	14	GPC10E	1.5	N	N	3.8565E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.141E-02)	(0.000E+00)		8%			(0.000E+00)	48.028766		

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
	11/20/06	ALPHA	R	**4.039112**		7.20000E-02	0.186697	0.186697	1.00 Sa	100%		4.577535		
				(1.563888)		(2.6882E-02)	(0.071503)	(0.071503)	(0.027097)			1.783067		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
6	Calc	S7	FILTER	*STLE	GabWoBS	**JH3MC1AE**	**PCI/SA**		10/05/06 09:50	11/20/06 14:50			1	1.00 Sa	
536403,P-0769					,J6K060216-1 v4.8.24		FILTER			00.5				0.020856 Sa	

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
0	11/20/06 16:05	ALPHA	15	26	GPC10A	1.5	N	N	3.9535E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.366E-02)	(0.000E+00)		8%			(0.000E+00)	47.948253		

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
	11/20/06	ALPHA	R	**2.622294**		4.80000E-02	0.121412	0.121412	1.00 Sa	100%		5.716872		
				(1.539766)		(2.7761E-02)	(0.071011)	(0.071011)	(0.014142)			2.36634		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
7	Calc	S7	FILTER	*STLE	GabWoBS	**JH3MJ1AE**	**PCI/SA**		10/05/06 10:10	11/20/06 14:50			1	1.00 Sa	
536403,P-0770					,J6K060216-2 v4.8.24		FILTER			00.5				0.020924 Sa	

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
0	11/20/06 16:05	ALPHA	9	13	GPC10B	1.5	N	N	4.0142E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.348E-02)	(0.000E+00)		8%			(0.000E+00)	47.792684		

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
	11/20/06	ALPHA	R	**1.823432**	U4	3.40000E-02	0.0847	0.0847	1.00 Sa	100%		4.252176		
				(1.155012)		(2.1260E-02)	(0.05347)	(0.05347)	(0.014142)			1.642603		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	S7	FILTER	*STLE	GabWoBS	**JH3MK1AE**	**PCI/SA**		10/05/06 10:30	11/20/06 14:50			1	1.00 Sa	
536403,P-0771					,J6K060216-3 v4.8.24		FILTER			00.6				0.020813 Sa	

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

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:8

RADCALC v4.8.24

STL Richland

Batch Nbr: 6311393

Alpha Beta, Alpha by GPC-Am , Calculated Results

11/20/2006 9:48:19 PM

0	11/20/06 16:05	ALPHA	23	22	GPC10C	1.5	N	N	3.8791E-01	1.0000E+00	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.292E-02)	(0.000E+00)		8%		(0.000E+00)	48.046055		

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
	11/20/06	ALPHA	R	**6.099965**		1.09333E-01	0.281853	0.281853	1.00 Sa	100%		5.45131		
				(1.958508)		(3.3320E-02)	(0.089301)	(0.089301)	(0.014142)			2.222984		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
9	Calc	S7	FILTER	*STLE	GabWoBS	**JH3ML1AE**	**PCI/SA**		10/05/06 09:55	11/20/06 14:50			1	1.00 Sa	
536403,P-0772					,J6K060216-4 v4.8.24		FILTER			00.5				0.020765 Sa	

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
0	11/20/06 16:05	ALPHA	18	21	GPC10D	1.5	N	N	4.1358E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.203E-02)	(0.000E+00)		8%			(0.000E+00)	48.158019		

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
	11/20/06	ALPHA	R	**4.091213**		7.80000E-02	0.188598	0.188598	1.00 Sa	100%		5.028837		
				(1.611986)		(2.9732E-02)	(0.073661)	(0.073661)	(0.014142)			2.04182		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	S7	FILTER	*STLE	GabWoBS	**JH3MM1AE**	**PCI/SA**		10/05/06 10:35	11/20/06 14:50			1	1.00 Sa	
536403,000544					,J6K060216-5 v4.8.24		FILTER			00.8				0.020874 Sa	

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
0	11/20/06 16:05	ALPHA	13	14	GPC10E	1.5	N	N	3.8498E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.139E-02)	(0.000E+00)		8%			(0.000E+00)	47.907112		

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
	11/20/06	ALPHA	R	**3.288543**		5.86667E-02	0.15239	0.15239	1.00 Sa	100%		4.573939		
				(1.448894)		(2.5175E-02)	(0.066673)	(0.066673)	(0.014142)			1.781667		

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
11	Calc	S7	FILTER	*STLE	GabWoBS	**JH3NN1AE**	**PCI/SA**		10/11/06 10:55	11/20/06 17:38			1	1.00 Sa	
536403,P-0773					,J6K060219-1 v4.8.24		FILTER			00.5				0.020853 Sa	

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
0	11/20/06 18:53	ALPHA	21	26	GPC10A	1.5	N	N	3.9535E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.366E-02)	(0.000E+00)		8%			(0.000E+00)	47.954965		

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
	11/20/06	ALPHA	R	**4.808212**		8.80000E-02	0.222589	0.222589	1.00 Sa	100%		5.717672		
				(1.826147)		(3.2208E-02)	(0.083744)	(0.083744)	(0.014142)			2.366671		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:12

RADCALC v4.8.24

STL Richland

Batch Nbr: 6311393

Alpha Beta, Alpha by GPC-Am , Calculated Results

11/20/2006 9:48:19 PM

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
12	Calc	S7	FILTER	*STLE	GabWoBS	**JH3NR1AE**	**PCI/SA**		10/11/06 11:10	11/20/06 17:38			1	1.00 Sa	
536403,P-0774					,J6K060219-2 v4.8.24		FILTER			00.5				0.020507 Sa	

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
0	11/20/06 18:53	ALPHA	9	13	GPC10B	1.5	N	N	4.0142E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.348E-02)	(0.000E+00)		8%			(0.000E+00)	48.764003		

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
	11/20/06	ALPHA	R	**1.86049**	**U4**	3.40000E-02	0.0847	0.0847	1.00 Sa	100%		4.338596		
				(1.178486)		(2.1260E-02)	(0.05347)	(0.05347)	(0.014142)			1.675986		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
13	Calc	S7	FILTER	*STLE	GabWoBS	**JH3NT1AE**	**PCI/SA**		10/11/06 11:35	11/20/06 17:38			1	1.00 Sa	
536403,P-0775					,J6K060219-3 v4.8.24		FILTER			00.6				0.02088 Sa	

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
0	11/20/06 18:53	ALPHA	25	22	GPC10C	1.5	N	N	3.8791E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.292E-02)	(0.000E+00)		8%			(0.000E+00)	47.891985		

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
	11/20/06	ALPHA	R	**6.821917**		1.22667E-01	0.316226	0.316226	1.00 Sa	100%		5.433829		
				(2.04543)		(3.4628E-02)	(0.09338)	(0.09338)	(0.014142)			2.215856		

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	S7	FILTER	*STLE	GabWoBS	**JH3NV1AE**	**PCI/SA**		10/11/06 11:00	11/20/06 17:38			1	1.00 Sa	
536403,P-0776					,J6K060219-4 v4.8.24		FILTER			00.6				0.020943 Sa	

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
0	11/20/06 18:53	ALPHA	12	21	GPC10D	1.5	N	N	4.1339E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.203E-02)	(0.000E+00)		8%			(0.000E+00)	47.748193		

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
	11/20/06	ALPHA	R	**1.977095**	**U4**	3.80000E-02	0.091923	0.091923	1.00 Sa	100%		4.988317		
				(1.307669)		(2.4846E-02)	(0.060611)	(0.060611)	(0.014142)			2.025368		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
15	Calc	S7	FILTER	*STLE	GabWoBS	**JH3NW1AE**	**PCI/SA**		10/11/06 11:40	11/20/06 17:38			1	1.00 Sa	
536403,000545					,J6K060219-5 v4.8.24		FILTER			00.6				0.020614 Sa	

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
0	11/20/06 18:53	ALPHA	10	14	GPC10E	1.5	N	N	3.8532E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.140E-02)	(0.000E+00)		8%			(0.000E+00)	48.51027		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:15

RADCALC v4.8.24

STL Richland

Batch Nbr: 6311393

Alpha Beta, Alpha by GPC-Am , Calculated Results

11/20/2006 9:48:19 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	BlkLcC/MDC	StdDvMdC/LcC
	11/20/06	ALPHA	R	**2.192799**		3.86667E-02	0.10035	0.10035	1.00 Sa	100%		4.627434		
				(1.28741)		(2.2371E-02)	(0.058685)	(0.058685)	(0.014142)			1.802504		

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	S7	FILTER	*STLE	GabWoBS	**JH5PQ1AA**	**PCI/SA**	**B**	10/18/06 11:05	11/20/06 20:21			1	1.00 Sa	
0,INTRA-LAB BLANK					,J6K070000-393		FILTER			00.3				12.58 Sa	

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
0	11/20/06 21:36	ALPHA	7	13	GPC10B	1.5	N	N	4.0178E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.349E-02)	(0.000E+00)		8%			(0.000E+00)	0.079491		

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
	11/20/06	ALPHA	R	**0.001842**	**U4**	2.06667E-02	0.051438	0.051438	1.00 Sa	100%		0.007066		
				(0.001708)		(1.9055E-02)	(0.047638)	(0.047638)	(0.014142)			0.00273		

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	S7	FILTER	*STLE	GabWoBS	**JH5PQ1AC**	**PCI/SA**	**S**	10/18/06 11:05	11/20/06 20:21		ASC0422	1	1.00 Sa	
0,INTRA-LAB CHECK					,J6K070000-393		FILTER			00.5		ASC0422 Alq		12.54 Sa	

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
0	11/20/06 21:36	ALPHA	308	26	GPC10A	1.5	N	N	3.9535E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(1.366E-02)	(0.000E+00)		8%			(0.000E+00)	0.079745		

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
	11/20/06	ALPHA	R	**0.18184**		2.00133E+00	5.062211	5.062211	1.00 Sa	100%	99%	0.009508		
				(0.021312)		(1.1744E-01)	(0.531813)	(0.531813)	(0.014142)			0.003936		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:17

RADCALC v4.8.24

STL Richland

UST Number: JH3LV1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JH3LV1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4392

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00019	00000	0150	00000	1000	20-NOV-2006 13:21:48.39

Bkg File: [quad10.bkgrnd]2006-11-19_2227.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00026	0500	0.05	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3L11AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JH3L11AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4387

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00024	00000	0150	00000	1000	20-NOV-2006 13:21:48.39

Bkg File: [quad10.bkgrnd]2006-11-19_2227.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00013	0500	0.03	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3L31AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C File: [quad10.sample.C]JH3L31AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.C_15;4398

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00016	00000	0150	00000	1000	20-NOV-2006 13:21:48.39

Bkg File: [quad10.bkgrnd]2006-11-19_2227.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00022	0500	0.04	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3L51AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-D File: [quad10.sample.D]JH3L51AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.D_15;4391

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00024	00000	0150	00000	1000	20-NOV-2006 13:21:48.39

Bkg File: [quad10.bkgrnd]2006-11-19_2227.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00021	0500	0.04	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3L61AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-E File: [quad10.sample.E]JH3L61AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.E_15;4387

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00015	00000	0150	00000	1000	20-NOV-2006 13:21:48.39

Bkg File: [quad10.bkgrnd]2006-11-19_2227.E_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00014	0500	0.03	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3MC1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JH3MC1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4392

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00015	00000	0150	00000	1000	20-NOV-2006 16:05:55.04

Bkg File: [quad10.bkgrnd]2006-11-19_2227.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00026	0500	0.05	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3MJ1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JH3MJ1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4387

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00009	00000	0150	00000	1000	20-NOV-2006 16:05:55.04

Bkg File: [quad10.bkgrnd]2006-11-19_2227.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00013	0500	0.03	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3MK1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C File: [quad10.sample.C]JH3MK1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.C_15;4398

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00023	00000	0150	00000	1000	20-NOV-2006 16:05:55.04

Bkg File: [quad10.bkgrnd]2006-11-19_2227.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00022	0500	0.04	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3ML1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-D File: [quad10.sample.D]JH3ML1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.D_15;4391

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00018	00000	0150	00000	1000	20-NOV-2006 16:05:55.04

Bkg File: [quad10.bkgrnd]2006-11-19_2227.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00021	0500	0.04	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3MM1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-E File: [quad10.sample.E]JH3MM1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.E_15;4387

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00013	00000	0150	00000	1000	20-NOV-2006 16:05:55.04

Bkg File: [quad10.bkgrnd]2006-11-19_2227.E_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00014	0500	0.03	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3NN1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JH3NN1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4392

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00021	00000	0150	00000	1000	20-NOV-2006 18:53:54.66

Bkg File: [quad10.bkgrnd]2006-11-19_2227.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00026	0500	0.05	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3NR1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JH3NR1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4387

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00009	00000	0150	00000	1000	20-NOV-2006 18:53:54.66

Bkg File: [quad10.bkgrnd]2006-11-19_2227.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00013	0500	0.03	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3NT1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C File: [quad10.sample.C]JH3NT1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.C_15;4398

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00025	00000	0150	00000	1000	20-NOV-2006 18:53:54.66

Bkg File: [quad10.bkgrnd]2006-11-19_2227.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00022	0500	0.04	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3NV1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-D File: [quad10.sample.D]JH3NV1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.D_15;4391

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00012	00000	0150	00000	1000	20-NOV-2006 18:53:54.66

Bkg File: [quad10.bkgrnd]2006-11-19_2227.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00021	0500	0.04	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH3NW1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-E File: [quad10.sample.E]JH3NW1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.E_15;4387

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00010	00000	0150	00000	1000	20-NOV-2006 18:53:54.66

Bkg File: [quad10.bkgrnd]2006-11-19_2227.E_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00014	0500	0.03	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH5PQ1AA Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JH5PQ1AA.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4387

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00007	00000	0150	00000	1000	20-NOV-2006 21:36:42.94

Bkg File: [quad10.bkgrnd]2006-11-19_2227.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00013	0500	0.03	00000	1000	19-NOV-2006 22:27:30.35

UST Number: JH5PQ1AC Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JH5PQ1AC.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4392

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00308	00000	0150	00000	1000	20-NOV-2006 21:36:42.94

Bkg File: [quad10.bkgrnd]2006-11-19_2227.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00026	0500	0.05	00000	1000	19-NOV-2006 22:27:30.35

RADIUM 228

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

11/24/2006 9:04:03 AM

Lot No., Due Date: J6K060215,J6K060216,J6K060219; 12/01/2006

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6311396; RRA228 Ra-228 by GPC

SDG, Matrix: 32992,32993,32994; FILTER

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. 10-09032

First Level Review Pam Anderson **Date** 11-24-06

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 631396

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?	SM 11-24-09	✓	
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 NCM

Second Level Review: Sheryl A Adam Date: 11-24-09

STL RICHLAND

11/10/2006 3:33:53 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TF Radium-228 by GPC
01 STANDARD TEST SET

AnalyDueDate: 11/30/2006

Batch: 6311396 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: 6311395, BXTE

Balance Id:1120373922,1120373922,1120
Pipet #:
Sep1 DT/Tm Tech: AL 11/2/06 1536
Sep2 DT/Tm Tech: AL 11/2/06 1331
Prep Tech: WoodT,HarrisonJ

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 JH3LV-1-AD J6K060215-1-SAMP	0.833sa	500.20sa	150.09g,in	0.2499g	RATA24637 10/30/06	in 31.2	3x50	7A 2019	11/21/06 DD	
			1.0609					7A 0739	11/28/06	
10/18/2006 11:05		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
2 JH3L1-1-AD J6K060215-2-SAMP	0.833sa	500.14sa	150.05g,in	0.2499g	RATA24638 10/30/06	31.0		7B 2019	11/21/06 DD	
			1.0470					7B 0739	11/28/06	
10/18/2006 11:30		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
3 JH3L3-1-AD J6K060215-3-SAMP	0.833sa	501.73sa	150.08g,in	0.2492g	RATA24639 10/30/06	31.1		7C 2019	11/21/06 DD	
			1.0709					7C 0739	11/28/06	
10/18/2006 11:55		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
4 JH3L5-1-AD J6K060215-4-SAMP	501.44sa	502.50sa	150.08g,in	149.7634g	RATA24640 10/30/06	30.8		1B 2019	11/21/06 DD	
			1.0076					1B 0739	11/28/06	
10/18/2006 11:10		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:

STL RICHLAND

11/10/2006 3:33:53 PM

Sample Preparation/Analysis

Balance Id:1120373922,1120373922,1120

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TF Radium-228 by GPC
01 STANDARD TEST SET

Pipet #:

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311396 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6311395, BXTE

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

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:
5 JH3L6-1-AD J6K060215-5-SAMP	0.833sa	502.50sa	150.37g,in	0.2493g 1.0567	RATA24641 10/30/06	lin 30.7	3x50	IC 2019	11/21/06	
10/18/2006 12:00		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
6 JH3MC-1-AD J6K060216-1-SAMP	0.833sa,g	500.06sa,g	150.06g,in	0.25g 0.9805	RATA24642 11/07/06	31.1		1D 2019	11/24/06	
10/05/2006 09:50		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
7 JH3MJ-1-AD J6K060216-2-SAMP	0.833sa,g	500.03sa,g	150.14g,in	0.2501g 1.0605	RATA24643 11/07/06	30.7		2A 2019	11/21/06	
10/05/2006 10:10		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
8 JH3MK-1-AD J6K060216-3-SAMP	0.833sa,g	501.08sa,g	150.03g,in	0.2494g 0.9858	RATA24644 11/07/06	30.2		2B 2019	11/21/06	
10/05/2006 10:30		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:

STL RICHLAND

11/10/2006 3:33:53 PM

Sample Preparation/Analysis

Balance Id:1120373922,1120373922,1120

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TF Radium-228 by GPC
01 STANDARD TEST SET

Pipet #:

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311396 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6311395, BXTE

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

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:
9 JH3ML-1-AD J6K060216-4-SAMP	0.833sa,g	503.05sa,g	150.06g,in	0.2485g 1.1054	RATA24645 11/07/06	in 30.9	3X50	2C 2019 2C 0739	11/21/06 OK 11/22/06	
10/05/2006 09:55			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
10 JH3MM-1-AD J6K060216-5-SAMP	0.833sa,g	500.03sa,g	150.06g,in	0.25g 0.9905	RATA24646 11/07/06	31.3		2D 2019 2D 0739	11/21/06 OK 11/22/06	
10/05/2006 10:35			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
11 JH3NN-1-AD J6K060219-1-SAMP	0.833sa,g	500.13sa,g	150.13g,in	0.2501g 0.9235	RATA24647 11/07/06	30.7		3A 2019 3A 0739	11/21/06 OK 11/22/06	
10/11/2006 10:55			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
12 JH3NR-1-AD J6K060219-2-SAMP	0.833sa,g	509.38sa,g	150.47g,in	0.2461g 1.0130	RATA24648 11/07/06	31.1		3B 2019 3B 0739	11/21/06 OK 11/22/06	
10/11/2006 11:10			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:

11/10/2006 3:33:54 PM

Sample Preparation/Analysis

Balance Id:1120373922,1120373922,1120

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TF Radium-228 by GPC
01 STANDARD TEST SET

Pipet #:

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311396 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6311395, BXTE

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

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:
13 JH3NT-1-AD J6K060219-3-SAMP	0.833sa,g	500.67sa,g	150.26g,in	0.25g 0.9917	RATA24649 11/07/06	1in 30.5	3x58	3C 2019 3C 0739	11/21/06 00 11/22/06	
10/11/2006 11:35		AmtRec: FILTER	#Containers: 1					Scr:	Alpha:	Beta:
14 JH3NV-1-AD J6K060219-4-SAMP	0.833sa	500.36sa	150.07g,in	0.2498g 0.9931	RATA24650 11/07/06	30.6		3D 2019 3D 0739	11/21/06 00 11/22/06	
10/11/2006 11:00		AmtRec: FILTER	#Containers: 1					Scr:	Alpha:	Beta:
15 JH3NW-1-AD J6K060219-5-SAMP	0.833sa,g	508.75sa,g	150.56g,in	0.2465g 0.9955	RATA24651 11/07/06	26.3		4A 2019 4A 0739	11/21/06 00 11/22/06	
10/11/2006 11:40		AmtRec: FILTER	#Containers: 1					Scr:	Alpha:	Beta:
16 JH5QD-1-AA-B J6K070000-396-BLK		500.12g	150.00g,in	150.00g ~~1.9735~~ 1.0164	RATA24652 11/07/06	30.5		4B 2019 4B 0739	11/21/06 00 11/22/06	
10/18/2006 11:05		AmtRec:	#Containers: 1					Scr:	Alpha:	Beta:

STL RICHLAND

11/10/2006 3:33:54 PM

Sample Preparation/Analysis

BX Ra-226/228 PrpRC5016, SepRC5005
TF Radium-228 by GPC
01 STANDARD TEST SET

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311396 pCi/sampl

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

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:
17JH5QD-1-AC-C J6K070000-396-LCS		500.12g	150.00g,in	150.00g	RASC4247 10/18/06,pd 11/01/01,r					

11/13/06

10/18/2006 11:05 AmtRec: #Containers: 1 Scr: Alpha: Beta:

Comments: Spike & tracer added to blank, no spike added to LCS - AL 11/21/06

All Clients for Batch:
536403, Brown and Caldwell Brown & Caldwell , SA , 63174

JH3LV1AD-SAMP Constituent List:

Ba-133	RDL:	pCi/sam	LCL:70	UCL:130	RPD:20	RA-228	RDL:3.10E+00	pCi/sam	LCL:	UCL:	RPD:
RA-228DA	RDL:3.10E+00	pCi/sam	LCL:	UCL:	RPD:						

JH5QD1AA-BLK:

Ba-133	RDL:	pCi/sam	LCL:70	UCL:130	RPD:20	RA-228	RDL:3.10E+00	pCi/sam	LCL:	UCL:	RPD:
RA-228DA	RDL:3.10E+00	pCi/sam	LCL:	UCL:	RPD:						

JH5QD1AC-LCS:

Ba-133	RDL:	pCi/sam	LCL:70	UCL:130	RPD:20	Ra-226	RDL:	pCi/sam	LCL:70	UCL:130	RPD:20
RA-228	RDL:1	pCi/sam	LCL:70	UCL:130	RPD:20	RA-228DA	RDL:1	pCi/sam	LCL:70	UCL:130	RPD:20

JH3LV1AD-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

JH5QD1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

JH5QD1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

271

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #: **10-09032**
NCM Initiated By: Pam Anderson
Date Opened: 11/24/2006
Date Closed:

Classification: **Deficiency**
Status: **GLREVIEW**
Production Area: Environmental - Prep
Tests: Ra-228 by GPC
Lot #'s (Sample #'s): J6K060215 (1,2,3,4,5), J6K060216 (1,2,3,4,5), J6K060219 (1,2,3,4,5), J6K070000 (396),
QC Batches: 6311396

Nonconformance: Technician Error
Subcategory: Laboratory error: prep error

Problem Description / Root Cause

Name	Date	Description
Pam Anderson	11/24/2006	The LCS in this batch was added to the blank during the prep procedure. The blank was then recalculated as the LCS. All the samples in the batch are >CRDL and can act as their own blanks. Data accepted.

Corrective Action

Name	Date	Corrective Action
Pam Anderson	11/24/2006	The tech is aware of the error and will be more careful.

Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note	Response	Response Note

Quality Assurance Verification

Verified By	Due Date	Status	Notes
		This section not yet completed by QA.	

Approval History

Date Approved	Approved By	Position

Date Printed: 11/24/2006

11/22/2006 3:58:32 PM

ICOC Fraction Transfer/Status Report

ByDate: 11/22/2005, 11/27/2006, Batch: '6311396', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6311396						
AC		**CalcC**	**LongA**	11/12/2006 3:46:40		
SC			wagarr	IsBatched	11/7/2006 3:29:16 PM	ICOC_RADCALC v4.8.24
SC			LongA	Sep1C	11/12/2006 3:46:40 PM	RICH-RC-5005 REVISION 5
SC			LongA	Sep2C	11/21/2006 4:08:27 PM	RICH-RC-5005 REVISION 4
SC			DAWKINSO	InCnt1	11/21/2006 5:36:52 PM	RICH-RD-0003 REVISION 4
SC			BlackCL	CalcC	11/22/2006 9:46:23 AM	RICH-RD-0003 REVISION 4
AC			**LongA**	11/21/2006 4:08:27		
AC			**DAWKINSO**	11/21/2006 5:36:52		
AC			**BlackCL**	11/22/2006 9:46:23		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 4

ICOCFractions v4.8.18

11/22/2006 3:58:31 PM

Rpt DB Transfer log (Batch Results)

SEVERN TRENT STL

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 / MDA	Units	Expected	Yield	Volumes
32992	**9JH3L110**			**J6K0602152**	P-0779	FILTER	11/3/2006 10:00:00	10/18/2006 11:30:00 AM				
ALPHA	BAS7	0		11/20/2006 12:06:48	**7.22E+00**	1.802E+00	1.944E+00	4.272E+00	PCI/SA	1.0	1.0E+0	2.084E-2
RA-228	BXTF	0		11/22/2006 7:42:25	**1.0496E+00**	5.082E-01	5.385E-01	2.351E+00	PCI/SA	0.944	1.0E+0	2.499E-1
TH-228	9NS1	0		11/15/2006 12:20:29	**9.9555E-02**	5.786E-02	5.846E-02	1.589E-01	PCI/SA	1.014	1.0E+0	3.354E-2
TH-230	9NS1	0		11/15/2006 12:20:29	**1.6049E-01**	7.206E-02	7.33E-02	1.537E-01	PCI/SA	1.014	1.0E+0	3.354E-2
TH-232	9NS1	0		11/15/2006 12:20:29	**0.0E+00**	0.0E+00	3.273E-02	1.537E-01	PCI/SA	1.014	1.0E+0	3.354E-2
32992	**9JH3L310**			**J6K0602153**	P-0780	FILTER	11/3/2006 10:00:00	10/18/2006 11:55:00 AM				
ALPHA	BAS7	0		11/20/2006 12:06:48	**3.5037E+00**	1.58E+00	1.622E+00	5.463E+00	PCI/SA	1.0	1.0E+0	2.077E-2
RA-228	BXTF	0		11/22/2006 7:42:25	**1.3253E+00**	5.538E-01	6.082E-01	2.614E+00	PCI/SA	0.968	1.0E+0	2.492E-1
TH-228	9NS1	0		11/15/2006 12:20:45	**1.3289E-01**	9.583E-02	9.661E-02	3.189E-01	PCI/SA	0.827	1.0E+0	3.416E-2
TH-230	9NS1	0		11/15/2006 12:20:45	**4.1132E-01**	1.477E-01	1.524E-01	3.084E-01	PCI/SA	0.827	1.0E+0	3.416E-2
TH-232	9NS1	0		11/15/2006 12:20:45	**5.1415E-02**	5.749E-02	5.768E-02	3.084E-01	PCI/SA	0.827	1.0E+0	3.416E-2
32992	**9JH3L510**			**J6K0602154**	P-0781	FILTER	11/3/2006 10:00:00	10/18/2006 11:10:00 AM				
ALPHA	BAS7	0		11/20/2006 12:06:48	**6.196E+00**	1.781E+00	1.885E+00	5.034E+00	PCI/SA	1.0	1.0E+0	2.077E-2
RA-228	BXTF	0		11/22/2006 7:43:07	**1.6172E+00**	5.507E-01	5.8E-01	2.411E+00	PCI/SA	0.902	1.0E+0	2.488E-1
TH-228	9NS1	0		11/15/2006 12:20:52	**9.3038E-02**	1.186E-01	1.188E-01	5.006E-01	PCI/SA	0.989	1.0E+0	3.413E-2
TH-230	9NS1	0		11/15/2006 12:20:52	**1.7993E-01**	9.273E-02	9.406E-02	2.698E-01	PCI/SA	0.989	1.0E+0	3.413E-2
TH-232	9NS1	0		11/15/2006 12:20:52	**0.0E+00**	0.0E+00	5.029E-02	2.698E-01	PCI/SA	0.989	1.0E+0	3.413E-2
32992	**9JH3L610**			**J6K0602155**	000546	FILTER	11/3/2006 10:00:00	10/18/2006 12:00:00 PM				
ALPHA	BAS7	0		11/20/2006 12:06:48	**4.0391E+00**	1.508E+00	1.564E+00	4.578E+00	PCI/SA	1.0	1.0E+0	2.082E-2
RA-228	BXTF	0		11/22/2006 7:43:07	**1.1306E+00**	4.917E-01	5.183E-01	2.213E+00	PCI/SA	0.943	1.0E+0	2.493E-1
TH-228	9NS1	0		11/15/2006 9:17:45	**1.3445E-01**	9.211E-02	9.287E-02	3.229E-01	PCI/SA	1.043	1.0E+0	3.348E-2
TH-230	9NS1	0		11/15/2006 9:17:45	**5.1997E-01**	1.402E-01	1.475E-01	2.228E-01	PCI/SA	1.043	1.0E+0	3.348E-2
TH-232	9NS1	0		11/15/2006 9:17:45	**1.1142E-01**	6.696E-02	6.767E-02	2.228E-01	PCI/SA	1.043	1.0E+0	3.348E-2
32992	**9JH3LV10**			**J6K0602151**	P-0778	FILTER	11/3/2006 10:00:00	10/18/2006 11:05:00 AM				
ALPHA	BAS7	0		11/20/2006 12:06:48	**4.076E+00**	1.681E+00	1.734E+00	5.712E+00	PCI/SA	1.0	1.0E+0	2.088E-2
RA-228	BXTF	0		11/22/2006 7:42:25	**1.5537E+00**	5.771E-01	5.783E-01	2.401E+00	PCI/SA	0.962	1.0E+0	2.499E-1
32993	**9JH3MC10**			**J6K0602161**	P-0769	FILTER	11/3/2006 10:00:00	10/5/2006 9:50:00 AM				
ALPHA	BAS7	0		11/20/2006 2:50:55 PM	**2.6223E+00**	1.517E+00	1.54E+00	5.717E+00	PCI/SA	1.0	1.0E+0	2.086E-2
RA-228	BXTF	0		11/22/2006 7:43:07	**7.8301E-01**	5.606E-01	5.606E-01	2.481E+00	PCI/SA	0.886	1.0E+0	2.5E-1
TH-228	9NS1	0		11/15/2006 9:17:45	**1.3258E-01**	7.809E-02	7.889E-02	2.272E-01	PCI/SA	1.099	1.0E+0	3.329E-2
TH-230	9NS1	0		11/15/2006 9:17:45	**2.7116E-01**	1.038E-01	1.063E-01	2.169E-01	PCI/SA	1.099	1.0E+0	3.329E-2
TH-232	9NS1	0		11/15/2006 9:17:45	**7.2309E-02**	5.423E-02	5.457E-02	2.169E-01	PCI/SA	1.099	1.0E+0	3.329E-2
32993	**9JH3MJ10**			**J6K0602162**	P-0770	FILTER	11/3/2006 10:00:00	10/5/2006 10:10:00 AM				
ALPHA	BAS7	0		11/20/2006 2:50:55 PM	**1.8234E+00**	1.14E+00	1.155E+00	4.252E+00	PCI/SA	1.0	1.0E+0	2.092E-2
RA-228	BXTF	0		11/22/2006 7:43:19	**1.9695E+00**	4.784E-01	4.971E-01	1.799E+00	PCI/SA	0.946	1.0E+0	2.501E-1
TH-228	9NS1	0		11/15/2006 9:17:45	**1.553E-01**	9.147E-02	9.246E-02	2.661E-01	PCI/SA	1.024	1.0E+0	3.393E-2
TH-230	9NS1	0		11/15/2006 9:17:45	**2.5409E-01**	1.059E-01	1.081E-01	2.54E-01	PCI/SA	1.024	1.0E+0	3.393E-2
TH-232	9NS1	0		11/15/2006 9:17:45	**4.2349E-02**	4.735E-02	4.749E-02	2.54E-01	PCI/SA	1.024	1.0E+0	3.393E-2
32993	**9JH3MK10**			**J6K0602163**	P-0771	FILTER	11/3/2006 10:00:00	10/5/2006 10:30:00 AM				
ALPHA	BAS7	0		11/20/2006 2:50:55 PM	**6.1E+00**	1.859E+00	1.959E+00	5.451E+00	PCI/SA	1.0	1.0E+0	2.081E-2
RA-228	BXTF	0		11/22/2006 7:43:19	**1.9269E+00**	4.947E-01	5.185E-01	1.936E+00	PCI/SA	0.865	1.0E+0	2.494E-1
TH-228	9NS1	0		11/15/2006 9:17:45	**6.8692E-02**	6.869E-02	6.894E-02	2.747E-01	PCI/SA	1.114	1.0E+0	3.315E-2
TH-230	9NS1	0		11/15/2006 9:17:45	**3.0596E-01**	1.177E-01	1.206E-01	2.622E-01	PCI/SA	1.114	1.0E+0	3.315E-2
TH-232	9NS1	0		11/15/2006 9:17:45	**4.3708E-02**	4.887E-02	4.901E-02	2.622E-01	PCI/SA	1.114	1.0E+0	3.315E-2
32993	**9JH3ML10**			**J6K0602164**	P-0772	FILTER	11/3/2006 10:00:00	10/5/2006 9:55:00 AM				
ALPHA	BAS7	0		11/20/2006 2:50:55 PM	**4.0912E+00**	1.559E+00	1.612E+00	5.029E+00	PCI/SA	1.0	1.0E+0	2.076E-2
RA-228	BXTF	0		11/22/2006 7:43:19	**2.311E+00**	4.874E-01	5.099E-01	1.755E+00	PCI/SA	0.993	1.0E+0	2.485E-1
TH-228	9NS1	0		11/15/2006 9:17:45	**7.773E-02**	7.271E-02	7.3E-02	2.86E-01	PCI/SA	1.099	1.0E+0	3.281E-2
TH-230	9NS1	0		11/15/2006 9:17:45	**1.8548E-02**	6.151E-02	6.153E-02	3.118E-01	PCI/SA	1.099	1.0E+0	3.281E-2
TH-232	9NS1	0		11/15/2006 9:17:45	**7.4186E-02**	5.564E-02	5.599E-02	2.225E-01	PCI/SA	1.099	1.0E+0	3.281E-2
32993	**9JH3MM10**			**J6K0602165**	000544	FILTER	11/3/2006 10:00:00	10/5/2006 10:35:00 AM				

6311396, **Samples Inserted | Updated | NotUpdated => 1 | 0 | 15,
**Results Inserted | ReTestInserted | Updated | NotInserted => 16 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Matrix / Cnt Uncert	Received Date / Tot Uncert	Sample Date / Mda	Units	Expected	Yield	Volumes	
ALPHA	BAS7	0		11/20/2006 2:50:55 PM	**3.2885E+00**	1.411E+00	1.449E+00	4.574E+00	PCI/SA		1.0	1.0E+0	2.087E-2
RA-228	BXTF	0		11/22/2006 7:43:19	**1.9571E+00**	4.752E-01	5.021E-01	1.833E+00	PCI/SA		0.901	1.0E+0	2.5E-1
TH-228	9NS1	0		11/15/2006 9:17:45	**1.8849E-01**	1.088E-01	1.1E-01	3.521E-01	PCI/SA		0.929	1.0E+0	3.33E-2
TH-230	9NS1	0		11/15/2006 9:17:45	**3.9979E-01**	1.356E-01	1.399E-01	2.942E-01	PCI/SA		0.929	1.0E+0	3.33E-2
TH-232	9NS1	0		11/15/2006 9:17:45	**7.9958E-02**	5.997E-02	6.036E-02	2.398E-01	PCI/SA		0.929	1.0E+0	3.33E-2
32994	**9JH3NN10**			**J6K0602191**	P-0773	FILTER	11/3/2006 10:00:00	10/11/2006 10:55:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	**4.8082E+00**	1.76E+00	1.826E+00	5.718E+00	PCI/SA		1.0	1.0E+0	2.085E-2
RA-228	BXTF	0		11/22/2006 7:43:32	**8.8239E-01**	4.247E-01	4.319E-01	1.849E+00	PCI/SA		0.826	1.0E+0	2.501E-1
TH-228	9NS1	0		11/15/2006 9:17:45	**6.4106E-02**	6.411E-02	6.434E-02	2.563E-01	PCI/SA		1.068	1.0E+0	3.411E-2
TH-230	9NS1	0		11/15/2006 9:17:45	**1.231E-01**	7.398E-02	7.473E-02	2.461E-01	PCI/SA		1.068	1.0E+0	3.411E-2
TH-232	9NS1	0		11/15/2006 9:17:45	**2.0517E-02**	4.588E-02	4.591E-02	2.461E-01	PCI/SA		1.068	1.0E+0	3.411E-2
32994	**9JH3NR10**			**J6K0602192**	P-0774	FILTER	11/3/2006 10:00:00	10/11/2006 11:10:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	**1.8605E+00**	1.163E+00	1.178E+00	4.339E+00	PCI/SA		1.0	1.0E+0	2.051E-2
RA-228	BXTF	0		11/22/2006 7:43:32	**8.4187E-01**	3.952E-01	4.069E-01	1.738E+00	PCI/SA		0.916	1.0E+0	2.461E-1
TH-228	9NS1	0		11/15/2006 9:17:45	**-1.909E-02**	4.269E-02	4.272E-02	2.29E-01	PCI/SA		0.959	1.0E+0	3.183E-2
TH-230	9NS1	0		11/15/2006 9:17:45	**1.833E-02**	4.099E-02	4.102E-02	2.199E-01	PCI/SA		0.959	1.0E+0	3.183E-2
TH-232	9NS1	0		11/15/2006 9:17:45	**3.6659E-02**	4.099E-02	4.11E-02	2.199E-01	PCI/SA		0.959	1.0E+0	3.183E-2
32994	**9JH3NT10**			**J6K0602193**	P-0775	FILTER	11/3/2006 10:00:00	10/11/2006 11:35:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	**6.8219E+00**	1.926E+00	2.045E+00	5.434E+00	PCI/SA		1.0	1.0E+0	2.088E-2
RA-228	BXTF	0		11/22/2006 7:43:32	**1.1331E+00**	4.218E-01	4.417E-01	1.806E+00	PCI/SA		0.879	1.0E+0	2.5E-1
TH-228	9NS1	0		11/15/2006 9:18:10	**0.0E+00**	0.0E+00	3.403E-02	1.598E-01	PCI/SA		1.035	1.0E+0	3.37E-2
TH-230	9NS1	0		11/15/2006 9:18:10	**2.8835E-01**	9.633E-02	9.932E-02	1.535E-01	PCI/SA		1.035	1.0E+0	3.37E-2
TH-232	9NS1	0		11/15/2006 9:18:10	**0.0E+00**	0.0E+00	3.267E-02	1.535E-01	PCI/SA		1.035	1.0E+0	3.37E-2
32994	**9JH3NV10**			**J6K0602194**	P-0776	FILTER	11/3/2006 10:00:00	10/11/2006 11:00:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	**1.9771E+00**	1.293E+00	1.308E+00	4.988E+00	PCI/SA		1.0	1.0E+0	2.094E-2
RA-228	BXTF	0		11/22/2006 7:43:32	**1.2015E+00**	4.077E-01	4.387E-01	1.76E+00	PCI/SA		0.883	1.0E+0	2.498E-1
TH-228	9NS1	0		11/15/2006 9:18:18	**7.805E-02**	7.805E-02	7.835E-02	3.121E-01	PCI/SA		0.855	1.0E+0	3.379E-2
TH-230	9NS1	0		11/15/2006 9:18:18	**6.9942E-01**	1.886E-01	1.985E-01	2.996E-01	PCI/SA		0.855	1.0E+0	3.379E-2
TH-232	9NS1	0		11/15/2006 9:18:18	**0.0E+00**	0.0E+00	5.585E-02	2.996E-01	PCI/SA		0.855	1.0E+0	3.379E-2
32994	**9JH3NW10**			**J6K0602195**	000545	FILTER	11/3/2006 10:00:00	10/11/2006 11:40:00 AM					
ALPHA	BAS7	0		11/20/2006 5:38:54 PM	**2.1928E+00**	1.269E+00	1.287E+00	4.627E+00	PCI/SA		1.0	1.0E+0	2.061E-2
RA-228	BXTF	0		11/22/2006 7:43:45	**2.1915E-01**	3.632E-01	4.233E-01	2.071E+00	PCI/SA		0.761	1.0E+0	2.465E-1
TH-228	9NS1	0		11/15/2006 9:18:20	**1.4771E-01**	1.348E-01	1.354E-01	5.298E-01	PCI/SA		0.966	1.0E+0	3.2E-2
TH-230	9NS1	0		11/15/2006 9:18:20	**2.3632E-01**	1.083E-01	1.103E-01	2.835E-01	PCI/SA		0.966	1.0E+0	3.2E-2
TH-232	9NS1	0		11/15/2006 9:18:20	**4.7264E-02**	5.284E-02	5.3E-02	2.835E-01	PCI/SA		0.966	1.0E+0	3.2E-2
32992	**JH5QD1CS**			**J6K070000396**	INTRA-LAB CHECK	FILTER	11/3/2006 10:00:00	10/18/2006 11:05:00 AM					
RA-228	BXTF	0	S	11/22/2006 7:43:45	**4.4588E+00**	2.577E-01	3.616E-01	4.353E-01	PCI/SA	5.0391E+00	0.901	1.0E+0	1.0E+0

6311396, **Samples Inserted | Updated | NotUpdated => 1 | 0 | 15,
**Results Inserted | ReTestInserted | Updated | NotInserted => 16 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Ra-228 by GPC				Ra-226/Ra-228 Deem With Out Blk Subt.										
Calc	TF	FILTER	JH3LV1AD	RA-228	1.36E+00	(8.87E-01)	U4	PCI/SA	R	1.71E+00	3.73E+00		96%	
Calc	TF	FILTER	JH3LV1AD	RA-228	4.71E-01	(9.01E-01)	U4	PCI/SA	R	1.90E+00	4.14E+00		96%	
Calc	TF	FILTER	JH3LV1AD	RA-228	2.83E+00	(1.19E+00)		PCI/SA	R	2.10E+00	4.60E+00		96%	
Calc	TF	FILTER	JH3LV1AD	RA-228	1.55E+00	(5.78E-01)		PCI/SA	A	1.10E+00	2.40E+00		96%	
Calc	TF	FILTER	JH3LV1AD	RA-228	2.18E+00	(3.72E+00)	U4	PCI/SA	R	7.68E+00	1.68E+01		96%	
Calc	TF	FILTER	JH3L11AD	RA-228	1.91E+00	(9.18E-01)		PCI/SA	R	1.67E+00	3.66E+00		94%	
Calc	TF	FILTER	JH3L11AD	RA-228	7.95E-01	(9.08E-01)	U4	PCI/SA	R	1.85E+00	4.06E+00		94%	
Calc	TF	FILTER	JH3L11AD	RA-228	4.41E-01	(9.71E-01)	U4	PCI/SA	R	2.05E+00	4.50E+00		94%	
Calc	TF	FILTER	JH3L11AD	RA-228	1.05E+00	(5.38E-01)		PCI/SA	A	1.07E+00	2.35E+00		94%	
Calc	TF	FILTER	JH3L11AD	RA-228	3.12E+00	(3.66E+00)	U4	PCI/SA	R	7.37E+00	1.62E+01		94%	
Calc	TF	FILTER	JH3L31AD	RA-228	3.10E+00	(1.10E+00)		PCI/SA	R	1.87E+00	4.07E+00		97%	
Calc	TF	FILTER	JH3L31AD	RA-228	9.88E-01	(1.02E+00)	U4	PCI/SA	R	2.07E+00	4.51E+00		97%	
Calc	TF	FILTER	JH3L31AD	RA-228	-1.13E-01	(1.04E+00)	U4	PCI/SA	R	2.30E+00	5.01E+00		97%	
Calc	TF	FILTER	JH3L31AD	RA-228	1.33E+00	(6.08E-01)		PCI/SA	A	1.20E+00	2.61E+00		97%	
Calc	TF	FILTER	JH3L31AD	RA-228	-4.60E-01	(3.93E+00)	U4	PCI/SA	R	8.55E+00	1.86E+01		97%	
Calc	TF	FILTER	JH3L51AD	RA-228	2.80E+00	(1.02E+00)		PCI/SA	R	1.70E+00	3.75E+00		90%	
Calc	TF	FILTER	JH3L51AD	RA-228	8.22E-01	(9.30E-01)	U4	PCI/SA	R	1.89E+00	4.16E+00		90%	
Calc	TF	FILTER	JH3L51AD	RA-228	1.23E+00	(1.06E+00)	U4	PCI/SA	R	2.09E+00	4.62E+00		90%	
Calc	TF	FILTER	JH3L51AD	RA-228	1.62E+00	(5.80E-01)		PCI/SA	A	1.09E+00	2.41E+00		90%	
Calc	TF	FILTER	JH3L51AD	RA-228	2.16E+00	(3.55E+00)	U4	PCI/SA	R	7.37E+00	1.63E+01		90%	
Calc	TF	FILTER	JH3L61AD	RA-228	2.35E+00	(9.26E-01)		PCI/SA	R	1.55E+00	3.44E+00		94%	
Calc	TF	FILTER	JH3L61AD	RA-228	-3.13E-01	(7.57E-01)	U4	PCI/SA	R	1.72E+00	3.82E+00		94%	
Calc	TF	FILTER	JH3L61AD	RA-228	1.35E+00	(9.94E-01)	U4	PCI/SA	R	1.91E+00	4.24E+00		94%	
Calc	TF	FILTER	JH3L61AD	RA-228	1.13E+00	(5.18E-01)		PCI/SA	A	9.98E-01	2.21E+00		94%	
Calc	TF	FILTER	JH3L61AD	RA-228	6.31E-01	(3.09E+00)	U4	PCI/SA	R	6.64E+00	1.48E+01		94%	
Calc	TF	FILTER	JH3MC1AD	RA-228	-7.87E-01	(7.36E-01)	U4	PCI/SA	R	1.75E+00	3.86E+00		89%	
Calc	TF	FILTER	JH3MC1AD	RA-228	2.33E+00	(1.09E+00)		PCI/SA	R	1.95E+00	4.28E+00		89%	
Calc	TF	FILTER	JH3MC1AD	RA-228	8.07E-01	(1.05E+00)	U4	PCI/SA	R	2.16E+00	4.75E+00		89%	
Calc	TF	FILTER	JH3MC1AD	RA-228	7.83E-01	(5.61E-01)	U4	PCI/SA	A	1.13E+00	2.48E+00		89%	
Calc	TF	FILTER	JH3MC1AD	RA-228	-1.61E+00	(3.07E+00)	U4	PCI/SA	R	7.06E+00	1.57E+01		89%	
Calc	TF	FILTER	JH3MJ1AD	RA-228	2.44E+00	(8.50E-01)		PCI/SA	R	1.20E+00	2.80E+00		95%	
Calc	TF	FILTER	JH3MJ1AD	RA-228	1.21E+00	(7.63E-01)	U4	PCI/SA	R	1.33E+00	3.11E+00		95%	
Calc	TF	FILTER	JH3MJ1AD	RA-228	2.26E+00	(9.59E-01)		PCI/SA	R	1.47E+00	3.44E+00		95%	
Calc	TF	FILTER	JH3MJ1AD	RA-228	1.97E+00	(4.97E-01)		PCI/SA	A	7.69E-01	1.80E+00		95%	
Calc	TF	FILTER	JH3MJ1AD	RA-228	1.34E+00	(2.44E+00)	U4	PCI/SA	R	4.93E+00	1.17E+01		95%	
Calc	TF	FILTER	JH3MK1AD	RA-228	2.94E+00	(9.47E-01)		PCI/SA	R	1.29E+00	3.01E+00		87%	
Calc	TF	FILTER	JH3MK1AD	RA-228	1.16E+00	(8.03E-01)	U4	PCI/SA	R	1.43E+00	3.34E+00		87%	
Calc	TF	FILTER	JH3MK1AD	RA-228	1.68E+00	(9.38E-01)		PCI/SA	R	1.59E+00	3.71E+00		87%	

() - (1s Uncertainities)
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 Reguardless of Significants
Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:39
RADCALC v4.8.24
STL Richland

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	TF	FILTER	JH3MK1AD	RA-228	1.93E+00	(5.19E-01)		PCI/SA	A	8.31E-01	1.94E+00		87%	
Calc	TF	FILTER	JH3MK1AD	RA-228	3.79E+00	(2.86E+00)	U4	PCI/SA	R	5.09E+00	1.21E+01		87%	
Calc	TF	FILTER	JH3ML1AD	RA-228	2.81E+00	(8.74E-01)		PCI/SA	R	1.17E+00	2.73E+00		99%	
Calc	TF	FILTER	JH3ML1AD	RA-228	1.37E+00	(7.66E-01)		PCI/SA	R	1.30E+00	3.03E+00		99%	
Calc	TF	FILTER	JH3ML1AD	RA-228	2.75E+00	(9.95E-01)		PCI/SA	R	1.44E+00	3.36E+00		99%	
Calc	TF	FILTER	JH3ML1AD	RA-228	2.31E+00	(5.10E-01)		PCI/SA	A	7.53E-01	1.75E+00		99%	
Calc	TF	FILTER	JH3ML1AD	RA-228	1.92E+00	(2.69E+00)	U4	PCI/SA	R	5.36E+00	1.25E+01		99%	
Calc	TF	FILTER	JH3MM1AD	RA-228	3.16E+00	(9.47E-01)		PCI/SA	R	1.22E+00	2.85E+00		90%	
Calc	TF	FILTER	JH3MM1AD	RA-228	1.28E+00	(7.84E-01)	U4	PCI/SA	R	1.35E+00	3.16E+00		90%	
Calc	TF	FILTER	JH3MM1AD	RA-228	1.42E+00	(8.70E-01)	U4	PCI/SA	R	1.50E+00	3.51E+00		90%	
Calc	TF	FILTER	JH3MM1AD	RA-228	1.96E+00	(5.02E-01)		PCI/SA	A	7.82E-01	1.83E+00		90%	
Calc	TF	FILTER	JH3MM1AD	RA-228	-4.31E-01	(2.43E+00)	U4	PCI/SA	R	5.47E+00	1.28E+01		90%	
Calc	TF	FILTER	JH3NN1AD	RA-228	6.34E-01	(6.47E-01)	U4	PCI/SA	R	1.22E+00	2.88E+00		83%	
Calc	TF	FILTER	JH3NN1AD	RA-228	1.23E+00	(7.91E-01)	U4	PCI/SA	R	1.36E+00	3.19E+00		83%	
Calc	TF	FILTER	JH3NN1AD	RA-228	7.81E-01	(7.97E-01)	U4	PCI/SA	R	1.51E+00	3.54E+00		83%	
Calc	TF	FILTER	JH3NN1AD	RA-228	8.82E-01	(4.32E-01)		PCI/SA	A	7.87E-01	1.85E+00		83%	
Calc	TF	FILTER	JH3NN1AD	RA-228	1.89E+00	(2.83E+00)	U4	PCI/SA	R	5.54E+00	1.30E+01		83%	
Calc	TF	FILTER	JH3NR1AD	RA-228	8.12E-01	(6.39E-01)	U4	PCI/SA	R	1.16E+00	2.70E+00		92%	
Calc	TF	FILTER	JH3NR1AD	RA-228	1.05E+00	(7.30E-01)	U4	PCI/SA	R	1.29E+00	3.00E+00		92%	
Calc	TF	FILTER	JH3NR1AD	RA-228	6.59E-01	(7.41E-01)	U4	PCI/SA	R	1.43E+00	3.33E+00		92%	
Calc	TF	FILTER	JH3NR1AD	RA-228	8.42E-01	(4.07E-01)		PCI/SA	A	7.49E-01	1.74E+00		92%	
Calc	TF	FILTER	JH3NR1AD	RA-228	-2.20E+00	(2.28E+00)	U4	PCI/SA	R	5.48E+00	1.26E+01		92%	
Calc	TF	FILTER	JH3NT1AD	RA-228	1.59E+00	(7.64E-01)		PCI/SA	R	1.20E+00	2.81E+00		88%	
Calc	TF	FILTER	JH3NT1AD	RA-228	9.44E-01	(7.37E-01)	U4	PCI/SA	R	1.34E+00	3.12E+00		88%	
Calc	TF	FILTER	JH3NT1AD	RA-228	8.65E-01	(7.93E-01)	U4	PCI/SA	R	1.48E+00	3.46E+00		88%	
Calc	TF	FILTER	JH3NT1AD	RA-228	1.13E+00	(4.42E-01)		PCI/SA	A	7.74E-01	1.81E+00		88%	
Calc	TF	FILTER	JH3NT1AD	RA-228	-5.53E+00	(2.17E+00)	U4	PCI/SA	R	6.02E+00	1.38E+01		88%	
Calc	TF	FILTER	JH3NV1AD	RA-228	2.24E+00	(8.37E-01)		PCI/SA	R	1.18E+00	2.74E+00		88%	
Calc	TF	FILTER	JH3NV1AD	RA-228	8.96E-01	(7.15E-01)	U4	PCI/SA	R	1.30E+00	3.04E+00		88%	
Calc	TF	FILTER	JH3NV1AD	RA-228	4.64E-01	(7.22E-01)	U4	PCI/SA	R	1.45E+00	3.37E+00		88%	
Calc	TF	FILTER	JH3NV1AD	RA-228	1.20E+00	(4.39E-01)		PCI/SA	A	7.56E-01	1.76E+00		88%	
Calc	TF	FILTER	JH3NV1AD	RA-228	2.56E+00	(2.65E+00)	U4	PCI/SA	R	4.95E+00	1.16E+01		88%	
Calc	TF	FILTER	JH3NW1AD	RA-228	1.07E+00	(7.68E-01)	U4	PCI/SA	R	1.38E+00	3.22E+00		76%	
Calc	TF	FILTER	JH3NW1AD	RA-228	-4.88E-01	(6.34E-01)	U4	PCI/SA	R	1.54E+00	3.57E+00		76%	
Calc	TF	FILTER	JH3NW1AD	RA-228	7.73E-02	(7.87E-01)	U4	PCI/SA	R	1.70E+00	3.97E+00		76%	
Calc	TF	FILTER	JH3NW1AD	RA-228	2.19E-01	(4.23E-01)	U4	PCI/SA	A	8.90E-01	2.07E+00		76%	
Calc	TF	FILTER	JH3NW1AD	RA-228	-2.33E+00	(2.90E+00)	U4	PCI/SA	R	6.98E+00	1.60E+01		76%	
Calc	TF	FILTER	JH5QD1AC	RA-228	4.13E+00	(5.71E-01)		PCI/SA	R	2.90E-01	6.77E-01	S	90%	82%
Calc	TF	FILTER	JH5QD1AC	RA-228	3.95E+00	(5.70E-01)		PCI/SA	R	3.22E-01	7.51E-01	S	90%	78%

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Q - Qualifier, U is Less Than Lc = 1.645*TPU
All Results Displayed to Three Digits Reguardless of Significants
Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:78
RADCALC v4.8.24
STL Richland

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	TF	FILTER	**JH5QD1AC**	RA-228	**5.30E+00**	**(7.25E-01)**		PCI/SA	R	3.57E-01	8.33E-01	**S**	90%	105%
Calc	TF	FILTER	**JH5QD1AC**	RA-228	**4.46E+00**	**(3.62E-01)**		PCI/SA	A	1.87E-01	4.35E-01	**S**	90%	88%
Calc	TF	FILTER	**JH5QD1AC**	RA-228	**4.95E+00**	**(1.20E+00)**		PCI/SA	R	1.43E+00	3.28E+00	**S**	90%	98%

P Anderson
11-22-06

spike added to blank.

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All Results Displayed to Three Digits Reguardless of Significants
Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:80
RADCALC v4.8.24
STL Richland

Batch Nbr: 6311396

Alpha Beta, Ra-228 by GPC , Calculated Results

11/22/2006 2:04:02 PM

Detailed Report

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
1	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3LV1AD**	**PCI/SA**		10/18/06 11:05	11/22/06 07:42	11/12/06 15:36	RATA24637	1	1.00 SA	
536403,P-0778					,J6K060215-1 v4.8.24		FILTER			31.2	11/21/06 13:31	RATA24637 Alq	106%	0.24995 SA	

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
0	11/21/06 18:25	RA-228	51	315	GPC7A	1	N	N	5.3665E-01	1.0000E+00	N	96%	N		1.6640E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.607E-02)	(0.000E+00)		8%			(0.000E+00)	4.000801		
1	11/21/06 19:20	RA-228	43	315	GPC7A	1	N	N	5.3665E-01	1.0000E+00	N	96%	N		1.8460E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.607E-02)	(0.000E+00)		8%			(0.000E+00)	4.000801		
2	11/21/06 20:16	RA-228	59	315	GPC7A	1	N	N	5.3665E-01	1.0000E+00	N	96%	N		2.0479E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.607E-02)	(0.000E+00)		8%			(0.000E+00)	4.000801		
3	11/22/06 07:42	RA-228	44	247	GPC7A	1	N	N	5.3665E-01	1.0000E+00	N	96%	N		7.4342E+00	4.5045E-01	1.0083E+00	
			50	310			N		(1.607E-02)	(0.000E+00)		8%			(0.000E+00)	4.000801		

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
	11/22/06	RA-228	R	**1.361496**	**U4**	2.32500E-01	0.749236	0.749236	1.00 SA	96%		3.734718		
				(0.886892)		(1.4956E-01)	(0.486197)	(0.486197)	(0.027062)			1.709679		
	11/22/06	RA-228	R	**0.470982**	**U4**	7.25000E-02	0.259183	0.259183	1.00 SA	96%		4.143151		
				(0.900719)		(1.3845E-01)	(0.49545)	(0.49545)	(0.027062)			1.896652		
	11/22/06	RA-228	R	**2.828737**		3.92500E-01	1.556664	1.556664	1.00 SA	96%		4.596394		
				(1.188405)		(1.5990E-01)	(0.647968)	(0.647968)	(0.027062)			2.104138		
	11/22/06	RA-228	A	**1.553739**		2.32500E-01	0.855028	0.855028	1.00 SA	96%		2.400673		
				(0.578329)		(8.6350E-02)	(0.31653)	(0.31653)	(0.015624)			1.09898		
	11/22/06	RA-228	R	**2.177383**	**U4**	8.32258E-02	1.198222	1.198222	1.00 SA	96%		16.775216		
				(3.722341)		(1.4202E-01)	(2.047285)	(2.047285)	(0.027062)			7.68317		

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
2	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3L11AD**	**PCI/SA**		10/18/06 11:30	11/22/06 07:42	11/12/06 15:36	RATA24638	1	1.00 SA	
536403,P-0779					,J6K060215-2 v4.8.24		FILTER			31.0	11/21/06 13:31	RATA24638 Alq	105%	0.249913 SA	

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
0	11/21/06 18:25	RA-228	52	288	GPC7B	1	N	N	5.3641E-01	1.0000E+00	N	94%	N		1.6640E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.542E-02)	(0.000E+00)		8%			(0.000E+00)	4.001387		
1	11/21/06 19:20	RA-228	42	288	GPC7B	1	N	N	5.3641E-01	1.0000E+00	N	94%	N		1.8460E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.542E-02)	(0.000E+00)		8%			(0.000E+00)	4.001387		
2	11/21/06 20:16	RA-228	39	288	GPC7B	1	N	N	5.3641E-01	1.0000E+00	N	94%	N		2.0479E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.542E-02)	(0.000E+00)		8%			(0.000E+00)	4.001387		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:2

RADCALC v4.8.24
STL Richland

Batch Nbr: 6311396

Alpha Beta, Ra-228 by GPC , Calculated Results

11/22/2006 2:04:02 PM

3	11/22/06 07:42	RA-228	41	218	GPC7B	1	N	N	5.3641E-01	1.0000E+00	N	94%	N	7.4342E+00	4.5045E-01	1.0083E+00
			50	310			N		(1.542E-02)	(0.000E+00)		8%		(0.000E+00)	4.001387	

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
	11/22/06	RA-228	R	**1.912113**		3.20000E-01	1.052095	1.052095	1.00 SA	94%		3.658111		
				(0.91827)		(1.5033E-01)	(0.50229)	(0.50229)	(0.014142)			1.668114		
	11/22/06	RA-228	R	**0.795459**	U4	1.20000E-01	0.437682	0.437682	1.00 SA	94%		4.058166		
				(0.907518)		(1.3638E-01)	(0.498822)	(0.498822)	(0.014142)			1.850541		
	11/22/06	RA-228	R	**0.441239**	U4	6.00000E-02	0.242781	0.242781	1.00 SA	94%		4.502112		
				(0.971053)		(1.3191E-01)	(0.53415)	(0.53415)	(0.014142)			2.052982		
	11/22/06	RA-228	A	**1.049604**		1.66667E-01	0.577519	0.577519	1.00 SA	94%		2.35143		
				(0.538491)		(8.0691E-02)	(0.295604)	(0.295604)	(0.008165)			1.072262		
	11/22/06	RA-228	R	**3.117409**	U4	1.16774E-01	1.71528	1.71528	1.00 SA	94%		16.168772		
				(3.660749)		(1.3663E-01)	(2.012267)	(2.012267)	(0.014142)			7.365296		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
3	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3L31AD**	**PCI/SA**		10/18/06 11:55	11/22/06 07:42	11/12/06 15:36	RATA24639	1	1.00 SA	
536403,P-0780					,J6K060215-3 v4.8.24		FILTER			31.1	11/21/06 13:31	RATA24639 Alq	107%	0.249171 SA	

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
0	11/21/06 18:25	RA-228	68	342	GPC7C	1	N	N	5.1014E-01	1.0000E+00	N	97%	N		1.6640E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.633E-02)	(0.000E+00)		8%			(0.000E+00)	4.013306		
1	11/21/06 19:20	RA-228	50	342	GPC7C	1	N	N	5.1014E-01	1.0000E+00	N	97%	N		1.8460E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.633E-02)	(0.000E+00)		8%			(0.000E+00)	4.013306		
2	11/21/06 20:16	RA-228	42	342	GPC7C	1	N	N	5.1014E-01	1.0000E+00	N	97%	N		2.0479E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.633E-02)	(0.000E+00)		8%			(0.000E+00)	4.013306		
3	11/22/06 07:42	RA-228	44	278	GPC7C	1	N	N	5.1014E-01	1.0000E+00	N	97%	N		7.4342E+00	4.5045E-01	1.0083E+00	
			50	310			N		(1.633E-02)	(0.000E+00)		8%			(0.000E+00)	4.013306		

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
	11/22/06	RA-228	R	**3.101355**		5.05000E-01	1.701388	1.701388	1.00 SA	97%		4.067174		
				(1.099537)		(1.7128E-01)	(0.595395)	(0.595395)	(0.027062)			1.868267		
	11/22/06	RA-228	R	**0.987873**	U4	1.45000E-01	0.541942	0.541942	1.00 SA	97%		4.511965		
				(1.018789)		(1.4879E-01)	(0.558053)	(0.558053)	(0.027062)			2.072583		
	11/22/06	RA-228	R	**-0.113373**	U4	-1.50000E-02	-0.062196	-0.062196	1.00 SA	97%		5.005555		
				(1.04018)		(1.3761E-01)	(0.570627)	(0.570627)	(0.027062)			2.299315		
	11/22/06	RA-228	A	**1.325285**		2.11667E-01	0.727045	0.727045	1.00 SA	97%		2.614375		
				(0.608174)		(8.8451E-02)	(0.331919)	(0.331919)	(0.015624)			1.20092		
	11/22/06	RA-228	R	**-0.460241**	U4	-1.67742E-02	-0.252486	-0.252486	1.00 SA	97%		18.573602		
				(3.928041)		(1.4315E-01)	(2.154857)	(2.154857)	(0.027062)			8.548322		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:4

RADCALC v4.8.24

STL Richland

Batch Nbr: 6311396

Alpha Beta, Ra-228 by GPC , Calculated Results

11/22/2006 2:04:02 PM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
4	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3L51AD**	**PCI/SA**		10/18/06 11:10	11/22/06 07:43	11/12/06 15:36	RATA24640	1	1.00 SA	
536403,P-0781					,J6K060215-4 v4.8.24		FILTER			30.8	11/21/06 13:31	RATA24640 Alq	101%	0.248789 SA	

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
0	11/21/06 18:25	RA-228	54	258	GPC1B	1	N	N	5.2327E-01	1.0000E+00	N	90%	N		1.6653E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.537E-02)	(0.000E+00)		7%			(0.000E+00)	4.019465		
1	11/21/06 19:21	RA-228	38	258	GPC1B	1	N	N	5.2327E-01	1.0000E+00	N	90%	N		1.8474E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.537E-02)	(0.000E+00)		7%			(0.000E+00)	4.019465		
2	11/21/06 20:16	RA-228	40	258	GPC1B	1	N	N	5.2327E-01	1.0000E+00	N	90%	N		2.0495E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.537E-02)	(0.000E+00)		7%			(0.000E+00)	4.019465		
3	11/22/06 07:43	RA-228	34	242	GPC1B	1	N	N	5.2327E-01	1.0000E+00	N	90%	N		7.4440E+00	4.5045E-01	1.0083E+00	
			50	400			N		(1.537E-02)	(0.000E+00)		7%			(0.000E+00)	4.019465		

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
	11/22/06	RA-228	R	**2.801443**		4.35000E-01	1.534488	1.534488	1.00 SA	90%		3.750318		
				(1.020259)		(1.5236E-01)	(0.553128)	(0.553128)	(0.014142)			1.701643		
	11/22/06	RA-228	R	**0.821631**	**U4**	1.15000E-01	0.450048	0.450048	1.00 SA	90%		4.160587		
				(0.930016)		(1.2966E-01)	(0.508878)	(0.508878)	(0.014142)			1.887795		
	11/22/06	RA-228	R	**1.228563**	**U4**	1.55000E-01	0.672944	0.672944	1.00 SA	90%		4.615737		
				(1.059028)		(1.3271E-01)	(0.579027)	(0.579027)	(0.014142)			2.094312		
	11/22/06	RA-228	A	**1.617212**		2.35000E-01	0.885826	0.885826	1.00 SA	90%		2.410753		
				(0.579981)		(8.0026E-02)	(0.316259)	(0.316259)	(0.008165)			1.093838		
	11/22/06	RA-228	R	**2.159146**	**U4**	7.50000E-02	1.18267	1.18267	1.00 SA	90%		16.285717		
				(3.545624)		(1.2293E-01)	(1.941139)	(1.941139)	(0.014142)			7.367061		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
5	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3L61AD**	**PCI/SA**		10/18/06 12:00	11/22/06 07:43	11/12/06 15:36	RATA24641	1	1.00 SA	
536403,000546					,J6K060215-5 v4.8.24		FILTER			30.7	11/21/06 13:31	RATA24641 Alq	106%	0.24927 SA	

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
0	11/21/06 18:25	RA-228	47	226	GPC1C	1	N	N	5.1268E-01	1.0000E+00	N	94%	N		1.6653E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.850E-02)	(0.000E+00)		8%			(0.000E+00)	4.011713		
1	11/21/06 19:21	RA-228	26	226	GPC1C	1	N	N	5.1268E-01	1.0000E+00	N	94%	N		1.8474E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.850E-02)	(0.000E+00)		8%			(0.000E+00)	4.011713		
2	11/21/06 20:16	RA-228	37	226	GPC1C	1	N	N	5.1268E-01	1.0000E+00	N	94%	N		2.0495E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(1.850E-02)	(0.000E+00)		8%			(0.000E+00)	4.011713		
3	11/22/06 07:43	RA-228	27	207	GPC1C	1	N	N	5.1268E-01	1.0000E+00	N	94%	N		7.4440E+00	4.5045E-01	1.0083E+00	
			50	400			N		(1.850E-02)	(0.000E+00)		8%			(0.000E+00)	4.011713		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:5

RADCALC v4.8.24
STL Richland

Batch Nbr: 6311396

Alpha Beta, Ra-228 by GPC , Calculated Results

11/22/2006 2:04:02 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	BlkLcC/MDC	StdDvMdC/LcC
	11/22/06	RA-228	R	**2.353462**		3.75000E-01	1.291612	1.291612	1.00 SA	94%		3.442342		
				(0.925565)		(1.4217E-01)	(0.502627)	(0.502627)	(0.027062)			1.552016		
	11/22/06	RA-228	R	**-0.313311**	U4	-4.50000E-02	-0.171949	-0.171949	1.00 SA	94%		3.81892		
				(0.757426)		(1.0869E-01)	(0.415571)	(0.415571)	(0.027062)			1.7218		
	11/22/06	RA-228	R	**1.351721**	U4	1.75000E-01	0.741843	0.741843	1.00 SA	94%		4.236693		
				(0.993604)		(1.2733E-01)	(0.54367)	(0.54367)	(0.027062)			1.910157		
	11/22/06	RA-228	A	**1.130624**		1.68333E-01	0.620502	0.620502	1.00 SA	94%		2.212782		
				(0.518289)		(7.3210E-02)	(0.283021)	(0.283021)	(0.015624)			0.997656		
	11/22/06	RA-228	R	**0.631229**	U4	2.25000E-02	0.346427	0.346427	1.00 SA	94%		14.79228		
				(3.085915)		(1.0997E-01)	(1.693478)	(1.693478)	(0.027062)			6.639803		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
6	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3MC1AD**	**PCI/SA**		10/05/06 09:50	11/22/06 07:43	11/12/06 15:36	RATA24642	1	1.00 SA	
536403,P-0769					,J6K060216-1 v4.8.24		FILTER			31.1	11/21/06 13:31	RATA24642 Alq	98%	0.24997 SA	

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
0	11/21/06 18:25	RA-228	27	264	GPC1D	1	N	N	5.2258E-01	1.0000E+00	N	89%	N		1.6653E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(1.787E-02)	(0.000E+00)		7%			(0.000E+00)	4.000481		
1	11/21/06 19:21	RA-228	49	264	GPC1D	1	N	N	5.2258E-01	1.0000E+00	N	89%	N		1.8474E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(1.787E-02)	(0.000E+00)		7%			(0.000E+00)	4.000481		
2	11/21/06 20:16	RA-228	38	264	GPC1D	1	N	N	5.2258E-01	1.0000E+00	N	89%	N		2.0495E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(1.787E-02)	(0.000E+00)		7%			(0.000E+00)	4.000481		
3	11/22/06 07:43	RA-228	24	214	GPC1D	1	N	N	5.2258E-01	1.0000E+00	N	89%	N		7.4440E+00	4.5045E-01	1.0127E+00	
			50	400			N		(1.787E-02)	(0.000E+00)		7%			(0.000E+00)	4.000481		

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
	11/22/06	RA-228	R	**-0.787204**	U4	-1.20000E-01	-0.431377	-0.431377	1.00 SA	89%		3.860213		
				(0.736299)		(1.1158E-01)	(0.402859)	(0.402859)	(0.014142)			1.753371		
	11/22/06	RA-228	R	**2.328854**		3.20000E-01	1.27618	1.27618	1.00 SA	89%		4.282504		
				(1.086825)		(1.4577E-01)	(0.591862)	(0.591862)	(0.014142)			1.945182		
	11/22/06	RA-228	R	**0.807382**	U4	1.00000E-01	0.442434	0.442434	1.00 SA	89%		4.750992		
				(1.051231)		(1.2981E-01)	(0.575601)	(0.575601)	(0.014142)			2.157977		
	11/22/06	RA-228	A	**0.783011**	U4	1.00000E-01	0.429079	0.429079	1.00 SA	89%		2.481395		
				(0.560596)		(7.4944E-02)	(0.306216)	(0.306216)	(0.008165)			1.12709		
	11/22/06	RA-228	R	**-1.61286**	U4	-5.50000E-02	-0.883825	-0.883825	1.00 SA	89%		15.694586		
				(3.071205)		(1.0458E-01)	(1.682351)	(1.682351)	(0.014142)			7.056783		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh mm, 24hr Time

RecCnt:7

RADCALC v4.8.24

STL Richland

Batch Nbr: 6311396

Alpha Beta, Ra-228 by GPC , Calculated Results

11/22/2006 2:04:02 PM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
7	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3MJ1AD**	**PCI/SA**		10/05/06 10:10	11/22/06 07:43	11/12/06 15:36	RATA24643	1	1.00 SA	
536403,P-0770					,J6K060216-2 v4.8.24		FILTER			30.7	11/21/06 13:31	RATA24643 Alq	106%	0.250118 SA	

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
0	11/21/06 18:26	RA-228	28	94	GPC2A	1	N	N	4.2823E-01	1.0000E+00	N	95%	N		1.6676E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(1.185E-02)	(0.000E+00)		8%			(0.000E+00)	3.998109		
1	11/21/06 19:21	RA-228	19	94	GPC2A	1	N	N	4.2823E-01	1.0000E+00	N	95%	N		1.8500E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(1.185E-02)	(0.000E+00)		8%			(0.000E+00)	3.998109		
2	11/21/06 20:17	RA-228	24	94	GPC2A	1	N	N	4.2823E-01	1.0000E+00	N	95%	N		2.0523E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(1.185E-02)	(0.000E+00)		8%			(0.000E+00)	3.998109		
3	11/22/06 07:43	RA-228	12	80	GPC2A	1	N	N	4.2823E-01	1.0000E+00	N	95%	N		7.4468E+00	4.5045E-01	1.0127E+00	
			50	400			N		(1.185E-02)	(0.000E+00)		8%			(0.000E+00)	3.998109		

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
	11/22/06	RA-228	R	**2.438834**		3.25000E-01	1.337246	1.337246	1.00 SA	95%		2.79894		
				(0.849974)		(1.0857E-01)	(0.460843)	(0.460843)	(0.014142)			1.19682		
	11/22/06	RA-228	R	**1.207128**	**U4**	1.45000E-01	0.661885	0.661885	1.00 SA	95%		3.105133		
				(0.762771)		(9.0485E-02)	(0.416821)	(0.416821)	(0.014142)			1.327747		
	11/22/06	RA-228	R	**2.262686**		2.45000E-01	1.240662	1.240662	1.00 SA	95%		3.444713		
				(0.958875)		(1.0093E-01)	(0.521797)	(0.521797)	(0.014142)			1.47295		
	11/22/06	RA-228	A	**1.969549**		2.38333E-01	1.079931	1.079931	1.00 SA	95%		1.799175		
				(0.497071)		(5.7891E-02)	(0.270471)	(0.270471)	(0.008165)			0.769322		
	11/22/06	RA-228	R	**1.340412**	**U4**	4.00000E-02	0.734966	0.734966	1.00 SA	95%		11.671363		
				(2.443217)		(7.2801E-02)	(1.339105)	(1.339105)	(0.014142)			4.93048		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3MK1AD**	**PCI/SA**		10/05/06 10:30	11/22/06 07:43	11/12/06 15:36	RATA24644	1	1.00 SA	
536403,P-0771					,J6K060216-3 v4.8.24		FILTER			30.2	11/21/06 13:31	RATA24644 Alq	99%	0.249411 SA	

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
0	11/21/06 18:26	RA-228	31	99	GPC2B	1	N	N	4.4612E-01	1.0000E+00	N	87%	N		1.6676E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(1.052E-02)	(0.000E+00)		7%			(0.000E+00)	4.009442		
1	11/21/06 19:21	RA-228	19	99	GPC2B	1	N	N	4.4612E-01	1.0000E+00	N	87%	N		1.8500E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(1.052E-02)	(0.000E+00)		7%			(0.000E+00)	4.009442		
2	11/21/06 20:17	RA-228	21	99	GPC2B	1	N	N	4.4612E-01	1.0000E+00	N	87%	N		2.0523E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(1.052E-02)	(0.000E+00)		7%			(0.000E+00)	4.009442		
3	11/22/06 07:43	RA-228	15	77	GPC2B	1	N	N	4.4612E-01	1.0000E+00	N	87%	N		7.4468E+00	4.5045E-01	1.0127E+00	
			50	400			N		(1.052E-02)	(0.000E+00)		7%			(0.000E+00)	4.009442		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:8

RADCALC v4.8.24

STL Richland

Batch Nbr: 6311396

Alpha Beta, Ra-228 by GPC , Calculated Results

11/22/2006 2:04:02 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	BlkLcC/MDC	StdDvMdC/LcC
	11/22/06	RA-228	R	**2.942578**		3.72500E-01	1.608903	1.608903	1.00 SA	87%		3.01254		
				(0.946582)		(1.1410E-01)	(0.510763)	(0.510763)	(0.014142)			1.29296		
	11/22/06	RA-228	R	**1.161192**	U4	1.32500E-01	0.634901	0.634901	1.00 SA	87%		3.342099		
				(0.802647)		(9.0657E-02)	(0.437619)	(0.437619)	(0.014142)			1.434405		
	11/22/06	RA-228	R	**1.677066**		1.72500E-01	0.916963	0.916963	1.00 SA	87%		3.707595		
				(0.937875)		(9.4967E-02)	(0.51058)	(0.51058)	(0.014142)			1.591273		
	11/22/06	RA-228	A	**1.926945**		2.25833E-01	1.053589	1.053589	1.00 SA	87%		1.936478		
				(0.518531)		(5.7981E-02)	(0.28148)	(0.28148)	(0.008165)			0.831122		
	11/22/06	RA-228	R	**3.792186**	U4	1.07500E-01	2.073439	2.073439	1.00 SA	87%		12.090014		
				(2.864293)		(8.0506E-02)	(1.562389)	(1.562389)	(0.014142)			5.092047		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
9	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3ML1AD**	**PCI/SA**		10/05/06 09:55	11/22/06 07:43	11/12/06 15:36	RATA24645	1	1.00 SA	
536403,P-0772					,J6K060216-4 v4.8.24		FILTER			30.9	11/21/06 13:31	RATA24645 Alq	111%	0.248484 SA	

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
0	11/21/06 18:26	RA-228	32	99	GPC2C	1	N	N	4.3069E-01	1.0000E+00	N	99%	N		1.6676E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(9.367E-03)	(0.000E+00)		8%			(0.000E+00)	4.024401		
1	11/21/06 19:21	RA-228	21	99	GPC2C	1	N	N	4.3069E-01	1.0000E+00	N	99%	N		1.8500E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(9.367E-03)	(0.000E+00)		8%			(0.000E+00)	4.024401		
2	11/21/06 20:17	RA-228	28	99	GPC2C	1	N	N	4.3069E-01	1.0000E+00	N	99%	N		2.0523E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(9.367E-03)	(0.000E+00)		8%			(0.000E+00)	4.024401		
3	11/22/06 07:43	RA-228	16	104	GPC2C	1	N	N	4.3069E-01	1.0000E+00	N	99%	N		7.4468E+00	4.5045E-01	1.0127E+00	
			50	400			N		(9.367E-03)	(0.000E+00)		8%			(0.000E+00)	4.024401		

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
	11/22/06	RA-228	R	**2.809757**		3.92500E-01	1.530558	1.530558	1.00 SA	99%		2.729985		
				(0.873631)		(1.1584E-01)	(0.4692)	(0.4692)	(0.014142)			1.17169		
	11/22/06	RA-228	R	**1.36995**		1.72500E-01	0.746252	0.746252	1.00 SA	99%		3.028634		
				(0.766022)		(9.4967E-02)	(0.415469)	(0.415469)	(0.014142)			1.299868		
	11/22/06	RA-228	R	**2.753205**		3.12500E-01	1.499753	1.499753	1.00 SA	99%		3.359849		
				(0.994959)		(1.0871E-01)	(0.536352)	(0.536352)	(0.014142)			1.442023		
	11/22/06	RA-228	A	**2.310971**		2.92500E-01	1.258854	1.258854	1.00 SA	99%		1.75485		
				(0.509898)		(6.1695E-02)	(0.274962)	(0.274962)	(0.008165)			0.753169		
	11/22/06	RA-228	R	**1.918049**	U4	6.00000E-02	1.044818	1.044818	1.00 SA	99%		12.451858		
				(2.69068)		(8.3964E-02)	(1.464687)	(1.464687)	(0.014142)			5.362794		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:10

RADCALC v4.8.24

STL Richland

Batch Nbr: 6311396

Alpha Beta, Ra-228 by GPC , Calculated Results

11/22/2006 2:04:02 PM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3MM1AD**	**PCI/SA**		10/05/06 10:35	11/22/06 07:43	11/12/06 15:36	RATA24646	1	1.00 SA	
536403,000544					,J6K060216-5 v4.8.24		FILTER			31.3	11/21/06 13:31	RATA24646 Alq	99%	0.249985 SA	

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
0	11/21/06 18:26	RA-228	32	92	GPC2D	1	N	N	4.3763E-01	1.0000E+00	N	90%	N		1.6676E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(1.308E-02)	(0.000E+00)		7%			(0.000E+00)	4.000241		
1	11/21/06 19:21	RA-228	19	92	GPC2D	1	N	N	4.3763E-01	1.0000E+00	N	90%	N		1.8500E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(1.308E-02)	(0.000E+00)		7%			(0.000E+00)	4.000241		
2	11/21/06 20:17	RA-228	19	92	GPC2D	1	N	N	4.3763E-01	1.0000E+00	N	90%	N		2.0523E+00	4.5045E-01	1.0127E+00	
			50	400			Y		(1.308E-02)	(0.000E+00)		7%			(0.000E+00)	4.000241		
3	11/22/06 07:43	RA-228	11	93	GPC2D	1	N	N	4.3763E-01	1.0000E+00	N	90%	N		7.4468E+00	4.5045E-01	1.0127E+00	
			50	400			N		(1.308E-02)	(0.000E+00)		7%			(0.000E+00)	4.000241		

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
	11/22/06	RA-228	R	**3.163182**		4.10000E-01	1.733502	1.733502	1.00 SA	90%		2.851325		
				(0.946627)		(1.1565E-01)	(0.510895)	(0.510895)	(0.014142)			1.217307		
	11/22/06	RA-228	R	**1.283861**	U4	1.50000E-01	0.703588	0.703588	1.00 SA	90%		3.163248		
				(0.784445)		(9.0416E-02)	(0.428338)	(0.428338)	(0.014142)			1.350475		
	11/22/06	RA-228	R	**1.424265**	U4	1.50000E-01	0.780533	0.780533	1.00 SA	90%		3.509185		
				(0.870233)		(9.0416E-02)	(0.475181)	(0.475181)	(0.014142)			1.498165		
	11/22/06	RA-228	A	**1.957103**		2.36667E-01	1.072541	1.072541	1.00 SA	90%		1.832848		
				(0.50208)		(5.7470E-02)	(0.272903)	(0.272903)	(0.008165)			0.782492		
	11/22/06	RA-228	R	**-0.430655**	U4	-1.25000E-02	-0.23601	-0.23601	1.00 SA	90%		12.791759		
				(2.431963)		(7.0578E-02)	(1.332719)	(1.332719)	(0.014142)			5.465464		

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
11	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3NN1AD**	**PCI/SA**		10/11/06 10:55	11/22/06 07:43	11/12/06 15:36	RATA24647	1	1.00 SA	
536403,P-0773					,J6K060219-1 v4.8.24		FILTER			30.7	11/21/06 13:31	RATA24647 Alq	93%	0.250052 SA	

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
0	11/21/06 18:27	RA-228	15	88	GPC3A	1	N	N	4.6416E-01	1.0000E+00	N	83%	N		1.6691E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(4.127E-02)	(0.000E+00)		7%			(0.000E+00)	3.999175		
1	11/21/06 19:22	RA-228	18	88	GPC3A	1	N	N	4.6416E-01	1.0000E+00	N	83%	N		1.8517E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(4.127E-02)	(0.000E+00)		7%			(0.000E+00)	3.999175		
2	11/21/06 20:17	RA-228	15	88	GPC3A	1	N	N	4.6416E-01	1.0000E+00	N	83%	N		2.0543E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(4.127E-02)	(0.000E+00)		7%			(0.000E+00)	3.999175		
3	11/22/06 07:43	RA-228	14	70	GPC3A	1	N	N	4.6416E-01	1.0000E+00	N	83%	N		7.4499E+00	4.5045E-01	1.0107E+00	
			50	309			N		(4.127E-02)	(0.000E+00)		7%			(0.000E+00)	3.999175		

() - (1s Uncertainities), 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 Significants. Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:11

RADCALC v4.8.24

STL Richland

Batch Nbr: 6311396

Alpha Beta, Ra-228 by GPC , Calculated Results

11/22/2006 2:04:03 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	BlkLcC/MDC	StdDvMdC/LcC
	11/22/06	RA-228	R	**0.634476**	U4	8.00000E-02	0.348491	0.348491	1.00 SA	83%		2.876128		
				(0.647179)		(8.0932E-02)	(0.355006)	(0.355006)	(0.014142)			1.223862		
	11/22/06	RA-228	R	**1.231799**	U4	1.40000E-01	0.676575	0.676575	1.00 SA	83%		3.190764		
				(0.791054)		(8.8034E-02)	(0.433068)	(0.433068)	(0.014142)			1.357747		
	11/22/06	RA-228	R	**0.780887**	U4	8.00000E-02	0.428908	0.428908	1.00 SA	83%		3.53982		
				(0.796521)		(8.0932E-02)	(0.436927)	(0.436927)	(0.014142)			1.506279		
	11/22/06	RA-228	A	**0.882387**		1.00000E-01	0.484658	0.484658	1.00 SA	83%		1.848812		
				(0.431927)		(4.8132E-02)	(0.236757)	(0.236757)	(0.008165)			0.786714		
	11/22/06	RA-228	R	**1.892512**	U4	5.34628E-02	1.039477	1.039477	1.00 SA	83%		12.998225		
				(2.82785)		(7.9581E-02)	(1.55228)	(1.55228)	(0.014142)			5.5431		

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
12	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3NR1AD**	**PCI/SA**		10/11/06 11:10	11/22/06 07:43	11/12/06 15:36	RATA24648	1	1.00 SA	
536403,P-0774					,J6K060219-2 v4.8.24		FILTER			31.1	11/21/06 13:31	RATA24648 Alq	101%	0.246067 SA	

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
0	11/21/06 18:27	RA-228	19	105	GPC3B	1	N	N	4.8788E-01	1.0000E+00	N	92%	N		1.6691E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(5.450E-02)	(0.000E+00)		7%			(0.000E+00)	4.063937		
1	11/21/06 19:22	RA-228	20	105	GPC3B	1	N	N	4.8788E-01	1.0000E+00	N	92%	N		1.8517E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(5.450E-02)	(0.000E+00)		7%			(0.000E+00)	4.063937		
2	11/21/06 20:17	RA-228	17	105	GPC3B	1	N	N	4.8788E-01	1.0000E+00	N	92%	N		2.0543E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(5.450E-02)	(0.000E+00)		7%			(0.000E+00)	4.063937		
3	11/22/06 07:43	RA-228	11	90	GPC3B	1	N	N	4.8788E-01	1.0000E+00	N	92%	N		7.4499E+00	4.5045E-01	1.0107E+00	
			50	309			N		(5.450E-02)	(0.000E+00)		7%			(0.000E+00)	4.063937		

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
	11/22/06	RA-228	R	**0.812087**	U4	1.17500E-01	0.438939	0.438939	1.00 SA	92%		2.703211		
				(0.639224)		(9.0864E-02)	(0.344752)	(0.344752)	(0.014142)			1.164999		
	11/22/06	RA-228	R	**1.054276**	U4	1.37500E-01	0.569843	0.569843	1.00 SA	92%		2.998931		
				(0.729988)		(9.3039E-02)	(0.393451)	(0.393451)	(0.014142)			1.292445		
	11/22/06	RA-228	R	**0.659234**	U4	7.75000E-02	0.356321	0.356321	1.00 SA	92%		3.327002		
				(0.740867)		(8.6350E-02)	(0.400015)	(0.400015)	(0.014142)			1.433833		
	11/22/06	RA-228	A	**0.841866**		1.10833E-01	0.455034	0.455034	1.00 SA	92%		1.73766		
				(0.406936)		(5.2035E-02)	(0.219512)	(0.219512)	(0.008165)			0.748877		
	11/22/06	RA-228	R	**-2.198294**	U4	-7.12621E-02	-1.188193	-1.188193	1.00 SA	92%		12.620012		
				(2.277779)		(7.3093E-02)	(1.229606)	(1.229606)	(0.014142)			5.477278		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:13

RADCALC v4.8.24
STL Richland

Batch Nbr: 6311396

Alpha Beta, Ra-228 by GPC , Calculated Results

11/22/2006 2:04:03 PM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
13	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3NT1AD**	**PCI/SA**		10/11/06 11:35	11/22/06 07:43	11/12/06 15:36	RATA24649	1	1.00 SA	
536403,P-0775					,J6K060219-3 v4 8.24		FILTER			30.5	11/21/06 13:31	RATA24649 Alq	99%	0.249998 SA	

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
0	11/21/06 18:27	RA-228	23	98	GPC3C	1	N	N	4.6730E-01	1.0000E+00	N	88%	N		1.6691E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(4.595E-02)	(0.000E+00)		7%			(0.000E+00)	4.000029		
1	11/21/06 19:22	RA-228	18	98	GPC3C	1	N	N	4.6730E-01	1.0000E+00	N	88%	N		1.8517E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(4.595E-02)	(0.000E+00)		7%			(0.000E+00)	4.000029		
2	11/21/06 20:17	RA-228	17	98	GPC3C	1	N	N	4.6730E-01	1.0000E+00	N	88%	N		2.0543E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(4.595E-02)	(0.000E+00)		7%			(0.000E+00)	4.000029		
3	11/22/06 07:43	RA-228	7	95	GPC3C	1	N	N	4.6730E-01	1.0000E+00	N	88%	N		7.4499E+00	4.5045E-01	1.0107E+00	
			50	309			N		(4.595E-02)	(0.000E+00)		7%			(0.000E+00)	4.000029		

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
	11/22/06	RA-228	R	**1.590461**		2.15000E-01	0.873395	0.873395	1.00 SA	88%		2.808828		
				(0.764493)		(9.9058E-02)	(0.417358)	(0.417358)	(0.014142)			1.204657		
	11/22/06	RA-228	R	**0.943776**	**U4**	1.15000E-01	0.51827	0.51827	1.00 SA	88%		3.116102		
				(0.736815)		(8.8388E-02)	(0.403722)	(0.403722)	(0.014142)			1.336442		
	11/22/06	RA-228	R	**0.86493**	**U4**	9.50000E-02	0.474973	0.474973	1.00 SA	88%		3.45699		
				(0.792769)		(8.6096E-02)	(0.434646)	(0.434646)	(0.014142)			1.482643		
	11/22/06	RA-228	A	**1.133056**		1.41667E-01	0.622213	0.622213	1.00 SA	88%		1.805551		
				(0.441692)		(5.2744E-02)	(0.241775)	(0.241775)	(0.008165)			0.774369		
	11/22/06	RA-228	R	**-5.52859**	**U4**	-1.67443E-01	-3.036001	-3.036001	1.00 SA	88%		13.828738		
				(2.170455)		(6.1603E-02)	(1.18141)	(1.18141)	(0.014142)			6.023167		

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	FILTER	*STLE	Ra228WoBS	**JH3NV1AD**	**PCI/SA**		10/11/06 11:00	11/22/06 07:43	11/12/06 15:36	RATA24650	1	1.00 SA	
536403,P-0776					,J6K060219-4 v4.8.24		FILTER			30.6	11/21/06 13:31	RATA24650 Alq	99%	0.249837 SA	

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
0	11/21/06 18:27	RA-228	28	99	GPC3D	1	N	N	4.7942E-01	1.0000E+00	N	88%	N		1.6691E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(4.533E-02)	(0.000E+00)		7%			(0.000E+00)	4.002614		
1	11/21/06 19:22	RA-228	18	99	GPC3D	1	N	N	4.7942E-01	1.0000E+00	N	88%	N		1.8517E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(4.533E-02)	(0.000E+00)		7%			(0.000E+00)	4.002614		
2	11/21/06 20:17	RA-228	15	99	GPC3D	1	N	N	4.7942E-01	1.0000E+00	N	88%	N		2.0543E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(4.533E-02)	(0.000E+00)		7%			(0.000E+00)	4.002614		
3	11/22/06 07:43	RA-228	15	68	GPC3D	1	N	N	4.7942E-01	1.0000E+00	N	88%	N		7.4499E+00	4.5045E-01	1.0107E+00	
			50	309			N		(4.533E-02)	(0.000E+00)		7%			(0.000E+00)	4.002614		

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IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration

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RecCnt:14

RADCALC v4.8.24

STL Richland

Batch Nbr: 6311396

Alpha Beta, Ra-228 by GPC , Calculated Results

11/22/2006 2:04:03 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	BlkLcC/MDC	StdDvMdC/LcC
	11/22/06	RA-228	R	**2.244174**		3.12500E-01	1.231573	1.231573	1.00 SA	88%		2.738658		
				(0.836886)		(1.0871E-01)	(0.454792)	(0.454792)	(0.014142)			1.175412		
	11/22/06	RA-228	R	**0.896284**	U4	1.12500E-01	0.491869	0.491869	1.00 SA	88%		3.038255		
				(0.714681)		(8.8424E-02)	(0.391374)	(0.391374)	(0.014142)			1.303997		
	11/22/06	RA-228	R	**0.464022**	U4	5.25000E-02	0.254649	0.254649	1.00 SA	88%		3.370628		
				(0.72176)		(8.1356E-02)	(0.395871)	(0.395871)	(0.014142)			1.446649		
	11/22/06	RA-228	A	**1.201494**		1.59167E-01	0.659364	0.659364	1.00 SA	88%		1.760445		
				(0.438696)		(5.4013E-02)	(0.239612)	(0.239612)	(0.008165)			0.75557		
	11/22/06	RA-228	R	**2.562164**	U4	7.99353E-02	1.406081	1.406081	1.00 SA	88%		11.625344		
				(2.648489)		(8.1928E-02)	(1.451618)	(1.451618)	(0.014142)			4.946974		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
15	Calc	TF	FILTER	*STLE	Ra228WoBS	**JH3NW1AD**	**PCI/SA**		10/11/06 11:40	11/22/06 07:43	11/12/06 15:36	RATA24651	1	1.00 SA	
536403,000545					,J6K060219-5 v4.8.24		FILTER			26.3	11/21/06 13:31	RATA24651 Alq	100%	0.246519 SA	

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
0	11/21/06 18:28	RA-228	19	101	GPC4A	1	N	N	4.8439E-01	1.0000E+00	N	76%	N		1.6723E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(2.054E-02)	(0.000E+00)		6%			(0.000E+00)	4.056484		
1	11/21/06 19:23	RA-228	10	101	GPC4A	1	N	N	4.8439E-01	1.0000E+00	N	76%	N		1.8552E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(2.054E-02)	(0.000E+00)		6%			(0.000E+00)	4.056484		
2	11/21/06 20:18	RA-228	13	101	GPC4A	1	N	N	4.8439E-01	1.0000E+00	N	76%	N		2.0581E+00	4.5045E-01	1.0107E+00	
			50	400			Y		(2.054E-02)	(0.000E+00)		6%			(0.000E+00)	4.056484		
3	11/22/06 07:43	RA-228	13	129	GPC4A	1	N	N	4.8439E-01	1.0000E+00	N	76%	N		7.4529E+00	4.5045E-01	1.0107E+00	
			50	400			N		(2.054E-02)	(0.000E+00)		6%			(0.000E+00)	4.056484		

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
	11/22/06	RA-228	R	**1.068024**	U4	1.27500E-01	0.578339	0.578339	1.00 SA	76%		3.222035		
				(0.768118)		(9.0726E-02)	(0.414852)	(0.414852)	(0.014142)			1.384833		
	11/22/06	RA-228	R	**-0.487884**	U4	-5.25000E-02	-0.264191	-0.264191	1.00 SA	76%		3.574513		
				(0.634469)		(6.8053E-02)	(0.343293)	(0.343293)	(0.014142)			1.536327		
	11/22/06	RA-228	R	**0.07732**	U4	7.50000E-03	0.041869	0.041869	1.00 SA	76%		3.965425		
				(0.787288)		(7.6363E-02)	(0.426314)	(0.426314)	(0.014142)			1.704342		
	11/22/06	RA-228	A	**0.219153**	U4	2.75000E-02	0.118672	0.118672	1.00 SA	76%		2.071143		
				(0.423265)		(4.5575E-02)	(0.228934)	(0.228934)	(0.008165)			0.890178		
	11/22/06	RA-228	R	**-2.333316**	U4	-6.25000E-02	-1.263499	-1.263499	1.00 SA	76%		15.965492		
				(2.903548)		(7.7500E-02)	(1.57091)	(1.57091)	(0.014142)			6.975162		

() - (1s Uncertainities), 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

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RecCnt:16

RADCALC v4.8.24

STL Richland

Batch Nbr: 6311396

Alpha Beta, Ra-228 by GPC , Calculated Results

11/22/2006 2:04:03 PM

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	TF	FILTER	*STLE	Ra228WoBS	**JH5QD1AC**	**PCI/SA**	**S**	10/18/06 11:05	11/22/06 07:43	11/12/06 15:36	RASC4247	1	1.00 SA	
0,INTRA-LAB BLANK					,J6K070000-396		FILTER			30.5	11/21/06 13:31	RATA24652 Alq	102%	1.00 SA	

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
0	11/21/06 18:28	RA-228	128	98	GPC4B	1	N	N	4.7251E-01	1.0000E+00	N	90%	N		1.6723E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(9.015E-03)	(0.000E+00)		7%			(0.000E+00)	1.00		
1	11/21/06 19:23	RA-228	112	98	GPC4B	1	N	N	4.7251E-01	1.0000E+00	N	90%	N		1.8552E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(9.015E-03)	(0.000E+00)		7%			(0.000E+00)	1.00		
2	11/21/06 20:18	RA-228	133	98	GPC4B	1	N	N	4.7251E-01	1.0000E+00	N	90%	N		2.0581E+00	4.5045E-01	1.0083E+00	
			50	400			Y		(9.015E-03)	(0.000E+00)		7%			(0.000E+00)	1.00		
3	11/22/06 07:43	RA-228	46	119	GPC4B	1	N	N	4.7251E-01	1.0000E+00	N	90%	N		7.4529E+00	4.5045E-01	1.0083E+00	
			50	400			N		(9.015E-03)	(0.000E+00)		7%			(0.000E+00)	1.00		

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	BlkLcC/MDC	StdDvMdC/LcC
	11/22/06	RA-228	R	**4.128617**		2.31500E+00	9.089792	9.089792	1.00 SA	90%	82%	0.677165		
				(0.571063)		(2.2762E-01)	(1.165195)	(1.165195)	(0.014142)			0.290424		
	11/22/06	RA-228	R	**3.947144**		1.99500E+00	8.690252	8.690252	1.00 SA	90%	78%	0.751243		
				(0.570279)		(2.1310E-01)	(1.171546)	(1.171546)	(0.014142)			0.322195		
	11/22/06	RA-228	R	**5.300663**		2.41500E+00	11.670232	11.670232	1.00 SA	90%	105%	0.8334		
				(0.724676)		(2.3198E-01)	(1.475756)	(1.475756)	(0.014142)			0.357431		
	11/22/06	RA-228	A	**4.458808**		2.24167E+00	9.816759	9.816759	1.00 SA	90%	88%	0.435285		
				(0.361553)		(1.2955E-01)	(0.738471)	(0.738471)	(0.008165)			0.186686		
	11/22/06	RA-228	R	**4.947842**		6.22500E-01	10.893442	10.893442	1.00 SA	90%	98%	3.281739		
				(1.200466)		(1.3836E-01)	(2.581688)	(2.581688)	(0.014142)			1.426316		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:16

RADCALC v4.8.24

STL Richland

UST Number: JH3LV1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-A File: [quad7.sample.A]JH3LV1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.A_1;3082

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00051	0050	01170	1700	21-NOV-2006 18:25:33.11
2	00000	00043	0050	01184	1700	21-NOV-2006 19:20:48.94
3	00000	00059	0050	01195	1700	21-NOV-2006 20:16:04.58

Bkg File: [quad7.bkgrnd]2006-11-21_0211.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00315	0400	0.79	09340	1700	21-NOV-2006 02:11:57.13

UST Number: JH3LV1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-A File: [quad7.sample.A]JH3LV1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.A_1;3083

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00044	0050	01169	1700	22-NOV-2006 07:42:25.49

Bkg File: [quad7.bkgrnd]2006-11-22_0210.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00247	0310	0.80	07352	1700	22-NOV-2006 02:10:21.06

UST Number: JH3L11AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-B File: [quad7.sample.B]JH3L11AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.B_1;3069

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00052	0050	01170	1700	21-NOV-2006 18:25:33.11
2	00000	00042	0050	01184	1700	21-NOV-2006 19:20:48.94
3	00000	00039	0050	01195	1700	21-NOV-2006 20:16:04.58

Bkg File: [quad7.bkgrnd]2006-11-21_0211.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00288	0400	0.72	09340	1700	21-NOV-2006 02:11:57.13

UST Number: JH3L11AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-B File: [quad7.sample.B]JH3L11AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.B_1;3070

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00041	0050	01169	1700	22-NOV-2006 07:42:25.49

Bkg File: [quad7.bkgrnd]2006-11-22_0210.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00218	0310	0.70	07352	1700	22-NOV-2006 02:10:21.06

UST Number: JH3L31AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-C File: [quad7.sample.C]JH3L31AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.C_1;3074

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00068	0050	01170	1700	21-NOV-2006 18:25:33.11
2	00000	00050	0050	01184	1700	21-NOV-2006 19:20:48.94
3	00000	00042	0050	01195	1700	21-NOV-2006 20:16:04.58

Bkg File: [quad7.bkgrnd]2006-11-21_0211.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00342	0400	0.86	09340	1700	21-NOV-2006 02:11:57.13

UST Number: JH3L31AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-C File: [quad7.sample.C]JH3L31AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.C_1;3075

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00044	0050	01169	1700	22-NOV-2006 07:42:25.49

Bkg File: [quad7.bkgrnd]2006-11-22_0210.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00278	0310	0.90	07352	1700	22-NOV-2006 02:10:21.06

UST Number: JH3L51AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-B File: [quad1.sample.B]JH3L51AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.B_1;3132

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00054	0050	01188	1650	21-NOV-2006 18:25:57.88
2	00000	00038	0050	01189	1650	21-NOV-2006 19:21:13.83
3	00000	00040	0050	01205	1650	21-NOV-2006 20:16:29.59

Bkg File: [quad1.bkgrnd]2006-11-21_0211.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00258	0400	0.65	09435	1650	21-NOV-2006 02:11:18.70

UST Number: JH3L51AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-B File: [quad1.sample.B]JH3L51AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.B_1;3133

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00034	0050	01185	1650	22-NOV-2006 07:43:07.43

Bkg File: [quad1.bkgrnd]2006-11-22_0344.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00242	0400	0.61	09547	1650	22-NOV-2006 03:44:27.79

UST Number: JH3L61AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-C File: [quad1.sample.C]JH3L61AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.C_1;3129

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00047	0050	01188	1650	21-NOV-2006 18:25:57.88
2	00000	00026	0050	01189	1650	21-NOV-2006 19:21:13.83
3	00000	00037	0050	01205	1650	21-NOV-2006 20:16:29.59

Bkg File: [quad1.bkgrnd]2006-11-21_0211.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00226	0400	0.57	09435	1650	21-NOV-2006 02:11:18.70

UST Number: JH3L61AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-C File: [quad1.sample.C]JH3L61AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.C_1;3130

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00027	0050	01185	1650	22-NOV-2006 07:43:07.43

Bkg File: [quad1.bkgrnd]2006-11-22_0344.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00207	0400	0.52	09547	1650	22-NOV-2006 03:44:27.79

UST Number: JH3MC1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-D File: [quad1.sample.D]JH3MC1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.D_1;3132

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00027	0050	01188	1650	21-NOV-2006 18:25:57.88
2	00000	00049	0050	01189	1650	21-NOV-2006 19:21:13.83
3	00000	00038	0050	01205	1650	21-NOV-2006 20:16:29.59

Bkg File: [quad1.bkgrnd]2006-11-21_0211.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00264	0400	0.66	09435	1650	21-NOV-2006 02:11:18.70

UST Number: JH3MC1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-D File: [quad1.sample.D]JH3MC1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.D_1;3133

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00024	0050	01185	1650	22-NOV-2006 07:43:07.43

Bkg File: [quad1.bkgrnd]2006-11-22_0344.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00214	0400	0.54	09547	1650	22-NOV-2006 03:44:27.79

UST Number: JH3MJ1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-A File: [quad2.sample.A]JH3MJ1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.A_1;3671

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00028	0050	01192	1810	21-NOV-2006 18:26:42.46
2	00000	00019	0050	01198	1810	21-NOV-2006 19:21:58.25
3	00000	00024	0050	01201	1810	21-NOV-2006 20:17:13.90

Bkg File: [quad2.bkgrnd]2006-11-21_0211.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00094	0400	0.24	09525	1810	21-NOV-2006 02:11:28.72

UST Number: JH3MJ1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-A File: [quad2.sample.A]JH3MJ1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.A_1;3672

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00012	0050	01191	1810	22-NOV-2006 07:43:19.52

Bkg File: [quad2.bkgrnd]2006-11-22_0344.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00080	0400	0.20	09605	1810	22-NOV-2006 03:44:32.77

UST Number: JH3MK1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-B File: [quad2.sample.B]JH3MK1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.B_1;3668

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00031	0050	01192	1810	21-NOV-2006 18:26:42.46
2	00000	00019	0050	01198	1810	21-NOV-2006 19:21:58.25
3	00000	00021	0050	01201	1810	21-NOV-2006 20:17:13.90

Bkg File: [quad2.bkgrnd]2006-11-21_0211.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00099	0400	0.25	09525	1810	21-NOV-2006 02:11:28.72

UST Number: JH3MK1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-B File: [quad2.sample.B]JH3MK1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.B_1;3669

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01191	1810	22-NOV-2006 07:43:19.52

Bkg File: [quad2.bkgrnd]2006-11-22_0344.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00077	0400	0.19	09605	1810	22-NOV-2006 03:44:32.77

UST Number: JH3ML1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-C File: [quad2.sample.C]JH3ML1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.C_1;3669

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00032	0050	01192	1810	21-NOV-2006 18:26:42.46
2	00000	00021	0050	01198	1810	21-NOV-2006 19:21:58.25
3	00000	00028	0050	01201	1810	21-NOV-2006 20:17:13.90

Bkg File: [quad2.bkgrnd]2006-11-21_0211.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00099	0400	0.25	09525	1810	21-NOV-2006 02:11:28.72

UST Number: JH3ML1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-C File: [quad2.sample.C]JH3ML1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.C_1;3670

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00016	0050	01191	1810	22-NOV-2006 07:43:19.52

Bkg File: [quad2.bkgrnd]2006-11-22_0344.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00104	0400	0.26	09605	1810	22-NOV-2006 03:44:32.77

UST Number: JH3MM1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-D File: [quad2.sample.D]JH3MM1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.D_1;3668

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00032	0050	01192	1810	21-NOV-2006 18:26:42.46
2	00000	00019	0050	01198	1810	21-NOV-2006 19:21:58.25
3	00000	00019	0050	01201	1810	21-NOV-2006 20:17:13.90

Bkg File: [quad2.bkgrnd]2006-11-21_0211.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00092	0400	0.23	09525	1810	21-NOV-2006 02:11:28.72

UST Number: JH3MM1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-D File: [quad2.sample.D]JH3MM1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.D_1;3669

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00011	0050	01191	1810	22-NOV-2006 07:43:19.52

Bkg File: [quad2.bkgrnd]2006-11-22_0344.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00093	0400	0.23	09605	1810	22-NOV-2006 03:44:32.77

UST Number: JH3NN1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JH3NN1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.A_1;5586

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01276	1920	21-NOV-2006 18:27:11.91
2	00000	00018	0050	01279	1920	21-NOV-2006 19:22:27.79
3	00000	00015	0050	01292	1920	21-NOV-2006 20:17:43.41

Bkg File: [quad3.bkgrnd]2006-11-21_0211.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00088	0400	0.22	10202	1920	21-NOV-2006 02:11:34.48

UST Number: JH3NN1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JH3NN1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.A_1;5587

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00014	0050	01261	1920	22-NOV-2006 07:43:32.26

Bkg File: [quad3.bkgrnd]2006-11-22_0209.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00070	0309	0.23	07893	1920	22-NOV-2006 02:09:23.45

UST Number: JH3NR1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JH3NR1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.B_1;5594

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01276	1920	21-NOV-2006 18:27:11.91
2	00000	00020	0050	01279	1920	21-NOV-2006 19:22:27.79
3	00000	00017	0050	01292	1920	21-NOV-2006 20:17:43.41

Bkg File: [quad3.bkgrnd]2006-11-21_0211.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00105	0400	0.26	10202	1920	21-NOV-2006 02:11:34.48

UST Number: JH3NR1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JH3NR1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.B_1;5595

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00011	0050	01261	1920	22-NOV-2006 07:43:32.26

Bkg File: [quad3.bkgrnd]2006-11-22_0209.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00090	0309	0.29	07893	1920	22-NOV-2006 02:09:23.45

UST Number: JH3NT1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JH3NT1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.C_1;5599

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00023	0050	01276	1920	21-NOV-2006 18:27:11.91
2	00000	00018	0050	01279	1920	21-NOV-2006 19:22:27.79
3	00000	00017	0050	01292	1920	21-NOV-2006 20:17:43.41

Bkg File: [quad3.bkgrnd]2006-11-21_0211.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00098	0400	0.25	10202	1920	21-NOV-2006 02:11:34.48

UST Number: JH3NT1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JH3NT1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.C_1;5600

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00007	0050	01261	1920	22-NOV-2006 07:43:32.26

Bkg File: [quad3.bkgrnd]2006-11-22_0209.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00095	0309	0.31	07893	1920	22-NOV-2006 02:09:23.45

UST Number: JH3NV1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JH3NV1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.D_1;5584

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00028	0050	01276	1920	21-NOV-2006 18:27:11.91
2	00000	00018	0050	01279	1920	21-NOV-2006 19:22:27.79
3	00000	00015	0050	01292	1920	21-NOV-2006 20:17:43.41

Bkg File: [quad3.bkgrnd]2006-11-21_0211.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00099	0400	0.25	10202	1920	21-NOV-2006 02:11:34.48

UST Number: JH3NV1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JH3NV1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.D_1;5585

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01261	1920	22-NOV-2006 07:43:32.26

Bkg File: [quad3.bkgrnd]2006-11-22_0209.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00068	0309	0.22	07893	1920	22-NOV-2006 02:09:23.45

UST Number: JH3NW1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JH3NW1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.A_1;5602

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01227	1850	21-NOV-2006 18:28:11.32
2	00000	00010	0050	01244	1850	21-NOV-2006 19:23:27.02
3	00000	00013	0050	01233	1850	21-NOV-2006 20:18:42.61

Bkg File: [quad4.bkgrnd]2006-11-21_0211.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00101	0400	0.25	09860	1850	21-NOV-2006 02:11:39.91

UST Number: JH3NW1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JH3NW1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.A_1;5603

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00013	0050	01221	1850	22-NOV-2006 07:43:45.11

Bkg File: [quad4.bkgrnd]2006-11-22_0340.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00129	0400	0.32	09852	1850	22-NOV-2006 03:40:17.32

UST Number: JH5QD1AA Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JH5QD1AA.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.B_1;5601

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00128	0050	01227	1850	21-NOV-2006 18:28:11.32
2	00000	00112	0050	01244	1850	21-NOV-2006 19:23:27.02
3	00000	00133	0050	01233	1850	21-NOV-2006 20:18:42.61

Bkg File: [quad4.bkgrnd]2006-11-21_0211.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00098	0400	0.25	09860	1850	21-NOV-2006 02:11:39.91

UST Number: JH5QD1AA Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JH5QD1AA.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.B_1;5602

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00046	0050	01221	1850	22-NOV-2006 07:43:45.11

Bkg File: [quad4.bkgrnd]2006-11-22_0340.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00119	0400	0.30	09852	1850	22-NOV-2006 03:40:17.32

RADIUM 226

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

12/5/2006 8:26:58 AM

Lot No., Due Date: J6K060215,J6K060216,J6K060219; 12/01/2006

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6325489; RRA2267 Ra-226 by ASC-7

SDG, Matrix: 32992,32993,32994; FILTER

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.

First Level Review Pam Anderson **Date** 12-5-06

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 625489

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 NCM

Second Level Review: Sheryl R Adam Date: 12-5-06

LS-038B, Rev. 10, 8/02

STL RICHLAND

11/22/2006 2:30:19 PM

Sample Preparation/Analysis

Balance Id:1120373922,1120403183

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by Nal & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Pipet #:

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech: 11/27/06 JH 1320

Batch: 6325489 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6311396, BXTF

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

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 JH3LV-2-AC J6K060215-1-SAMP	0.833sa	500.20sa	150.01g,in	0.2498g 7.5022 = 7.13 1.0522 -	RATA24784 11/15/06		9"	1549	11/27/06 [illegible] 11/28/06 1410 [illegible] 1RH 12/2/06 0926 R	
10/18/2006 11:05		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
2 JH3L1-2-AC J6K060215-2-SAMP	0.833sa	500.14sa	150.15g,in	0.2501g 7.4829 = 7.497 - .9981	RATA24785 11/15/06		G13	1550	11/27/06 [illegible] 11/28/06 1410 [illegible] 2RC 12/2/06 0925 R	
10/18/2006 11:30		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
3 JH3L3-2-AC J6K060215-3-SAMP	0.833sa	501.73sa	159.30g,in	0.2645g 7.5022 = 6.87 - 1.0920 -	RATA24791 11/15/06		9"	1625	11/27/06 [illegible] 11/28/06 1410 [illegible] 3MA 12/2/06 0924 R	
10/18/2006 11:55		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
4 JH3L5-2-AC J6K060215-4-SAMP	0.833sa	502.50sa	150.62g,in	0.2497g 7.5215 = 7.450 - 1.0096	RATA24786 11/15/06		G13	1625	11/27/06 [illegible] 11/28/06 1410 [illegible] 7UA 12/2/06 0926 R	
10/18/2006 11:10		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 1 ISV - Insufficient Volume for Analysis WO Cnt: 4
Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added Prep_SamplePrep v4.8.24

STL RICHLAND

11/22/2006 2:30:20 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6325489 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6311396, BXTF

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

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:
5 JH3L6-2-AC J6K060215-5-SAMP	0.833sa	502.50sa	150.08g,in	0.2488g	RATA24787 11/15/06		9"	1658	11/27/06 OKD	
				7.5022 –						
				7.11 –					11/28/06 1410 P	
				1.0552				SHC	12/2/06 0925 R	
10/18/2006 12:00		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
6 JH3MC-2-AC J6K060216-1-SAMP	0.833sa,g	500.06sa,g	150.08g,in	0.25g	RATA24788 11/15/06		G13	1658	11/27/06 OKD	
				7.5311 –						
				7.214 –					11/28/06 1410 P	
				1.0440 –				9RC	12/2/06 0927 R	
10/05/2006 09:50		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
7 JH3MJ-2-AC J6K060216-2-SAMP	0.833sa,g	500.03sa,g	150.46g,in	0.2507g	RATA24789 11/15/06		9"	1733	11/27/06 OKD	
				7.4829 –						
				6.61 –					11/28/06 1410 P	
				1.1321				ASA	12/2/06 0955 R	
10/05/2006 10:10		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
8 JH3MK-2-AC J6K060216-3-SAMP	0.833sa,g	501.08sa,g	150.11g,in	0.2495g	RATA24790 11/15/06		G13	1734	11/27/06 OKD	
				7.5022 –						
				6.724 –					11/28/06 1410 P	
				1.1157 –				BMC	12/2/06 0956 R	
10/05/2006 10:30		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:

STL RICHLAND

11/22/2006 2:30:20 PM

536403, Brown and Caldwell , Brown & Caldwell

AnalyDueDate: 11/30/2006

Sample Preparation/Analysis

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Balance Id:1120373922,1120373922,na,11

Pipet #:

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Batch: 6325489 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: 6311396, BXTF

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:
9 JH3ML-2-AC J6K060216-4-SAMP	0.833sa,g	503.05sa,g	150.19g,in	0.2487g	RATA24792 11/15/06		9"	1808	11/29/06 00	
				7.5311						
				7.24					11/28/06	1430
				1.0402				CSD	12/2/06	0954 R
10/05/2006 09:55		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
10 JH3MM-2-AC J6K060216-5-SAMP	0.833sa,g	500.03sa,g	150.18g,in	0.2502g	RATA24793 11/15/06		G5	1809	11/27/06 00	
				7.5118						
				7.381					11/28/06	1430
				1.0177				DSA	12/2/06	0955 R
10/05/2006 10:35		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
11 JH3NN-2-AC J6K060219-1-SAMP	0.833sa,g	500.13sa,g	150.79g,in	0.2512g	RATA24794 11/15/06		9"	1841	11/27/06 00	
				7.4829						
				7.21					11/28/06	1430
				1.0379				EHA	12/2/06	1027 R
10/11/2006 10:55		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
12 JH3NR-2-AC J6K060219-2-SAMP	0.833sa,g	509.38sa,g	150.07g,in	0.2454g	RATA24795 11/15/06		G5	1841	11/27/06 00	
				7.4829						
				6.385					11/28/06	1430
				1.1719				FSA	12/2/06	1026 R
10/11/2006 11:10		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:

STL RICHLAND

11/22/2006 2:30:21 PM

Sample Preparation/Analysis

Balance Id:1120373922,1120373922,1120

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Pipet #:

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6325489 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6311396, BXTF

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

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:
13 JH3NT-2-AC J6K060219-3-SAMP	0.833sa,g	500.67sa,g	150.28g,in	0.25g 7.5118 = 7.02 = 1.0701	RATA24796 11/15/06		9"	1914	11/27/06 OD 11/28/06 1430 JSB 12/2/06 1028 R	
10/11/2006 11:35			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
14 JH3NV-2-AC J6K060219-4-SAMP	0.833sa	500.36sa	151.79g,in	0.2527g 7.5214 = 6.973 = 1.0786	RATA24797 11/15/06		G13	1914	11/27/06 OD 11/28/06 1430 NMA 12/2/06 1029 R	
10/11/2006 11:00			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
15 JH3NW-2-AC J6K060219-5-SAMP	0.833sa,g	508.75sa,g	150.06g,in	0.2457g 7.4829 = 7.28 = 1.0279	RATA24798 11/15/06		9"	1948	11/27/06 OD 11/28/06 1430 QMC 12/2/06 1027 R	
10/11/2006 11:40			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
16 JJ7A2-1-AA-B J6K210000-489-BLK			150.30g,in	150.30g 7.4637 = 6.797 = 1.0981	RATA24799 11/15/06		G13	1949	11/27/06 OD 11/28/06 1430 GSB 12/2/06 0953 R	
10/11/2006 11:35			AmtRec:	#Containers: 1			Scr:	Alpha:		Beta:

11/22/2006 2:30:21 PM

Sample Preparation/Analysis

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Balance Id:1120403183,1120403183,1120
Pipet #: _____
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech: ,HarrisonJ

AnalyDueDate: 11/30/2006

Batch: 6325489 pCi/sampl
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:
17JJ7A2-1-AC-C J6K210000-489-LCS			150.00g,in	150.00g 7.4666 – 7.16 – 1.0428 –	RASC4267 11/20/06		9"	2028	11/27/06 one 11/28/06 1448 p PMA 12/2/06 0956 R	

10/11/2006 11:35 AmtRec: #Containers: 1 Scr: Alpha: Beta:

Comments: JH3L5-SAMP "Comments Spike was added to sample. Repoured from filtered surplus and RATA tracer added,"

All Clients for Batch:
536403, Brown and Caldwell Brown & Caldwell , SA , 63174

JH3LV2AC-SAMP Constituent List:

Ba-133	RDL:	pCi/sam	LCL:20	UCL:115	RPD:20	Ra-226	RDL:1.00E+00	pCi/sam	LCL:	UCL:	RPD:

JJ7A21AA-BLK:

Ba-133	RDL:	pCi/sam	LCL:20	UCL:115	RPD:20	Ra-226	RDL:1.00E+00	pCi/sam	LCL:	UCL:	RPD:

JJ7A21AC-LCS:

Ba-133	RDL:	pCi/sam	LCL:20	UCL:115	RPD:20	Ra-226	RDL:1	pCi/sam	LCL:70	UCL:130	RPD:20

JH3LV2AC-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JJ7A21AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JJ7A21AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

SEVERN TRENT STL

*** RE-ANALYSIS REQUEST ***

DUE DATE 11 30-06

CUSTOMER Brown + Caldwell

ANALYSIS Ra 226

MATRIX filter

LOT NUMBER J6K060219

SAMPLE DELIVERY GROUP NA

OLD BATCH NUMBER 6311395

NEW BATCH NUMBER 63 25489

	LAB SAMPLE ID	REASON FOR REQUEST & ANALYSIS COMMENTS
1)	All	54% LCS
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		
11)		
12)		
13)		
14)		
15)		
16)		
17)		
18)		
19)		
20)		
	LAB QC ID	Assigned with new batch.

RC-048, 10/03, Rev 7

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #: **10-09063**
NCM Initiated By: Pam Anderson
Date Opened: 12/05/2006
Date Closed:

Classification: **Deficiency**
Status: **GLREVIEW**
Production Area: Environmental - Prep
Tests: Ra-226 by ASC-7
Lot #'s (Sample #'s): J6K060215 (1,2,3,4,5), J6K060216 (1,2,3,4,5), J6K060219 (1,2,3,4,5), J6K210000 (489),
QC Batches: 6325489

Nonconformance: Technician Error
Subcategory: Laboratory error: prep error

Problem Description / Root Cause

Name	Date	Description
Pam Anderson	12/05/2006	This batch of Ra 226 in filters had the LCS vial added to the blank. Then the "LCS" only had a 54% recovery. The samples were reanalyzed. The reanalysis.

Corrective Action

Name	Date	Corrective Action
Pam Anderson	12/05/2006	Reanalysis data is acceptable.

Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note	Response	Response Note

Quality Assurance Verification

Verified By	Due Date	Status	Notes
		This section not yet completed by QA.	

Approval History

Date Approved	Approved By	Position

12/5/2006 8:23:16 AM

ICOC Fraction Transfer/Status Report

ByDate: 12/5/2005, 12/10/2006, Batch: '6325489', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6325489						
AC		**CalcC**	**HarrisonJ**	11/22/2006 12:17:49		
SC			andersonp	IsBatched	11/21/2006 2:50:07 PM	ICOC_RADCALC v4.8.24
SC			HarrisonJ	InPrep	11/22/2006 12:17:49 PM	RICH-RC-5005 Revision 5
SC			HarrisonJ	Sep1C	11/27/2006 2:34:39 PM	RICH-RC-5005 REVISION 5
SC			DAWKINSO	InCnt1	11/27/2006 3:22:35 PM	RICH-RD-0007 REVISION 5
SC			DAWKINSO	Cnt1C	11/27/2006 8:51:23 PM	RICH-RD-0007 REVISION 5
SC			PetersonJ	InSep2	11/28/2006 2:36:11 PM	RICH-RC-5005 REVISION 5
SC			StringerR	CalcC	12/2/2006 2:41:52 PM	RICH-RC-5005 REVISION 5
AC			**HarrisonJ**	11/27/2006 2:34:39		
AC			**DAWKINSO**	11/27/2006 3:22:35		
AC			**DAWKINSO**	11/27/2006 8:51:23		
AC			**PetersonJ**	11/28/2006 2:36:11		
AC			**StringerR**	12/2/2006 2:41:52 PM		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt:6

ICOCFractions v4.8.26

12/5/2006 8:23:15 AM

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 / Mda	Units	Expected	Yield	Volumes	
32992	**9JH3L120**			**J6K0602152**	P-0779	FILTER	11/3/2006 10:00:00	10/18/2006 11:30:00 AM					
RA-226	BXTE	1		12/2/2006 12:25:00 PM	**1.2993E-01**	1.879E-01	1.883E-01	6.977E-01	PCI/SA		1.002	1.0E+0	2.501E-1
32992	**9JH3L320**			**J6K0602153**	P-0780	FILTER	11/3/2006 10:00:00	10/18/2006 11:55:00 AM					
RA-226	BXTE	1		12/2/2006 12:24:00 PM	**1.2535E-01**	1.137E-01	1.144E-01	4.108E-01	PCI/SA		0.916	1.0E+0	2.645E-1
32992	**9JH3L520**			**J6K0602154**	P-0781	FILTER	11/3/2006 10:00:00	10/18/2006 11:10:00 AM					
RA-226	BXTE	1		12/2/2006 12:26:00 PM	**0.0E+00**	0.0E+00	1.454E-01	5.914E-01	PCI/SA		0.99	1.0E+0	2.497E-1
32992	**9JH3L620**			**J6K0602155**	000546	FILTER	11/3/2006 10:00:00	10/18/2006 12:00:00 PM					
RA-226	BXTE	1		12/2/2006 12:25:00 PM	**-2.1273E-01**	1.467E-01	1.482E-01	6.604E-01	PCI/SA		0.948	1.0E+0	2.488E-1
32992	**9JH3LV20**			**J6K0602151**	P-0778	FILTER	11/3/2006 10:00:00	10/18/2006 11:05:00 AM					
RA-226	BXTE	1		12/2/2006 12:26:00 PM	**1.7381E-01**	2.55E-01	2.556E-01	9.234E-01	PCI/SA		0.95	1.0E+0	2.498E-1
TH-228	9NS1	1		11/22/2006 12:45:29	**1.5777E-01**	1.081E-01	1.09E-01	3.789E-01	PCI/SA		0.86	1.0E+0	3.33E-2
TH-230	9NS1	1		11/22/2006 12:45:29	**1.2989E-01**	7.805E-02	7.892E-02	2.597E-01	PCI/SA		0.86	1.0E+0	3.33E-2
TH-232	9NS1	1		11/22/2006 12:45:29	**4.3295E-02**	4.841E-02	4.856E-02	2.597E-01	PCI/SA		0.86	1.0E+0	3.33E-2
32993	**9JH3MC20**			**J6K0602161**	P-0769	FILTER	11/3/2006 10:00:00	10/5/2006 9:50:00 AM					
RA-226	BXTE	1		12/2/2006 12:27:00 PM	**3.3848E-01**	2.828E-01	2.848E-01	9.945E-01	PCI/SA		0.958	1.0E+0	2.5E-1
32993	**9JH3MJ20**			**J6K0602162**	P-0770	FILTER	11/3/2006 10:00:00	10/5/2006 10:10:00 AM					
RA-226	BXTE	1		12/2/2006 12:55:00 PM	**4.5105E-01**	1.812E-01	1.874E-01	5.382E-01	PCI/SA		0.883	1.0E+0	2.507E-1
32993	**9JH3MK20**			**J6K0602163**	P-0771	FILTER	11/3/2006 10:00:00	10/5/2006 10:30:00 AM					
RA-226	BXTE	1		12/2/2006 12:56:02 PM	**3.4611E-01**	2.119E-01	2.152E-01	7.171E-01	PCI/SA		0.896	1.0E+0	2.495E-1
32993	**9JH3ML20**			**J6K0602164**	P-0772	FILTER	11/3/2006 10:00:00	10/5/2006 9:55:00 AM					
RA-226	BXTE	1		12/2/2006 12:54:00 PM	**1.5692E-01**	1.862E-01	1.869E-01	6.924E-01	PCI/SA		0.961	1.0E+0	2.487E-1
32993	**9JH3MM20**			**J6K0602165**	000544	FILTER	11/3/2006 10:00:00	10/5/2006 10:35:00 AM					
RA-226	BXTE	1		12/2/2006 12:55:00 PM	**6.2538E-02**	1.628E-01	1.629E-01	6.439E-01	PCI/SA		0.983	1.0E+0	2.502E-1
32994	**9JH3NN20**			**J6K0602191**	P-0773	FILTER	11/3/2006 10:00:00	10/11/2006 10:55:00 AM					
RA-226	BXTE	1		12/2/2006 1:27:00 PM	**9.6696E-02**	2.03E-01	2.033E-01	7.576E-01	PCI/SA		0.963	1.0E+0	2.512E-1
32994	**9JH3NR20**			**J6K0602192**	P-0774	FILTER	11/3/2006 10:00:00	10/11/2006 11:10:00 AM					
RA-226	BXTE	1		12/2/2006 1:26:00 PM	**6.1967E-01**	3.128E-01	3.185E-01	1.017E+00	PCI/SA		0.853	1.0E+0	2.454E-1
32994	**9JH3NT20**			**J6K0602193**	P-0775	FILTER	11/3/2006 10:00:00	10/11/2006 11:35:00 AM					
RA-226	BXTE	1		12/2/2006 1:28:00 PM	**4.2552E-01**	1.822E-01	1.874E-01	5.525E-01	PCI/SA		0.934	1.0E+0	2.5E-1
32994	**9JH3NV20**			**J6K0602194**	P-0776	FILTER	11/3/2006 10:00:00	10/11/2006 11:00:00 AM					
RA-226	BXTE	1		12/2/2006 1:29:00 PM	**4.6104E-01**	1.898E-01	1.961E-01	5.863E-01	PCI/SA		0.927	1.0E+0	2.527E-1
32994	**9JH3NW20**			**J6K0602195**	000545	FILTER	11/3/2006 10:00:00	10/11/2006 11:40:00 AM					
RA-226	BXTE	1		12/2/2006 1:27:00 PM	**2.0542E-01**	1.101E-01	1.124E-01	3.451E-01	PCI/SA		0.973	1.0E+0	2.457E-1
32992	**JJ7A21AB**			**J6K210000489**	INTRA-LAB BLANK	FILTER	11/3/2006 10:00:00	10/11/2006 11:35:00 AM					
RA-226	BXTE	0	B	12/2/2006 12:53:00 PM	**-2.3913E-02**	4.32E-02	4.346E-02	1.79E-01	PCI/SA		0.911	1.0E+0	1.0E+0
32992	**JJ7A21CS**			**J6K210000489**	INTRA-LAB CHECK	FILTER	11/3/2006 10:00:00	10/11/2006 11:35:00 AM					
RA-226	BXTE	0	S	12/2/2006 12:56:00 PM	**1.1936E+00**	1.009E-01	2.592E-01	1.161E-01	PCI/SA	1.3556E+00	0.959	1.0E+0	1.0E+0

6325489, **Samples Inserted | Updated | NotUpdated => 16 | 0 | 1,
**Results Inserted | ReTestInserted | Updated | NotInserted => 17 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 6325489

Alpha Beta, Ra-226 by ASC-7 , Results

12/5/2006 8:10:39 AM

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.										
Calc	TE	FILTER	**JH3LV2AC**	RA-226	**1.74E-01**	**(2.56E-01)**	**U4**	PCI/SA	R	4.19E-01	9.23E-01	CPDL met	95%	
Calc	TE	FILTER	**JH3L12AC**	RA-226	**1.30E-01**	**(1.88E-01)**	**U4**	PCI/SA	R	3.01E-01	6.98E-01		100%	
Calc	TE	FILTER	**JH3L32AC**	RA-226	**1.25E-01**	**(1.14E-01)**	**U4**	PCI/SA	R	1.63E-01	4.11E-01		92%	
Calc	TE	FILTER	**JH3L52AC**	RA-226	**0.00E+00**	**(1.45E-01)**	**U4**	PCI/SA	R	2.50E-01	5.91E-01		99%	
Calc	TE	FILTER	**JH3L62AC**	RA-226	**-2.13E-01**	**(1.48E-01)**	**U4**	PCI/SA	R	2.88E-01	6.60E-01		95%	
Calc	TE	FILTER	**JH3MC2AC**	RA-226	**3.38E-01**	**(2.85E-01)**	**U4**	PCI/SA	R	4.40E-01	9.95E-01		96%	
Calc	TE	FILTER	**JH3MJ2AC**	RA-226	**4.51E-01**	**(1.87E-01)**		PCI/SA	R	2.20E-01	5.38E-01		88%	
Calc	TE	FILTER	**JH3MK2AC**	RA-226	**3.46E-01**	**(2.15E-01)**	**U4**	PCI/SA	R	3.12E-01	7.17E-01		90%	
Calc	TE	FILTER	**JH3ML2AC**	RA-226	**1.57E-01**	**(1.87E-01)**	**U4**	PCI/SA	R	2.86E-01	6.92E-01		96%	
Calc	TE	FILTER	**JH3MM2AC**	RA-226	**6.25E-02**	**(1.63E-01)**	**U4**	PCI/SA	R	2.66E-01	6.44E-01		98%	
Calc	TE	FILTER	**JH3NN2AC**	RA-226	**9.67E-02**	**(2.03E-01)**	**U4**	PCI/SA	R	3.35E-01	7.58E-01		96%	
Calc	TE	FILTER	**JH3NR2AC**	RA-226	**6.20E-01**	**(3.19E-01)**		PCI/SA	R	4.34E-01	1.02E+00		85%	
Calc	TE	FILTER	**JH3NT2AC**	RA-226	**4.26E-01**	**(1.87E-01)**		PCI/SA	R	2.26E-01	5.53E-01		93%	
Calc	TE	FILTER	**JH3NV2AC**	RA-226	**4.61E-01**	**(1.96E-01)**		PCI/SA	R	2.49E-01	5.86E-01		93%	
Calc	TE	FILTER	**JH3NW2AC**	RA-226	**2.05E-01**	**(1.12E-01)**		PCI/SA	R	1.31E-01	3.45E-01		97%	
Calc	TE	FILTER	**JJ7A21AA**	RA-226	**-2.39E-02** ~	**(4.35E-02)**	**U4**	PCI/SA	R	7.81E-02	1.79E-01	**B**	91%	
Calc	TE	FILTER	**JJ7A21AC**	RA-226	**1.19E+00**	**(2.59E-01)**		PCI/SA	R	4.74E-02	1.16E-01	**S**	96%	88%

P Anderson
12-5-06

() - (1s Uncertainities)
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 Reguardless of Significants
Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:17
RADCALC v4.8.26
STL Richland

Batch Nbr: 6325489

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

Detailed Report

12/5/2006 8:10:39 AM

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
1	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3LV2AC**	**PCI/SA**		10/18/06 11:05	12/02/06 12:26	11/28/06 14:10	RATA24784	1	1.00 Sa	
CID:P-0778LOT:J6K0602151 v4.8.26							FILTER				12/02/06 09:26	RATA24784 Alq	95%	0.249817 Sa	

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	12/02/06 12:26	RA-226	38	39	ASC1RH	ASC		N	2.4697E+00	1.0000E+00	N	95%	N		2.0568E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(9.113E-02)	(0.000E+00)		8%			(0.000E+00)	4.002934		

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
	12/05/06	RA-226	R	**0.173814**	**U4**	1.10000E-01	0.096392	0.096392	1.00 Sa	95%		0.923399		
				(0.255602)		(1.6135E-01)	(0.141642)	(0.141642)	(0.027062)			0.419127		

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
2	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3L12AC**	**PCI/SA**		10/18/06 11:30	12/02/06 12:25	11/28/06 14:10	RATA24785	1	1.00 Sa	
CID:P-0779LOT:J6K0602152 v4.8.26							FILTER				12/02/06 09:25	RATA24785 Alq	100%	0.25008 Sa	

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	12/02/06 12:25	RA-226	17	16	ASC2RC	ASC		N	2.0913E+00	1.0000E+00	N	100%	N		2.0571E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(6.818E-02)	(0.000E+00)		8%			(0.000E+00)	3.998722		

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
	12/05/06	RA-226	R	**0.129932**	**U4**	7.33333E-02	0.072132	0.072132	1.00 Sa	100%		0.697716		
				(0.188338)		(1.0604E-01)	(0.104489)	(0.104489)	(0.014142)			0.301021		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
3	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3L32AC**	**PCI/SA**		10/18/06 11:55	12/02/06 12:24	11/28/06 14:10	RATA24791	1	1.00 Sa	
CID:P-0780LOT:J6K0602153 v4.8.26							FILTER				12/02/06 09:24	RATA24791 Alq	92%	0.264479 Sa	

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	12/02/06 12:24	RA-226	9	6	ASC3MA	ASC		N	2.4421E+00	1.0000E+00	N	92%	N		2.0573E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(6.350E-02)	(0.000E+00)		7%			(0.000E+00)	3.781023		

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
	12/05/06	RA-226	R	**0.125349**	**U4**	8.00000E-02	0.073594	0.073594	1.00 Sa	92%		0.410761		
				(0.11442)		(7.2572E-02)	(0.067047)	(0.067047)	(0.027084)			0.163015		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
4	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3L52AC**	**PCI/SA**		10/18/06 11:10	12/02/06 12:26	11/28/06 14:10	RATA24786	1	1.00 Sa	
CID:P-0781LOT:J6K0602154 v4.8.26							FILTER				12/02/06 09:26	RATA24786 Alq	99%	0.249684 Sa	

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	12/02/06 12:26	RA-226	10	12	ASC7UA	ASC		N	2.2064E+00	1.0000E+00	N	99%	N		2.0568E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.072E-01)	(0.000E+00)		8%			(0.000E+00)	4.005054		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:4

RADCALC v4.8.26
STL Richland

Batch Nbr: 6325489

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

12/5/2006 8:10:40 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	BlkLcC/MDC	StdDvMdC/LcC
	12/05/06	RA-226	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 Sa	99%		0.591382		
				(0.145404)		(8.5635E-02)	(0.080593)	(0.080593)	(0.014142)			0.249825		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
5	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3L62AC**	**PCI/SA**		10/18/06 12:00	12/02/06 12:25	11/28/06 14:10	RATA24787	1	1.00 Sa	
CID:000546LOT:J6K0602155 v4.8.26							FILTER				12/02/06 09:25	RATA24787 Alq	95%	0.248789 Sa	

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	12/02/06 12:25	RA-226	9	19	ASC8HC	ASC		N	2.5249E+00	1.0000E+00	N	95%	N		2.0571E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(6.186E-02)	(0.000E+00)		8%			(0.000E+00)	4.019465		

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
	12/05/06	RA-226	R	**-0.21273**	U4	-1.36667E-01	-0.117488	-0.117488	1.00 Sa	95%		0.660382		
				(0.148232)		(9.4222E-02)	(0.081594)	(0.081594)	(0.027062)			0.288179		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
6	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3MC2AC**	**PCI/SA**		10/05/06 09:50	12/02/06 12:27	11/28/06 14:10	RATA24788	1	1.00 Sa	
CID:P-0769LOT:J6K0602161 v4.8.26							FILTER				12/02/06 09:27	RATA24788 Alq	96%	0.250003 Sa	

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	12/02/06 12:27	RA-226	28	24	ASC9RC	ASC		N	1.8288E+00	1.0000E+00	N	96%	N		2.0565E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(5.139E-02)	(0.000E+00)		8%			(0.000E+00)	3.999948		

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
	12/05/06	RA-226	R	**0.338476**	U4	1.60000E-01	0.187845	0.187845	1.00 Sa	96%		0.994504		
				(0.284764)		(1.3367E-01)	(0.157735)	(0.157735)	(0.014142)			0.440184		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
7	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3MJ2AC**	**PCI/SA**		10/05/06 10:10	12/02/06 12:55	11/28/06 14:10	RATA24789	1	1.00 Sa	
CID:P-0770LOT:J6K0602162 v4.8.26							FILTER				12/02/06 09:55	RATA24789 Alq	88%	0.250651 Sa	

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	12/02/06 12:55	RA-226	19	8	ASCASA	ASC		N	2.2802E+00	1.0000E+00	N	88%	N		2.0493E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(1.047E-01)	(0.000E+00)		7%			(0.000E+00)	3.989606		

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
	12/05/06	RA-226	R	**0.451052**		2.46667E-01	0.25097	0.25097	1.00 Sa	88%		0.5382		
				(0.187411)		(9.9107E-02)	(0.103459)	(0.103459)	(0.014142)			0.219676		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3MK2AC**	**PCI/SA**		10/05/06 10:30	12/02/06 12:56	11/28/06 14:10	RATA24790	1	1.00 Sa	
CID:P-0771LOT:J6K0602163 v4.8.26							FILTER				12/02/06 09:56	RATA24790 Alq	90%	0.249544 Sa	

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

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:8

RADCALC v4.8.26

STL Richland

Batch Nbr: 6325489

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

12/5/2006 8:10:40 AM

1	12/02/06 12:56	RA-226	25	18	ASCBMC	ASC		N	2.3847E+00	1.0000E+00	N	90%	N		2.0490E+00	4.5045E-01	1.0001E+00
			50	60			Y		(1.207E-01)	(0.000E+00)		7%			(0.000E+00)	4.007305	

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
	12/05/06	RA-226	R	**0.346111**	**U4**	2.00000E-01	0.19173	0.19173	1.00 Sa	90%		0.717121		
				(0.215219)		(1.2247E-01)	(0.118804)	(0.118804)	(0.014142)			0.311848		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
9	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3ML2AC**	**PCI/SA**		10/05/06 09:55	12/02/06 12:54	11/28/06 14:30	RATA24792	1	1.00 Sa	
CID:P-0772LOT:J6K0602164 v4.8.26							FILTER				12/02/06 09:54	RATA24792 Alq	96%	0.248699 Sa	

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	12/02/06 12:54	RA-226	11	9	ASCCSD	ASC		N	1.7270E+00	1.0000E+00	N	96%	N		2.0547E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(5.958E-02)	(0.000E+00)		8%			(0.000E+00)	4.020917		

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
	12/05/06	RA-226	R	**0.156921**	**U4**	7.00000E-02	0.086632	0.086632	1.00 Sa	96%		0.692448		
				(0.186891)		(8.3066E-02)	(0.10308)	(0.10308)	(0.014142)			0.285643		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3MM2AC**	**PCI/SA**		10/05/06 10:35	12/02/06 12:55	11/28/06 14:30	RATA24793	1	1.00 Sa	
CID:000544LOT:J6K0602165 v4.8.26							FILTER				12/02/06 09:55	RATA24793 Alq	98%	0.250185 Sa	

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	12/02/06 12:55	RA-226	9	9	ASCDSA	ASC		N	1.8059E+00	1.0000E+00	N	98%	N		2.0544E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(3.449E-02)	(0.000E+00)		8%			(0.000E+00)	3.997044		

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
	12/05/06	RA-226	R	**0.062538**	**U4**	3.00000E-02	0.034732	0.034732	1.00 Sa	98%		0.643919		
				(0.162927)		(7.8102E-02)	(0.090468)	(0.090468)	(0.014142)			0.265624		

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
11	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3NN2AC**	**PCI/SA**		10/11/06 10:55	12/02/06 13:27	11/28/06 14:30	RATA24794	1	1.00 Sa	
CID:P-0773LOT:J6K0602191 v4.8.26							FILTER				12/02/06 10:27	RATA24794 Alq	96%	0.251151 Sa	

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	12/02/06 13:27	RA-226	23	24	ASCEHA	ASC		N	2.3636E+00	1.0000E+00	N	96%	N		2.0462E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(1.057E-01)	(0.000E+00)		8%			(0.000E+00)	3.981671		

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
	12/05/06	RA-226	R	**0.096696**	**U4**	6.00000E-02	0.05391	0.05391	1.00 Sa	96%		0.757628		
				(0.203258)		(1.2596E-01)	(0.113286)	(0.113286)	(0.014142)			0.335339		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt: 12

RADCALC v4.8.26

STL Richland

Batch Nbr: 6325489

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

12/5/2006 8:10:40 AM

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
12	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3NR2AC**	**PCI/SA**		10/11/06 11:10	12/02/06 13:26	11/28/06 14:30	RATA24795	1	1.00 Sa	
CID:P-0774LOT:J6K0602192 v4.8.26							FILTER				12/02/06 10:26	RATA24795 Alq	85%	0.245413 Sa	

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	12/02/06 13:26	RA-226	23	14	ASCFSA	ASC		N	1.6102E+00	1.0000E+00	N	85%	N		2.0464E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(2.979E-02)	(0.000E+00)		7%			(0.000E+00)	4.074769		

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
	12/05/06	RA-226	R	**0.619673**		2.26667E-01	0.337589	0.337589	1.00 Sa	85%		1.016597		
				(0.318514)		(1.1441E-01)	(0.172633)	(0.172633)	(0.014142)			0.434469		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
13	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3NT2AC**	**PCI/SA**		10/11/06 11:35	12/02/06 13:28	11/28/06 14:30	RATA24796	1	1.00 Sa	
CID:P-0775LOT:J6K0602193 v4.8.26							FILTER				12/02/06 10:28	RATA24796 Alq	93%	0.250031 Sa	

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	12/02/06 13:28	RA-226	18	8	ASCJSB	ASC		N	2.1011E+00	1.0000E+00	N	93%	N		2.0459E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(7.837E-02)	(0.000E+00)		7%			(0.000E+00)	3.999497		

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
	12/05/06	RA-226	R	**0.42552**		2.26667E-01	0.23618	0.23618	1.00 Sa	93%		0.552535		
				(0.187365)		(9.7068E-02)	(0.103268)	(0.103268)	(0.014142)			0.225527		

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	TE	FILTER	*STLE	Ra226WoBS	**JH3NV2AC**	**PCI/SA**		10/11/06 11:00	12/02/06 13:29	11/28/06 14:30	RATA24797	1	1.00 Sa	
CID:P-0776LOT:J6K0602194 v4.8.26							FILTER				12/02/06 10:29	RATA24797 Alq	93%	0.2527 Sa	

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	12/02/06 13:29	RA-226	25	13	ASCNMA	ASC		N	2.4172E+00	1.0000E+00	N	93%	N		2.0457E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(1.136E-01)	(0.000E+00)		7%			(0.000E+00)	3.957259		

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
	12/05/06	RA-226	R	**0.461045**		2.83333E-01	0.258629	0.258629	1.00 Sa	93%		0.586287		
				(0.196071)		(1.1667E-01)	(0.109165)	(0.109165)	(0.014142)			0.249194		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
15	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3NW2AC**	**PCI/SA**		10/11/06 11:40	12/02/06 13:27	11/28/06 14:30	RATA24798	1	1.00 Sa	
CID:000545LOT:J6K0602195 v4.8.26							FILTER				12/02/06 10:27	RATA24798 Alq	97%	0.2457 Sa	

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	12/02/06 13:27	RA-226	10	4	ASCQMC	ASC		N	2.5030E+00	1.0000E+00	N	97%	N		2.0462E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(1.307E-01)	(0.000E+00)		8%			(0.000E+00)	4.070001		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:15

RADCALC v4.8.26

STL Richland

Batch Nbr: 6325489

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

12/5/2006 8:10:40 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	BlkLcC/MDC	StdDvMdC/LcC
	12/05/06	RA-226	R	**0.205417**		1.33333E-01	0.112039	0.112039	1.00 Sa	97%		0.345092		
				(0.112385)		(7.1492E-02)	(0.06102)	(0.06102)	(0.014142)			0.130873		

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	FILTER	*STLE	Ra226WoBS	**JJ7A21AA**	**PCI/SA**	**B**	10/11/06 11:35	12/02/06 12:53	11/28/06 14:30	RATA24799	1	1.00 Sa	
CID:INTRA-LAB BLANKLOT:J6K210000489 v4.8.26							FILTER				12/02/06 09:53	RATA24799 Alq	91%	1.00 Sa	

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	12/02/06 12:53	RA-226	13	19	ASCGSB	ASC		N	2.4088E+00	1.0000E+00	N	91%	N		2.0550E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(9.081E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		

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	BlkLcC/MDC	StdDvMdC/LcC
	12/02/06	RA-226	R	**-0.023913**	**U4**	-5.66667E-02	-0.053085	-0.053085	1.00 Sa	91%		0.179037		
				(0.043462)		(1.0236E-01)	(0.096005)	(0.096005)	(0.173205)			0.078128		

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	FILTER	*STLE	Ra226WoBS	**JJ7A21AC**	**PCI/SA**	**S**	10/11/06 11:35	12/02/06 12:56	11/28/06 14:48	RASC4267	1	1.00 Sa	
CID:INTRA-LAB CHECKLOT:J6K210000489 v4.8.26							FILTER				12/02/06 09:56	RASC4267 Alq	96%	1.00 Sa	

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	12/02/06 12:56	RA-226	158	8	ASCPMA	ASC		N	2.4525E+00	1.0000E+00	N	96%	N		2.0589E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(8.241E-02)	(0.000E+00)		8%			(0.000E+00)	1.00		

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	BlkLcC/MDC	StdDvMdC/LcC
	12/02/06	RA-226	R	**1.193579**		3.02667E+00	2.649597	2.649597	1.00 Sa	96%	88%	0.116068		
				(0.259231)		(2.5578E-01)	(0.320925)	(0.320925)	(0.173205)			0.047375		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:17

RADCALC v4.8.26
STL Richland

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3LV2AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.0522
Technician: RS

Analysis Size: 0.2498 Analysis Unit: SA

Report Date: 2-DEC-2006 13:16:00.94
First Separation Date: 28-NOV-2006 14:10:00.00
Second Separation Date: 2-DEC-2006 09:26:00.00

Detector ID: 1 Cell ID: 1RH

Bkg Date: 2-DEC-2006 07:59:59.44
Bkg Counts: 000039 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 12:26:00.40
Counts: 000038 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3L12AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 0.9981
Technician: RS

Analysis Size: 0.2501 Analysis Unit: SA

Report Date: 2-DEC-2006 13:15:00.87
First Separation Date: 28-NOV-2006 14:10:00.00
Second Separation Date: 2-DEC-2006 09:25:00.00

Detector ID: 2 Cell ID: 2RC

Bkg Date: 2-DEC-2006 08:00:07.36
Bkg Counts: 000016 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 12:25:00.35
Counts: 000017 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3L32AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.092
Technician: RS

Analysis Size: 0.2645 Analysis Unit: SA

Report Date: 2-DEC-2006 13:14:00.69
First Separation Date: 28-NOV-2006 14:10:00.00
Second Separation Date: 2-DEC-2006 09:24:00.00

Detector ID: 3 Cell ID: 3MA

Bkg Date: 2-DEC-2006 08:00:17.49
Bkg Counts: 000006 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 12:24:00.34
Counts: 000009 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3L52AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.0096
Technician: RS

Analysis Size: 0.2497 Analysis Unit: SA

Report Date: 2-DEC-2006 13:16:01.01
First Separation Date: 28-NOV-2006 14:10:00.00
Second Separation Date: 2-DEC-2006 09:26:00.00

Detector ID: 7 Cell ID: 7UA

Bkg Date: 1-DEC-2006 14:20:43.67
Bkg Counts: 000012 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 12:26:00.49
Counts: 000010 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3L62AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.0552
Technician: RS

Analysis Size: 0.2488 Analysis Unit: SA

Report Date: 2-DEC-2006 13:15:00.93
First Separation Date: 28-NOV-2006 14:10:00.00
Second Separation Date: 2-DEC-2006 09:25:00.00

Detector ID: 8 Cell ID: 8HC

Bkg Date: 2-DEC-2006 08:00:26.59
Bkg Counts: 000019 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 12:25:00.42
Counts: 000009 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3MC2AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.044
Technician: RS

Analysis Size: 0.25 Analysis Unit: SA

Report Date: 2-DEC-2006 13:17:00.62
First Separation Date: 28-NOV-2006 14:10:00.00
Second Separation Date: 2-DEC-2006 09:27:00.00

Detector ID: 9 Cell ID: 9RC

Bkg Date: 2-DEC-2006 08:00:52.79
Bkg Counts: 000024 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 12:27:00.27
Counts: 000028 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3MJ2AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.1321
Technician: RS

Analysis Size: 0.2507 Analysis Unit: SA

Report Date: 2-DEC-2006 13:45:00.96
First Separation Date: 28-NOV-2006 14:10:00.00
Second Separation Date: 2-DEC-2006 09:55:00.00

Detector ID: 10 Cell ID: ASA

Bkg Date: 2-DEC-2006 08:01:03.06
Bkg Counts: 000008 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 12:55:00.38
Counts: 000019 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3MK2AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.1157
Technician: RS

Analysis Size: 0.2495 Analysis Unit: SA

Report Date: 2-DEC-2006 13:46:02.85
First Separation Date: 28-NOV-2006 14:10:00.00
Second Separation Date: 2-DEC-2006 09:56:00.00

Detector ID: 11 Cell ID: BMC

Bkg Date: 2-DEC-2006 08:01:11.89
Bkg Counts: 000018 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 12:56:02.41
Counts: 000025 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3ML2AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.0402
Technician: RS

Analysis Size: 0.2487 Analysis Unit: SA

Report Date: 2-DEC-2006 13:44:00.61
First Separation Date: 28-NOV-2006 14:30:00.00
Second Separation Date: 2-DEC-2006 09:54:00.00

Detector ID: 12 Cell ID: CSD

Bkg Date: 2-DEC-2006 08:01:19.75
Bkg Counts: 000009 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 12:54:00.26
Counts: 000011 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3MM2AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.0177
Technician: RS

Analysis Size: 0.2502 Analysis Unit: SA

Report Date: 2-DEC-2006 13:45:01.05
First Separation Date: 28-NOV-2006 14:30:00.00
Second Separation Date: 2-DEC-2006 09:55:00.00

Detector ID: 13 Cell ID: DSA

Bkg Date: 1-DEC-2006 14:21:55.59
Bkg Counts: 000009 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 12:55:00.46
Counts: 000009 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3NN2AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.0379
Technician: RS

Analysis Size: 0.2512 Analysis Unit: SA

Report Date: 2-DEC-2006 14:17:00.94
First Separation Date: 28-NOV-2006 14:30:00.00
Second Separation Date: 2-DEC-2006 10:27:00.00

Detector ID: 14 Cell ID: EHA

Bkg Date: 2-DEC-2006 08:01:32.03
Bkg Counts: 000024 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 13:27:00.42
Counts: 000023 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3NR2AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.1719
Technician: RS

Analysis Size: 0.2454 Analysis Unit: SA

Report Date: 2-DEC-2006 14:16:00.75
First Separation Date: 28-NOV-2006 14:30:00.00
Second Separation Date: 2-DEC-2006 10:26:00.00

Detector ID: 15 Cell ID: FSA

Bkg Date: 2-DEC-2006 08:01:39.30
Bkg Counts: 000014 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 13:26:00.34
Counts: 000023 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3NT2AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.0701
Technician: RS

Analysis Size: 0.25 Analysis Unit: SA

Report Date: 2-DEC-2006 14:18:00.66
First Separation Date: 28-NOV-2006 14:30:00.00
Second Separation Date: 2-DEC-2006 10:28:00.00

Detector ID: 18 Cell ID: JSB

Bkg Date: 2-DEC-2006 08:09:23.40
Bkg Counts: 000008 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 13:28:00.29
Counts: 000018 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3NV2AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.0786
Technician: RS

Analysis Size: 0.2527 Analysis Unit: SA

Report Date: 2-DEC-2006 14:19:00.80
First Separation Date: 28-NOV-2006 14:30:00.00
Second Separation Date: 2-DEC-2006 10:29:00.00

Detector ID: 22 Cell ID: NMA

Bkg Date: 2-DEC-2006 08:03:54.97
Bkg Counts: 000013 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 13:29:00.41
Counts: 000025 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3NW2AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.0279
Technician: RS

Analysis Size: 0.2457 Analysis Unit: SA

Report Date: 2-DEC-2006 14:17:01.05
First Separation Date: 28-NOV-2006 14:30:00.00
Second Separation Date: 2-DEC-2006 10:27:00.00

Detector ID: 24 Cell ID: QMC

Bkg Date: 30-NOV-2006 08:25:25.28
Bkg Counts: 000004 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 13:27:00.50
Counts: 000010 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JJ7A21AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.0981
Technician: RS

Analysis Size: 1.0 Analysis Unit: SA

Report Date: 2-DEC-2006 13:43:00.68
First Separation Date: 28-NOV-2006 14:30:00.00
Second Separation Date: 2-DEC-2006 09:53:00.00

Detector ID: 16 Cell ID: GSB

Bkg Date: 1-DEC-2006 14:22:37.13
Bkg Counts: 000019 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 12:53:00.32
Counts: C00013 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JJ7A21AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6325489 Activity Unit: PCI/SA Multiplier: 1.0428
Technician: RS

Analysis Size: 1.0 Analysis Unit: SA

Report Date: 2-DEC-2006 13:46:00.76
First Separation Date: 28-NOV-2006 14:48:00.00
Second Separation Date: 2-DEC-2006 09:56:00.00

Detector ID: 23 Cell ID: PMA

Bkg Date: 2-DEC-2006 08:01:49.55
Bkg Counts: 000008 Bkg Duration: 000060.0

Count Date: 2-DEC-2006 12:56:00.38
Counts: 000158 Count Duration: 000050.0

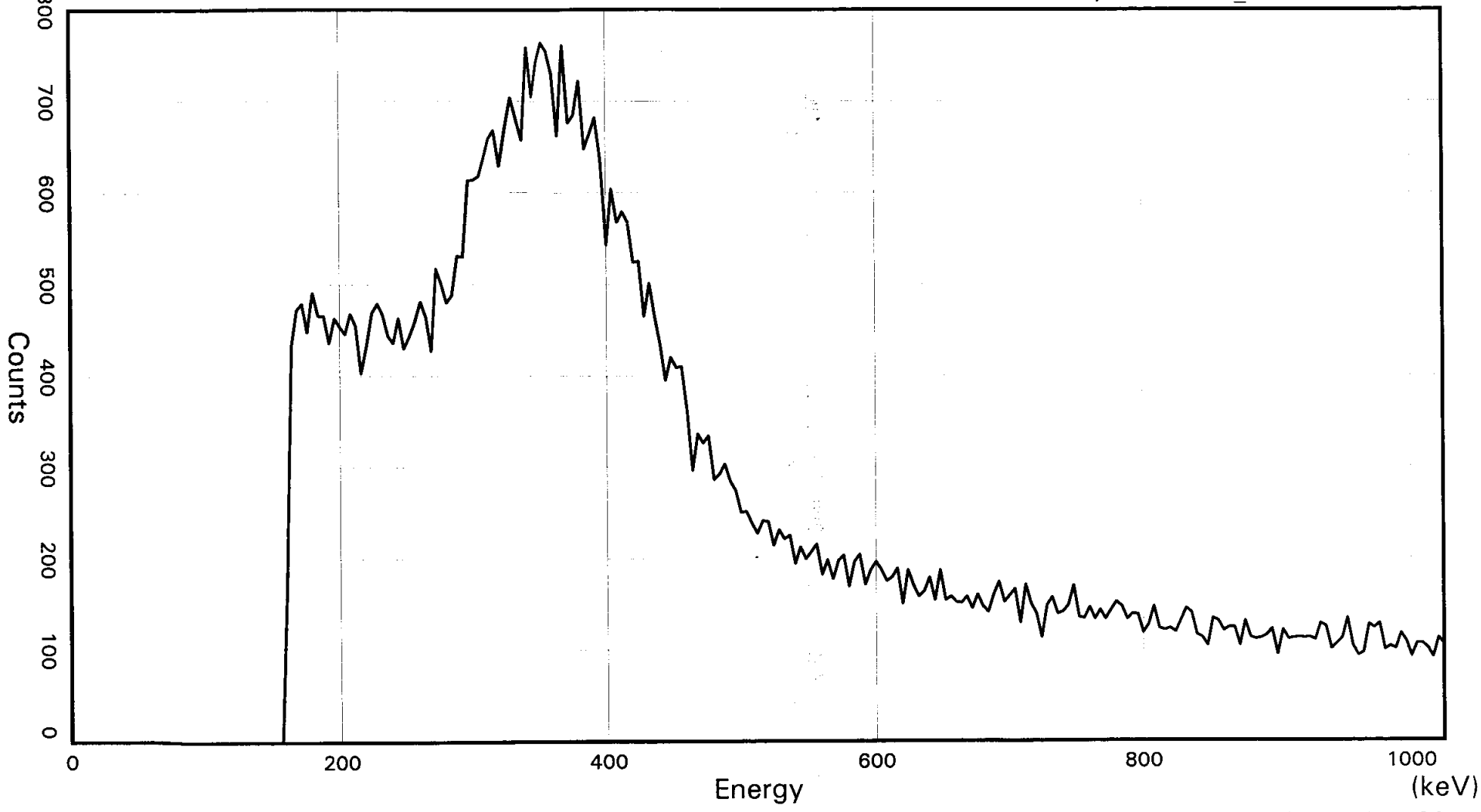
End of Report

STL Richland WA.

BA133

Sample ID: JH3LV2AC
Detector ID: NAI1 1

BatchID: 6325489
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 27-NOV-2006 15:19:55.44
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: JH3LV2AC

CONFIGURATION ID: NAI1:JH3LV2AC_271161519
TITLE : BA133
SAMPLE ID : JH3LV2AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 15:19:55
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 27-NOV-2006 15:50:00

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH3LV2AC_271161519.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 15:19:55
Sample ID	: JH3LV2AC	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:	2.8	3.7	4.9	3.1	1.1	3.8	2.8	2.7
88:	2.3	1.6	1.0	-2.3	1.9	-2.1	0.7	2.3
96:	-1.6	-1.0	-0.1	-1.5	-5.7	-1.1	-3.2	-0.8
104:	-1.6	-4.2	-3.0	-4.6	-2.2	-2.7	-3.6	-5.1
112:	-2.7	-3.1						

List of Suspicious Channels

81 82 86 87

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	9.33E+00	0.00E+00	1.01E+00
2	4.31E+00	0.00E+00	1.03E+00
3	2.11E+00	0.00E+00	1.05E+00
4	1.01E+00	0.00E+00	1.06E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	713.	9.19
Total Activity :	713.	

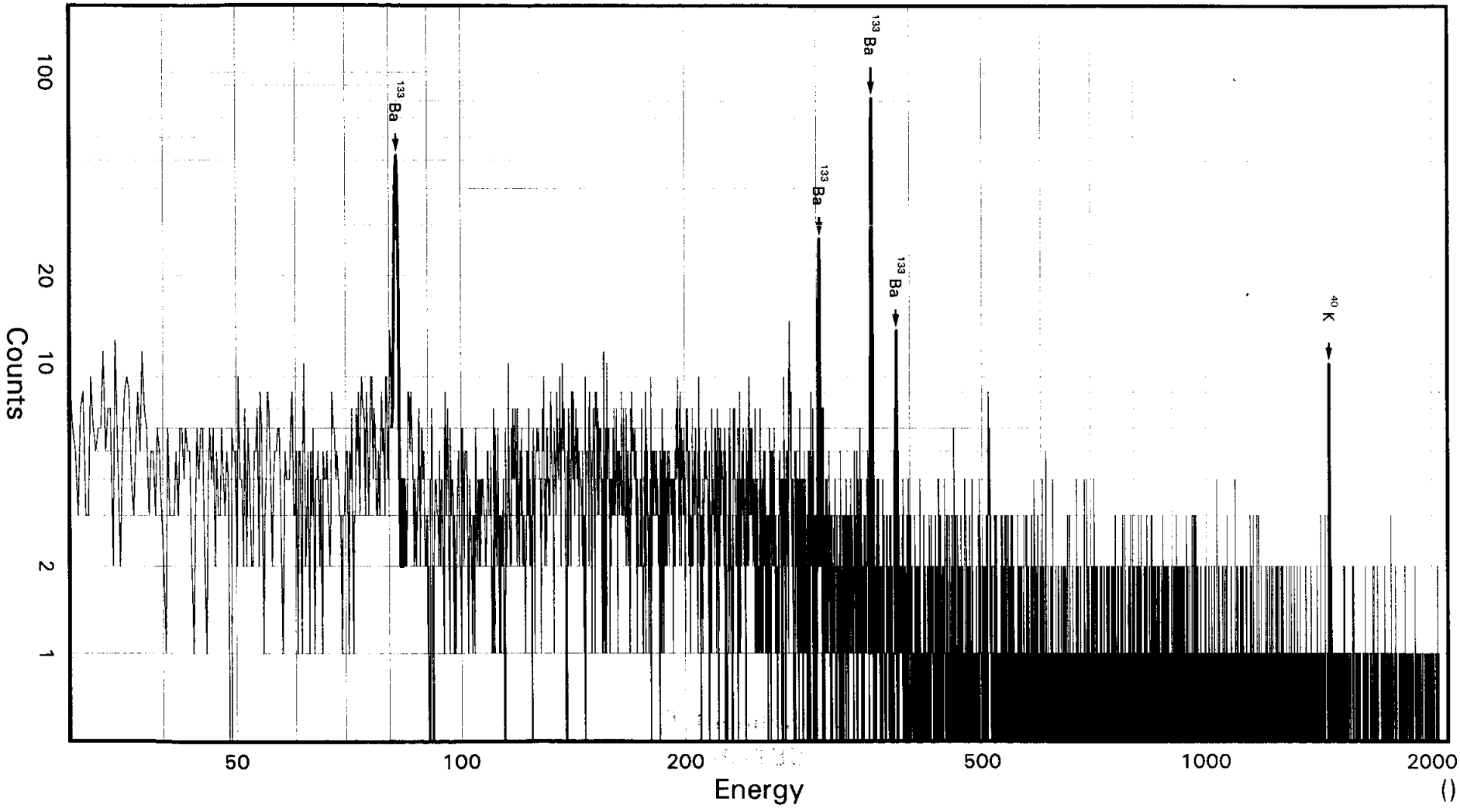
STL Richland WA.

BA133

Sample ID: JH3L12AC

Detector ID: GER13 1

Batch ID: 6325489



Acquisition Start: 27-NOV-2006 15:20:52.39

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: -5.51771E-01

Slope: 2.50834E-01

Quadrature: -1.04675E-07

SAMPLE IDENTIFICATION: JH3L12AC

CONFIGURATION ID: GER13:JH3L12AC_271161520
TITLE : BA133
SAMPLE ID : JH3L12AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 15:20:52
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 27-NOV-2006 05:16:24.34
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: -.5518E+00 keV
ENERGY SLOPE: 2.5083E-01 keV/C
ENERGY Q COEFF: -.1047E-06 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.2738E-01 keV
FWHM SLOPE: 4.4703E-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 27-NOV-2006 15:51:14

Configuration : $DISK1:[GER13.SAMPLE]JH3L12AC_271161520.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 15:20:52
Sample ID : JH3L12AC 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 : 19.51 End energy : 2047.26
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.98	169	69	0.94	329.06	324	14	9.40E-02	13.5	
2	0	303.03	132	23	1.17	1210.88	1202	21	7.31E-02	13.0	
3	0	355.79	404	22	1.28	1421.47	1410	21	2.25E-01	5.7	
4	0	383.68	53	26	0.65	1532.80	1524	17	2.97E-02	25.6	
5	0	1460.49*	5	10	1.74	5838.95	5825	25	2.66E-03	217.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 27-NOV-2006 15:51:15

Configuration	: $DISK1:[GER13.SAMPLE]JH3L12AC_271161520.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: BA133		
Sample date	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 15:20:52
Sample ID	: JH3L12AC	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: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
K-40	1460.81	5	10.67*	2.719E+00	5.511E+01	5.511E+01	217.50

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	169	33.00	2.705E+00	6.321E+02	6.335E+02	14.53
	276.40	------	6.90	2.897E+00	------	Line Not Found	------
	302.84	132	17.80	2.900E+00	8.501E+02	8.520E+02	14.07
	356.00	404	62.05*	2.903E+00	7.481E+02	7.497E+02	7.86
	383.85	53	8.70	2.902E+00	7.053E+02	7.069E+02	26.18

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 27-NOV-2006 15:51:17

Configuration	: $DISK1:[GER13.SAMPLE]JH3L12AC_271161520.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	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 15:20:52
Sample ID	: JH3L12AC	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
K-40	5.511E+01	1.199E+02	1.032E+02	2.204E+00	0.534
BA-133	7.497E+02	5.895E+01	4.787E+01	9.574E-01	15.661

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	3.268E+01		7.147E+01	2.769E+02	5.554E+00	0.118
NA-22	1.182E+00		3.682E+00	1.602E+01	3.380E-01	0.074
SC-46	-4.570E+00		6.093E+00	2.403E+01	5.018E-01	-0.190
CR-51	-8.796E+00		1.057E+02	3.840E+02	7.682E+00	-0.023
MN-54	-1.614E+00		5.881E+00	2.190E+01	4.486E-01	-0.074
CO-57	3.034E+02		1.195E+02	4.696E+02	9.680E+00	0.646
CO-58	-3.193E+00		6.826E+00	2.488E+01	5.087E-01	-0.128
FE-59	9.359E+00		1.220E+01	4.982E+01	1.039E+00	0.188
CO-60	4.853E+00		3.016E+00	1.600E+01	3.388E-01	0.303
ZN-65	-8.840E+00		1.254E+01	4.430E+01	9.249E-01	-0.200
SE-75	-4.316E+01		1.759E+01	5.407E+01	1.084E+00	-0.798
SR-85	-3.197E+01		1.215E+01	3.750E+01	7.533E-01	-0.853
Y-88	-5.469E+00		3.361E+00	1.004E+01	2.194E-01	-0.545
NB-94	-5.637E-01		5.655E+00	2.138E+01	4.389E-01	-0.026
NB-95	-7.359E+00		7.143E+00	2.483E+01	5.063E-01	-0.296
TC-95M	-4.363E+01		2.100E+01	6.533E+01	1.320E+00	-0.668
ZR-95	-9.368E+00		1.127E+01	4.018E+01	8.188E-01	-0.233
ZRNB-95	-1.319E+01		1.280E+01	4.452E+01	9.077E-01	-0.296
MO-99	2.007E+02		2.855E+02	1.056E+03	2.174E+01	0.190
RH-101	-7.925E+00		1.774E+01	6.066E+01	1.227E+00	-0.131
RH-102M	-2.040E+00		6.508E+00	2.378E+01	4.770E-01	-0.086
RU-103	1.401E+01		9.700E+00	4.005E+01	8.039E-01	0.350
RU-106DA	-2.986E+00		5.483E+01	2.108E+02	4.260E+00	-0.014
AG-108M	-1.077E+01		8.774E+00	2.938E+01	5.884E-01	-0.367
AG-110M	-1.845E+00		7.761E+00	2.971E+01	6.105E-01	-0.062
SN-113DA	1.084E+01		1.156E+01	4.609E+01	9.221E-01	0.235

---- Non-Identified Nuclides ----

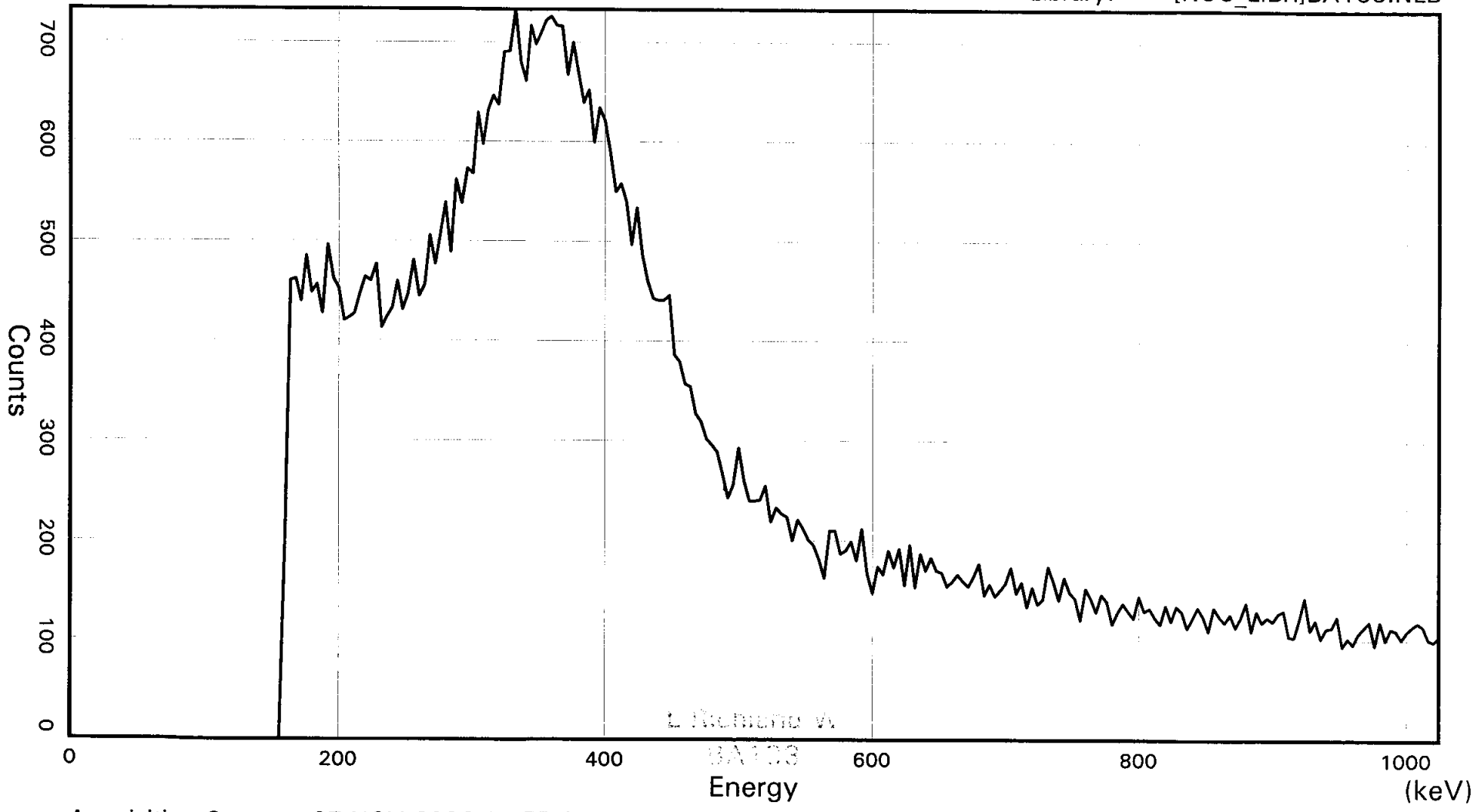
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	9.642E+00		6.888E+00	2.917E+01	5.887E-01	0.331
SB-125	-1.266E-01		2.455E+01	9.115E+01	1.825E+00	-0.001
SN-126DA	-1.164E+01		6.275E+00	1.930E+01	3.910E-01	-0.603
I-131	-4.655E+01		2.922E+01	9.680E+01	1.936E+00	-0.481
CS-134	2.309E+00		7.356E+00	2.859E+01	5.841E-01	0.081
CS-137DA	1.999E+00		5.904E+00	2.365E+01	4.790E-01	0.085
LA-138	-1.524E+00		6.531E+00	2.586E+01	5.513E-01	-0.059
CE-139	1.394E+01		1.511E+01	5.612E+01	1.144E+00	0.248
BA-140	1.236E+01		4.742E+01	1.848E+02	3.717E+00	0.067
BALA-140	-2.072E+01		1.436E+01	4.615E+01	9.938E-01	-0.449
LA-140	-6.748E+02		5.172E+02	1.716E+03	3.696E+01	-0.393
CE-141	-7.589E+01		3.075E+01	9.619E+01	1.975E+00	-0.789
CE-144	-8.606E+01		1.162E+02	4.048E+02	8.357E+00	-0.213
CEPR-144	-1.730E+02		2.324E+02	8.094E+02	1.671E+01	-0.214
PM-144	8.306E-01		5.799E+00	2.248E+01	4.542E-01	0.037
PM-146	1.681E+01		1.048E+01	4.337E+01	8.691E-01	0.388
EU-152	5.872E+00		3.249E+01	1.214E+02	2.429E+00	0.048
EU-154	3.308E+00		1.030E+01	4.482E+01	9.455E-01	0.074
EU-155	2.778E+01		4.751E+01	1.754E+02	3.684E+00	0.158
HF-181	-1.572E+01		1.023E+01	3.287E+01	6.593E-01	-0.478
BI-207	1.142E+00		6.119E+00	2.371E+01	4.777E-01	0.048
TL-208	3.372E+00		8.072E+00	3.318E+01	6.689E-01	0.102
BI-210M	-2.934E+01		1.847E+01	6.061E+01	1.216E+00	-0.484
BI-212	-5.449E+01		9.683E+01	3.515E+02	1.074E+01	-0.155
PB-212	1.608E+01		2.314E+01	8.898E+01	1.789E+00	0.181
BI-214	6.677E-01		1.608E+01	6.613E+01	1.335E+00	0.010
PB-214	-9.079E+00		2.748E+01	9.227E+01	1.845E+00	-0.098
RA-223	1.146E+02		7.544E+01	2.909E+02	5.833E+00	0.394
RA-224DA	1.628E+01		2.342E+01	9.006E+01	1.811E+00	0.181
RA-226DA	6.677E-01		1.608E+01	6.613E+01	1.335E+00	0.010
AC-227DA	-1.266E+02		9.579E+01	3.234E+02	6.504E+00	-0.391
AC-228	-1.607E+01		1.937E+01	8.031E+01	1.653E+00	-0.200
RA-228DA	-1.614E+01		1.945E+01	8.063E+01	1.660E+00	-0.200
TH-228DA	9.500E+00		2.274E+01	9.347E+01	1.884E+00	0.102
TH-232DA	3.155E+01		7.353E+01	2.695E+02	5.391E+00	0.117
TH-234DA	-7.341E+02		7.335E+02	2.578E+03	5.341E+01	-0.285
U-234DA	5.558E+01		5.292E+01	2.040E+02	4.084E+00	0.273
U-235HP	3.779E+01		1.131E+02	4.117E+02	8.460E+00	0.092
NP-237DA	1.211E+01		2.451E+01	9.102E+01	1.821E+00	0.133
U-238DA	-9.079E+00		2.748E+01	9.227E+01	1.845E+00	-0.098
U-238DHP	-6.844E+01		2.762E+02	9.999E+02	2.206E+01	-0.068
AM-241HP	9.629E+00		3.052E+01	1.136E+02	2.524E+00	0.085

STL Richland WA.

BA133

Sample ID: JH3L32AC
Detector ID: NAI1 1

BatchID: 6325489
Library: [NUC_LIBR]BA133.NLB



Acquisition Start:	27-NOV-2006 15:55:24.04
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: JH3L32AC

CONFIGURATION ID: NAI1:JH3L32AC_271161555
TITLE : BA133
SAMPLE ID : JH3L32AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 15:55:24
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 27-NOV-2006 16:25:29

```
Configuration     : RDND06$DKA100:[NAI1.SAMPLE]JH3L32AC_271161555.CNF;1
Analyses by       : NAI V3.0
Sample title      : BA133
Sample date       : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 15:55:24
Sample ID         : JH3L32AC             Sample quantity  : 1.0000 sampl
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.69   0.0%
Sample Multiplier:     1.00              Rejection Coeff. :     0.00
Gain shift type   : ITER                 Threshold Shift  : No
Weighting type    : DERIVED              Calculated counts: No
Iterations        :  5
```

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	3.9	5.4	4.7	5.3	2.7	0.8	3.3	1.4
88:	2.1	2.0	1.4	0.7	1.2	-2.3	0.6	0.4
96:	-1.1	-0.9	-2.5	-1.2	-2.5	-1.0	-3.1	-2.3
104:	-3.9	-5.1	-1.5	-2.8	-3.7	-3.6	-3.5	-3.6
112:	-1.2	-3.4						

List of Suspicious Channels

81 82 83

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	7.53E+00	0.00E+00	1.02E+00
2	3.64E+00	0.00E+00	1.04E+00
3	1.51E+00	0.00E+00	1.05E+00
4	7.64E-01	0.00E+00	1.06E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	687.	7.81

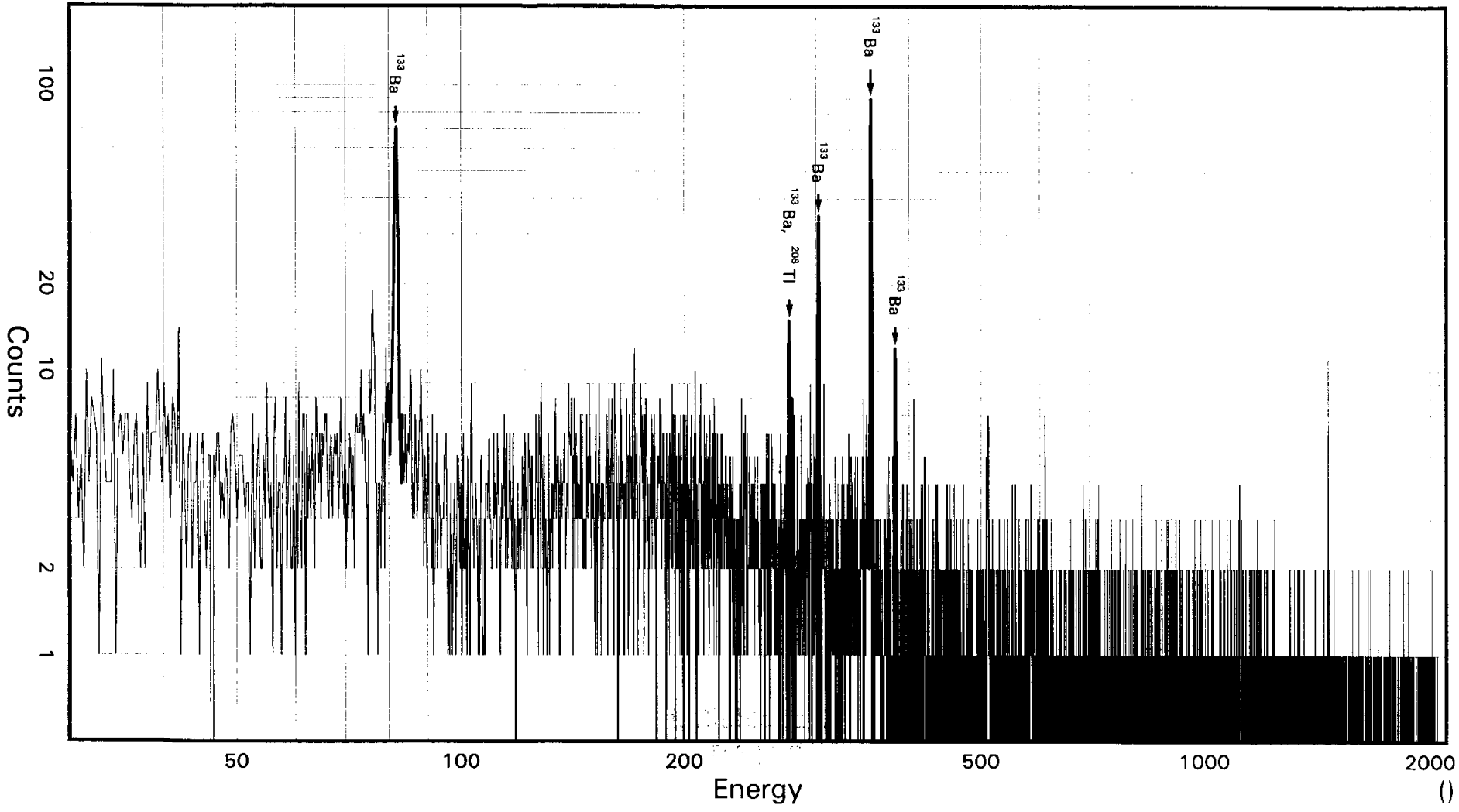
Total Activity :	687.	

STL Richland WA.

BA133

Sample ID: JH3L52AC
Detector ID: GER13 1

Batch ID: 6325489



Acquisition Start: 27-NOV-2006 15:55:42.74
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -5.51771E-01
Slope: 2.50834E-01
Quadrature: -1.04675E-07

SAMPLE IDENTIFICATION: JH3L52AC

CONFIGURATION ID: GER13:JH3L52AC_271161555
TITLE : BA133
SAMPLE ID : JH3L52AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 15:55:42
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 27-NOV-2006 05:16:24.34
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: -.5518E+00 keV
ENERGY SLOPE: 2.5083E-01 keV/C
ENERGY Q COEFF: -.1047E-06 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.2738E-01 keV
FWHM SLOPE: 4.4703E-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 27-NOV-2006 16:25:59

Configuration : $DISK1:[GER13.SAMPLE]JH3L52AC_271161555.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 15:55:42
Sample ID : JH3L52AC 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 : 19.51 End energy : 2047.26
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	76.01*	33	25	0.74	305.25	301	10	1.81E-02	37.0	
2	0	81.82	239	72	0.87	328.44	322	13	1.32E-01	9.8	
3	0	276.51	86	15	1.01	1105.06	1096	20	4.76E-02	15.5	
4	0	302.73	150	19	0.96	1209.69	1203	15	8.32E-02	10.3	
5	0	355.87	402	37	1.09	1421.78	1412	18	2.23E-01	6.1	
6	0	383.38	54	23	1.07	1531.58	1523	16	3.00E-02	24.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 27-NOV-2006 16:25:59

Configuration : $DISK1:[GER13.SAMPLE]JH3L52AC_271161555.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 15:55:42
Sample ID : JH3L52AC 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	239	33.00	2.704E+00	8.909E+02	8.929E+02	11.18
	276.40	86	6.90	2.897E+00	1.428E+03	1.431E+03	16.40
	302.84	150	17.80	2.900E+00	9.674E+02	9.695E+02	11.64
	356.00	402	62.05*	2.903E+00	7.434E+02	7.450E+02	8.14
	383.85	54	8.70	2.902E+00	7.120E+02	7.136E+02	24.97

Flag: "*" = Keyline

Sample ID : JH3L52AC Acquisition date : 27-NOV-2006 15:55:42

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	76.01	33	25	0.74	305.25	301	10	1.81E-02	37.0	2.68E+00	

Flags: "T" = Tentatively associated

Sample ID : JH3L52AC Acquisition date : 27-NOV-2006 15:55:42

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	1.449E+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 27-NOV-2006 16:26:02

Configuration	: $DISK1:[GER13.SAMPLE]JH3L52AC_271161555.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	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 15:55:42
Sample ID	: JH3L52AC	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	7.450E+02	6.064E+01	4.218E+01	8.437E-01	17.662

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.530E+02		7.277E+01	2.172E+02	4.357E+00	-0.704
NA-22	-1.020E+00		3.297E+00	1.348E+01	2.843E-01	-0.076
K-40	-1.649E+02		9.251E+01	4.273E+02	9.123E+00	-0.386
SC-46	7.198E+00		6.552E+00	2.901E+01	6.057E-01	0.248
CR-51	6.315E+01		1.111E+02	4.186E+02	8.375E+00	0.151
MN-54	-1.847E+00		5.017E+00	1.888E+01	3.867E-01	-0.098
CO-57	-3.105E+01		1.055E+02	3.773E+02	7.778E+00	-0.082
CO-58	-5.100E+00		5.440E+00	1.917E+01	3.920E-01	-0.266
FE-59	2.829E+00		1.087E+01	4.343E+01	9.057E-01	0.065
CO-60	4.678E-01		4.379E+00	1.782E+01	3.774E-01	0.026
ZN-65	-4.429E+01		1.182E+01	2.151E+01	4.490E-01	-2.059
SE-75	-1.711E-01		1.660E+01	6.033E+01	1.210E+00	-0.003
SR-85	-2.349E+01		1.117E+01	3.569E+01	7.171E-01	-0.658
Y-88	-2.484E+00		2.799E+00	1.060E+01	2.316E-01	-0.234
NB-94	-5.252E-01		5.391E+00	2.052E+01	4.213E-01	-0.026
NB-95	-3.840E+00		6.553E+00	2.411E+01	4.916E-01	-0.159
TC-95M	-3.460E+01		2.010E+01	6.396E+01	1.292E+00	-0.541
ZR-95	5.594E+00		1.082E+01	4.414E+01	8.995E-01	0.127
ZRNB-95	-7.203E+00		1.171E+01	4.295E+01	8.758E-01	-0.168
MO-99	3.389E+02		2.917E+02	1.096E+03	2.255E+01	0.309
RH-101	-3.341E+00		1.563E+01	5.446E+01	1.102E+00	-0.061
RH-102M	5.812E+00		6.755E+00	2.695E+01	5.405E-01	0.216
RU-103	6.522E+00		7.616E+00	3.178E+01	6.379E-01	0.205
RU-106DA	7.033E+01		6.004E+01	2.511E+02	5.073E+00	0.280
AG-108M	-1.704E+01		7.709E+00	2.323E+01	4.652E-01	-0.734
AG-110M	-3.913E+00		8.522E+00	3.162E+01	6.499E-01	-0.124
SN-113DA	2.004E+01		1.204E+01	4.963E+01	9.930E-01	0.404

---- Non-Identified Nuclides ----

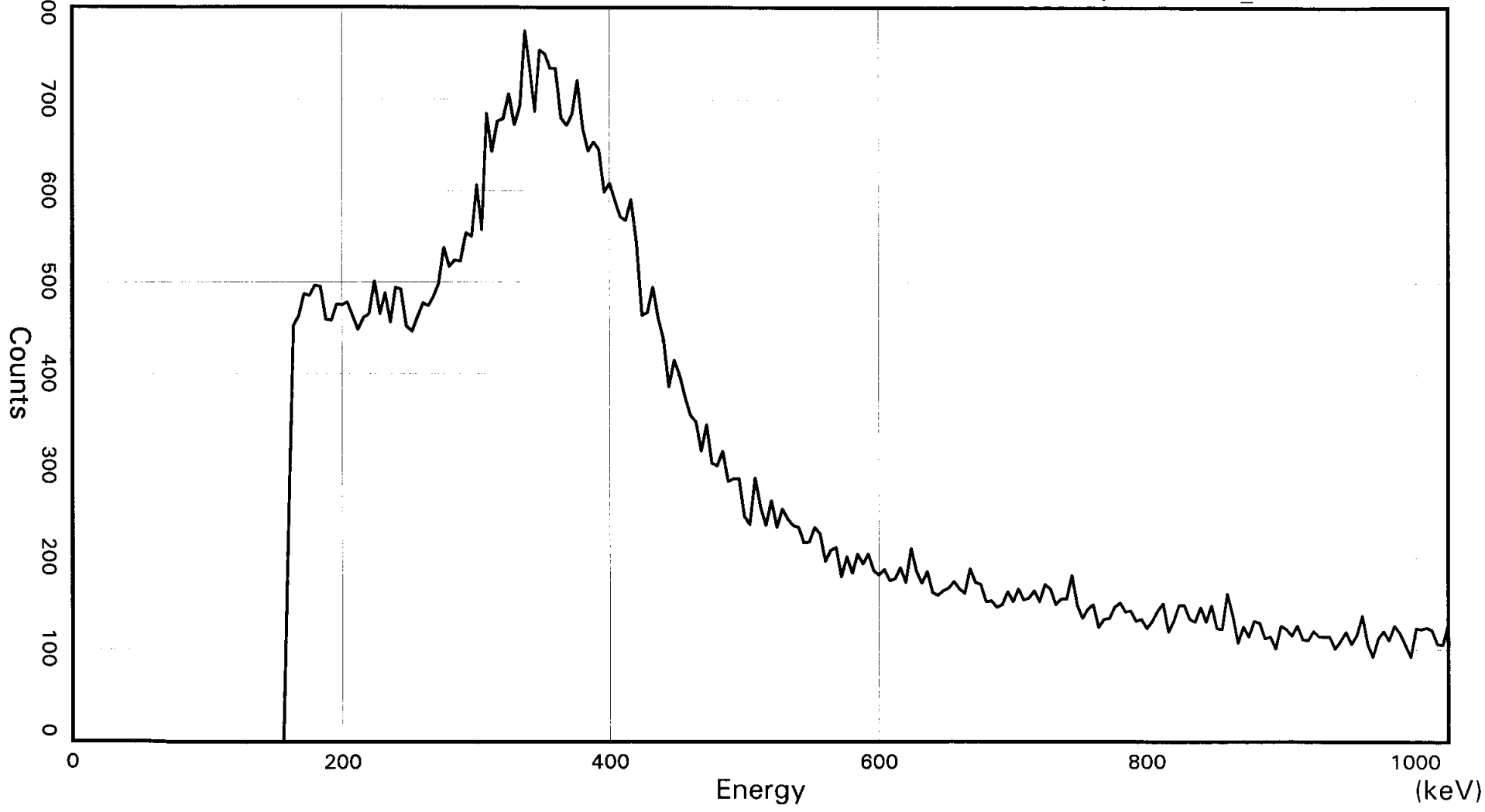
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-4.954E+00		7.340E+00	2.614E+01	5.276E-01	-0.189
SB-125	-1.290E+01		2.212E+01	7.924E+01	1.587E+00	-0.163
SN-126DA	2.458E+00		5.398E+00	2.155E+01	4.366E-01	0.114
I-131	1.410E+01		2.587E+01	1.003E+02	2.006E+00	0.141
CS-134	-4.649E+00		6.958E+00	2.497E+01	5.101E-01	-0.186
CS-137DA	6.452E-01		6.711E+00	2.572E+01	5.210E-01	0.025
LA-138	3.112E-01		6.783E+00	2.754E+01	5.870E-01	0.011
CE-139	-4.407E+00		1.511E+01	5.312E+01	1.083E+00	-0.083
BA-140	7.389E+01		4.698E+01	2.004E+02	4.030E+00	0.369
BALA-140	-5.534E+00		1.336E+01	5.366E+01	1.156E+00	-0.103
LA-140	-6.154E+02		5.346E+02	1.847E+03	3.978E+01	-0.333
CE-141	-1.464E+01		2.964E+01	1.043E+02	2.142E+00	-0.140
CE-144	8.938E+01		9.832E+01	3.741E+02	7.722E+00	0.239
CEPR-144	1.778E+02		1.966E+02	7.479E+02	1.544E+01	0.238
PM-144	-5.810E+00		5.888E+00	2.037E+01	4.115E-01	-0.285
PM-146	6.124E-01		1.182E+01	4.351E+01	8.718E-01	0.014
EU-152	-2.447E+01		3.464E+01	1.224E+02	2.448E+00	-0.200
EU-154	-2.856E+00		9.222E+00	3.769E+01	7.952E-01	-0.076
EU-155	-1.026E+00		4.729E+01	1.688E+02	3.545E+00	-0.006
HF-181	1.305E+01		1.018E+01	4.108E+01	8.241E-01	0.318
BI-207	-3.498E+00		5.895E+00	2.142E+01	4.316E-01	-0.163
TL-208	3.696E+00		9.598E+00	3.783E+01	7.627E-01	0.098
BI-210M	-2.230E+01		1.803E+01	6.071E+01	1.218E+00	-0.367
BI-212	-3.334E+00		8.506E+01	3.282E+02	1.003E+01	-0.010
PB-212	-1.522E+01		2.218E+01	8.038E+01	1.616E+00	-0.189
BI-214	-1.275E+01		1.949E+01	7.349E+01	1.484E+00	-0.173
PB-214	3.050E+01		3.498E+01	1.200E+02	2.399E+00	0.254
RA-223	3.510E+00		6.547E+01	2.393E+02	4.799E+00	0.015
RA-224DA	-1.540E+01		2.245E+01	8.136E+01	1.636E+00	-0.189
RA-226DA	-1.285E+01		1.948E+01	7.345E+01	1.483E+00	-0.175
AC-227DA	-1.643E+02		7.700E+01	2.447E+02	4.922E+00	-0.671
AC-228	-5.578E+01		2.136E+01	7.260E+01	1.495E+00	-0.768
RA-228DA	-5.601E+01		2.145E+01	7.289E+01	1.501E+00	-0.768
TH-228DA	1.041E+01		2.704E+01	1.066E+02	2.149E+00	0.098
TH-232DA	-5.270E+01		7.718E+01	2.633E+02	5.266E+00	-0.200
TH-234DA	-6.822E-01		4.484E+02	1.968E+03	4.077E+01	0.000
U-234DA	-2.492E+01		5.388E+01	1.927E+02	3.859E+00	-0.129
U-235HP	-1.707E+01		1.092E+02	3.902E+02	8.018E+00	-0.044
NP-237DA	-1.173E+01		2.337E+01	8.192E+01	1.639E+00	-0.143
U-238DA	3.050E+01		3.498E+01	1.200E+02	2.399E+00	0.254
U-238DHP	1.588E+01		3.085E+02	1.124E+03	2.479E+01	0.014
AM-241HP	-1.573E+01		2.940E+01	1.051E+02	2.336E+00	-0.150

STL Richland WA.

BA133

Sample ID: JH3L62AC
Detector ID: NAI1 1

BatchID: 6325489
Library: [NUC_LIBR]BA133.NLB



Acquisition Start:	27-NOV-2006 16:28:17.63	Start Channel:	80
Preset Live Time:	0 00:30:00	End Channel:	113
Elapsed Live Time:	0 00:30:00	Iterations:	5
Weighting:	DERIVED	Gain shift:	Iter

SAMPLE IDENTIFICATION: JH3L62AC

CONFIGURATION ID: NAI1:JH3L62AC_271161628
TITLE : BA133
SAMPLE ID : JH3L62AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 16:28:17
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 27-NOV-2006 16:58:23

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH3L62AC_271161628.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 16:28:17
Sample ID	: JH3L62AC	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.70 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	4.8	3.3	2.9	5.9	3.6	1.9	2.1
88:	2.1	2.1	1.6	-1.5	-1.3	-1.9	1.7	1.0
96:	-1.0	-2.1	-1.8	-2.6	-3.0	-1.4	-2.8	-1.8
104:	-1.5	-3.4	-5.0	-4.2	-2.8	-3.1	-2.7	-4.6
112:	-3.0	-4.0						

List of Suspicious Channels

81 82 83 84 88

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.05E+01	0.00E+00	1.02E+00
2	5.47E+00	0.00E+00	1.04E+00
3	2.48E+00	0.00E+00	1.05E+00
4	1.00E+00	0.00E+00	1.06E+00

Brief Report

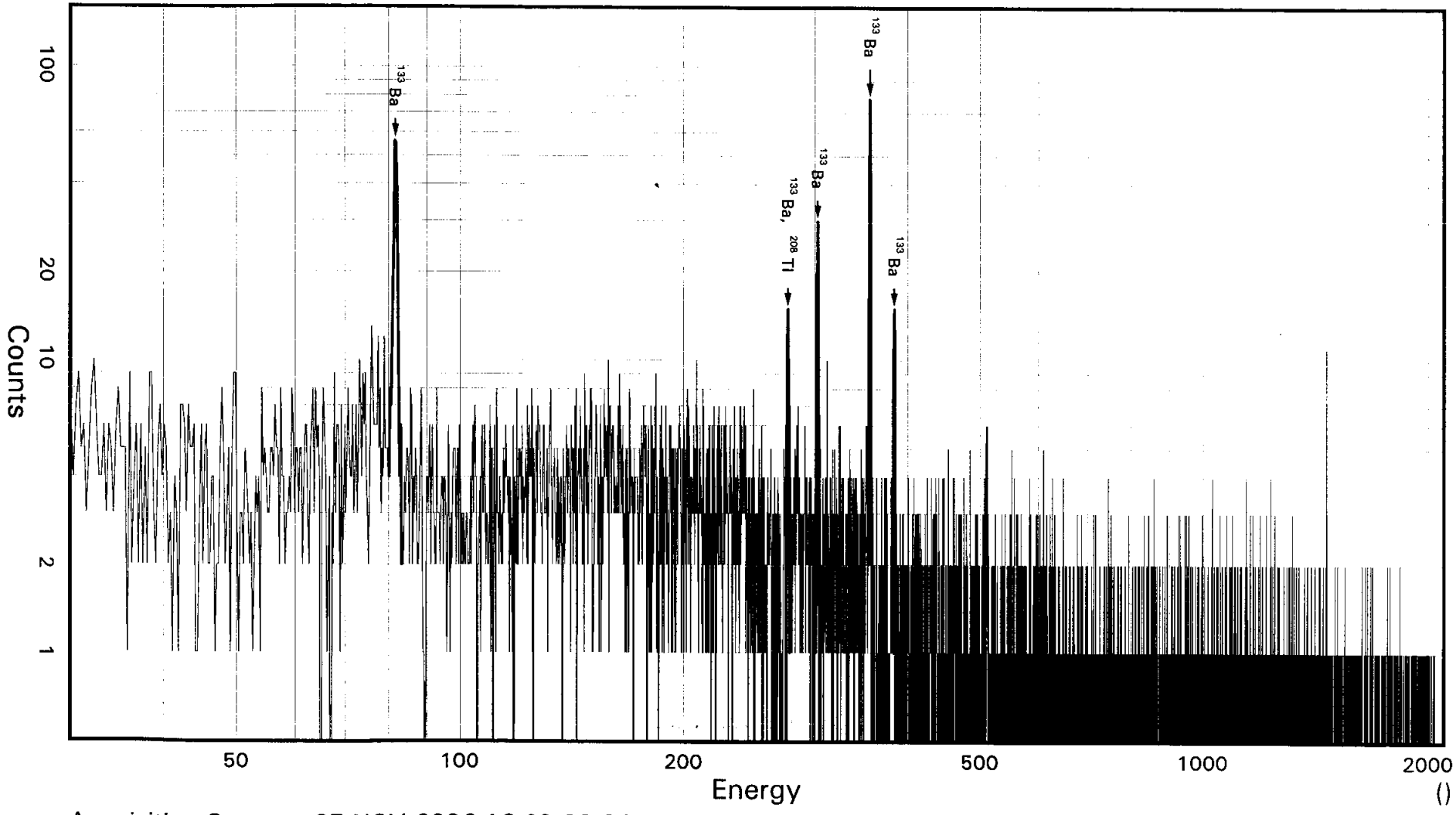
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	711.	9.04
Total Activity :	711.	

STL Richland WA.

BA133

Sample ID: JH3MC2AC
Detector ID: GER13 1

Batch ID: 6325489



Acquisition Start: 27-NOV-2006 16:28:32.34
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -5.51771E-01
Slope: 2.50834E-01
Quadrature: -1.04675E-07

SAMPLE IDENTIFICATION: JH3MC2AC

CONFIGURATION ID: GER13:JH3MC2AC_271161628
TITLE : BA133
SAMPLE ID : JH3MC2AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 16:28:32
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 27-NOV-2006 05:16:24.34
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: -.5518E+00 keV
ENERGY SLOPE: 2.5083E-01 keV/C
ENERGY Q COEFF: -.1047E-06 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.2738E-01 keV
FWHM SLOPE: 4.4703E-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 27-NOV-2006 16:58:49

```
Configuration     : $DISK1:[GER13.SAMPLE]JH3MC2AC_271161628.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 16:28:32
Sample ID         : JH3MC2AC             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      :    19.51             End energy       :  2047.26
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.86	222	48	0.84	328.62	321	15	1.23E-01	9.6	
2	0	276.13	65	25	1.11	1103.56	1097	14	3.61E-02	20.4	
3	0	302.63	144	18	1.21	1209.30	1200	18	8.00E-02	10.8	
4	0	355.79	389	30	1.09	1421.48	1412	20	2.16E-01	6.1	
5	0	383.66	73	15	1.49	1532.70	1527	15	4.06E-02	16.5	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 27-NOV-2006 16:58:50

Configuration : $DISK1:[GER13.SAMPLE]JH3MC2AC_271161628.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 16:28:32
Sample ID : JH3MC2AC 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	222	33.00	2.704E+00	8.286E+02	8.304E+02	11.03
	276.40	65	6.90	2.897E+00	1.083E+03	1.085E+03	21.12
	302.84	144	17.80	2.900E+00	9.297E+02	9.318E+02	12.09
	356.00	389	62.05*	2.903E+00	7.199E+02	7.214E+02	8.16
	383.85	73	8.70	2.902E+00	9.637E+02	9.658E+02	17.31

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JH3MC2AC

Acquisition date : 27-NOV-2006 16:28:32

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	1.099E+03	21.12	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 27-NOV-2006 16:58:52

Configuration	: $DISK1:[GER13.SAMPLE]JH3MC2AC_271161628.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	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 16:28:32
Sample ID	: JH3MC2AC	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	7.214E+02	5.888E+01	5.949E+01	1.190E+00	12.128

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-5.840E+00		7.546E+01	2.783E+02	5.583E+00	-0.021
NA-22	-2.496E+00		3.479E+00	1.315E+01	2.775E-01	-0.190
K-40	-1.592E+01		9.837E+01	4.651E+02	9.931E+00	-0.034
SC-46	5.685E-01		5.831E+00	2.495E+01	5.210E-01	0.023
CR-51	5.753E+01		1.288E+02	4.730E+02	9.463E+00	0.122
MN-54	-5.273E+00		5.769E+00	2.012E+01	4.122E-01	-0.262
CO-57	-9.337E+01		9.851E+01	3.413E+02	7.035E+00	-0.274
CO-58	7.632E+00		5.668E+00	2.489E+01	5.090E-01	0.307
FE-59	-6.292E+00		1.227E+01	4.458E+01	9.295E-01	-0.141
CO-60	-2.634E+00		3.925E+00	1.466E+01	3.104E-01	-0.180
ZN-65	-9.688E-01		1.060E+01	4.071E+01	8.498E-01	-0.024
SE-75	-2.936E+01		1.559E+01	4.994E+01	1.002E+00	-0.588
SR-85	-2.401E+01		1.038E+01	3.249E+01	6.527E-01	-0.739
Y-88	1.363E+00		3.617E+00	1.640E+01	3.583E-01	0.083
NB-94	-2.920E+00		4.508E+00	1.648E+01	3.383E-01	-0.177
NB-95	4.527E+00		6.147E+00	2.598E+01	5.298E-01	0.174
TC-95M	1.081E+00		2.026E+01	7.123E+01	1.439E+00	0.015
ZR-95	-1.033E+00		1.114E+01	4.285E+01	8.732E-01	-0.024
ZRNB-95	8.111E+00		1.102E+01	4.656E+01	9.493E-01	0.174
MO-99	1.629E+02		2.655E+02	9.875E+02	2.032E+01	0.165
RH-101	1.299E+01		1.542E+01	5.657E+01	1.144E+00	0.230
RH-102M	2.910E+00		7.185E+00	2.747E+01	5.509E-01	0.106
RU-103	8.338E+00		8.676E+00	3.556E+01	7.138E-01	0.234
RU-106DA	1.923E+01		5.985E+01	2.347E+02	4.742E+00	0.082
AG-108M	-7.755E+00		8.601E+00	2.961E+01	5.929E-01	-0.262
AG-110M	-6.355E+00		7.265E+00	2.621E+01	5.387E-01	-0.242
SN-113DA	-4.347E+00		1.121E+01	4.096E+01	8.195E-01	-0.106

---- Non-Identified Nuclides ----

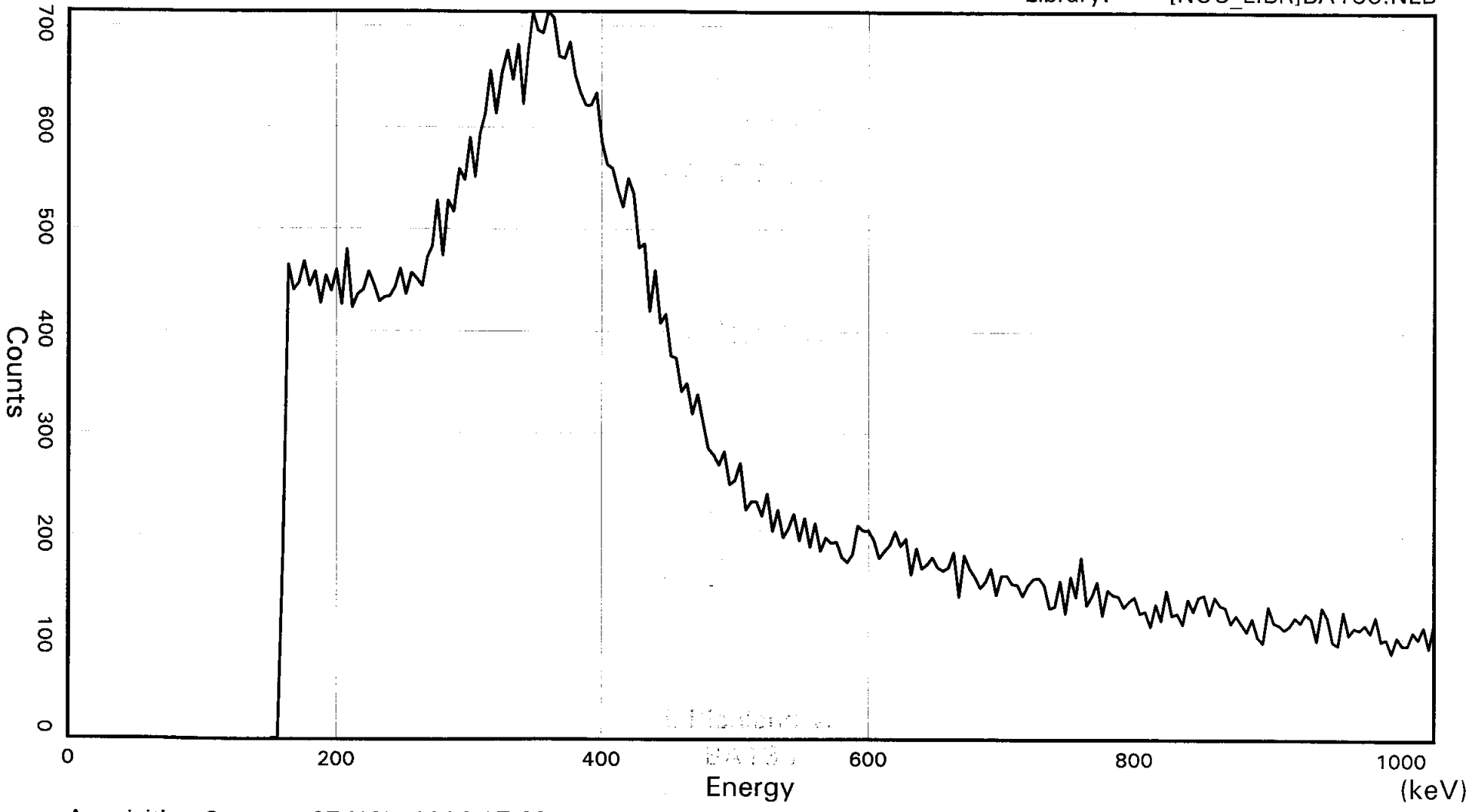
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	1.759E+01		7.167E+00	3.202E+01	6.462E-01	0.549
SB-125	-1.724E+01		2.512E+01	8.838E+01	1.769E+00	-0.195
SN-126DA	-3.917E+00		6.028E+00	2.137E+01	4.330E-01	-0.183
I-131	5.289E-01		2.419E+01	9.149E+01	1.830E+00	0.006
CS-134	8.536E+00		5.625E+00	2.536E+01	5.182E-01	0.337
CS-137DA	1.307E+01		6.515E+00	2.901E+01	5.875E-01	0.451
LA-138	1.778E-01		5.128E+00	2.203E+01	4.695E-01	0.008
CE-139	1.542E+00		1.445E+01	5.197E+01	1.059E+00	0.030
BA-140	1.760E+01		5.261E+01	2.031E+02	4.084E+00	0.087
BALA-140	2.471E+01		1.823E+01	8.352E+01	1.798E+00	0.296
LA-140	9.512E+02		7.251E+02	3.316E+03	7.141E+01	0.287
CE-141	-3.350E+01		3.180E+01	1.084E+02	2.226E+00	-0.309
CE-144	1.533E+02		1.033E+02	3.997E+02	8.250E+00	0.384
CEPR-144	3.075E+02		2.066E+02	7.997E+02	1.651E+01	0.385
PM-144	-1.733E+00		6.283E+00	2.322E+01	4.690E-01	-0.075
PM-146	4.158E+00		1.063E+01	4.062E+01	8.140E-01	0.102
EU-152	-4.455E+01		3.238E+01	1.097E+02	2.194E+00	-0.406
EU-154	-6.983E+00		9.733E+00	3.680E+01	7.763E-01	-0.190
EU-155	-4.963E+01		5.274E+01	1.767E+02	3.711E+00	-0.281
HF-181	-1.290E+01		9.850E+00	3.240E+01	6.500E-01	-0.398
BI-207	6.920E+00		6.008E+00	2.507E+01	5.051E-01	0.276
TL-208	6.589E+00		7.384E+00	3.200E+01	6.451E-01	0.206
BI-210M	2.038E+01		1.501E+01	6.046E+01	1.213E+00	0.337
BI-212	-3.883E+01		8.130E+01	3.027E+02	9.248E+00	-0.128
PB-212	-1.828E+01		2.568E+01	9.156E+01	1.841E+00	-0.200
BI-214	3.214E+00		1.588E+01	6.613E+01	1.335E+00	0.049
PB-214	2.350E+01		3.000E+01	1.061E+02	2.123E+00	0.221
RA-223	-5.002E+01		5.843E+01	2.030E+02	4.069E+00	-0.246
RA-224DA	-1.850E+01		2.599E+01	9.267E+01	1.863E+00	-0.200
RA-226DA	3.214E+00		1.588E+01	6.613E+01	1.335E+00	0.049
AC-227DA	-3.231E+01		9.036E+01	3.224E+02	6.484E+00	-0.100
AC-228	-3.674E+01		2.152E+01	8.027E+01	1.653E+00	-0.458
RA-228DA	-3.689E+01		2.161E+01	8.059E+01	1.659E+00	-0.458
TH-228DA	1.856E+01		2.080E+01	9.016E+01	1.818E+00	0.206
TH-232DA	-6.121E+01		7.417E+01	2.511E+02	5.022E+00	-0.244
TH-234DA	-1.500E+02		8.429E+02	3.211E+03	6.651E+01	-0.047
U-234DA	-3.423E+01		5.125E+01	1.823E+02	3.650E+00	-0.188
U-235HP	5.605E+01		1.076E+02	3.967E+02	8.150E+00	0.141
NP-237DA	1.508E+01		2.760E+01	1.013E+02	2.028E+00	0.149
U-238DA	2.350E+01		3.000E+01	1.061E+02	2.123E+00	0.221
U-238DHP	2.327E+02		3.107E+02	1.166E+03	2.572E+01	0.200
AM-241HP	6.806E+00		3.109E+01	1.150E+02	2.555E+00	0.059

STL Richland WA.

BA133

Sample ID: JH3MJ2AC
Detector ID: NAI1 1

BatchID: 6325489
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 27-NOV-2006 17:03:46.92
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: JH3MJ2AC

CONFIGURATION ID: NAI1:JH3MJ2AC_271161703
TITLE : BA133
SAMPLE ID : JH3MJ2AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 17:03:46
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 27-NOV-2006 17:33:51

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH3MJ2AC_271161703.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 17:03:46
Sample ID	: JH3MJ2AC	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:	2.9	3.7	4.4	2.3	3.0	0.1	2.8	2.9
88:	1.9	0.4	1.1	1.1	-0.1	-1.9	1.2	1.3
96:	-0.7	-2.1	-1.0	0.2	-3.2	-1.9	-2.5	-2.1
104:	-3.1	-2.0	-1.1	-2.7	-2.4	-5.0	-2.0	-3.5
112:	-1.5	-3.5						

List of Suspicious Channels

81 82 83

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	5.66E+00	0.00E+00	1.02E+00
2	2.46E+00	0.00E+00	1.04E+00
3	1.10E+00	0.00E+00	1.05E+00

Brief Report

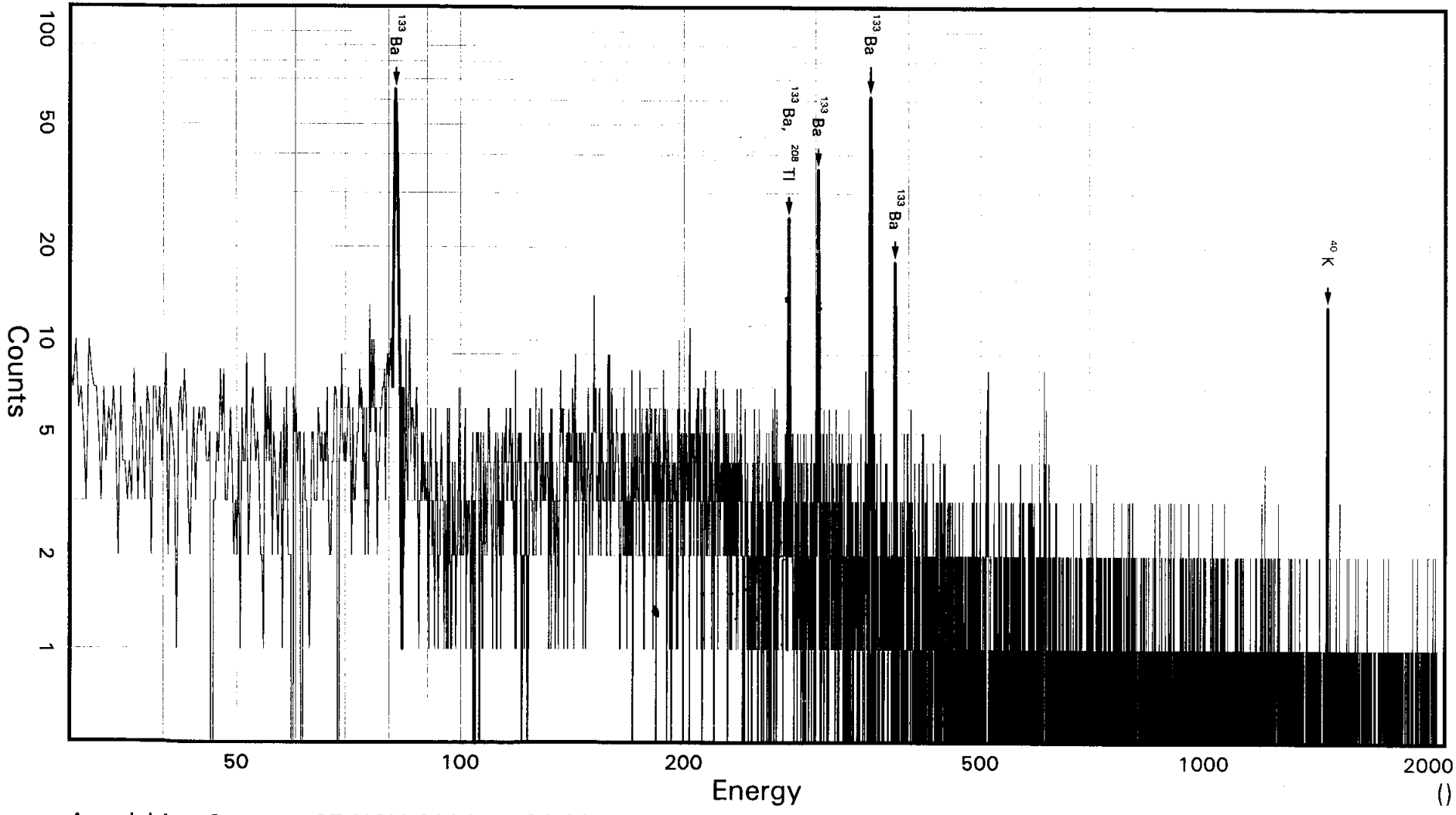
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	661.	9.26
Total Activity :	661.	

STL Richland WA.

BA133

Sample ID: JH3MK2AC
Detector ID: GER13 1

Batch ID: 6325489



Acquisition Start: 27-NOV-2006 17:04:00.18
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -5.51771E-01
Slope: 2.50834E-01
Quadrature: -1.04675E-07

SAMPLE IDENTIFICATION: JH3MK2AC

CONFIGURATION ID: GER13:JH3MK2AC_271161704
TITLE : BA133
SAMPLE ID : JH3MK2AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 17:04:00
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 27-NOV-2006 05:16:24.34
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: -.5518E+00 keV
ENERGY SLOPE: 2.5083E-01 keV/C
ENERGY Q COEFF: -.1047E-06 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.2738E-01 keV
FWHM SLOPE: 4.4703E-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 27-NOV-2006 17:34:33

```
Configuration     : $DISK1:[GER13.SAMPLE]JH3MK2AC_271161704.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 17:04:00
Sample ID         : JH3MK2AC             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      :    19.51             End energy       :  2047.26
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	197	79	0.76	328.98	323	13	1.09E-01	11.9	
2	0	276.23	69	32	0.40	1103.93	1097	14	3.85E-02	21.0	
3	0	302.57	138	28	0.69	1209.05	1201	16	7.67E-02	12.1	
4	0	355.82	363	9	1.26	1421.58	1412	19	2.01E-01	5.6	
5	0	383.61	73	13	1.13	1532.51	1521	20	4.06E-02	17.4	
6	0	1460.53*	5	2	1.18	5839.13	5827	20	2.54E-03	193.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 27-NOV-2006 17:34:34

Configuration : $DISK1:[GER13.SAMPLE]JH3MK2AC_271161704.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 17:04:00
Sample ID : JH3MK2AC 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: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
K-40	1460.81	5	10.67*	2.719E+00	5.243E+01	5.243E+01	193.27

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	197	33.00	2.704E+00	7.351E+02	7.368E+02	13.10
	276.40	69	6.90	2.897E+00	1.156E+03	1.158E+03	21.66
	302.84	138	17.80	2.900E+00	8.911E+02	8.931E+02	13.23
	356.00	363	62.05*	2.903E+00	6.709E+02	6.724E+02	7.79
	383.85	73	8.70	2.902E+00	9.640E+02	9.661E+02	18.19

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Sample ID : JH3MK2AC Acquisition date : 27-NOV-2006 17:04:00

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	1.173E+03	21.66	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 27-NOV-2006 17:34:36

Configuration : $DISK1:[GER13.SAMPLE]JH3MK2AC_271161704.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 : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 17:04:00
Sample ID : JH3MK2AC 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
K-40	5.243E+01	1.013E+02	1.370E+02	2.925E+00	0.383
BA-133	6.724E+02	5.240E+01	4.444E+01	8.888E-01	15.131

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	2.576E+00		6.605E+01	2.504E+02	5.022E+00	0.010
NA-22	-3.486E+00		3.734E+00	1.348E+01	2.843E-01	-0.259
SC-46	3.167E+00		5.847E+00	2.582E+01	5.393E-01	0.123
CR-51	-1.547E+02		1.265E+02	4.183E+02	8.369E+00	-0.370
MN-54	2.147E+00		5.193E+00	2.104E+01	4.309E-01	0.102
CO-57	1.673E+02		1.028E+02	4.009E+02	8.263E+00	0.417
CO-58	3.838E+00		5.531E+00	2.317E+01	4.739E-01	0.166
FE-59	-1.388E+01		1.085E+01	3.610E+01	7.528E-01	-0.385
CO-60	3.600E+00		3.261E+00	1.600E+01	3.388E-01	0.225
ZN-65	-6.763E+00		1.113E+01	4.018E+01	8.387E-01	-0.168
SE-75	8.498E+00		1.833E+01	6.757E+01	1.355E+00	0.126
SR-85	-2.492E+01		1.110E+01	3.508E+01	7.046E-01	-0.710
Y-88	-5.696E+00		4.299E+00	1.440E+01	3.145E-01	-0.396
NB-94	3.026E+00		4.937E+00	2.042E+01	4.192E-01	0.148
NB-95	1.351E+01		8.062E+00	3.431E+01	6.994E-01	0.394
TC-95M	1.733E+01		2.108E+01	7.642E+01	1.544E+00	0.227
ZR-95	1.126E+01		1.145E+01	4.791E+01	9.763E-01	0.235
ZRNB-95	2.420E+01		1.444E+01	6.146E+01	1.253E+00	0.394
MO-99	1.548E+02		2.803E+02	1.035E+03	2.129E+01	0.150
RH-101	4.245E+00		1.602E+01	5.702E+01	1.153E+00	0.074
RH-102M	1.684E+00		6.611E+00	2.530E+01	5.075E-01	0.067
RU-103	7.913E-01		8.790E+00	3.387E+01	6.798E-01	0.023
RU-106DA	-2.192E+01		6.787E+01	2.478E+02	5.008E+00	-0.088
AG-108M	4.149E+00		8.102E+00	3.105E+01	6.218E-01	0.134
AG-110M	8.249E+00		6.361E+00	2.887E+01	5.933E-01	0.286
SN-113DA	3.883E+00		1.159E+01	4.446E+01	8.894E-01	0.087

Sample ID : JH3MK2AC Acquisition date : 27-NOV-2006 17:04:00

---- Non-Identified Nuclides ----

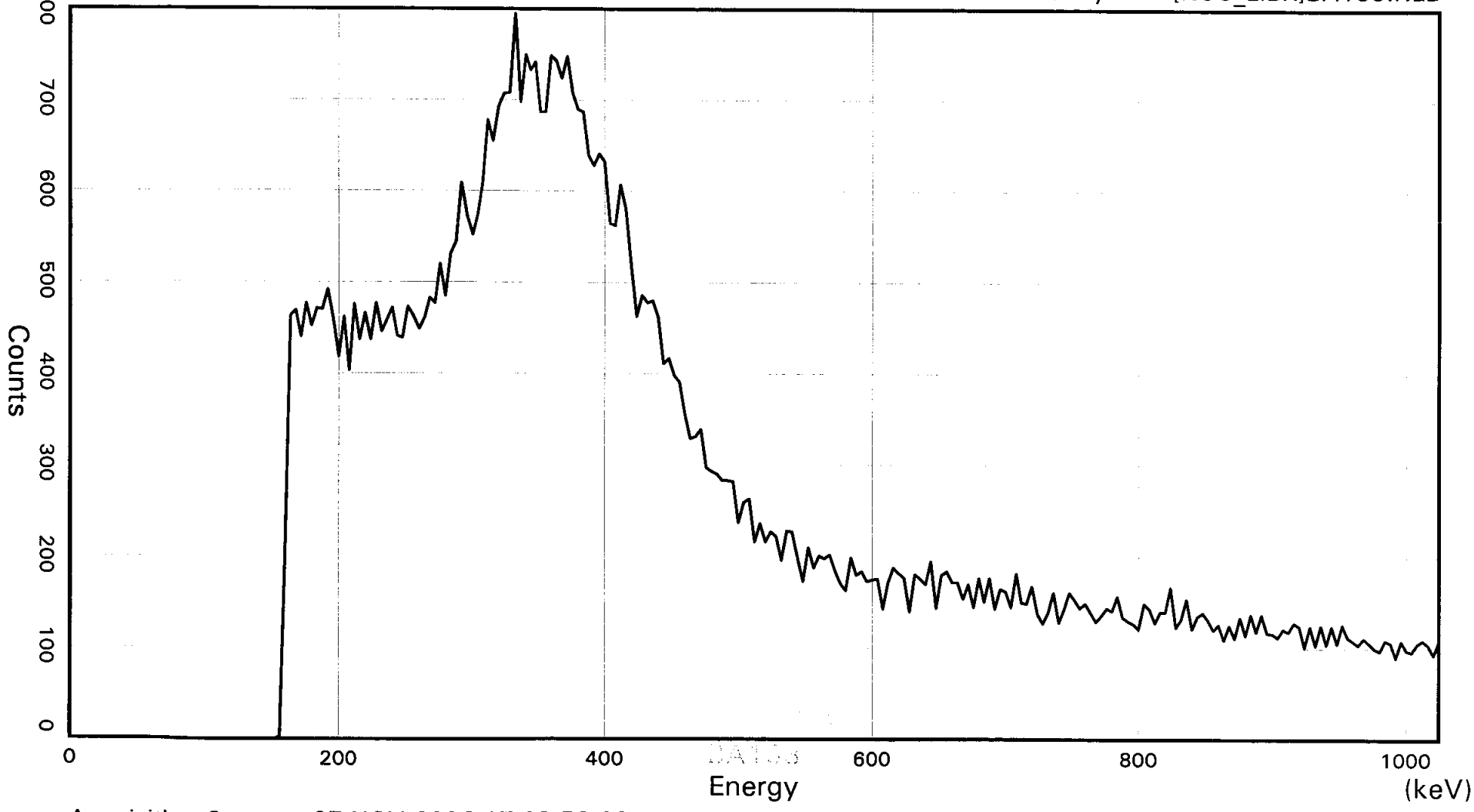
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-9.542E+00		8.174E+00	2.763E+01	5.576E-01	-0.345
SB-125	-2.224E+01		2.409E+01	8.326E+01	1.667E+00	-0.267
SN-126DA	2.918E+00		5.173E+00	2.102E+01	4.259E-01	0.139
I-131	-2.504E+01		2.763E+01	9.663E+01	1.933E+00	-0.259
CS-134	5.330E+00		8.137E+00	3.189E+01	6.516E-01	0.167
CS-137DA	-8.422E-01		6.244E+00	2.367E+01	4.794E-01	-0.036
LA-138	-1.702E+00		4.045E+00	1.703E+01	3.630E-01	-0.100
CE-139	1.860E+01		1.372E+01	5.252E+01	1.071E+00	0.354
BA-140	-3.213E+01		4.499E+01	1.623E+02	3.265E+00	-0.198
BALA-140	1.479E+01		1.518E+01	7.077E+01	1.524E+00	0.209
LA-140	5.980E+02		6.136E+02	2.861E+03	6.161E+01	0.209
CE-141	-1.643E+00		2.939E+01	1.058E+02	2.173E+00	-0.016
CE-144	2.236E+01		9.177E+01	3.411E+02	7.041E+00	0.066
CEPR-144	4.742E+01		1.837E+02	6.833E+02	1.410E+01	0.069
PM-144	9.342E+00		6.177E+00	2.621E+01	5.294E-01	0.356
PM-146	2.663E+00		1.018E+01	3.879E+01	7.774E-01	0.069
EU-152	3.379E+00		3.124E+01	1.168E+02	2.336E+00	0.029
EU-154	-9.754E+00		1.044E+01	3.769E+01	7.952E-01	-0.259
EU-155	6.681E+01		4.608E+01	1.786E+02	3.750E+00	0.374
HF-181	7.065E+00		9.657E+00	3.796E+01	7.616E-01	0.186
BI-207	-3.793E+00		6.747E+00	2.430E+01	4.895E-01	-0.156
TL-208	-1.143E+01		9.112E+00	3.265E+01	6.582E-01	-0.350
BI-210M	-9.438E+00		2.065E+01	7.257E+01	1.456E+00	-0.130
BI-212	5.088E+01		8.361E+01	3.412E+02	1.043E+01	0.149
PB-212	-1.467E+01		2.304E+01	8.336E+01	1.676E+00	-0.176
BI-214	1.017E+01		2.090E+01	8.222E+01	1.660E+00	0.124
PB-214	9.079E-01		3.025E+01	1.019E+02	2.038E+00	0.009
RA-223	-3.564E+01		7.137E+01	2.509E+02	5.031E+00	-0.142
RA-224DA	-1.485E+01		2.332E+01	8.438E+01	1.696E+00	-0.176
RA-226DA	1.017E+01		2.090E+01	8.222E+01	1.660E+00	0.124
AC-227DA	-1.276E+01		9.557E+01	3.435E+02	6.907E+00	-0.037
AC-228	2.552E+01		1.766E+01	8.838E+01	1.820E+00	0.289
RA-228DA	2.562E+01		1.773E+01	8.874E+01	1.827E+00	0.289
TH-228DA	-3.221E+01		2.567E+01	9.199E+01	1.855E+00	-0.350
TH-232DA	-8.413E+01		7.408E+01	2.452E+02	4.905E+00	-0.343
TH-234DA	1.035E+03		8.137E+02	3.523E+03	7.297E+01	0.294
U-234DA	-3.575E+01		4.663E+01	1.667E+02	3.337E+00	-0.215
U-235HP	1.640E+01		1.109E+02	4.014E+02	8.247E+00	0.041
NP-237DA	8.027E+00		2.554E+01	9.344E+01	1.870E+00	0.086
U-238DA	9.079E-01		3.025E+01	1.019E+02	2.038E+00	0.009
U-238DHP	-1.810E+02		2.657E+02	9.411E+02	2.076E+01	-0.192
AM-241HP	1.034E+01		2.867E+01	1.077E+02	2.392E+00	0.096

STL Richland WA.

BA133

Sample ID: JH3ML2AC
Detector ID: NAI1 1

BatchID: 6325489
Library: [NUC_LIBR]BA133.NLB



Acquisition Start:	27-NOV-2006 17:38:52.03
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: JH3ML2AC

CONFIGURATION ID: NAI1:JH3ML2AC_271161738
TITLE : BA133
SAMPLE ID : JH3ML2AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 17:38:52
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 27-NOV-2006 18:08:57

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH3ML2AC_271161738.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 17:38:52
Sample ID	: JH3ML2AC	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.69 0.0%
Sample Multiplier	: 1.00	Rejection Coeff.	: 0.00
Gain shift type	: ITER	Threshold Shift	: No
Weighting type	: DERIVED	Calculated counts	: No
Iterations	: 5		

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	4.7	4.3	4.1	6.6	2.3	3.3	2.8	2.2
88:	0.3	-0.5	1.8	1.6	1.2	-0.3	-0.5	0.0
96:	-0.2	-2.5	-2.0	-1.0	-2.6	-2.2	-3.0	-1.1
104:	-2.6	-4.1	-4.8	-4.1	-3.9	-1.9	-1.5	-4.2
112:	-3.4	-4.3						

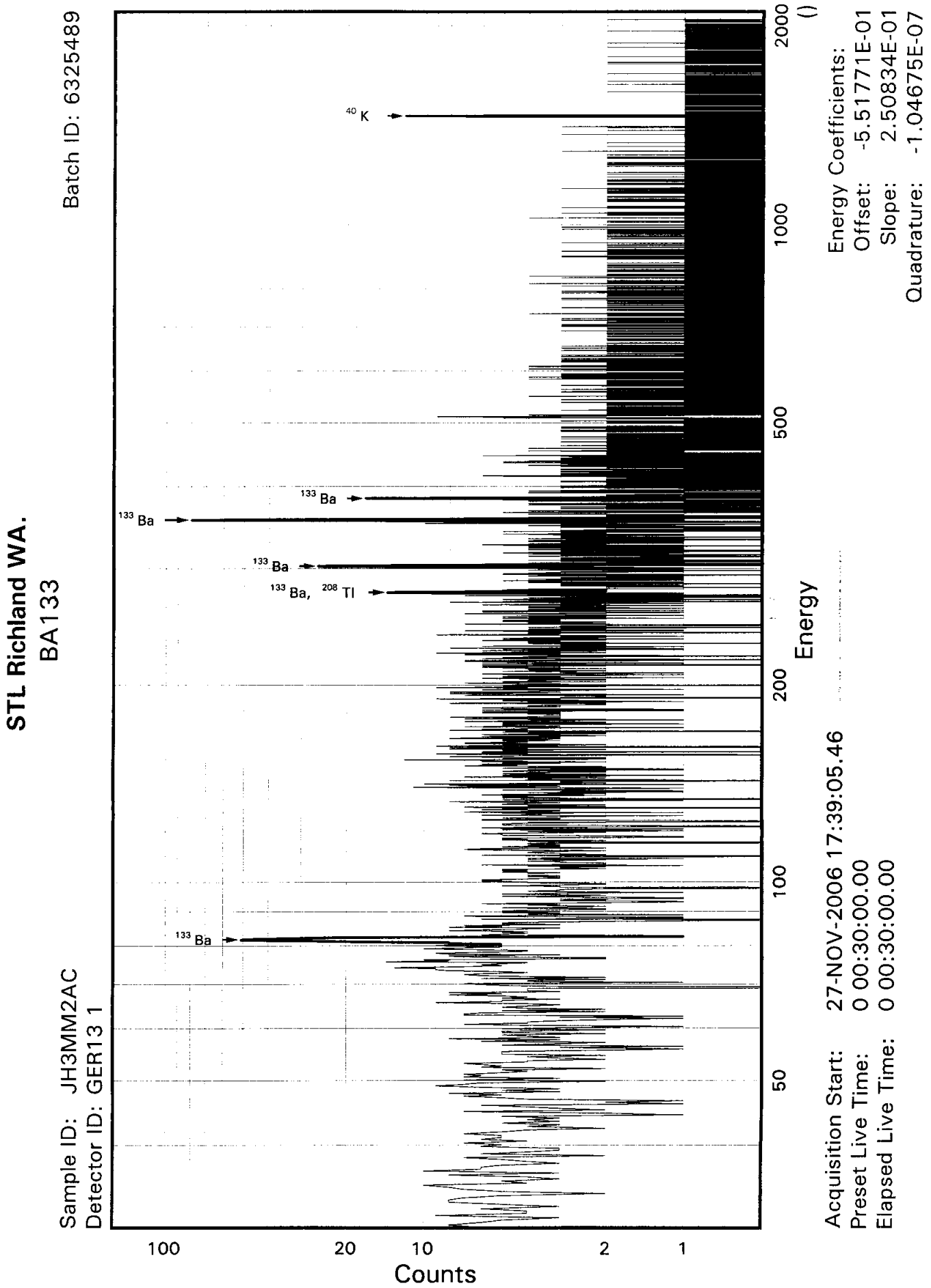
List of Suspicious Channels

81 82 83 84 85 86

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.05E+01	0.00E+00	1.02E+00
2	5.95E+00	0.00E+00	1.03E+00
3	2.78E+00	0.00E+00	1.05E+00
4	1.05E+00	0.00E+00	1.06E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	724.	9.35
Total Activity :	724.	


STL Richland WA.
BA133
Batch ID: 6325489
Sample ID: JH3MM2AC
Detector ID: GER13 1
40 K
133 Ba
133 Ba
133 Ba
133 Ba, 208 Tl
133 Ba
Counts
100
20
10
2
1
Energy
50
100
200
500
1000
2000
()
Acquisition Start: 27-NOV-2006 17:39:05.46
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00
Energy Coefficients:
Offset: -5.51771E-01
Slope: 2.50834E-01
Quadrature: -1.04675E-07

SAMPLE IDENTIFICATION: JH3MM2AC

CONFIGURATION ID: GER13:JH3MM2AC_271161739
TITLE : BA133
SAMPLE ID : JH3MM2AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 17:39:05
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 27-NOV-2006 05:16:24.34
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: -.5518E+00 keV
ENERGY SLOPE: 2.5083E-01 keV/C
ENERGY Q COEFF: -.1047E-06 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.2738E-01 keV
FWHM SLOPE: 4.4703E-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 27-NOV-2006 18:09:22

Configuration	: $DISK1:[GER13.SAMPLE]JH3MM2AC_271161739.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6		
Sample title	: BA133		
Sample date	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 17:39:05
Sample ID	: JH3MM2AC	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	: 19.51	End energy	: 2047.26
Sensitivity	: 5.00	Gaussian	: 10.00
Critical level	: No		

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.89	175	48	0.86	328.73	323	10	9.70E-02	10.6	
2	0	276.41	43	53	0.91	1104.68	1098	17	2.39E-02	41.1	
3	0	302.83	132	27	1.30	1210.11	1200	17	7.33E-02	12.4	
4	0	355.81	398	19	1.15	1421.54	1414	19	2.21E-01	5.7	
5	0	383.62	67	11	0.91	1532.56	1524	15	3.73E-02	16.3	
6	0	1460.70*	5	12	2.01	5839.81	5829	18	2.76E-03	207.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 27-NOV-2006 18:09:22

Configuration	: $DISK1:[GER13.SAMPLE]JH3MM2AC_271161739.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: BA133		
Sample date	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 17:39:05
Sample ID	: JH3MM2AC	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: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
K-40	1460.81	5	10.67*	2.719E+00	5.710E+01	5.710E+01	207.99

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	175	33.00	2.704E+00	6.524E+02	6.538E+02	11.90
	276.40	43	6.90	2.897E+00	7.181E+02	7.197E+02	41.42
	302.84	132	17.80	2.900E+00	8.516E+02	8.535E+02	13.52
	356.00	398	62.05*	2.903E+00	7.365E+02	7.381E+02	7.81
	383.85	67	8.70	2.902E+00	8.866E+02	8.885E+02	17.19

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JH3MM2AC

Acquisition date : 27-NOV-2006 17:39:05

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	7.287E+02	41.42	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 27-NOV-2006 18:09:24

Configuration : $DISK1:[GER13.SAMPLE]JH3MM2AC_271161739.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 : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 17:39:05
Sample ID : JH3MM2AC 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
K-40	5.710E+01	1.188E+02	1.608E+02	3.433E+00	0.355
BA-133	7.381E+02	5.766E+01	5.181E+01	1.036E+00	14.246

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.201E+01		7.218E+01	2.731E+02	5.477E+00	0.044
NA-22	-2.824E-01		4.887E+00	1.922E+01	4.055E-01	-0.015
SC-46	-1.574E+00		6.149E+00	2.523E+01	5.268E-01	-0.062
CR-51	-1.919E+02		1.199E+02	3.849E+02	7.701E+00	-0.499
MN-54	9.045E-01		5.339E+00	2.104E+01	4.309E-01	0.043
CO-57	1.121E+02		9.438E+01	3.660E+02	7.544E+00	0.306
CO-58	-1.498E+01		5.937E+00	1.598E+01	3.268E-01	-0.937
FE-59	3.166E-01		1.058E+01	4.152E+01	8.658E-01	0.008
CO-60	3.568E+00		3.701E+00	1.721E+01	3.645E-01	0.207
ZN-65	-1.766E+00		1.110E+01	4.205E+01	8.778E-01	-0.042
SE-75	9.647E-01		1.812E+01	6.557E+01	1.315E+00	0.015
SR-85	-3.497E+01		1.189E+01	3.570E+01	7.172E-01	-0.979
Y-88	-4.103E+00		2.380E+00	3.694E+00	8.070E-02	-1.111
NB-94	-7.598E+00		4.571E+00	1.415E+01	2.905E-01	-0.537
NB-95	-1.323E+00		6.841E+00	2.608E+01	5.317E-01	-0.051
TC-95M	1.903E+00		1.965E+01	6.939E+01	1.402E+00	0.027
ZR-95	-8.334E-01		9.491E+00	3.746E+01	7.633E-01	-0.022
ZRNB-95	-1.725E+00		1.232E+01	4.718E+01	9.619E-01	-0.037
MO-99	6.780E+02		2.729E+02	1.085E+03	2.233E+01	0.625
RH-101	1.045E+01		1.633E+01	5.902E+01	1.194E+00	0.177
RH-102M	-8.382E+00		6.900E+00	2.298E+01	4.609E-01	-0.365
RU-103	-9.384E+00		8.689E+00	3.037E+01	6.096E-01	-0.309
RU-106DA	1.041E+02		7.032E+01	2.902E+02	5.863E+00	0.359
AG-108M	-9.325E+00		9.942E+00	3.392E+01	6.792E-01	-0.275
AG-110M	3.431E+00		6.931E+00	2.887E+01	5.934E-01	0.119
SN-113DA	1.986E+01		1.232E+01	5.043E+01	1.009E+00	0.394

---- Non-Identified Nuclides ----

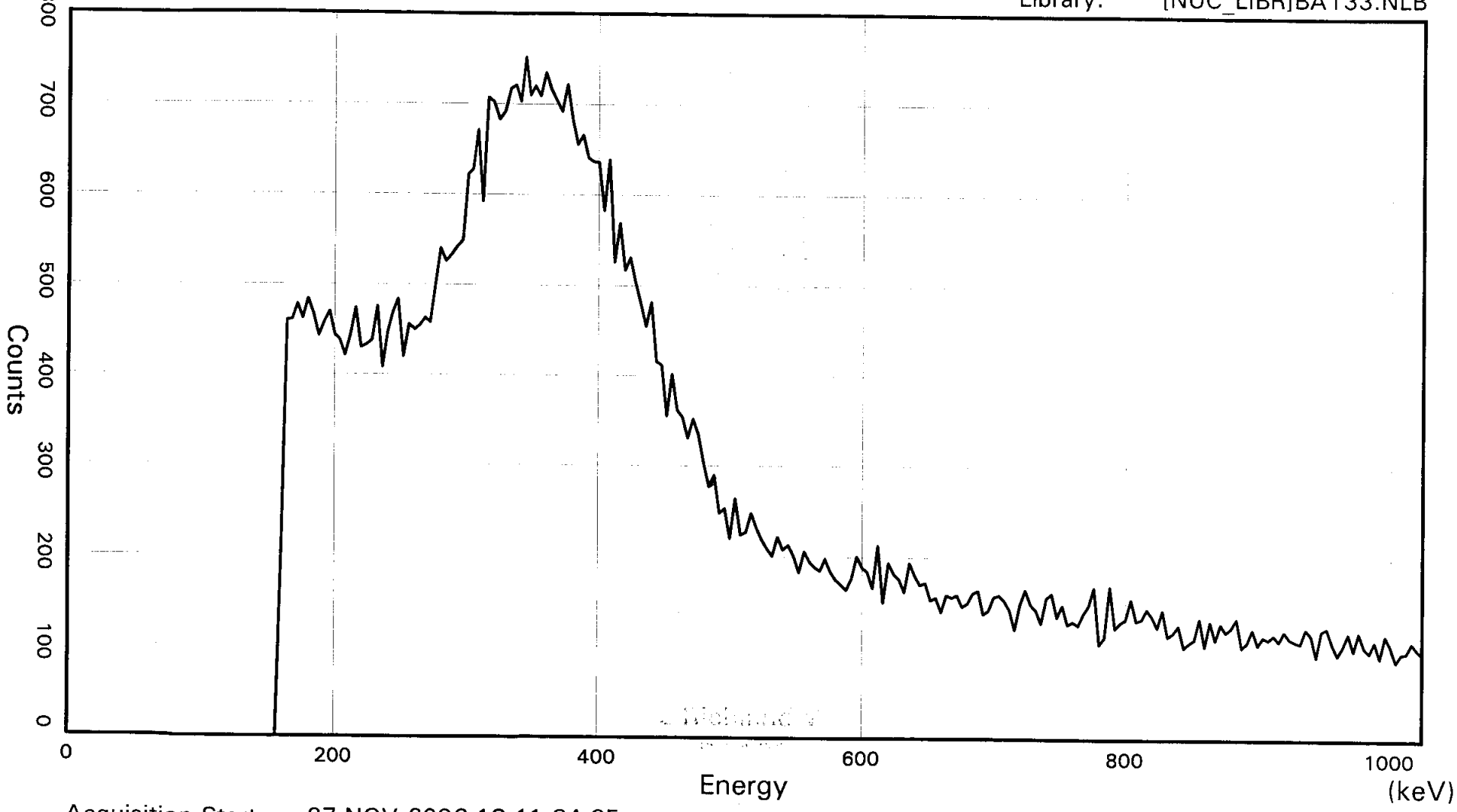
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	2.051E+01		7.465E+00	3.351E+01	6.763E-01	0.612
SB-125	-3.932E+01		2.407E+01	7.770E+01	1.556E+00	-0.506
SN-126DA	-3.478E+00		5.300E+00	1.899E+01	3.846E-01	-0.183
I-131	5.707E+01		2.771E+01	1.151E+02	2.301E+00	0.496
CS-134	-1.667E+01		7.481E+00	2.224E+01	4.544E-01	-0.749
CS-137DA	6.509E+00		5.394E+00	2.380E+01	4.821E-01	0.273
LA-138	-2.986E+00		5.788E+00	2.250E+01	4.798E-01	-0.133
CE-139	5.843E+00		1.624E+01	5.848E+01	1.192E+00	0.100
BA-140	3.701E+00		4.845E+01	1.858E+02	3.736E+00	0.020
BALA-140	-1.554E+01		1.350E+01	4.666E+01	1.005E+00	-0.333
LA-140	-4.251E+02		5.090E+02	1.903E+03	4.098E+01	-0.223
CE-141	2.086E+01		2.770E+01	1.041E+02	2.138E+00	0.200
CE-144	-5.258E+01		1.042E+02	3.690E+02	7.617E+00	-0.142
CEPR-144	-1.052E+02		2.083E+02	7.380E+02	1.523E+01	-0.142
PM-144	7.195E-02		7.315E+00	2.717E+01	5.490E-01	0.003
PM-146	-2.164E+00		1.216E+01	4.394E+01	8.806E-01	-0.049
EU-152	-2.101E+01		2.893E+01	1.032E+02	2.064E+00	-0.204
EU-154	-2.025E+00		1.352E+01	5.274E+01	1.113E+00	-0.038
EU-155	-3.268E+01		5.003E+01	1.711E+02	3.593E+00	-0.191
HF-181	-9.476E+00		9.826E+00	3.350E+01	6.720E-01	-0.283
BI-207	1.072E+01		6.601E+00	2.782E+01	5.604E-01	0.385
TL-208	-5.189E+00		8.507E+00	3.232E+01	6.516E-01	-0.161
BI-210M	1.664E+01		2.035E+01	7.628E+01	1.530E+00	0.218
BI-212	1.379E+02		7.849E+01	3.526E+02	1.077E+01	0.391
PB-212	-1.750E+01		2.472E+01	8.849E+01	1.779E+00	-0.198
BI-214	2.309E+01		1.704E+01	7.357E+01	1.485E+00	0.314
PB-214	5.374E+00		2.976E+01	1.016E+02	2.032E+00	0.053
RA-223	1.538E+01		6.835E+01	2.512E+02	5.036E+00	0.061
RA-224DA	-1.772E+01		2.502E+01	8.957E+01	1.801E+00	-0.198
RA-226DA	2.329E+01		1.706E+01	7.365E+01	1.487E+00	0.316
AC-227DA	-1.548E+02		9.643E+01	3.201E+02	6.438E+00	-0.484
AC-228	9.469E+00		2.200E+01	9.572E+01	1.971E+00	0.099
RA-228DA	9.507E+00		2.209E+01	9.611E+01	1.979E+00	0.099
TH-228DA	-1.462E+01		2.397E+01	9.106E+01	1.836E+00	-0.161
TH-232DA	3.579E+01		7.755E+01	2.830E+02	5.661E+00	0.126
TH-234DA	-5.509E+02		7.098E+02	2.578E+03	5.341E+01	-0.214
U-234DA	6.539E+01		4.842E+01	1.922E+02	3.849E+00	0.340
U-235HP	-9.178E+01		1.043E+02	3.601E+02	7.399E+00	-0.255
NP-237DA	4.327E+00		2.353E+01	8.623E+01	1.726E+00	0.050
U-238DA	5.374E+00		2.976E+01	1.016E+02	2.032E+00	0.053
U-238DHP	-1.904E+02		2.905E+02	1.025E+03	2.262E+01	-0.186
AM-241HP	-2.077E+01		2.949E+01	1.044E+02	2.320E+00	-0.199

STL Richland WA.

BA133

Sample ID: JH3NN2AC
Detector ID: NAI1 1

BatchID: 6325489
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 27-NOV-2006 18:11:34.35
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: JH3NN2AC

CONFIGURATION ID: NAI1:JH3NN2AC_271161811
TITLE : BA133
SAMPLE ID : JH3NN2AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 18:11:34
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 27-NOV-2006 18:41:40

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH3NN2AC_271161811.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 18:11:34
Sample ID	: JH3NN2AC	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.69 0.0%
Sample Multiplier	: 1.00	Rejection Coeff.	: 0.00
Gain shift type	: ITER	Threshold Shift	: No
Weighting type	: DERIVED	Calculated counts	: No
Iterations	: 5		

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	5.9	5.1	3.5	2.8	4.1	2.4	4.0	0.9
88:	1.5	0.1	1.1	0.5	0.1	-2.3	0.6	0.6
96:	-0.9	-1.6	-2.1	-1.3	-2.3	-2.0	-0.3	-4.1
104:	-3.0	-4.5	-2.6	-2.3	-2.5	-3.6	-2.3	-4.9
112:	-2.9	-5.1						

List of Suspicious Channels

81 82 83 84 85

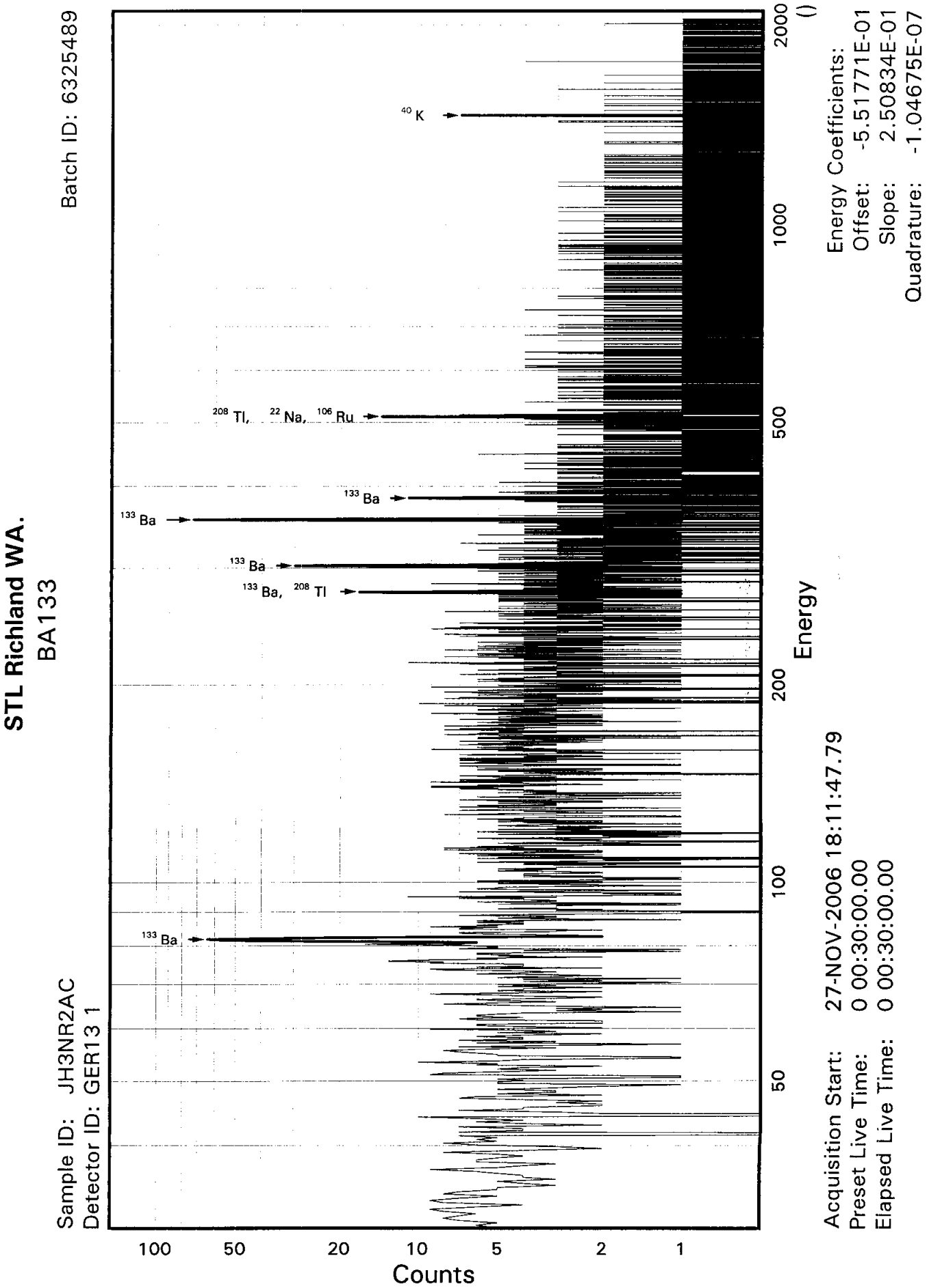
NAI Fit Report

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	8.22E+00	0.00E+00	1.03E+00
2	2.00E+00	0.00E+00	1.05E+00
3	1.13E+00	0.00E+00	1.06E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	721.	9.59

Total Activity :	721.	


STL Richland WA.
BA133
Batch ID: 6325489
Sample ID: JH3NR2AC
Detector ID: GER13 1
^{40}K
^{208}Tl, ^{22}Na, ^{106}Ru
^{133}Ba
^{133}Ba
^{133}Ba
^{133}Ba, ^{208}Tl
^{133}Ba
Counts
100
50
20
10
5
2
1
Energy
50
100
200
500
1000
2000
()
Acquisition Start: 27-NOV-2006 18:11:47.79
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00
Energy Coefficients:
Offset: -5.51771E-01
Slope: 2.50834E-01
Quadrature: -1.04675E-07

SAMPLE IDENTIFICATION: JH3NR2AC

CONFIGURATION ID: GER13:JH3NR2AC_271161811
TITLE : BA133
SAMPLE ID : JH3NR2AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 18:11:47
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 27-NOV-2006 05:16:24.34
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: -.5518E+00 keV
ENERGY SLOPE: 2.5083E-01 keV/C
ENERGY Q COEFF: -.1047E-06 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.2738E-01 keV
FWHM SLOPE: 4.4703E-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 27-NOV-2006 18:42:05

Configuration : $DISK1:[GER13.SAMPLE]JH3NR2AC_271161811.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 18:11:47
Sample ID : JH3NR2AC 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 : 19.51 End energy : 2047.26
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.95	183	64	0.82	328.95	324	9	1.02E-01	10.8	
2	0	276.74	43	63	0.87	1106.01	1096	20	2.40E-02	48.1	
3	0	302.68	135	37	1.06	1209.50	1200	21	7.48E-02	14.2	
4	0	355.87	344	30	1.10	1421.79	1414	14	1.91E-01	6.3	
5	0	383.54	55	18	1.52	1532.24	1524	18	3.06E-02	22.6	
6	0	510.73*	3	24	0.77	2040.05	2029	24	1.89E-03	449.4	
7	0	1460.37*	4	0	2.17	5838.48	5824	26	1.96E-03	234.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 27-NOV-2006 18:42:06

Configuration	: $DISK1:[GER13.SAMPLE]JH3NR2AC_271161811.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: BA133		
Sample date	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 18:11:47
Sample ID	: JH3NR2AC	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: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
K-40	1460.81	4	10.67*	2.719E+00	4.052E+01	4.052E+01	234.67

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	183	33.00	2.704E+00	6.841E+02	6.856E+02	12.12
	276.40	43	6.90	2.897E+00	7.201E+02	7.217E+02	48.38
	302.84	135	17.80	2.900E+00	8.697E+02	8.717E+02	15.17
	356.00	344	62.05*	2.903E+00	6.370E+02	6.385E+02	8.30
	383.85	55	8.70	2.902E+00	7.260E+02	7.277E+02	23.20

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JH3NR2AC

Acquisition date : 27-NOV-2006 18:11:47

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	510.73	3	24	0.77	2040.05	2029	24	1.89E-03	****	2.89E+00	T

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JH3NR2AC

Acquisition date : 27-NOV-2006 18:11:47

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
NA-22	2.60Y	0.01	511.00	179.68	2.198E+00	449.41	Abun.
			1274.54*	99.94	--- Not Found ---		
		% Abundances Found =		64.26			
RU-106DA	368.20D	0.03	511.85	20.60	1.944E+01	449.41	Abun.
			621.84*	9.80	--- Not Found ---		
		% Abundances Found =		67.76			
TL-208	1.41E+10Y	0.00	277.35	6.80	7.307E+02	48.38	Abun.
			510.84	21.60	1.812E+01	449.41	
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		22.71			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 27-NOV-2006 18:42:08

Configuration : $DISK1:[GER13.SAMPLE]JH3NR2AC_271161811.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 : 15-NOV-2006 12:00:00
Sample ID : JH3NR2AC
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 : 27-NOV-2006 18:11:47
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.38 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
K-40	4.052E+01	9.509E+01	1.032E+02	2.204E+00	0.393
BA-133	6.385E+02	5.297E+01	4.384E+01	8.767E-01	14.565

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.879E+02		7.842E+01	3.363E+02	6.745E+00	0.559
NA-22	-5.204E+00		5.199E+00	1.817E+01	3.834E-01	-0.286
SC-46	4.592E-01		5.223E+00	2.310E+01	4.824E-01	0.020
CR-51	1.984E+02		1.188E+02	4.702E+02	9.407E+00	0.422
MN-54	-7.623E+00		4.945E+00	1.583E+01	3.243E-01	-0.481
CO-57	-1.130E+02		1.035E+02	3.551E+02	7.320E+00	-0.318
CO-58	-4.196E+00		5.215E+00	1.877E+01	3.839E-01	-0.224
FE-59	1.082E+01		9.879E+00	4.350E+01	9.070E-01	0.249
CO-60	-7.615E+00		4.333E+00	1.314E+01	2.782E-01	-0.580
ZN-65	-1.787E+01		1.050E+01	3.258E+01	6.802E-01	-0.548
SE-75	1.652E+01		1.667E+01	6.374E+01	1.279E+00	0.259
SR-85	1.581E+01		1.135E+01	3.967E+01	7.970E-01	0.398
Y-88	-2.002E-03		2.735E+00	1.268E+01	2.771E-01	0.000
NB-94	-4.152E+00		4.676E+00	1.648E+01	3.383E-01	-0.252
NB-95	-5.328E+00		7.057E+00	2.532E+01	5.163E-01	-0.210
TC-95M	3.742E+01		1.788E+01	6.984E+01	1.411E+00	0.536
ZR-95	1.522E+01		1.087E+01	4.740E+01	9.659E-01	0.321
ZRNB-95	-9.863E+00		1.260E+01	4.510E+01	9.196E-01	-0.219
MO-99	1.688E+02		3.000E+02	1.102E+03	2.267E+01	0.153
RH-101	-7.871E+00		1.447E+01	4.977E+01	1.007E+00	-0.158
RH-102M	-1.262E+01		8.069E+00	2.593E+01	5.200E-01	-0.487
RU-103	3.735E+00		9.064E+00	3.558E+01	7.141E-01	0.105
RU-106DA	5.417E+01		6.090E+01	2.488E+02	5.028E+00	0.218
AG-108M	1.180E+01		8.311E+00	3.348E+01	6.704E-01	0.352
AG-110M	4.599E+00		7.438E+00	3.087E+01	6.343E-01	0.149
SN-113DA	4.866E+00		1.255E+01	4.778E+01	9.559E-01	0.102

---- Non-Identified Nuclides ----

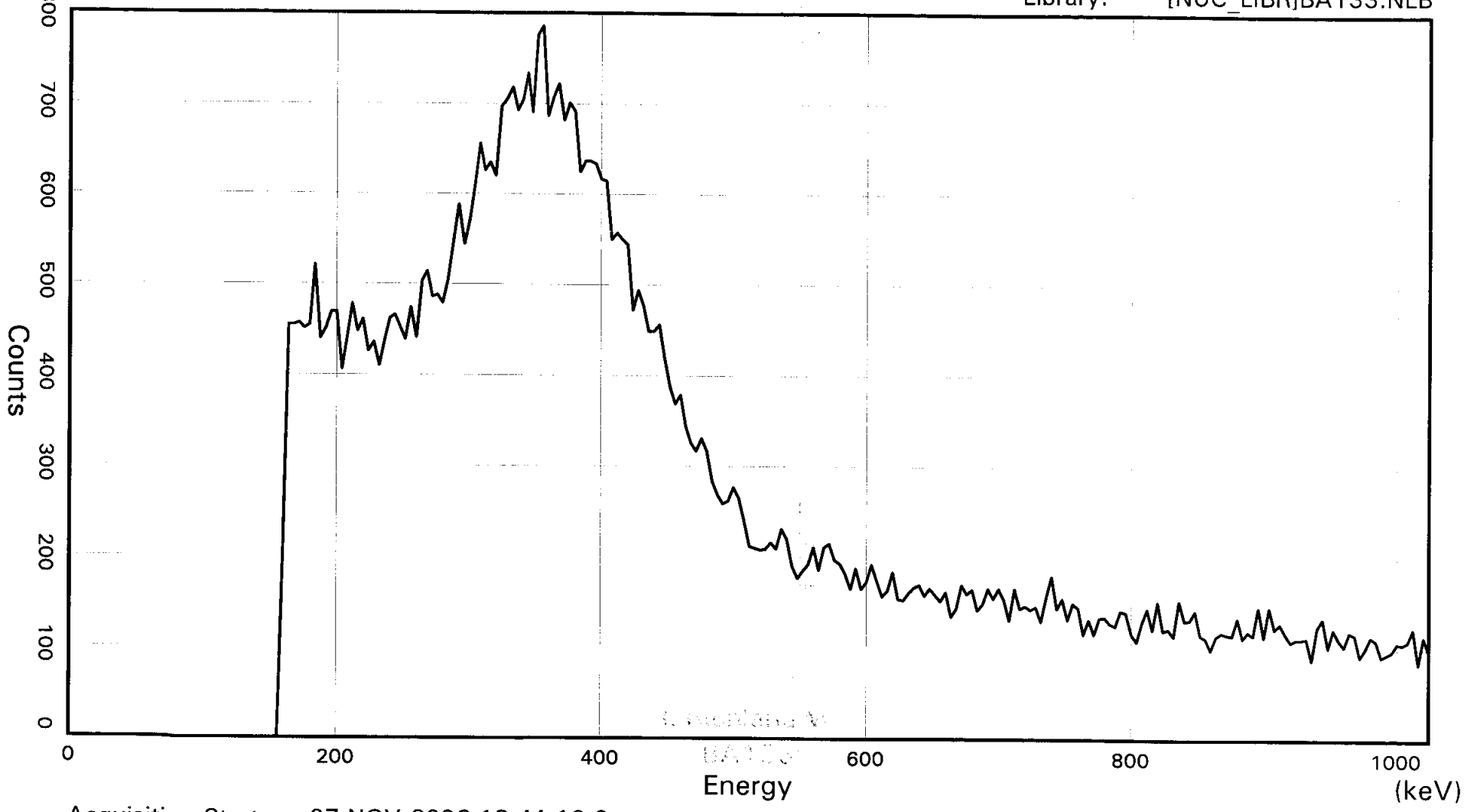
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-4.297E+00		8.140E+00	2.913E+01	5.879E-01	-0.148
SB-125	-1.854E+01		2.304E+01	8.070E+01	1.616E+00	-0.230
SN-126DA	4.022E+00		5.567E+00	2.259E+01	4.577E-01	0.178
I-131	8.492E+00		2.438E+01	9.424E+01	1.885E+00	0.090
CS-134	-7.121E+00		6.415E+00	2.202E+01	4.499E-01	-0.323
CS-137DA	-7.811E+00		6.137E+00	2.036E+01	4.123E-01	-0.384
LA-138	2.223E-01		5.733E+00	2.404E+01	5.125E-01	0.009
CE-139	-2.979E+01		1.564E+01	5.020E+01	1.023E+00	-0.593
BA-140	7.380E+01		4.377E+01	1.913E+02	3.847E+00	0.386
BALA-140	-4.567E-01		1.607E+01	6.596E+01	1.420E+00	-0.007
LA-140	-1.886E+01		6.606E+02	2.712E+03	5.840E+01	-0.007
CE-141	-2.133E+01		3.031E+01	1.054E+02	2.165E+00	-0.202
CE-144	-6.048E+01		1.015E+02	3.583E+02	7.396E+00	-0.169
CEPR-144	-1.210E+02		2.030E+02	7.167E+02	1.479E+01	-0.169
PM-144	4.497E+00		6.172E+00	2.481E+01	5.013E-01	0.181
PM-146	-5.268E+00		9.472E+00	3.398E+01	6.808E-01	-0.155
EU-152	-4.004E+01		3.318E+01	1.137E+02	2.275E+00	-0.352
EU-154	-1.579E+01		1.440E+01	4.972E+01	1.049E+00	-0.318
EU-155	-1.405E+01		4.648E+01	1.633E+02	3.430E+00	-0.086
HF-181	-1.613E+01		9.264E+00	2.892E+01	5.802E-01	-0.558
BI-207	1.123E+00		4.557E+00	1.868E+01	3.763E-01	0.060
TL-208	6.453E+00		8.778E+00	3.599E+01	7.255E-01	0.179
BI-210M	-1.305E+00		1.982E+01	7.135E+01	1.431E+00	-0.018
BI-212	7.432E+01		7.874E+01	3.338E+02	1.020E+01	0.223
PB-212	2.835E+01		2.385E+01	9.307E+01	1.871E+00	0.305
BI-214	1.200E+01		1.733E+01	7.215E+01	1.457E+00	0.166
PB-214	-3.236E+01		2.929E+01	9.127E+01	1.825E+00	-0.355
RA-223	2.048E+01		6.867E+01	2.532E+02	5.077E+00	0.081
RA-224DA	2.870E+01		2.414E+01	9.421E+01	1.894E+00	0.305
RA-226DA	1.170E+01		1.730E+01	7.203E+01	1.454E+00	0.162
AC-227DA	-1.277E+02		9.056E+01	3.043E+02	6.121E+00	-0.419
AC-228	-2.896E+00		2.312E+01	9.572E+01	1.971E+00	-0.030
RA-228DA	-2.908E+00		2.322E+01	9.611E+01	1.979E+00	-0.030
TH-228DA	1.818E+01		2.473E+01	1.014E+02	2.044E+00	0.179
TH-232DA	5.195E+01		7.094E+01	2.657E+02	5.314E+00	0.196
TH-234DA	9.496E+02		6.145E+02	2.930E+03	6.069E+01	0.324
U-234DA	-5.583E+00		4.999E+01	1.839E+02	3.683E+00	-0.030
U-235HP	1.271E+02		1.103E+02	4.161E+02	8.550E+00	0.305
NP-237DA	-6.036E-01		2.542E+01	9.125E+01	1.826E+00	-0.007
U-238DA	-3.236E+01		2.929E+01	9.127E+01	1.825E+00	-0.355
U-238DHP	1.148E+01		2.845E+02	1.043E+03	2.300E+01	0.011
AM-241HP	5.779E+00		3.103E+01	1.146E+02	2.547E+00	0.050

STL Richland WA.

BA133

Sample ID: JH3NT2AC
Detector ID: NAI1 1

BatchID: 6325489
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 27-NOV-2006 18:44:12.8
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: JH3NT2AC

CONFIGURATION ID: NAI1:JH3NT2AC_271161844
TITLE : BA133
SAMPLE ID : JH3NT2AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 18:44:12
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 27-NOV-2006 19:14:20

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH3NT2AC_271161844.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 18:44:12
Sample ID	: JH3NT2AC	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:	2.5	5.3	5.3	4.6	2.7	2.0	3.6	0.8
88:	4.1	3.7	-0.3	-0.1	0.6	-2.2	1.1	1.5
96:	-2.1	-2.2	-1.4	-1.3	-2.9	0.0	-3.6	-3.0
104:	-3.6	-3.3	-4.5	-2.5	-3.0	-4.0	-3.3	-2.3
112:	-2.7	-4.1						

List of Suspicious Channels

81 82 83

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	8.26E+00	0.00E+00	1.02E+00
2	3.99E+00	0.00E+00	1.04E+00
3	1.78E+00	0.00E+00	1.05E+00
4	6.71E-01	0.00E+00	1.06E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	702.	7.22

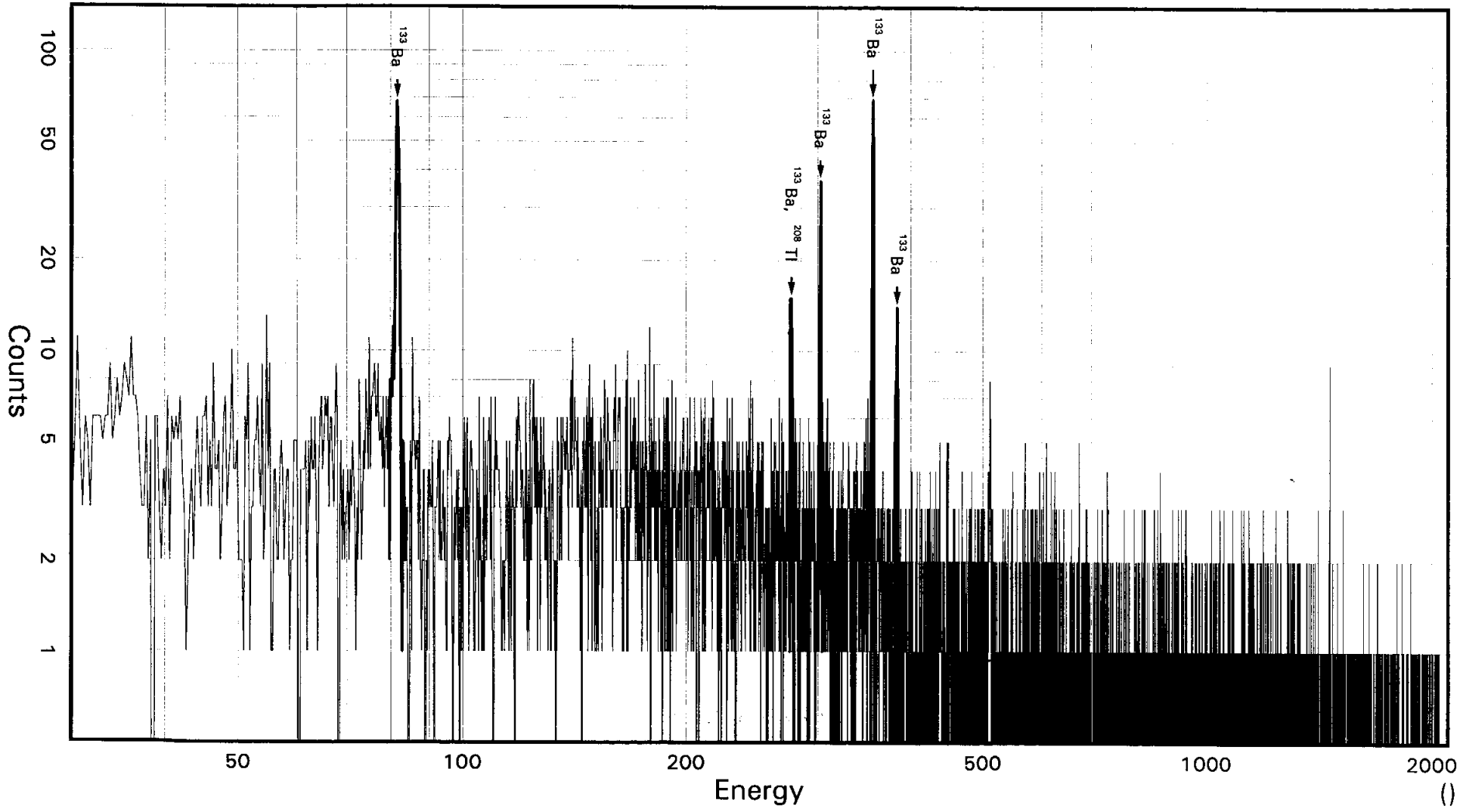
Total Activity :	702.	

STL Richland WA.

BA133

Sample ID: JH3NV2AC
Detector ID: GER13 1

Batch ID: 6325489



Acquisition Start: 27-NOV-2006 18:44:25.45
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -5.51771E-01
Slope: 2.50834E-01
Quadrature: -1.04675E-07

SAMPLE IDENTIFICATION: JH3NV2AC

CONFIGURATION ID: GER13:JH3NV2AC_271161844
TITLE : BA133
SAMPLE ID : JH3NV2AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 18:44:25
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 27-NOV-2006 05:16:24.34
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: -.5518E+00 keV
ENERGY SLOPE: 2.5083E-01 keV/C
ENERGY Q COEFF: -.1047E-06 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.2738E-01 keV
FWHM SLOPE: 4.4703E-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 27-NOV-2006 19:14:42

```
Configuration     : $DISK1:[GER13.SAMPLE]JH3NV2AC_271161844.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 18:44:25
Sample ID         : JH3NV2AC             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      :    19.51             End energy       :  2047.26
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.80	245	61	0.87	328.35	320	18	1.36E-01	9.9	
2	0	276.66	83	23	1.36	1105.67	1099	16	4.59E-02	17.9	
3	0	302.62	134	26	0.72	1209.27	1201	15	7.42E-02	12.0	
4	0	355.78	376	19	1.35	1421.44	1411	19	2.09E-01	5.9	
5	0	383.29	75	18	0.87	1531.25	1521	18	4.14E-02	17.7	
6	0	447.14	30	0	2.42	1786.13	1773	23	1.67E-02	18.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 27-NOV-2006 19:14:42

Configuration : $DISK1:[GER13.SAMPLE]JH3NV2AC_271161844.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 18:44:25
Sample ID : JH3NV2AC 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	245	33.00	2.704E+00	9.151E+02	9.171E+02	11.31
	276.40	83	6.90	2.897E+00	1.377E+03	1.380E+03	18.67
	302.84	134	17.80	2.900E+00	8.621E+02	8.640E+02	13.19
	356.00	376	62.05*	2.903E+00	6.958E+02	6.973E+02	7.96
	383.85	75	8.70	2.902E+00	9.842E+02	9.864E+02	18.49

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JH3NV2AC

Acquisition date : 27-NOV-2006 18:44:25

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	447.14	30	0	2.42	1786.13	1773	23	1.67E-02	18.3	2.90E+00	

Flags: "T" = Tentatively associated

Sample ID : JH3NV2AC
Acquisition date : 27-NOV-2006 18:44:25

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	1.397E+03	18.67	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 27-NOV-2006 19:14:45

Configuration : $DISK1:[GER13.SAMPLE]JH3NV2AC_271161844.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 : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 18:44:25
Sample ID : JH3NV2AC 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	6.973E+02	5.549E+01	3.671E+01	7.342E-01	18.995

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-9.023E+00		7.031E+01	2.605E+02	5.225E+00	-0.035
NA-22	2.194E+00		4.224E+00	1.817E+01	3.834E-01	0.121
K-40	-9.594E+01		9.642E+01	4.483E+02	9.573E+00	-0.214
SC-46	1.190E+00		6.937E+00	2.851E+01	5.953E-01	0.042
CR-51	1.306E+02		1.115E+02	4.350E+02	8.703E+00	0.300
MN-54	2.113E+00		5.475E+00	2.191E+01	4.487E-01	0.096
CO-57	8.045E+01		1.047E+02	3.937E+02	8.114E+00	0.204
CO-58	9.925E+00		4.942E+00	2.367E+01	4.841E-01	0.419
FE-59	7.108E+00		1.009E+01	4.271E+01	8.905E-01	0.166
CO-60	-3.919E+00		4.480E+00	1.600E+01	3.388E-01	-0.245
ZN-65	1.077E+00		1.248E+01	4.756E+01	9.928E-01	0.023
SE-75	1.272E+01		1.717E+01	6.463E+01	1.296E+00	0.197
SR-85	-1.190E+01		1.152E+01	3.956E+01	7.947E-01	-0.301
Y-88	-2.737E+00		2.740E+00	1.005E+01	2.196E-01	-0.272
NB-94	1.937E+00		5.103E+00	2.052E+01	4.213E-01	0.094
NB-95	-8.094E+00		6.433E+00	2.181E+01	4.448E-01	-0.371
TC-95M	-2.005E+01		1.853E+01	6.145E+01	1.242E+00	-0.326
ZR-95	-2.198E+00		1.048E+01	4.024E+01	8.200E-01	-0.055
ZRNB-95	-1.417E+01		1.155E+01	3.935E+01	8.022E-01	-0.360
MO-99	6.709E+01		3.069E+02	1.110E+03	2.285E+01	0.060
RH-101	1.345E+01		1.562E+01	5.728E+01	1.159E+00	0.235
RH-102M	-3.729E+00		6.598E+00	2.352E+01	4.717E-01	-0.159
RU-103	2.206E-01		9.277E+00	3.533E+01	7.091E-01	0.006
RU-106DA	-8.872E+01		7.097E+01	2.372E+02	4.792E+00	-0.374
AG-108M	-6.734E+00		8.075E+00	2.804E+01	5.615E-01	-0.240
AG-110M	1.387E+00		7.774E+00	3.087E+01	6.344E-01	0.045
SN-113DA	-4.423E+00		1.056E+01	3.872E+01	7.747E-01	-0.114

Sample ID : JH3NV2AC Acquisition date : 27-NOV-2006 18:44:25

---- Non-Identified Nuclides ----

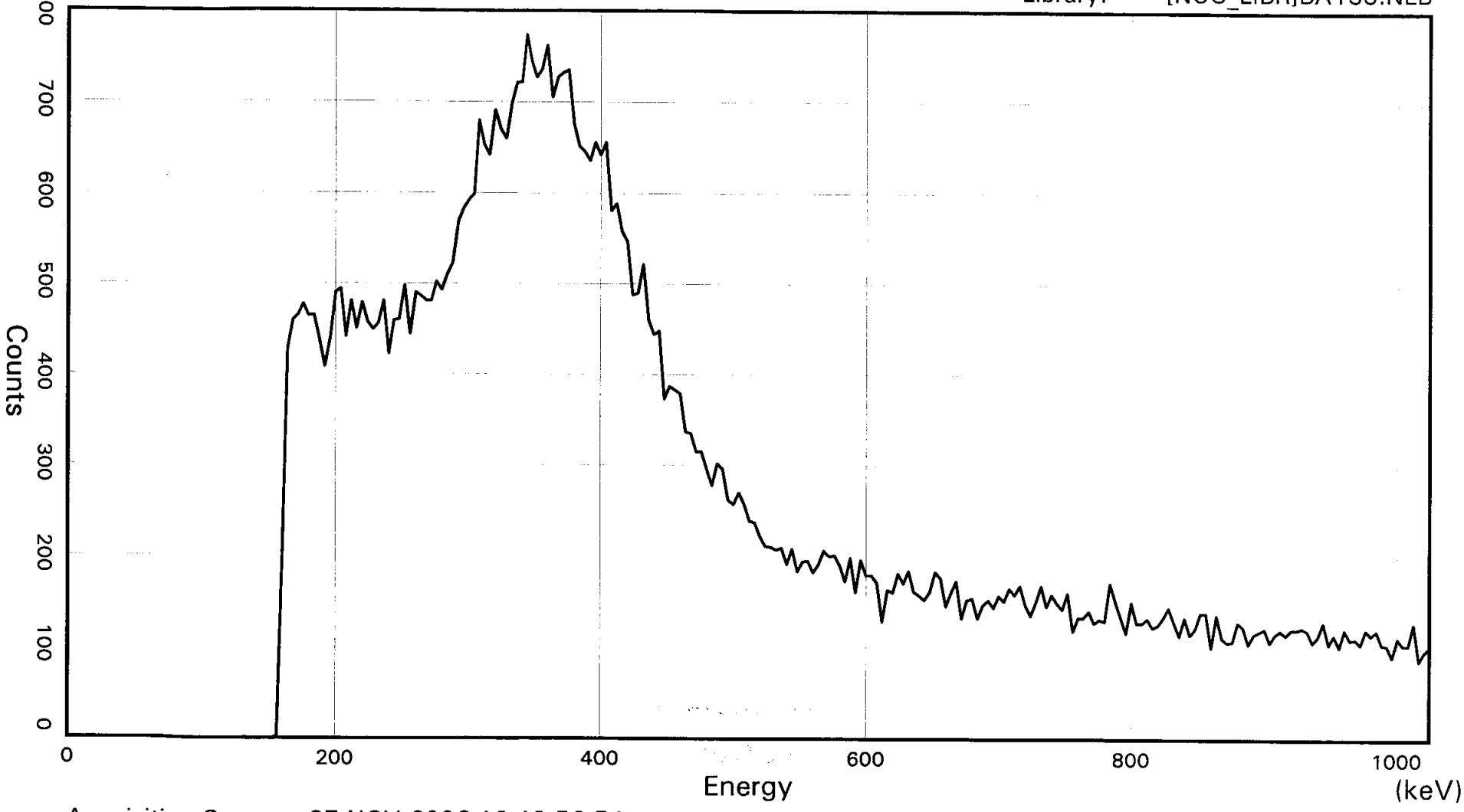
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-6.632E+00		7.706E+00	2.688E+01	5.426E-01	-0.247
SB-125	2.498E+01		2.334E+01	9.383E+01	1.879E+00	0.266
SN-126DA	-8.690E+00		6.066E+00	1.969E+01	3.988E-01	-0.441
I-131	-8.173E+00		3.107E+01	1.126E+02	2.251E+00	-0.073
CS-134	-3.739E+00		5.831E+00	2.133E+01	4.358E-01	-0.175
CS-137DA	-9.532E+00		7.447E+00	2.464E+01	4.990E-01	-0.387
LA-138	-4.821E+00		5.493E+00	2.029E+01	4.325E-01	-0.238
CE-139	-2.852E+00		1.439E+01	5.098E+01	1.039E+00	-0.056
BA-140	6.121E+01		4.761E+01	1.992E+02	4.007E+00	0.307
BALA-140	9.899E+00		1.243E+01	6.050E+01	1.303E+00	0.164
LA-140	3.698E+02		5.071E+02	2.460E+03	5.298E+01	0.150
CE-141	-6.369E+01		3.078E+01	9.891E+01	2.031E+00	-0.644
CE-144	-2.567E+01		8.746E+01	3.172E+02	6.547E+00	-0.081
CEPR-144	-5.225E+01		1.749E+02	6.340E+02	1.309E+01	-0.082
PM-144	-1.745E+00		6.515E+00	2.399E+01	4.847E-01	-0.073
PM-146	-1.603E+01		1.084E+01	3.529E+01	7.072E-01	-0.454
EU-152	-2.473E+01		3.413E+01	1.205E+02	2.411E+00	-0.205
EU-154	4.902E+00		1.163E+01	4.972E+01	1.049E+00	0.099
EU-155	2.546E+01		4.494E+01	1.669E+02	3.505E+00	0.152
HF-181	4.047E+00		1.034E+01	3.927E+01	7.878E-01	0.103
BI-207	4.874E+00		7.833E+00	3.017E+01	6.078E-01	0.162
TL-208	1.045E+00		8.779E+00	3.474E+01	7.004E-01	0.030
BI-210M	-4.108E+00		2.018E+01	7.201E+01	1.444E+00	-0.057
BI-212	-8.289E+01		8.403E+01	2.955E+02	9.028E+00	-0.281
PB-212	-4.693E+01		2.325E+01	7.766E+01	1.561E+00	-0.604
BI-214	-3.271E+00		1.657E+01	6.665E+01	1.346E+00	-0.049
PB-214	-3.799E+01		3.184E+01	9.715E+01	1.943E+00	-0.391
RA-223	4.692E+01		7.132E+01	2.667E+02	5.347E+00	0.176
RA-224DA	-4.751E+01		2.353E+01	7.862E+01	1.581E+00	-0.604
RA-226DA	-3.171E+00		1.657E+01	6.670E+01	1.347E+00	-0.048
AC-227DA	-4.863E+01		8.503E+01	3.010E+02	6.054E+00	-0.162
AC-228	-4.015E+01		2.037E+01	7.502E+01	1.544E+00	-0.535
RA-228DA	-4.032E+01		2.045E+01	7.532E+01	1.551E+00	-0.535
TH-228DA	2.945E+00		2.474E+01	9.789E+01	1.973E+00	0.030
TH-232DA	9.674E+01		7.393E+01	2.837E+02	5.674E+00	0.341
TH-234DA	1.871E+02		5.501E+02	2.402E+03	4.976E+01	0.078
U-234DA	-2.752E+00		4.942E+01	1.826E+02	3.657E+00	-0.015
U-235HP	-2.591E+02		1.107E+02	3.500E+02	7.191E+00	-0.740
NP-237DA	-4.929E+01		2.751E+01	8.746E+01	1.750E+00	-0.564
U-238DA	-3.799E+01		3.184E+01	9.715E+01	1.943E+00	-0.391
U-238DHP	-1.834E+02		2.977E+02	1.052E+03	2.320E+01	-0.174
AM-241HP	-1.885E+01		2.723E+01	9.694E+01	2.153E+00	-0.194

STL Richland WA.

BA133

Sample ID: JH3NW2AC
Detector ID: NAI1 1

BatchID: 6325489
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 27-NOV-2006 19:18:56.54
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: JH3NW2AC

CONFIGURATION ID: NAI1:JH3NW2AC_271161918
TITLE : BA133
SAMPLE ID : JH3NW2AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 19:18:56
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 27-NOV-2006 19:49:01

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH3NW2AC_271161918.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 19:18:56
Sample ID	: JH3NW2AC	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.68 0.0%
Sample Multiplier	: 1.00	Rejection Coeff.	: 0.00
Gain shift type	: ITER	Threshold Shift	: No
Weighting type	: DERIVED	Calculated counts	: No
Iterations	: 5		

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	5.1	3.7	2.9	3.2	3.7	3.0	5.0	1.9
88:	1.1	0.9	1.8	-0.3	1.0	-0.8	1.2	0.1
96:	-1.6	-2.7	-2.1	-0.6	-2.3	0.8	-3.0	-2.2
104:	-4.0	-4.0	-4.3	-3.2	-1.5	-3.5	-3.7	-3.2
112:	-5.6	-4.6						

List of Suspicious Channels

81 82 83 84 85

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	8.06E+00	0.00E+00	1.02E+00
2	3.29E+00	0.00E+00	1.04E+00
3	1.44E+00	0.00E+00	1.05E+00
4	7.92E-01	0.00E+00	1.06E+00

Brief Report

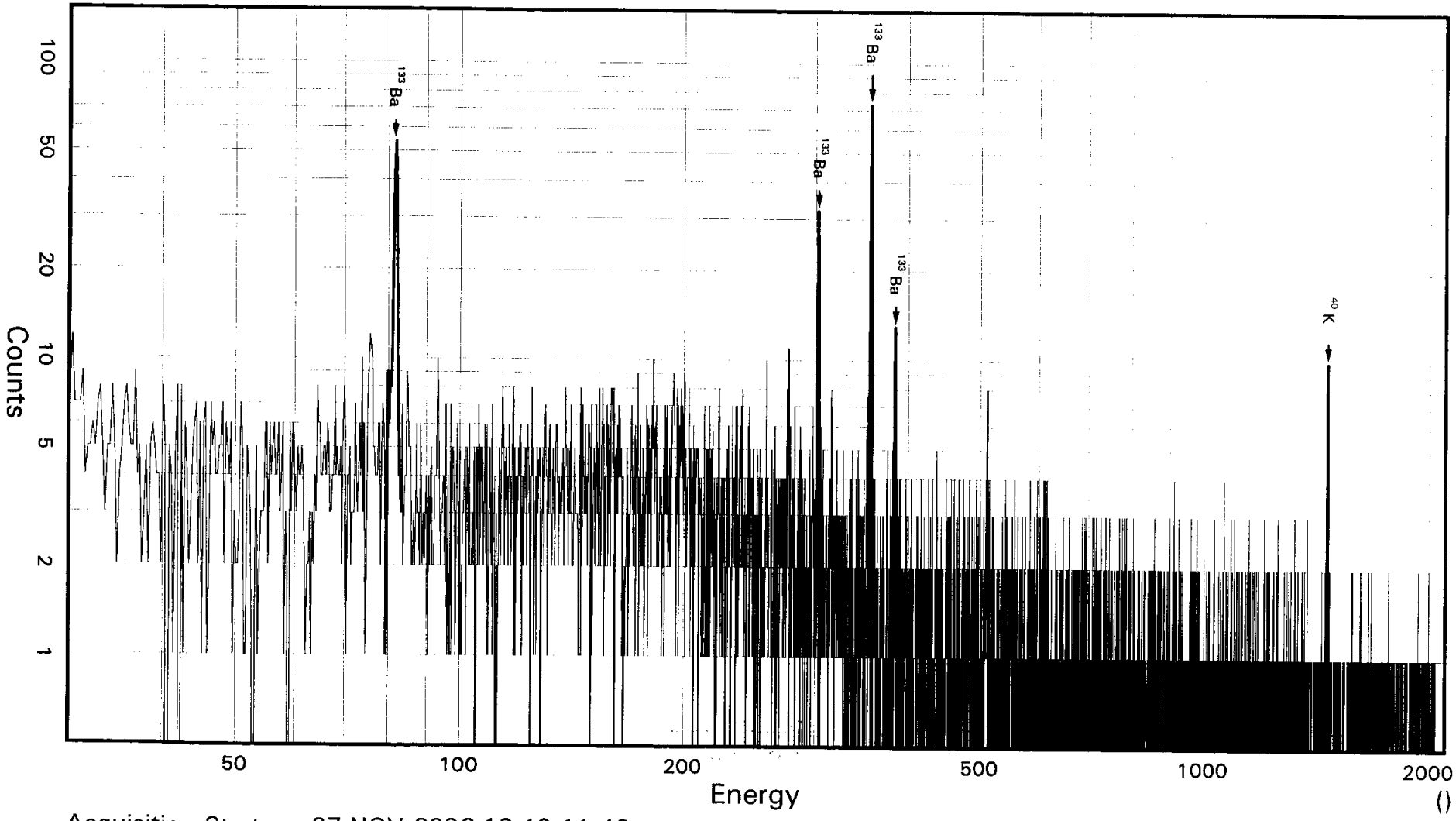
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	728.	8.08
Total Activity :	728.	

STL Richland WA.

BA133

Sample ID: JJ7A21AA
Detector ID: GER13 1

Batch ID: 6325489



Acquisition Start: 27-NOV-2006 19:19:11.43
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -5.51771E-01
Slope: 2.50834E-01
Quadrature: -1.04675E-07

SAMPLE IDENTIFICATION: JJ7A21AA

CONFIGURATION ID: GER13:JJ7A21AA_271161919
TITLE : BA133
SAMPLE ID : JJ7A21AA

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 19:19:11
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 15-NOV-2006 12:00:00.00
CALIB DATE: 27-NOV-2006 05:16:24.34
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: -.5518E+00 keV
ENERGY SLOPE: 2.5083E-01 keV/C
ENERGY Q COEFF: -.1047E-06 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.2738E-01 keV
FWHM SLOPE: 4.4703E-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 27-NOV-2006 19:49:29

Configuration : $DISK1:[GER13.SAMPLE]JJ7A21AA_271161919.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 19:19:11
Sample ID : JJ7A21AA 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 : 19.51 End energy : 2047.26
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.65	200	47	0.80	327.77	319	16	1.11E-01	10.5	
2	0	302.62	132	32	0.98	1209.28	1201	17	7.31E-02	13.3	
3	0	355.80	367	9	1.11	1421.51	1413	17	2.04E-01	5.5	
4	0	383.81	39	41	1.01	1533.30	1524	18	2.18E-02	41.3	
5	0	1460.47*	3	8	1.73	5838.87	5828	20	1.61E-03	335.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 27-NOV-2006 19:49:29

Configuration	: $DISK1:[GER13.SAMPLE]JJ7A21AA_271161919.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: BA133		
Sample date	: 15-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 19:19:11
Sample ID	: JJ7A21AA	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: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
K-40	1460.81	3	10.67*	2.719E+00	3.328E+01	3.328E+01	335.13

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	200	33.00	2.703E+00	7.459E+02	7.476E+02	11.82
	276.40	------	6.90	2.897E+00	------ Line Not Found		------
	302.84	132	17.80	2.900E+00	8.495E+02	8.514E+02	14.39
	356.00	367	62.05*	2.903E+00	6.782E+02	6.797E+02	7.72
	383.85	39	8.70	2.902E+00	5.179E+02	5.190E+02	41.63

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 27-NOV-2006 19:49:31

Configuration : $DISK1:[GER13.SAMPLE]JJ7A21AA_271161919.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 : 15-NOV-2006 12:00:00 Acquisition date : 27-NOV-2006 19:19:11
Sample ID : JJ7A21AA 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
K-40	3.328E+01	1.115E+02	1.495E+02	3.191E+00	0.223
BA-133	6.797E+02	5.248E+01	4.542E+01	9.084E-01	14.965

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-5.085E+01		8.547E+01	2.990E+02	5.997E+00	-0.170
NA-22	-1.274E+00		3.686E+00	1.468E+01	3.097E-01	-0.087
SC-46	-7.067E+00		6.628E+00	2.497E+01	5.215E-01	-0.283
CR-51	-1.537E+00		1.275E+02	4.571E+02	9.145E+00	-0.003
MN-54	4.666E+00		4.575E+00	2.013E+01	4.123E-01	0.232
CO-57	-4.300E+01		1.095E+02	3.887E+02	8.012E+00	-0.111
CO-58	-8.285E+00		6.041E+00	2.000E+01	4.089E-01	-0.414
FE-59	7.208E+00		9.395E+00	4.068E+01	8.482E-01	0.177
CO-60	4.821E+00		3.487E+00	1.721E+01	3.645E-01	0.280
ZN-65	-3.706E+00		1.146E+01	4.251E+01	8.875E-01	-0.087
SE-75	-3.478E+00		1.589E+01	5.728E+01	1.149E+00	-0.061
SR-85	-3.629E+01		1.183E+01	3.515E+01	7.060E-01	-1.032
Y-88	-1.370E+00		3.060E+00	1.269E+01	2.772E-01	-0.108
NB-94	-3.130E+00		5.653E+00	2.042E+01	4.192E-01	-0.153
NB-95	7.411E+00		7.463E+00	3.090E+01	6.301E-01	0.240
TC-95M	1.680E+01		1.908E+01	7.014E+01	1.417E+00	0.239
ZR-95	-1.250E+00		1.004E+01	3.911E+01	7.970E-01	-0.032
ZRNB-95	1.327E+01		1.336E+01	5.532E+01	1.128E+00	0.240
MO-99	-9.392E+01		2.767E+02	9.850E+02	2.027E+01	-0.095
RH-101	1.349E+01		1.747E+01	6.305E+01	1.275E+00	0.214
RH-102M	1.489E+01		7.132E+00	3.035E+01	6.087E-01	0.491
RU-103	1.040E+01		1.014E+01	4.060E+01	8.151E-01	0.256
RU-106DA	-9.905E+01		5.560E+01	1.727E+02	3.489E+00	-0.574
AG-108M	-1.683E+01		8.147E+00	2.511E+01	5.028E-01	-0.670
AG-110M	1.383E+01		7.087E+00	3.274E+01	6.729E-01	0.422
SN-113DA	-5.499E+00		1.204E+01	4.347E+01	8.697E-01	-0.126

---- Non-Identified Nuclides ----

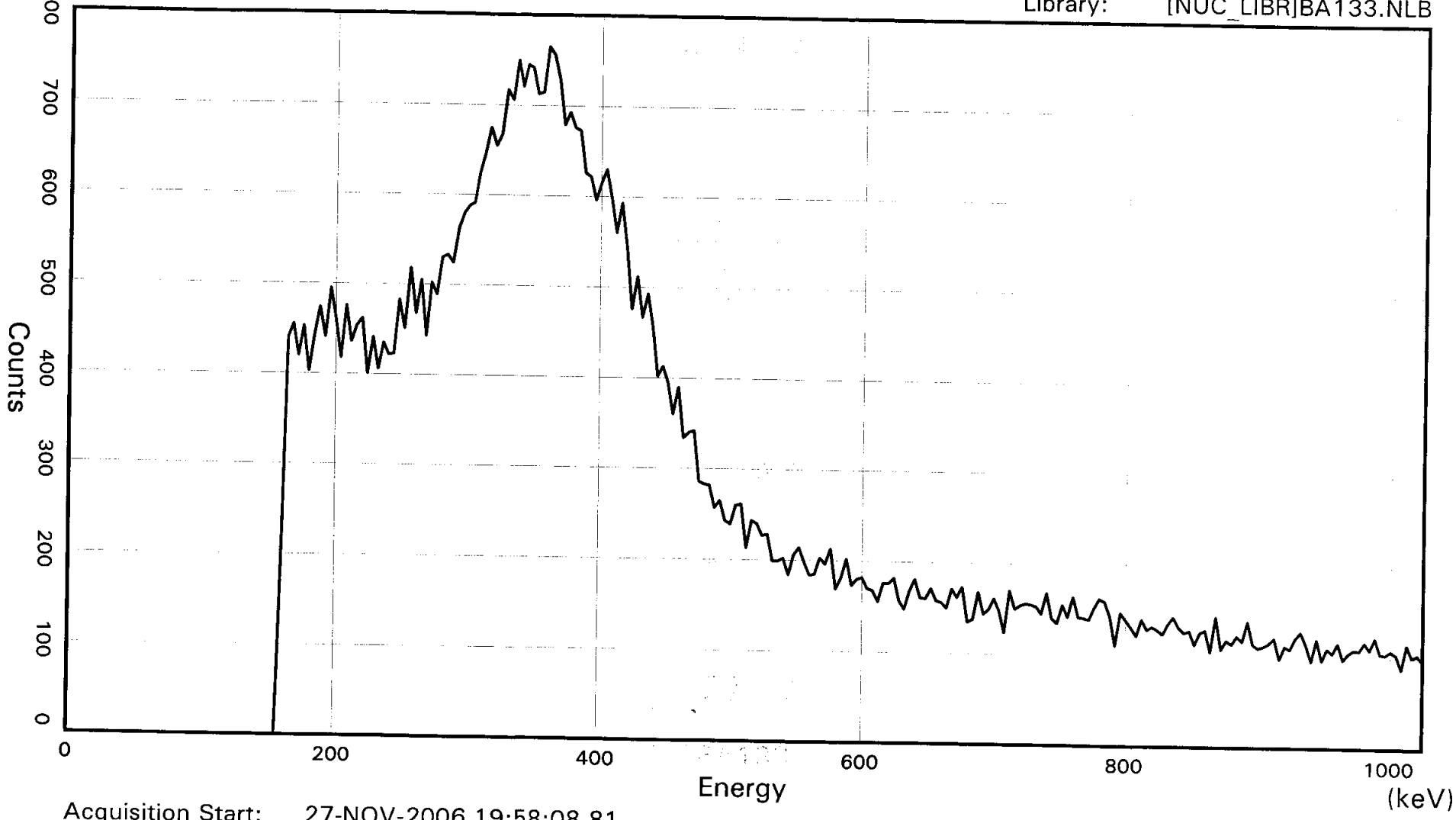
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	1.646E+01		7.824E+00	3.358E+01	6.777E-01	0.490
SB-125	1.926E+01		2.547E+01	9.895E+01	1.981E+00	0.195
SN-126DA	-3.052E+00		6.344E+00	2.276E+01	4.611E-01	-0.134
I-131	-4.325E+01		2.536E+01	8.299E+01	1.660E+00	-0.521
CS-134	3.193E+00		6.895E+00	2.740E+01	5.599E-01	0.117
CS-137DA	2.013E+00		6.849E+00	2.662E+01	5.392E-01	0.076
LA-138	4.065E+00		5.195E+00	2.431E+01	5.182E-01	0.167
CE-139	-2.826E+01		1.410E+01	4.481E+01	9.136E-01	-0.631
BA-140	-7.977E+01		5.363E+01	1.782E+02	3.584E+00	-0.448
BALA-140	-4.374E-01		1.244E+01	5.408E+01	1.164E+00	-0.008
LA-140	-6.524E+02		5.668E+02	1.958E+03	4.217E+01	-0.333
CE-141	1.501E+01		2.971E+01	1.097E+02	2.252E+00	0.137
CE-144	-6.058E+01		1.071E+02	3.776E+02	7.794E+00	-0.160
CEPR-144	-1.230E+02		2.141E+02	7.546E+02	1.558E+01	-0.163
PM-144	4.399E+00		6.399E+00	2.548E+01	5.148E-01	0.173
PM-146	-1.087E+01		1.208E+01	4.139E+01	8.294E-01	-0.263
EU-152	-5.792E+00		3.003E+01	1.107E+02	2.214E+00	-0.052
EU-154	-3.562E+00		1.031E+01	4.106E+01	8.663E-01	-0.087
EU-155	3.487E+01		5.171E+01	1.899E+02	3.988E+00	0.184
HF-181	2.427E+01		1.058E+01	4.482E+01	8.991E-01	0.541
BI-207	-3.428E+00		6.133E+00	2.228E+01	4.488E-01	-0.154
TL-208	-1.389E+00		7.142E+00	2.911E+01	5.868E-01	-0.048
BI-210M	1.196E+01		1.759E+01	6.668E+01	1.337E+00	0.179
BI-212	1.651E+02		1.045E+02	4.350E+02	1.329E+01	0.380
PB-212	3.258E+01		2.435E+01	9.522E+01	1.914E+00	0.342
BI-214	1.743E+01		1.736E+01	7.334E+01	1.481E+00	0.238
PB-214	5.411E+00		2.903E+01	9.976E+01	1.995E+00	0.054
RA-223	2.895E+01		6.920E+01	2.565E+02	5.144E+00	0.113
RA-224DA	3.298E+01		2.465E+01	9.639E+01	1.938E+00	0.342
RA-226DA	1.723E+01		1.735E+01	7.326E+01	1.479E+00	0.235
AC-227DA	-5.853E+01		9.418E+01	3.306E+02	6.649E+00	-0.177
AC-228	2.334E+01		2.333E+01	1.030E+02	2.121E+00	0.227
RA-228DA	2.343E+01		2.343E+01	1.034E+02	2.129E+00	0.227
TH-228DA	-3.914E+00		2.013E+01	8.201E+01	1.653E+00	-0.048
TH-232DA	-4.213E+01		5.992E+01	2.071E+02	4.142E+00	-0.203
TH-234DA	1.811E+02		7.549E+02	3.047E+03	6.311E+01	0.059
U-234DA	-1.081E+02		5.157E+01	1.671E+02	3.346E+00	-0.647
U-235HP	-1.528E+02		1.046E+02	3.494E+02	7.179E+00	-0.437
NP-237DA	-2.209E+01		2.662E+01	9.059E+01	1.813E+00	-0.244
U-238DA	5.411E+00		2.903E+01	9.976E+01	1.995E+00	0.054
U-238DHP	-5.009E+02		2.696E+02	8.829E+02	1.948E+01	-0.567
AM-241HP	-1.028E+01		2.896E+01	1.047E+02	2.326E+00	-0.098

STL Richland WA.

BA133

Sample ID: JJ7A21AC
Detector ID: NAI1 1

BatchID: 6325489
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 27-NOV-2006 19:58:08.81
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: JJ7A21AC

CONFIGURATION ID: NAI1:JJ7A21AC_271161958
TITLE : BA133
SAMPLE ID : JJ7A21AC

REPORT DATE: 27-NOV-06
ACQUIRE DATE: 27-NOV-06 19:58:08
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 20-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 27-NOV-2006 20:28:13

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JJ7A21AC_271161958.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 20-NOV-2006 12:00:00	Acquisition date	: 27-NOV-2006 19:58:08
Sample ID	: JJ7A21AC	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:	3.9	3.4	4.9	3.7	5.0	2.5	3.7	2.1
88:	1.0	0.7	2.4	1.9	1.3	-2.6	-0.7	0.0
96:	0.0	-2.2	-2.1	-3.1	-3.4	0.3	-1.5	-2.6
104:	-2.3	-4.2	-5.0	-2.1	-3.7	-2.0	-2.6	-4.7
112:	-3.3	-3.9						

List of Suspicious Channels

81 82 83 84 85 86

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	8.46E+00	0.00E+00	1.02E+00
2	4.20E+00	0.00E+00	1.04E+00
3	1.86E+00	0.00E+00	1.05E+00
4	9.32E-01	0.00E+00	1.06E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	716.	8.90

Total Activity :	716.	

STL RICHLAND

11/10/2006 3:33:50 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

AnalyDueDate: 11/30/2006

Batch: 6311395 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: 6311396, BXTF

Balance Id:1120373922,1120403183
Pipet #:
Sep1 DT/Tm Tech: AL 11/12/06 1536
Sep2 DT/Tm Tech:
Prep Tech: WoodT,HarrisonJ

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 JH3LV-1-AC J6K060215-1-SAMP	0.833sa	500.20sa	150.09g,in 7.4466 7.900 0.9426	0.2499g	RATA24637 10/30/06		612	0939	11/13/06 1ST DM 11/16/06 1012 p 1RH 11/19/06 1017 R	
10/18/2006 11:05			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
2 JH3L1-1-AC J6K060215-2-SAMP	0.833sa	500.14sa	150.05g,in 7.4853 7.873 0.4508	0.2499g	RATA24638 10/30/06		67	0940	11/13/06 1ST DM 11/16/06 1012 p 2RC 11/19/06 1016 R	
10/18/2006 11:30			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
3 JH3L3-1-AC J6K060215-3-SAMP	0.833sa	501.73sa	150.08g,in 7.5046 8.037 0.9338	0.2492g	RATA24639 10/30/06		66	0940	11/13/06 1ST DM 11/16/06 1012 p 3HA 11/19/06 1018 R	
10/18/2006 11:55			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
4 JH3L5-1-AC J6K060215-4-SAMP	~~501.44sa~~ PA 11-20-06 0.833	502.50sa	150.08g,in 7.4660 7.523 0.9924	~~149.7634g~~ 0.0248789	RATA24640 10/30/06		68	0940	11/13/06 1ST DM 11/16/06 1012 p 4HA 11/19/06 1016 R	
10/18/2006 11:10			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:

11/10/2006 3:33:51 PM

Sample Preparation/Analysis

Balance Id:1120373922,1120373922,1120

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Pipet #:

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311395 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6311396, BXTF

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

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:
5 JH3L6-1-AC J6K060215-5-SAMP	0.833sa	502.50sa	150.37g,in 7.4853 7.910 0.9463	0.2493g	RATA24641 10/30/06		613	0940	11/13/06 1ST DM 11/16/06 1012 p ASA 11/19/06 1017 R	
10/18/2006 12:00			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
6 JH3MC-1-AC J6K060216-1-SAMP	0.833sa,g	500.06sa,g	150.06g,in 7.4550 7.31 1.0198	0.25g	RATA24642 11/07/06		91	1035	11/13/06 1ST DM 11/16/06 1012 p BMC 11/19/06 1017 R	
10/05/2006 09:50			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
7 JH3MJ-1-AC J6K060216-2-SAMP	0.833sa,g	500.03sa,g	150.14g,in 7.4165 7.865 0.9421	0.2501g	RATA24643 11/07/06		612	1035	11/13/06 1ST DM 11/16/06 1012 p CSD 11/19/06 1041 R	
10/05/2006 10:10			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
8 JH3MK-1-AC J6K060216-3-SAMP	0.833sa,g	501.08sa,g	150.03g,in 7.5129 7.406 1.0144	0.2494g	RATA24644 11/07/06		67	1035	11/13/06 1ST DM 11/16/06 1012 p DSA 11/19/06 1040 R	
10/05/2006 10:30			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:

11/10/2006 3:33:51 PM

Sample Preparation/Analysis

Balance Id:1120373922,1120373922,1120

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Pipet #:

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311395 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6311396, BXTF

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

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:
9 JH3ML-1-AC J6K060216-4-SAMP	0.833sa,g	503.05sa,g	150.06g,in 7.5418 8.337 0.9046	0.2485g	RATA24645 11/07/06		65	1035 1ST DM EHA	11/13/06 11/16/06 11/19/06	 1036 p 1043 R
10 JH3MM-1-AC J6K060216-5-SAMP	0.833sa,g	500.03sa,g	150.06g,in 7.5225 7.451 1.0096	0.25g	RATA24646 11/07/06		66	1035 1ST DM FSA	11/13/06 11/16/06 11/19/06	 1036 p 1042 R
11 JH3NN-1-AC J6K060219-1-SAMP	0.833sa,g	500.13sa,g	150.13g,in 7.5129 6.938 1.0829	0.2501g	RATA24647 11/07/06		68	1035 1ST DM GSB	11/13/06 11/16/06 11/19/06	 1036 p 1041 R
12 JH3NR-1-AC J6K060219-2-SAMP	0.833sa,g	509.38sa,g	150.47g,in 7.4647 7.562 0.9871	0.2461g	RATA24648 11/07/06		613	1034 1ST DM JSB	11/13/06 11/16/06 11/19/06	 1036 p 1042 R

10/05/2006 09:55	AmtRec: FILTER	#Containers: 1	Scr:	Alpha: Beta:
10/05/2006 10:35	AmtRec: FILTER	#Containers: 1	Scr:	Alpha: Beta:
10/11/2006 10:55	AmtRec: FILTER	#Containers: 1	Scr:	Alpha: Beta:
10/11/2006 11:10	AmtRec: FILTER	#Containers: 1	Scr:	Alpha: Beta:

11/10/2006 3:33:51 PM

Sample Preparation/Analysis

Balance Id:1120373922,1120373922,1120

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Pipet #: _____

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311395 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6311396, BXTF

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

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:
13 JH3NT-1-AC J6K060219-3-SAMP	0.833sa,g	500.67sa,g	150.26g,in 7.5225 7.46 1.0084	0.25g	RATA24649 11/07/06		9"	1109 1st DM KME	11/18/06 11/16/06 11/19/06	1036 P 1107 R
10/11/2006 11:35		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:		Beta:
14 JH3NV-1-AC J6K060219-4-SAMP	0.833sa	500.36sa	150.07g,in 7.5418 7.49 1.0069	0.2498g	RATA24650 11/07/06		11/13/06 9" ~~6TC~~	1218 1st DM LMC	11/13/06 11/16/06 11/19/06	1036 P 1108 R
10/11/2006 11:00		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:		Beta:
15 JH3NW-1-AC J6K060219-5-SAMP	0.833sa,g	508.75sa,g	150.56g,in 7.4936 7.46 1.0045	0.2465g	RATA24651 11/07/06		9"	1325 1st DM PMA	11/13/06 11/16/06 11/19/06	1036 P 1107 R
10/11/2006 11:40		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:		Beta:
16 JH5P5-1-AA-B J6K070000-395-BLK		500.06g	150.72g,in 7.4434 +7.4840 PA 11-20-06 14.77 0.5067	150.72g 14.9274 14.77 = 1.0144	RATA24652 11/07/06		9"	1340 1st DM QMC	11/13/06 11/16/06 11/19/06	1106 P ~~1036~~ P 1109 R
10/18/2006 11:05		AmtRec:	#Containers: 1				Scr:	Alpha:		Beta:

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 4 ISV - Insufficient Volume for Analysis WO Cnt: 16
Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added Prep_SamplePrep v4.8.24

STL RICHLAND

11/10/2006 3:33:52 PM

Sample Preparation/Analysis

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 11/30/2006

Sep1 DT/Tm Tech:

Batch: 6311395 pCi/sampl

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

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:
17JH5P5-1-AC-C J6K070000-395-LCS		500.06g	150.72g,in	150.72g	RASC4247 10/18/06,pd 11/01/01,r		9	1435	11/13/06	

RS 11/13/06

10/18/2006 11:05 AmtRec: #Containers: 1 Scr: Alpha: Beta:

Comments:

All Clients for Batch:
536403, Brown and Caldwell Brown & Caldwell , SA , 63174

JH3LV1AC-SAMP Constituent List:
Ba-133 RDL: pCi/sam LCL:20 UCL:115 RPD:20 Ra-226 RDL:1.00E+00 pCi/sam LCL: UCL: RPD:

JH5P51AA-BLK:
Ba-133 RDL: pCi/sam LCL:20 UCL:115 RPD:20 Ra-226 RDL:1.00E+00 pCi/sam LCL: UCL: RPD:

JH5P51AC-LCS:
Ba-133 RDL: pCi/sam LCL:20 UCL:115 RPD:20 Ra-226 RDL:1 pCi/sam LCL:70 UCL:130 RPD:20

JH3LV1AC-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JH5P51AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JH5P51AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

Batch Nbr: 6311395

Alpha Beta, Ra-226 by ASC-7 , Results

11/21/2006 7:34:38 AM

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.										
Calc	TE	FILTER	**JH3LV1AC**	RA-226	**1.07E-01**	**(2.72E-01)**	**U4**	PCI/SA	R	4.54E-01	1.00E+00		106%	
Calc	TE	FILTER	**JH3L11AC**	RA-226	**6.17E-01**	**(2.39E-01)**		PCI/SA	R	2.83E-01	6.79E-01		105%	
Calc	TE	FILTER	**JH3L31AC**	RA-226	**-4.21E-01**	**(2.57E-01)**	**U4**	PCI/SA	R	4.85E-01	1.07E+00		107%	
Calc	TE	FILTER	**JH3L51AC**	RA-226	**-2.87E-01**	**(2.13E-01)**	**U4**	PCI/SA	R	4.07E-01	9.22E-01		101%	
Calc	TE	FILTER	**JH3L61AC**	RA-226	**2.58E-02**	**(1.94E-01)**	**U4**	PCI/SA	R	3.29E-01	7.62E-01		106%	
Calc	TE	FILTER	**JH3MC1AC**	RA-226	**2.45E-01**	**(1.71E-01)**	**U4**	PCI/SA	R	2.40E-01	5.81E-01		98%	
Calc	TE	FILTER	**JH3MJ1AC**	RA-226	**0.00E+00**	**(1.53E-01)**	**U4**	PCI/SA	R	2.64E-01	6.65E-01		106%	
Calc	TE	FILTER	**JH3MK1AC**	RA-226	**9.87E-02**	**(2.23E-01)**	**U4**	PCI/SA	R	3.63E-01	8.59E-01		99%	
Calc	TE	FILTER	**JH3ML1AC**	RA-226	**1.93E-01**	**(2.20E-01)**	**U4**	PCI/SA	R	3.46E-01	7.94E-01		111%	
Calc	TE	FILTER	**JH3MM1AC**	RA-226	**2.48E-01**	**(2.90E-01)**	**U4**	PCI/SA	R	4.54E-01	1.06E+00		99%	
Calc	TE	FILTER	**JH3NN1AC**	RA-226	**-1.98E-02**	**(1.87E-01)**	**U4**	PCI/SA	R	3.25E-01	7.57E-01		92%	
Calc	TE	FILTER	**JH3NR1AC**	RA-226	**3.47E-01**	**(1.88E-01)**		PCI/SA	R	2.39E-01	5.93E-01		101%	
Calc	TE	FILTER	**JH3NT1AC**	RA-226	**3.51E-01**	**(2.22E-01)**	**U4**	PCI/SA	R	3.08E-01	7.40E-01		99%	
Calc	TE	FILTER	**JH3NV1AC**	RA-226	**1.81E-01**	**(1.76E-01)**	**U4**	PCI/SA	R	2.67E-01	6.32E-01		99%	
Calc	TE	FILTER	**JH3NW1AC**	RA-226	**4.30E-01**	**(1.99E-01)**		PCI/SA	R	2.56E-01	6.11E-01		100%	
Calc	TE	FILTER	**JH5P51AA**	RA-226	**7.28E-01**	**(1.15E-01)**		PCI/SA	R	3.29E-02	8.99E-02	**S**	98%	53%

P Anderson
11-21-06

() - (1s Uncertainities)
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 Reguardless of Significants
Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:16
RADCALC v4.8.24
STL Richland

Batch Nbr: 6311395

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

Detailed Report

11/21/2006 7:34:39 AM

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
1	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3LV1AC**	**PCI/SA**		10/18/06 11:05	11/19/06 13:17	11/16/06 10:12	RATA24637	1	1.00 Sa	
CID:P-0778LOT:J6K0602151 v4.8.24							FILTER				11/19/06 10:17	RATA24637 Alq	106%	0.24995 Sa	

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	11/19/06 13:17	RA-226	33	36	ASC1RH	ASC		N	2.4697E+00	1.0000E+00	N	106%	N		2.4407E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(9.113E-02)	(0.000E+00)		8%			(0.000E+00)	4.000801		

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
	11/21/06	RA-226	R	**0.106864**	**U4**	6.00000E-02	0.059296	0.059296	1.00 Sa	106%		1.003781		
				(0.271516)		(1.5232E-01)	(0.150619)	(0.150619)	(0.027062)			0.453893		

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
2	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3L11AC**	**PCI/SA**		10/18/06 11:30	11/19/06 13:16	11/16/06 10:12	RATA24638	1	1.00 Sa	
CID:P-0779LOT:J6K0602152 v4.8.24							FILTER				11/19/06 10:16	RATA24638 Alq	105%	0.249913 Sa	

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	11/19/06 13:16	RA-226	23	10	ASC2RC	ASC		N	2.0913E+00	1.0000E+00	N	105%	N		2.4411E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(6.818E-02)	(0.000E+00)		8%			(0.000E+00)	4.001387		

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
	11/21/06	RA-226	R	**0.617172**		2.93333E-01	0.3424	0.3424	1.00 Sa	105%		0.678892		
				(0.238525)		(1.0944E-01)	(0.13113)	(0.13113)	(0.014142)			0.282595		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
3	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3L31AC**	**PCI/SA**		10/18/06 11:55	11/19/06 13:18	11/16/06 10:12	RATA24639	1	1.00 Sa	
CID:P-0780LOT:J6K0602153 v4.8.24							FILTER				11/19/06 10:18	RATA24639 Alq	107%	0.249171 Sa	

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	11/19/06 13:18	RA-226	21	39	ASC3HA	ASC		N	2.4113E+00	1.0000E+00	N	107%	N		2.4403E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(4.316E-02)	(0.000E+00)		9%			(0.000E+00)	4.013306		

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
	11/21/06	RA-226	R	**-0.42081**	**U4**	-2.30000E-01	-0.232767	-0.232767	1.00 Sa	107%		1.069188		
				(0.257187)		(1.3868E-01)	(0.141644)	(0.141644)	(0.027062)			0.4853		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
4	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3L51AC**	**PCI/SA**		10/18/06 11:10	11/19/06 13:16	11/16/06 10:12	RATA24640	1	1.00 Sa	
CID:P-0781LOT:J6K0602154 v4.8.24							FILTER				11/19/06 10:16	RATA24640 Alq	101%	0.248789 Sa	

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	11/19/06 13:16	RA-226	12	23	ASC4UA	ASC		N	2.2112E+00	1.0000E+00	N	101%	N		2.4411E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(6.457E-02)	(0.000E+00)		8%			(0.000E+00)	4.019465		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:4

RADCALC v4.8.24
STL Richland

Batch Nbr: 6311395

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

11/21/2006 7:34:39 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	BlkLcC/MDC	StdDvMdC/LcC
	11/21/06	RA-226	R	**-0.286509**	U4	-1.43333E-01	-0.158237	-0.158237	1.00 Sa	101%		0.922195		
				(0.213362)		(1.0578E-01)	(0.117551)	(0.117551)	(0.014142)			0.407169		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
5	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3L61AC**	**PCI/SA**		10/18/06 12:00	11/19/06 13:17	11/16/06 10:12	RATA24641	1	1.00 Sa	
CID:000546LOT:J6K0602155 v4.8.24							FILTER				11/19/06 10:17	RATA24641 Alq	106%	0.24927 Sa	

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	11/19/06 13:17	RA-226	14	16	ASCASA	ASC		N	2.2802E+00	1.0000E+00	N	106%	N		2.4407E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.047E-01)	(0.000E+00)		8%			(0.000E+00)	4.011713		

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
	11/21/06	RA-226	R	**0.025791**	U4	1.33333E-02	0.014272	0.014272	1.00 Sa	106%		0.761724		
				(0.193885)		(1.0022E-01)	(0.107285)	(0.107285)	(0.027062)			0.328636		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
6	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3MC1AC**	**PCI/SA**		10/05/06 09:50	11/19/06 13:17	11/16/06 10:12	RATA24642	1	1.00 Sa	
CID:P-0769LOT:J6K0602161 v4.8.24							FILTER				11/19/06 10:17	RATA24642 Alq	98%	0.24997 Sa	

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	11/19/06 13:17	RA-226	14	9	ASCBMC	ASC		N	2.3847E+00	1.0000E+00	N	98%	N		2.4407E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.207E-01)	(0.000E+00)		8%			(0.000E+00)	4.000481		

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
	11/21/06	RA-226	R	**0.244523**	U4	1.30000E-01	0.135687	0.135687	1.00 Sa	98%		0.581008		
				(0.171332)		(9.0000E-02)	(0.094811)	(0.094811)	(0.014142)			0.239672		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
7	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3MJ1AC**	**PCI/SA**		10/05/06 10:10	11/19/06 13:41	11/16/06 10:12	RATA24643	1	1.00 Sa	
CID:P-0770LOT:J6K0602162 v4.8.24							FILTER				11/19/06 10:41	RATA24643 Alq	106%	0.250118 Sa	

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	11/19/06 13:41	RA-226	5	6	ASCCSD	ASC		N	1.7270E+00	1.0000E+00	N	106%	N		2.4306E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(5.958E-02)	(0.000E+00)		8%			(0.000E+00)	3.998109		

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
	11/21/06	RA-226	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 Sa	106%		0.664514		
				(0.153491)		(6.0553E-02)	(0.085224)	(0.085224)	(0.014142)			0.26372		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3MK1AC**	**PCI/SA**		10/05/06 10:30	11/19/06 13:40	11/16/06 10:12	RATA24644	1	1.00 Sa	
CID:P-0771LOT:J6K0602163 v4.8.24							FILTER				11/19/06 10:40	RATA24644 Alq	99%	0.249411 Sa	

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

() - (1s Uncertainities). 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:8

RADCALC v4.8.24

STL Richland

Batch Nbr: 6311395

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

11/21/2006 7:34:39 AM

1	11/19/06 13:40	RA-226	12	12	ASCDSA	ASC		N	1.8059E+00	1.0000E+00	N	99%	N		2.4310E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(3.449E-02)	(0.000E+00)		8%			(0.000E+00)	4.009442		

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
	11/21/06	RA-226	R	**0.098651**	U4	4.00000E-02	0.05462	0.05462	1.00 Sa	99%		0.858985		
				(0.222628)		(9.0185E-02)	(0.123229)	(0.123229)	(0.014142)			0.362872		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
9	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3ML1AC**	**PCI/SA**		10/05/06 09:55	11/19/06 13:43	11/16/06 10:36	RATA24645	1	1.00 Sa	
CID:P-0772LOT:J6K0602164 v4.8.24							FILTER				11/19/06 10:43	RATA24645 Alq	111%	0.248484 Sa	

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	11/19/06 13:43	RA-226	21	19	ASCEHA	ASC		N	2.3636E+00	1.0000E+00	N	111%	N		2.4399E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.057E-01)	(0.000E+00)		9%			(0.000E+00)	4.024401		

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
	11/21/06	RA-226	R	**0.193373**	U4	1.03333E-01	0.106666	0.106666	1.00 Sa	111%		0.793935		
				(0.219804)		(1.1695E-01)	(0.121119)	(0.121119)	(0.014142)			0.34646		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3MM1AC**	**PCI/SA**		10/05/06 10:35	11/19/06 13:42	11/16/06 10:36	RATA24646	1	1.00 Sa	
CID:000544LOT:J6K0602165 v4.8.24							FILTER				11/19/06 10:42	RATA24646 Alq	99%	0.249985 Sa	

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	11/19/06 13:42	RA-226	17	15	ASCFSA	ASC		N	1.6102E+00	1.0000E+00	N	99%	N		2.4403E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(2.979E-02)	(0.000E+00)		8%			(0.000E+00)	4.000241		

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
	11/21/06	RA-226	R	**0.248141**	U4	9.00000E-02	0.137703	0.137703	1.00 Sa	99%		1.055989		
				(0.289736)		(1.0472E-01)	(0.160626)	(0.160626)	(0.014142)			0.453546		

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
11	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3NN1AC**	**PCI/SA**		10/11/06 10:55	11/19/06 13:41	11/16/06 10:36	RATA24647	1	1.00 Sa	
CID:P-0773LOT:J6K0602191 v4.8.24							FILTER				11/19/06 10:41	RATA24647 Alq	92%	0.250052 Sa	

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	11/19/06 13:41	RA-226	12	15	ASCGSB	ASC		N	2.4088E+00	1.0000E+00	N	92%	N		2.4407E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(9.081E-02)	(0.000E+00)		7%			(0.000E+00)	3.999175		

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
	11/21/06	RA-226	R	**-0.019767**	U4	-1.00000E-02	-0.010972	-0.010972	1.00 Sa	92%		0.757072		
				(0.187186)		(9.4692E-02)	(0.103904)	(0.103904)	(0.014142)			0.325161		

() - (1s Uncertainities), 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 Significants. Date/Time - mm/dd/yy hh:mn . 24hr Time

RecCnt:12

RADCALC v4.8.24
STL Richland

Batch Nbr: 6311395

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

11/21/2006 7:34:39 AM

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
12	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3NR1AC**	**PCI/SA**		10/11/06 11:10	11/19/06 13:42	11/16/06 10:36	RATA24648	1	1.00 Sa	
CID:P-0774LOT:J6K0602192 v4.8.24							FILTER				11/19/06 10:42	RATA24648 Alq	101%	0.246067 Sa	

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	11/19/06 13:42	RA-226	14	7	ASCJSB	ASC		N	2.1011E+00	1.0000E+00	N	101%	N		2.4403E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(7.837E-02)	(0.000E+00)		8%			(0.000E+00)	4.063937		

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
	11/21/06	RA-226	R	**0.347272**		1.63333E-01	0.189696	0.189696	1.00 Sa	101%		0.592806		
				(0.188069)		(8.6859E-02)	(0.102258)	(0.102258)	(0.014142)			0.238926		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
13	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3NT1AC**	**PCI/SA**		10/11/06 11:35	11/19/06 14:07	11/16/06 10:36	RATA24649	1	1.00 Sa	
CID:P-0775LOT:J6K0602193 v4.8.24							FILTER				11/19/06 11:07	RATA24649 Alq	99%	0.249998 Sa	

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	11/19/06 14:07	RA-226	16	10	ASCKME	ASC		N	1.9262E+00	1.0000E+00	N	99%	N		2.4297E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(2.562E-02)	(0.000E+00)		8%			(0.000E+00)	4.000029		

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
	11/21/06	RA-226	R	**0.351451**	**U4**	1.53333E-01	0.195046	0.195046	1.00 Sa	99%		0.739579		
				(0.222176)		(9.5801E-02)	(0.122885)	(0.122885)	(0.014142)			0.307857		

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	TE	FILTER	*STLE	Ra226WoBS	**JH3NV1AC**	**PCI/SA**		10/11/06 11:00	11/19/06 14:08	11/16/06 10:36	RATA24650	1	1.00 Sa	
CID:P-0776LOT:J6K0602194 v4.8.24							FILTER				11/19/06 11:08	RATA24650 Alq	99%	0.249837 Sa	

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	11/19/06 14:08	RA-226	15	12	ASCLMC	ASC		N	2.4313E+00	1.0000E+00	N	99%	N		2.4293E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.218E-01)	(0.000E+00)		8%			(0.000E+00)	4.002614		

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
	11/21/06	RA-226	R	**0.1814**	**U4**	1.00000E-01	0.100607	0.100607	1.00 Sa	99%		0.631801		
				(0.176335)		(9.6609E-02)	(0.097658)	(0.097658)	(0.014142)			0.266899		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
15	Calc	TE	FILTER	*STLE	Ra226WoBS	**JH3NW1AC**	**PCI/SA**		10/11/06 11:40	11/19/06 14:07	11/16/06 10:36	RATA24651	1	1.00 Sa	
CID:000545LOT:J6K0602195 v4.8.24							FILTER				11/19/06 11:07	RATA24651 Alq	100%	0.246519 Sa	

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	11/19/06 14:07	RA-226	21	11	ASCPMA	ASC		N	2.4525E+00	1.0000E+00	N	100%	N		2.4297E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(8.241E-02)	(0.000E+00)		8%			(0.000E+00)	4.056484		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:15

RADCALC v4.8.24

STL Richland

Batch Nbr: 6311395

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

11/21/2006 7:34:39 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	BlkLcC/MDC	StdDvMdC/LcC
	11/21/06	RA-226	R	**0.430373**		2.36667E-01	0.235521	0.235521	1.00 Sa	100%		0.610593		
				(0.199441)		(1.0703E-01)	(0.108455)	(0.108455)	(0.014142)			0.256168		

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	FILTER	*STLE	Ra226WoBS	**JH5P51AA**	**PCI/SA**	**S**	10/18/06 11:05	11/19/06 14:09	11/16/06 11:06	RASC4247	1	1.00 Sa	
CID:INTRA-LAB BLANKLOT:J6K070000395 v4.8.24							FILTER				11/19/06 11:09	RATA24652 Alq	98%	1.00 Sa	

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	11/19/06 14:09	RA-226	84	3	ASCQMC	ASC		N	2.5030E+00	1.0000E+00	N	98%	N		2.4416E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.307E-01)	(0.000E+00)		8%			(0.000E+00)	1.00		

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	BlkLcC/MDC	StdDvMdC/LcC
	11/21/06	RA-226	R	**0.728122**		1.63000E+00	1.616376	1.616376	1.00 Sa	98%	53%	0.089897		
				(0.11463)		(1.8556E-01)	(0.240209)	(0.240209)	(0.014142)			0.032862		

() - (1s Uncertainities), 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 Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:16

RADCALC v4.8.24

STL Richland

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3LV1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 0.9426
Technician: RS

Analysis Size: 0.2499 Analysis Unit: SA

Report Date: 19-NOV-2006 14:07:01.08
First Separation Date: 16-NOV-2006 10:12:00.00
Second Separation Date: 19-NOV-2006 10:17:00.00

Detector ID: 1 Cell ID: 1RH

Bkg Date: 19-NOV-2006 07:49:17.59
Bkg Counts: 000036 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 13:17:00.48
Counts: 000033 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3L11AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 0.9508
Technician: RS

Analysis Size: 0.2499 Analysis Unit: SA

Report Date: 19-NOV-2006 14:06:00.97
First Separation Date: 16-NOV-2006 10:12:00.00
Second Separation Date: 19-NOV-2006 10:16:00.00

Detector ID: 2 Cell ID: 2RC

Bkg Date: 19-NOV-2006 07:49:23.47
Bkg Counts: 000010 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 13:16:00.49
Counts: 000023 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3L31AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 0.9338
Technician: RS

Analysis Size: 0.2492 Analysis Unit: SA

Report Date: 19-NOV-2006 14:08:00.70
First Separation Date: 16-NOV-2006 10:12:00.00
Second Separation Date: 19-NOV-2006 10:18:00.00

Detector ID: 3 Cell ID: 3HA

Bkg Date: 19-NOV-2006 07:49:33.68
Bkg Counts: 000039 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 13:18:00.26
Counts: 000021 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3L51AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 0.9924
Technician: RS

Analysis Size: 0.25 Analysis Unit: SA

Report Date: 19-NOV-2006 14:06:02.96
First Separation Date: 16-NOV-2006 10:12:00.00
Second Separation Date: 19-NOV-2006 10:16:00.00

Detector ID: 4 Cell ID: 4UA

Bkg Date: 19-NOV-2006 07:49:47.03
Bkg Counts: 000023 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 13:16:02.51
Counts: 000012 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3L61AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 0.9463
Technician: RS

Analysis Size: 0.2493 Analysis Unit: SA

Report Date: 19-NOV-2006 14:07:01.17
First Separation Date: 16-NOV-2006 10:12:00.00
Second Separation Date: 19-NOV-2006 10:17:00.00

Detector ID: 10 Cell ID: ASA

Bkg Date: 19-NOV-2006 07:49:54.56
Bkg Counts: 000016 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 13:17:00.53
Counts: 000014 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3MC1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 1.0198
Technician: RS

Analysis Size: 0.25 Analysis Unit: SA

Report Date: 19-NOV-2006 14:07:01.22
First Separation Date: 16-NOV-2006 10:12:00.00
Second Separation Date: 19-NOV-2006 10:17:00.00

Detector ID: 11 Cell ID: BMC

Bkg Date: 19-NOV-2006 07:50:06.96
Bkg Counts: 000009 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 13:17:00.58
Counts: 000014 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3MJ1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 0.9421
Technician: RS

Analysis Size: 0.2501 Analysis Unit: SA

Report Date: 19-NOV-2006 14:31:00.93
First Separation Date: 16-NOV-2006 10:12:00.00
Second Separation Date: 19-NOV-2006 10:41:00.00

Detector ID: 12 Cell ID: CSD

Bkg Date: 19-NOV-2006 07:50:25.79
Bkg Counts: 000006 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 13:41:00.39
Counts: 000005 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3MK1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 1.0144
Technician: RS

Analysis Size: 0.2494 Analysis Unit: SA

Report Date: 19-NOV-2006 14:30:00.62
First Separation Date: 16-NOV-2006 10:12:00.00
Second Separation Date: 19-NOV-2006 10:40:00.00

Detector ID: 13 Cell ID: DSA

Bkg Date: 19-NOV-2006 07:50:35.79
Bkg Counts: 000012 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 13:40:00.27
Counts: 000012 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3ML1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 0.9046
Technician: RS

Analysis Size: 0.2485 Analysis Unit: SA

Report Date: 19-NOV-2006 14:33:00.60
First Separation Date: 16-NOV-2006 10:36:00.00
Second Separation Date: 19-NOV-2006 10:43:00.00

Detector ID: 14 Cell ID: EHA

Bkg Date: 19-NOV-2006 07:50:47.05
Bkg Counts: 000019 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 13:43:00.28
Counts: 000021 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3MM1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 1.0096
Technician: RS

Analysis Size: 0.25 Analysis Unit: SA

Report Date: 19-NOV-2006 14:32:00.91
First Separation Date: 16-NOV-2006 10:36:00.00
Second Separation Date: 19-NOV-2006 10:42:00.00

Detector ID: 15 Cell ID: FSA

Bkg Date: 16-NOV-2006 09:26:09.46
Bkg Counts: 000015 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 13:42:00.39
Counts: 000017 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3NN1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 1.0829
Technician: RS

Analysis Size: 0.2501 Analysis Unit: SA

Report Date: 19-NOV-2006 14:31:00.99
First Separation Date: 16-NOV-2006 10:36:00.00
Second Separation Date: 19-NOV-2006 10:41:00.00

Detector ID: 16 Cell ID: GSB

Bkg Date: 19-NOV-2006 07:50:58.21
Bkg Counts: 000015 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 13:41:00.44
Counts: 000012 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3NR1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 0.9871
Technician: RS

Analysis Size: 0.2461 Analysis Unit: SA

Report Date: 19-NOV-2006 14:32:00.98
First Separation Date: 16-NOV-2006 10:36:00.00
Second Separation Date: 19-NOV-2006 10:42:00.00

Detector ID: 18 Cell ID: JSB

Bkg Date: 16-NOV-2006 09:26:48.38
Bkg Counts: 000007 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 13:42:00.45
Counts: 000014 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3NT1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 1.0084
Technician: RS

Analysis Size: 0.25 Analysis Unit: SA

Report Date: 19-NOV-2006 14:57:00.77
First Separation Date: 16-NOV-2006 10:36:00.00
Second Separation Date: 19-NOV-2006 11:07:00.00

Detector ID: 19 Cell ID: KME

Bkg Date: 19-NOV-2006 07:51:08.27
Bkg Counts: 000010 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 14:07:00.44
Counts: 000016 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3NV1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 1.0069
Technician: RS

Analysis Size: 0.2498 Analysis Unit: SA

Report Date: 19-NOV-2006 14:58:00.63
First Separation Date: 16-NOV-2006 10:36:00.00
Second Separation Date: 19-NOV-2006 11:08:00.00

Detector ID: 20 Cell ID: LMC

Bkg Date: 16-NOV-2006 09:27:19.10
Bkg Counts: 000012 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 14:08:00.29
Counts: 000015 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH3NW1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 1.0045
Technician: RS

Analysis Size: 0.2465 Analysis Unit: SA

Report Date: 19-NOV-2006 14:57:02.87
First Separation Date: 16-NOV-2006 10:36:00.00
Second Separation Date: 19-NOV-2006 11:07:00.00

Detector ID: 23 Cell ID: PMA

Bkg Date: 19-NOV-2006 07:51:19.07
Bkg Counts: 000011 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 14:07:02.46
Counts: 000021 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JH5P51AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6311395 Activity Unit: PCI/SA Multiplier: 0.5067
Technician: RS

Analysis Size: 1.0 Analysis Unit: SA

Report Date: 19-NOV-2006 14:59:00.59
First Separation Date: 16-NOV-2006 11:06:00.00
Second Separation Date: 19-NOV-2006 11:09:00.00

Detector ID: 24 Cell ID: QMC

Bkg Date: 19-NOV-2006 07:51:27.32
Bkg Counts: 000003 Bkg Duration: 000060.0

Count Date: 19-NOV-2006 14:09:00.27
Counts: 000084 Count Duration: 000050.0

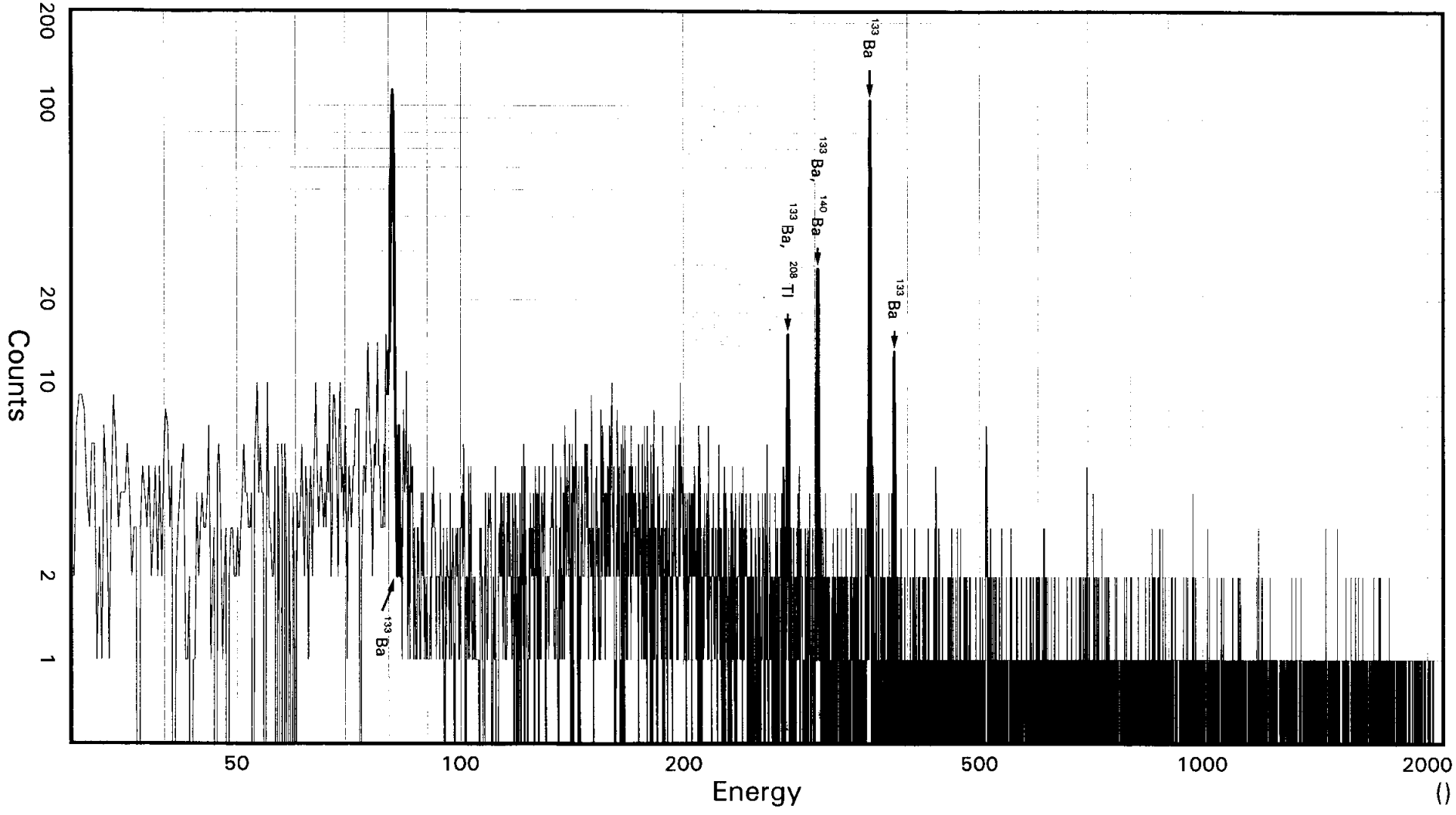
End of Report

STL Richland WA.

BA133

Sample ID: JH3LV1AC
Detector ID: GER12 1

Batch ID: 6311395



Acquisition Start: 13-NOV-2006 09:09:57.65
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.14421E+01
Slope: 2.47679E-01
Quadrature: 4.29113E-09

SAMPLE IDENTIFICATION: JH3LV1AC

CONFIGURATION ID: GER12:JH3LV1AC_131160909
TITLE : BA133
SAMPLE ID : JH3LV1AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 09:09:57
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 30-OCT-2006 12:00:00.00
CALIB DATE: 13-NOV-2006 05:12:54.60
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: 1.1442E+01 keV
ENERGY SLOPE: 2.4768E-01 keV/C
ENERGY Q COEFF: 4.2911E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.4166E-01 keV
FWHM SLOPE: 3.4564E-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 13-NOV-2006 09:40:18

Configuration : $DISK1:[GER12.SAMPLE]JH3LV1AC_131160909.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:09:57
Sample ID : JH3LV1AC 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 : 11.69 End energy : 2040.72
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.04	347	74	0.77	281.00	276	14	1.93E-01	7.8	
2	0	276.16	67	18	0.85	1068.78	1060	18	3.70E-02	19.3	
3	0	302.86	138	19	1.25	1176.58	1169	15	7.68E-02	10.9	
4	0	356.06	456	41	0.94	1391.35	1382	20	2.54E-01	5.8	
5	0	384.12	52	9	1.24	1504.64	1498	15	2.88E-02	19.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 09:40:18

Configuration : $DISK1:[GER12.SAMPLE]JH3LV1AC_131160909.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:09:57
Sample ID : JH3LV1AC 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 : 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	347	33.00	2.899E+00	1.210E+03	1.213E+03	9.54
	276.40	67	6.90	3.105E+00	1.037E+03	1.040E+03	20.07
	302.84	138	17.80	3.109E+00	8.330E+02	8.351E+02	12.16
	356.00	456	62.05*	3.111E+00	7.881E+02	7.900E+02	7.90
	383.85	52	8.70	3.111E+00	6.393E+02	6.409E+02	20.30

Flag: "*" = Keyline

Sample ID : JH3LV1AC
Acquisition date : 13-NOV-2006 09:09:57

None

Flags: "T" = Tentatively associated

Sample ID : JH3LV1AC Acquisition date : 13-NOV-2006 09:09:57

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
BA-140	12.79D	1.09	162.64	6.70	--- Not Found ---		Abun.
			304.84	4.50	6.995E+03	12.16	
			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	1.052E+03	20.07	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 13-NOV-2006 09:40:20

Configuration : $DISK1:[GER12.SAMPLE]JH3LV1AC_131160909.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 : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:09:57
Sample ID : JH3LV1AC 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 : 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	7.900E+02	6.244E+01	3.881E+01	7.762E-01	20.357

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	3.308E+01		5.748E+01	2.322E+02	4.658E+00	0.142
NA-22	3.822E+00		2.658E+00	1.417E+01	2.986E-01	0.270
K-40	-5.551E+01		4.166E+01	2.014E+02	4.295E+00	-0.276
SC-46	-4.967E+00		5.176E+00	1.847E+01	3.853E-01	-0.269
CR-51	-9.922E+01		8.331E+01	2.764E+02	5.530E+00	-0.359
MN-54	1.393E-02		3.128E+00	1.343E+01	2.750E-01	0.001
CO-57	-1.197E+02		7.580E+01	2.455E+02	5.058E+00	-0.488
CO-58	-1.057E+00		3.263E+00	1.358E+01	2.775E-01	-0.078
FE-59	-1.141E+01		8.625E+00	2.942E+01	6.130E-01	-0.388
CO-60	-1.439E-01		3.272E+00	1.367E+01	2.892E-01	-0.011
ZN-65	4.963E+00		7.828E+00	3.436E+01	7.167E-01	0.144
SE-75	-3.041E+00		1.086E+01	3.992E+01	8.006E-01	-0.076
SR-85	-2.711E+01		9.788E+00	2.797E+01	5.619E-01	-0.969
Y-88	1.145E-01		3.105E+00	1.384E+01	3.019E-01	0.008
NB-94	2.324E+00		4.368E+00	1.831E+01	3.757E-01	0.127
NB-95	-1.181E+00		4.570E+00	1.805E+01	3.678E-01	-0.065
TC-95M	-9.973E+00		1.472E+01	5.213E+01	1.053E+00	-0.191
ZR-95	9.152E+00		5.712E+00	3.015E+01	6.142E-01	0.304
ZRNB-95	-1.776E+00		8.112E+00	3.219E+01	6.560E-01	-0.055
MO-99	-2.492E+02		3.409E+02	1.185E+03	2.437E+01	-0.210
RH-101	2.976E+01		1.268E+01	5.128E+01	1.037E+00	0.580
RH-102M	1.935E-01		4.986E+00	1.942E+01	3.894E-01	0.010
RU-103	6.781E-01		5.160E+00	2.128E+01	4.271E-01	0.032
RU-106DA	-5.503E+01		4.643E+01	1.597E+02	3.227E+00	-0.345
AG-108M	-9.260E+00		6.827E+00	2.272E+01	4.550E-01	-0.408
AG-110M	2.226E-02		6.251E+00	2.488E+01	5.110E-01	0.001
SN-113DA	1.038E+01		8.995E+00	3.774E+01	7.551E-01	0.275

Sample ID : JH3LV1AC Acquisition date : 13-NOV-2006 09:09:57

---- Non-Identified Nuclides ----

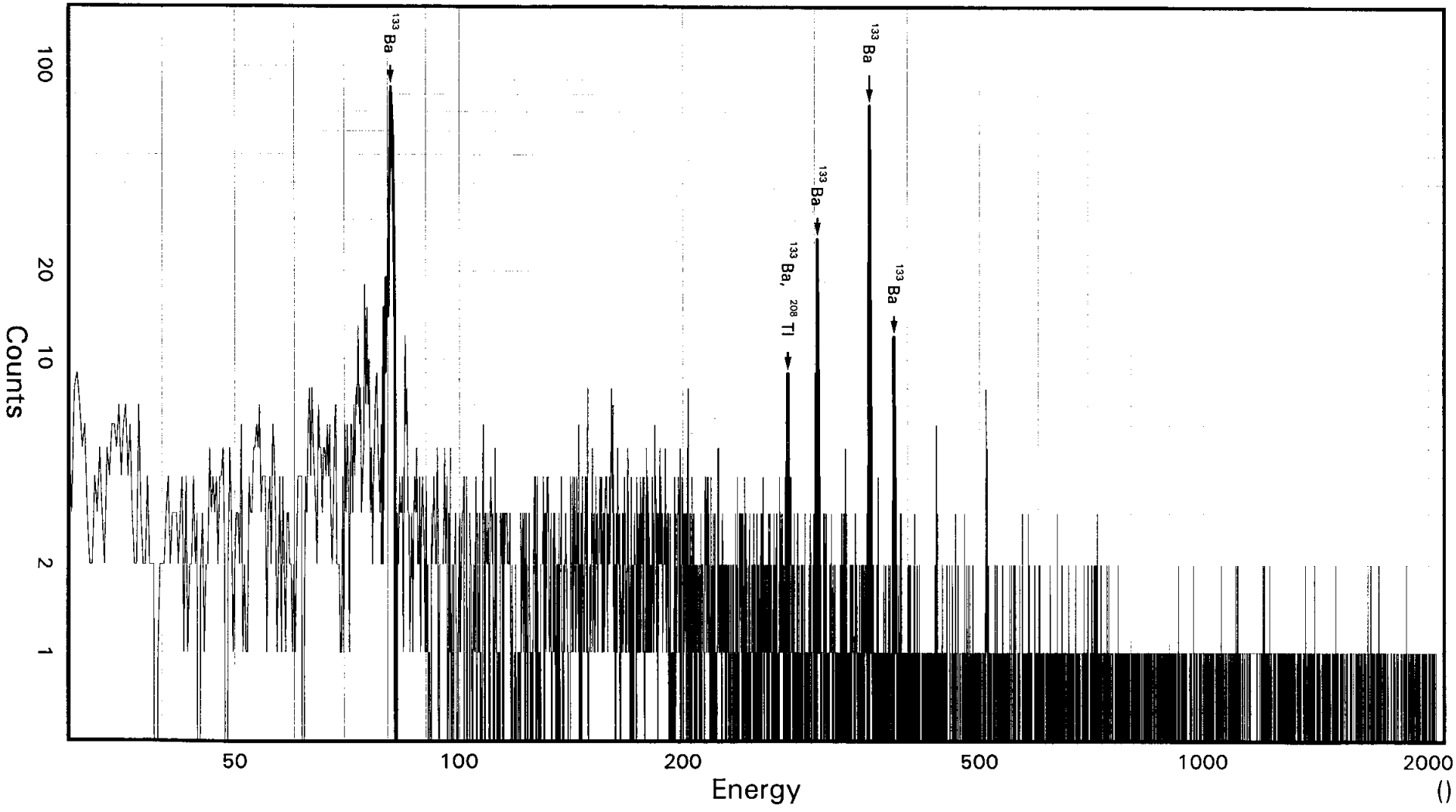
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	6.299E+00		4.610E+00	2.135E+01	4.308E-01	0.295
SB-125	1.592E+01		1.583E+01	6.773E+01	1.356E+00	0.235
SN-126DA	-5.301E-02		3.450E+00	1.422E+01	2.880E-01	-0.004
I-131	3.808E+01		2.215E+01	9.632E+01	1.926E+00	0.395
CS-134	1.816E-01		3.105E+00	1.396E+01	2.850E-01	0.013
CS-137DA	8.921E+00		3.860E+00	2.023E+01	4.096E-01	0.441
LA-138	1.832E+00		3.771E+00	1.839E+01	3.916E-01	0.100
CE-139	5.446E+00		1.124E+01	4.142E+01	8.441E-01	0.131
BA-140	2.695E+01		3.182E+01	1.424E+02	2.863E+00	0.189
BALA-140	-1.032E+01		1.259E+01	4.753E+01	1.022E+00	-0.217
CE-141	-5.577E+01		2.588E+01	7.987E+01	1.639E+00	-0.698
CE-144	1.351E+02		7.028E+01	2.893E+02	5.967E+00	0.467
CEPR-144	2.677E+02		1.404E+02	5.774E+02	1.191E+01	0.464
PM-144	-2.869E+00		4.882E+00	1.803E+01	3.641E-01	-0.159
PM-146	1.434E+00		6.475E+00	2.627E+01	5.263E-01	0.055
EU-152	-1.348E+01		2.195E+01	8.026E+01	1.605E+00	-0.168
EU-154	1.184E+01		7.680E+00	4.087E+01	8.613E-01	0.290
EU-155	-1.709E+01		2.945E+01	1.072E+02	2.249E+00	-0.159
HF-181	-7.208E+00		7.085E+00	2.444E+01	4.902E-01	-0.295
BI-207	1.892E+00		4.261E+00	1.790E+01	3.606E-01	0.106
TL-208	3.872E+00		4.874E+00	2.117E+01	4.268E-01	0.183
BI-210M	1.676E+01		1.146E+01	4.814E+01	9.653E-01	0.348
BI-212	-1.053E+02		5.939E+01	1.780E+02	5.439E+00	-0.591
PB-212	9.585E+00		1.656E+01	6.337E+01	1.274E+00	0.151
BI-214	-6.207E+00		1.010E+01	3.727E+01	7.524E-01	-0.167
PB-214	2.894E+01		1.761E+01	7.129E+01	1.426E+00	0.406
RA-223	2.211E+01		4.990E+01	1.904E+02	3.817E+00	0.116
RA-224DA	9.718E+00		1.679E+01	6.425E+01	1.292E+00	0.151
RA-226DA	-6.395E+00		1.008E+01	3.712E+01	7.493E-01	-0.172
AC-227DA	2.575E+01		6.137E+01	2.347E+02	4.720E+00	0.110
AC-228	2.779E+01		1.441E+01	6.922E+01	1.424E+00	0.402
RA-228DA	2.792E+01		1.448E+01	6.953E+01	1.431E+00	0.402
TH-228DA	1.093E+01		1.375E+01	5.975E+01	1.204E+00	0.183
TH-232DA	-8.070E+01		4.914E+01	1.631E+02	3.263E+00	-0.495
TH-234DA	-2.821E+01		5.485E+02	2.235E+03	4.626E+01	-0.013
U-234DA	-1.827E+01		3.415E+01	1.209E+02	2.421E+00	-0.151
U-235HP	2.780E+01		8.782E+01	3.200E+02	6.571E+00	0.087
NP-237DA	-6.717E+00		1.460E+01	5.289E+01	1.058E+00	-0.127
U-238DA	2.894E+01		1.761E+01	7.129E+01	1.426E+00	0.406
U-238DHP	1.510E+02		2.729E+02	9.919E+02	2.184E+01	0.152
AM-241HP	-5.415E+01		2.466E+01	7.411E+01	1.643E+00	-0.731

STL Richland WA.

BA133

Sample ID: JH3L11AC
Detector ID: GER7 1

Batch ID: 6311395



Acquisition Start: 13-NOV-2006 09:10:01.89
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 6.09766E-01
Slope: 2.49269E-01
Quadrature: 1.27094E-07

SAMPLE IDENTIFICATION: JH3L11AC

CONFIGURATION ID: GER7:JH3L11AC_131160910
TITLE : BA133
SAMPLE ID : JH3L11AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 09:10:01
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 30-OCT-2006 12:00:00.00
CALIB DATE: 13-NOV-2006 05:25:09.46
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: 6.0977E-01 keV
ENERGY SLOPE: 2.4927E-01 keV/C
ENERGY Q COEFF: 1.2709E-07 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 5.0504E-01 keV
FWHM SLOPE: 3.7958E-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 13-NOV-2006 09:40:34

Configuration : $DISK1:[GER7.SAMPLE]JH3L11AC_131160910.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:10:01
Sample ID : JH3L11AC 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 : 20.55 End energy : 2051.15
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.87	374	44	0.91	321.93	313	15	2.08E-01	6.4	
2	0	276.54	33	14	0.90	1106.32	1098	13	1.85E-02	28.3	
3	0	302.96	109	21	0.79	1212.21	1204	17	6.03E-02	13.7	
4	0	355.88	304	16	1.02	1424.22	1414	21	1.69E-01	6.6	
5	0	383.81	31	24	0.60	1536.09	1528	14	1.73E-02	38.0	
6	0	437.38	10	6	0.43	1750.64	1742	12	5.52E-03	58.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 09:40:34

Configuration : $DISK1:[GER7.SAMPLE]JH3L11AC_131160910.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:10:01
Sample ID : JH3L11AC 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	374	33.00	1.923E+00	1.966E+03	1.971E+03	8.40
	276.40	33	6.90	2.076E+00	7.767E+02	7.787E+02	28.82
	302.84	109	17.80	2.078E+00	9.784E+02	9.808E+02	14.69
	356.00	304	62.05*	2.080E+00	7.853E+02	7.873E+02	8.52
	383.85	31	8.70	2.080E+00	5.749E+02	5.763E+02	38.39

Flag: "*" = Keyline

Unidentified Energy Lines
Page : 2
Sample ID : JH3L11AC
Acquisition date : 13-NOV-2006 09:10:01

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	437.38	10	6	0.43	1750.64	1742	12	5.52E-03	58.7	2.08E+00	

Flags: "T" = Tentatively associated

Sample ID : JH3L11AC
Acquisition date : 13-NOV-2006 09:10:01

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	7.881E+02	28.82	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

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 09:40:36

Configuration : $DISK1:[GER7.SAMPLE]JH3L11AC_131160910.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 : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:10:01
Sample ID : JH3L11AC 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	7.873E+02	6.705E+01	5.147E+01	1.029E+00	15.298

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-4.991E-01		6.924E+01	2.772E+02	5.560E+00	-0.002
NA-22	3.841E+00		4.330E+00	2.114E+01	4.483E-01	0.182
K-40	2.088E+01		5.833E+01	3.005E+02	6.455E+00	0.070
SC-46	1.079E-01		3.715E+00	1.748E+01	3.666E-01	0.006
CR-51	9.828E+01		1.102E+02	4.556E+02	9.116E+00	0.216
MN-54	-1.451E+00		4.397E+00	1.825E+01	3.746E-01	-0.080
CO-57	-6.071E+00		9.562E+01	3.604E+02	7.451E+00	-0.017
CO-58	9.206E-01		5.334E+00	2.337E+01	4.789E-01	0.039
FE-59	-1.040E+01		9.517E+00	3.418E+01	7.154E-01	-0.304
CO-60	-1.832E+00		3.039E+00	1.260E+01	2.684E-01	-0.145
ZN-65	-9.805E+00		8.926E+00	3.193E+01	6.693E-01	-0.307
SE-75	-1.141E+01		1.602E+01	5.755E+01	1.155E+00	-0.198
SR-85	-3.407E+01		1.207E+01	3.364E+01	6.761E-01	-1.013
Y-88	-3.835E+00		2.720E+00	5.254E+00	1.157E-01	-0.730
NB-94	-3.117E+00		4.603E+00	1.774E+01	3.651E-01	-0.176
NB-95	-5.180E-01		7.626E+00	3.041E+01	6.211E-01	-0.017
TC-95M	-4.907E-01		2.141E+01	7.717E+01	1.561E+00	-0.006
ZR-95	6.874E+00		4.875E+00	3.189E+01	6.510E-01	0.216
ZRNB-95	-9.142E-01		1.346E+01	5.366E+01	1.096E+00	-0.017
MO-99	-3.193E+02		3.809E+02	1.344E+03	2.773E+01	-0.238
RH-101	1.889E+01		1.636E+01	6.341E+01	1.284E+00	0.298
RH-102M	1.022E+00		5.014E+00	2.165E+01	4.344E-01	0.047
RU-103	-4.883E+00		8.079E+00	3.024E+01	6.073E-01	-0.161
RU-106DA	6.139E+01		6.170E+01	2.755E+02	5.573E+00	0.223
AG-108M	-2.270E+00		9.300E+00	2.990E+01	5.988E-01	-0.076
AG-110M	4.844E+00		6.647E+00	3.096E+01	6.378E-01	0.156
SN-113DA	6.700E+00		1.172E+01	4.867E+01	9.737E-01	0.138

---- Non-Identified Nuclides ----

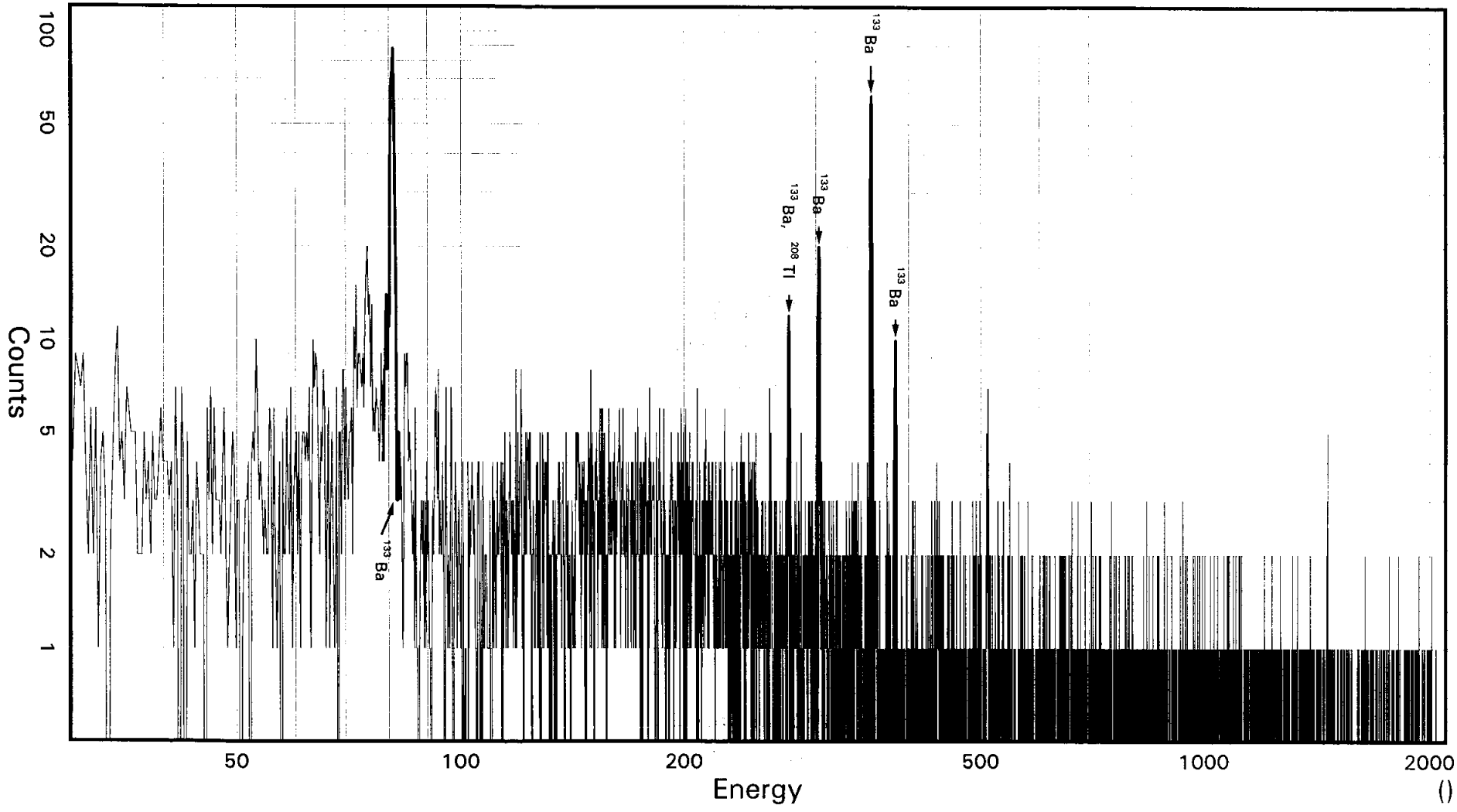
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	4.185E+00		6.045E+00	2.734E+01	5.524E-01	0.153
SB-125	3.893E+00		1.927E+01	8.053E+01	1.613E+00	0.048
SN-126DA	-9.668E-01		4.958E+00	2.020E+01	4.097E-01	-0.048
I-131	2.932E+01		3.210E+01	1.314E+02	2.628E+00	0.223
CS-134	-2.258E+00		4.492E+00	1.805E+01	3.694E-01	-0.125
CS-137DA	1.983E+00		5.709E+00	2.503E+01	5.076E-01	0.079
LA-138	-5.021E+00		3.561E+00	6.962E+00	1.493E-01	-0.721
CE-139	-1.098E+01		1.557E+01	5.449E+01	1.113E+00	-0.201
BA-140	6.617E+01		5.013E+01	2.280E+02	4.587E+00	0.290
BALA-140	-7.831E+00		7.843E+00	2.088E+01	4.528E-01	-0.375
CE-141	-1.851E-01		3.218E+01	1.191E+02	2.451E+00	-0.002
CE-144	-3.211E+01		9.859E+01	3.632E+02	7.520E+00	-0.088
CEPR-144	-6.169E+01		1.974E+02	7.278E+02	1.507E+01	-0.085
PM-144	3.684E-01		6.183E+00	2.519E+01	5.093E-01	0.015
PM-146	-7.259E+00		7.387E+00	2.666E+01	5.343E-01	-0.272
EU-152	-6.447E+01		3.197E+01	9.641E+01	1.928E+00	-0.669
EU-154	1.246E+01		1.244E+01	6.100E+01	1.293E+00	0.204
EU-155	-2.062E+01		5.190E+01	1.839E+02	3.878E+00	-0.112
HF-181	9.681E+00		8.476E+00	3.863E+01	7.752E-01	0.251
BI-207	-3.917E+00		5.429E+00	1.985E+01	4.002E-01	-0.197
TL-208	3.998E+00		7.783E+00	3.374E+01	6.808E-01	0.118
BI-210M	1.286E+01		1.724E+01	6.952E+01	1.395E+00	0.185
BI-212	4.850E+01		6.127E+01	2.977E+02	9.101E+00	0.163
PB-212	-3.041E+01		2.282E+01	8.300E+01	1.670E+00	-0.366
BI-214	1.495E+01		1.249E+01	5.823E+01	1.177E+00	0.257
PB-214	4.371E+01		2.405E+01	9.536E+01	1.907E+00	0.458
RA-223	-1.912E+01		7.156E+01	2.639E+02	5.293E+00	-0.072
RA-224DA	-3.083E+01		2.314E+01	8.416E+01	1.693E+00	-0.366
RA-226DA	1.495E+01		1.249E+01	5.823E+01	1.177E+00	0.257
AC-227DA	-8.124E+01		7.872E+01	2.771E+02	5.575E+00	-0.293
AC-228	-3.025E+00		1.635E+01	7.167E+01	1.479E+00	-0.042
RA-228DA	-3.039E+00		1.643E+01	7.199E+01	1.486E+00	-0.042
TH-228DA	1.128E+01		2.197E+01	9.523E+01	1.921E+00	0.118
TH-232DA	2.810E-01		7.501E+01	2.795E+02	5.591E+00	0.001
TH-234DA	-2.766E+02		5.821E+02	2.377E+03	4.940E+01	-0.116
U-234DA	2.266E+01		4.305E+01	1.713E+02	3.430E+00	0.132
U-235HP	1.478E+02		1.083E+02	4.337E+02	8.935E+00	0.341
NP-237DA	-4.443E+01		2.477E+01	7.828E+01	1.567E+00	-0.568
U-238DA	4.371E+01		2.405E+01	9.536E+01	1.907E+00	0.458
U-238DHP	2.698E+02		4.313E+02	1.613E+03	3.591E+01	0.167
AM-241HP	-2.658E+01		3.311E+01	1.168E+02	2.619E+00	-0.228

STL Richland WA.

BA133

Sample ID: JH3L31AC
Detector ID: GER6 1

Batch ID: 6311395



Acquisition Start: 13-NOV-2006 09:10:08.11
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -1.16882E-03
Slope: 2.49484E-01
Quadrature: 7.22075E-09

SAMPLE IDENTIFICATION: JH3L31AC

CONFIGURATION ID: GER6:JH3L31AC_131160910
TITLE : BA133
SAMPLE ID : JH3L31AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 09:10:08
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 30-OCT-2006 12:00:00.00
CALIB DATE: 13-NOV-2006 05:11:25.93
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: -.1169E-02 keV
ENERGY SLOPE: 2.4948E-01 keV/C
ENERGY Q COEFF: 7.2208E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.9076E-01 keV
FWHM SLOPE: 6.5845E-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 13-NOV-2006 09:40:49

```
Configuration     : $DISK1:[GER6.SAMPLE]JH3L31AC_131160910.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:10:08
Sample ID         : JH3L31AC             Sample quantity  : 1.0000 SAMPL
Sample type       :                      Sample geometry  : BA133T15
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.26   0.0%
Start energy      :    19.96             End energy       :  2044.26
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.84	376	72	1.07	324.03	315	17	2.09E-01	7.3	
2	0	276.36	55	13	1.40	1107.70	1098	16	3.05E-02	19.6	
3	0	303.01	117	29	1.58	1214.50	1205	20	6.49E-02	14.7	
4	0	356.06	349	0	1.38	1427.13	1418	19	1.94E-01	5.4	
5	0	384.06	48	8	1.58	1539.34	1531	15	2.69E-02	19.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 09:40:50

Configuration : $DISK1:[GER6.SAMPLE]JH3L31AC_131160910.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:10:08
Sample ID : JH3L31AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.26 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	376	33.00	2.166E+00	1.751E+03	1.756E+03	9.12
	276.40	55	6.90	2.334E+00	1.138E+03	1.141E+03	20.32
	302.84	117	17.80	2.337E+00	9.364E+02	9.387E+02	15.68
	356.00	349	62.05*	2.339E+00	8.016E+02	8.037E+02	7.59
	383.85	48	8.70	2.338E+00	7.927E+02	7.946E+02	19.71

Flag: "*" = Keyline

Sample ID : JH3L31AC
Acquisition date : 13-NOV-2006 09:10:08

None

Flags: "T" = Tentatively associated

Sample ID : JH3L31AC
Acquisition date : 13-NOV-2006 09:10:08

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	1.155E+03	20.32	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 13-NOV-2006 09:40:51

Configuration : $DISK1:[GER6.SAMPLE]JH3L31AC_131160910.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 : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:10:08
Sample ID : JH3L31AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.26 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 ----

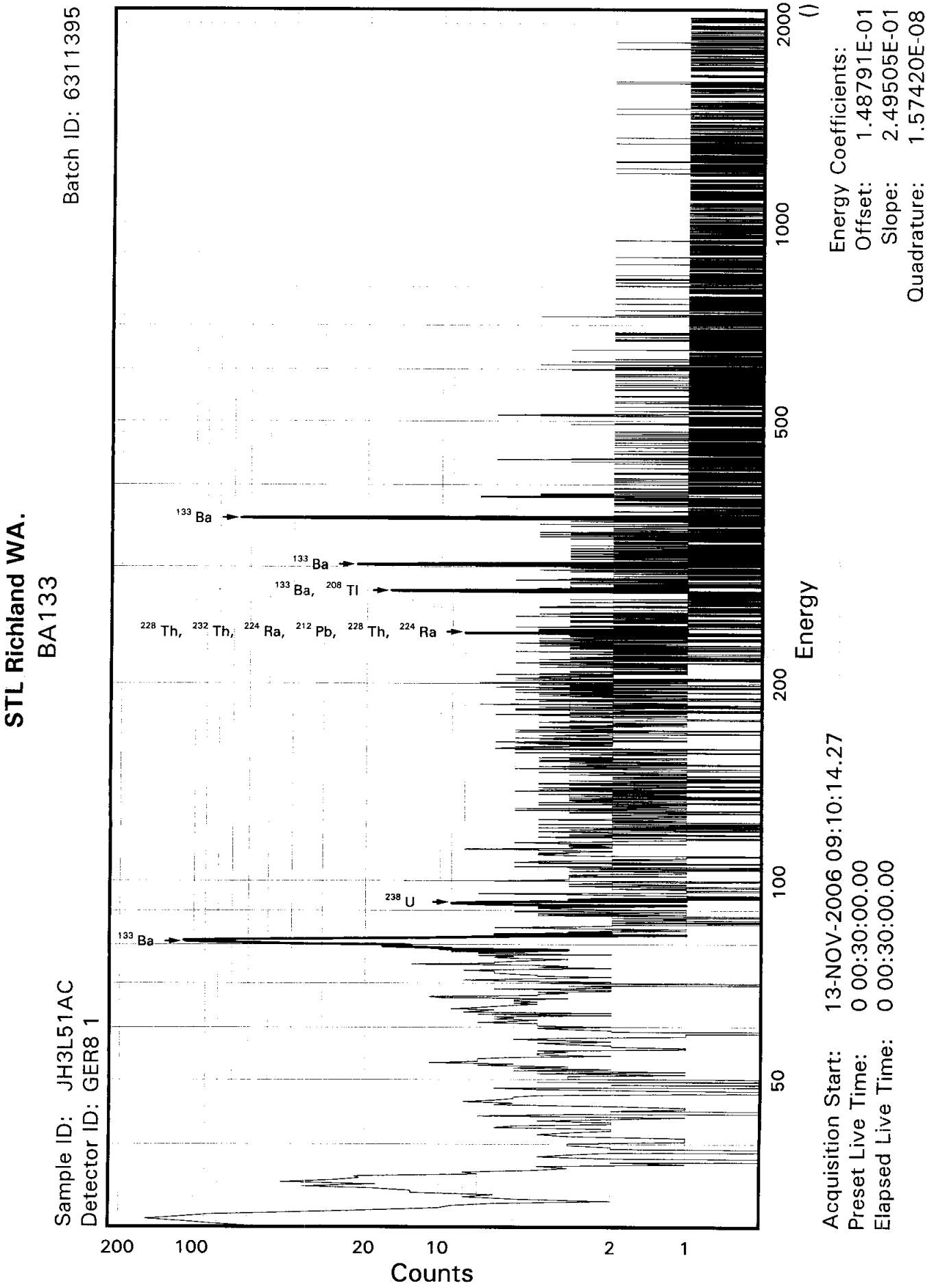
Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	8.037E+02	6.102E+01	5.189E+01	1.038E+00	15.487

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-9.460E+01		6.896E+01	2.315E+02	4.644E+00	-0.409
NA-22	1.000E+00		4.544E+00	1.954E+01	4.136E-01	0.051
K-40	9.044E+00		8.237E+01	3.910E+02	8.382E+00	0.023
SC-46	4.783E+00		6.107E+00	2.654E+01	5.556E-01	0.180
CR-51	3.914E+01		1.146E+02	4.411E+02	8.826E+00	0.089
MN-54	3.208E+00		4.711E+00	2.125E+01	4.359E-01	0.151
CO-57	1.100E+02		1.030E+02	4.039E+02	8.340E+00	0.272
CO-58	1.388E+00		5.669E+00	2.370E+01	4.854E-01	0.059
FE-59	6.289E+00		1.043E+01	4.611E+01	9.639E-01	0.136
CO-60	3.121E+00		3.701E+00	1.827E+01	3.882E-01	0.171
ZN-65	1.911E-01		1.249E+01	4.915E+01	1.029E+00	0.004
SE-75	-2.980E+01		1.688E+01	5.519E+01	1.107E+00	-0.540
SR-85	-1.292E+01		1.336E+01	4.548E+01	9.139E-01	-0.284
Y-88	-1.735E+00		1.737E+00	4.660E+00	1.023E-01	-0.372
NB-94	-1.294E+00		6.002E+00	2.324E+01	4.779E-01	-0.056
NB-95	9.603E+00		6.407E+00	3.046E+01	6.218E-01	0.315
TC-95M	7.766E+00		2.134E+01	7.903E+01	1.598E+00	0.098
ZR-95	6.064E+00		1.060E+01	4.585E+01	9.354E-01	0.132
ZRNB-95	1.736E+01		1.137E+01	5.409E+01	1.104E+00	0.321
MO-99	-4.223E+02		3.566E+02	1.216E+03	2.505E+01	-0.347
RH-101	2.467E+01		1.658E+01	6.482E+01	1.312E+00	0.381
RH-102M	7.867E+00		6.234E+00	2.757E+01	5.530E-01	0.285
RU-103	1.195E+01		1.003E+01	4.228E+01	8.488E-01	0.283
RU-106DA	-9.557E+00		6.298E+01	2.440E+02	4.932E+00	-0.039
AG-108M	-2.942E+01		1.082E+01	3.070E+01	6.147E-01	-0.958
AG-110M	-1.974E+00		9.126E+00	3.497E+01	7.199E-01	-0.056
SN-113DA	2.013E+01		1.084E+01	4.862E+01	9.728E-01	0.414

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	1.002E+01		7.256E+00	3.215E+01	6.492E-01	0.312
SB-125	1.629E+00		2.687E+01	1.013E+02	2.028E+00	0.016
SN-126DA	-3.276E+00		5.516E+00	2.037E+01	4.131E-01	-0.161
I-131	-6.196E+00		3.152E+01	1.183E+02	2.367E+00	-0.052
CS-134	3.377E+00		7.457E+00	3.030E+01	6.199E-01	0.111
CS-137DA	3.041E+00		6.887E+00	2.829E+01	5.734E-01	0.107
LA-138	1.719E+00		3.814E+00	2.029E+01	4.343E-01	0.085
CE-139	-2.078E+01		1.724E+01	5.713E+01	1.166E+00	-0.364
BA-140	4.594E+01		5.237E+01	2.207E+02	4.440E+00	0.208
BALA-140	-4.882E+00		7.764E+00	3.556E+01	7.693E-01	-0.137
CE-141	3.966E+01		3.281E+01	1.268E+02	2.607E+00	0.313
CE-144	-1.500E+02		9.914E+01	3.309E+02	6.843E+00	-0.453
CEPR-144	-3.809E+02		2.041E+02	6.617E+02	1.369E+01	-0.576
PM-144	1.046E+01		6.861E+00	3.000E+01	6.065E-01	0.349
PM-146	-1.271E+01		1.045E+01	3.603E+01	7.221E-01	-0.353
EU-152	-1.654E+01		3.345E+01	1.182E+02	2.364E+00	-0.140
EU-154	6.408E+00		1.181E+01	5.383E+01	1.139E+00	0.119
EU-155	-3.766E+01		4.827E+01	1.667E+02	3.510E+00	-0.226
HF-181	2.796E-01		8.599E+00	3.436E+01	6.894E-01	0.008
BI-207	4.788E+00		7.219E+00	2.943E+01	5.932E-01	0.163
TL-208	-7.735E+00		7.591E+00	2.900E+01	5.849E-01	-0.267
BI-210M	1.354E+01		1.633E+01	6.567E+01	1.317E+00	0.206
BI-212	-8.496E+01		8.753E+01	3.107E+02	9.497E+00	-0.273
PB-212	9.441E+00		2.538E+01	9.722E+01	1.955E+00	0.097
BI-214	-1.324E+00		1.352E+01	5.815E+01	1.175E+00	-0.023
PB-214	9.051E+00		2.311E+01	8.574E+01	1.715E+00	0.106
RA-223	2.344E+01		6.465E+01	2.493E+02	5.000E+00	0.094
RA-224DA	9.572E+00		2.573E+01	9.857E+01	1.983E+00	0.097
RA-226DA	-1.324E+00		1.352E+01	5.815E+01	1.175E+00	-0.023
AC-227DA	-1.711E+02		9.671E+01	3.077E+02	6.191E+00	-0.556
AC-228	-2.905E+01		2.136E+01	7.478E+01	1.542E+00	-0.389
RA-228DA	-2.919E+01		2.146E+01	7.512E+01	1.549E+00	-0.389
TH-228DA	-2.183E+01		2.142E+01	8.184E+01	1.651E+00	-0.267
TH-232DA	-2.915E+01		8.427E+01	2.976E+02	5.952E+00	-0.098
TH-234DA	-1.090E+03		8.095E+02	2.732E+03	5.671E+01	-0.399
U-234DA	7.033E+01		4.667E+01	1.907E+02	3.818E+00	0.369
U-235HP	1.905E+02		1.107E+02	4.392E+02	9.039E+00	0.434
NP-237DA	1.221E+01		2.442E+01	9.386E+01	1.878E+00	0.130
U-238DA	9.051E+00		2.311E+01	8.574E+01	1.715E+00	0.106
U-238DHP	3.350E+02		4.080E+02	1.501E+03	3.332E+01	0.223
AM-241HP	1.710E+01		3.309E+01	1.233E+02	2.756E+00	0.139


STL Richland WA.
BA133
Batch ID: 6311395
Sample ID: JH3L51AC
Detector ID: GER8 1
133 Ba
133 Ba
133 Ba, 208 Tl
228 Th, 232 Th, 224 Ra, 212 Pb, 228 Th, 224 Ra
238 U
133 Ba
200
100
20
10
2
1
Counts
50
100
200
500
1000
2000
()
Energy
Acquisition Start: 13-NOV-2006 09:10:14.27
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00
Energy Coefficients:
Offset: 1.48791E-01
Slope: 2.49505E-01
Quadrature: 1.57420E-08

SAMPLE IDENTIFICATION: JH3L51AC

CONFIGURATION ID: GER8:JH3L51AC_131160910
TITLE : BA133
SAMPLE ID : JH3L51AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 09:10:14
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 30-OCT-2006 12:00:00.00
CALIB DATE: 13-NOV-2006 05:11:58.71
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: 1.4879E-01 keV
ENERGY SLOPE: 2.4950E-01 keV/C
ENERGY Q COEFF: 1.5742E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.7056E-01 keV
FWHM SLOPE: 1.9926E-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 13-NOV-2006 09:41:04

Configuration : $DISK1:[GER8.SAMPLE]JH3L51AC_131160910.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:10:14
Sample ID : JH3L51AC 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 : 20.11 End energy : 2045.15
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.78	692	121	1.05	122.78	112	20	3.84E-01	5.4	
2	0	35.06	221	39	1.09	139.91	132	20	1.23E-01	10.0	
3	0	80.96	520	97	1.02	323.86	313	22	2.89E-01	6.5	
4	0	92.87*	9	22	0.87	371.61	365	13	5.01E-03	129.1	
5	0	239.60*	13	26	0.40	959.64	948	21	7.17E-03	104.5	
6	0	276.55	58	25	0.94	1107.74	1099	19	3.22E-02	24.1	
7	0	302.81	87	11	1.14	1212.94	1206	14	4.86E-02	13.3	
8	0	356.05	332	4	1.19	1426.32	1418	18	1.84E-01	5.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 09:41:04

Configuration	: $DISK1:[GER8.SAMPLE]JH3L51AC_131160910.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: BA133		
Sample date	: 30-OCT-2006 12:00:00	Acquisition date	: 13-NOV-2006 09:10:14
Sample ID	: JH3L51AC	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	520	33.00	2.202E+00	2.388E+03	2.394E+03	8.52
	276.40	58	6.90	2.371E+00	1.183E+03	1.186E+03	24.71
	302.84	87	17.80	2.374E+00	6.898E+02	6.915E+02	14.33
	356.00	332	62.05*	2.376E+00	7.504E+02	7.523E+02	7.83
	383.85	------	8.70	2.375E+00	------	Line Not Found	------

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
PB-212	238.63	13	44.60*	2.363E+00	4.084E+01	4.084E+01	104.59
	300.09	------	3.41	2.373E+00	------	Line Not Found	------

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JH3L51AC Acquisition date : 13-NOV-2006 09:10:14

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.78	692	121	1.05	122.78	112	20	3.84E-01	5.4	1.93E+00	
0	35.06	221	39	1.09	139.91	132	20	1.23E-01	10.0	1.97E+00	
0	92.87	9	22	0.87	371.61	365	13	5.01E-03	****	2.23E+00	T

Flags: "T" = Tentatively associated

Sample ID : JH3L51AC Acquisition date : 13-NOV-2006 09:10:14

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	1.200E+03	24.71	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			
RA-224DA	1.91Y	0.02	238.63*	44.60	4.141E+01	104.59	Abun.
			240.98	3.95	4.675E+02	104.59	
			583.14	30.25	--- Not Found ---		
			860.37	4.48	--- Not Found ---		
		% Abundances Found =		58.30			
TH-228DA	1.91Y	0.02	238.63	44.60	4.141E+01	104.59	Abun.
			240.98	3.95	4.675E+02	104.59	
			583.14*	30.25	--- Not Found ---		
			860.37	4.48	--- Not Found ---		
		% Abundances Found =		58.30			
TH-232DA	1.41E+10Y	0.00	238.63	44.60	4.084E+01	104.59	Abun.
			338.32*	12.40	--- Not Found ---		
			583.14	30.25	--- Not Found ---		
			911.07	27.70	--- Not Found ---		
			964.60	5.20	--- Not Found ---		
			969.11	16.60	--- Not Found ---		
		% Abundances Found =		32.61			
U-238DHP	4.47E+09Y	0.00	63.28*	3.80	--- Not Found ---		Abun.
			92.59	5.41	2.490E+02	129.22	
		% Abundances Found =		58.74			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 09:41:06

Configuration : $DISK1:[GER8.SAMPLE]JH3L51AC_131160910.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 : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:10:14
Sample ID : JH3L51AC 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	7.523E+02	5.892E+01	3.418E+01	6.836E-01	22.009
PB-212	4.084E+01	4.272E+01	8.346E+01	1.679E+00	0.489

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-4.211E+01		6.663E+01	2.413E+02	4.841E+00	-0.174
NA-22	3.001E+00		2.128E+00	1.392E+01	2.946E-01	0.216
K-40	-3.673E+01		4.119E+01	1.846E+02	3.956E+00	-0.199
SC-46	-1.160E+00		1.842E+00	8.508E+00	1.781E-01	-0.136
CR-51	-9.354E+01		1.201E+02	4.225E+02	8.454E+00	-0.221
MN-54	1.338E+00		3.983E+00	1.781E+01	3.654E-01	0.075
CO-57	3.361E+01		1.069E+02	3.943E+02	8.142E+00	0.085
CO-58	2.494E+00		3.140E+00	1.673E+01	3.425E-01	0.149
FE-59	5.030E+00		7.520E+00	3.681E+01	7.694E-01	0.137
CO-60	-3.120E+00		3.724E+00	1.390E+01	2.953E-01	-0.225
ZN-65	8.039E+00		4.937E+00	3.100E+01	6.487E-01	0.259
SE-75	-1.832E+01		1.471E+01	5.006E+01	1.004E+00	-0.366
SR-85	-3.835E+01		1.128E+01	3.085E+01	6.199E-01	-1.243
Y-88	-1.691E+00		1.694E+00	4.585E+00	1.007E-01	-0.369
NB-94	2.596E+00		4.127E+00	1.878E+01	3.862E-01	0.138
NB-95	3.713E+00		4.655E+00	2.266E+01	4.626E-01	0.164
TC-95M	2.537E+01		2.139E+01	8.254E+01	1.669E+00	0.307
ZR-95	-8.221E+00		8.240E+00	2.952E+01	6.021E-01	-0.279
ZRNB-95	6.553E+00		8.215E+00	3.999E+01	8.163E-01	0.164
MO-99	1.969E+02		3.742E+02	1.408E+03	2.901E+01	0.140
RH-101	-3.146E+00		1.656E+01	6.000E+01	1.214E+00	-0.052
RH-102M	8.280E-01		6.327E+00	2.489E+01	4.993E-01	0.033
RU-103	-2.187E+00		7.949E+00	3.107E+01	6.239E-01	-0.070
RU-106DA	2.538E+01		4.574E+01	2.040E+02	4.125E+00	0.124
AG-108M	-2.129E+01		8.480E+00	2.374E+01	4.754E-01	-0.897
AG-110M	1.068E+01		5.615E+00	2.954E+01	6.080E-01	0.361

Sample ID : JH3L51AC Acquisition date : 13-NOV-2006 09:10:14

---- Non-Identified Nuclides ----

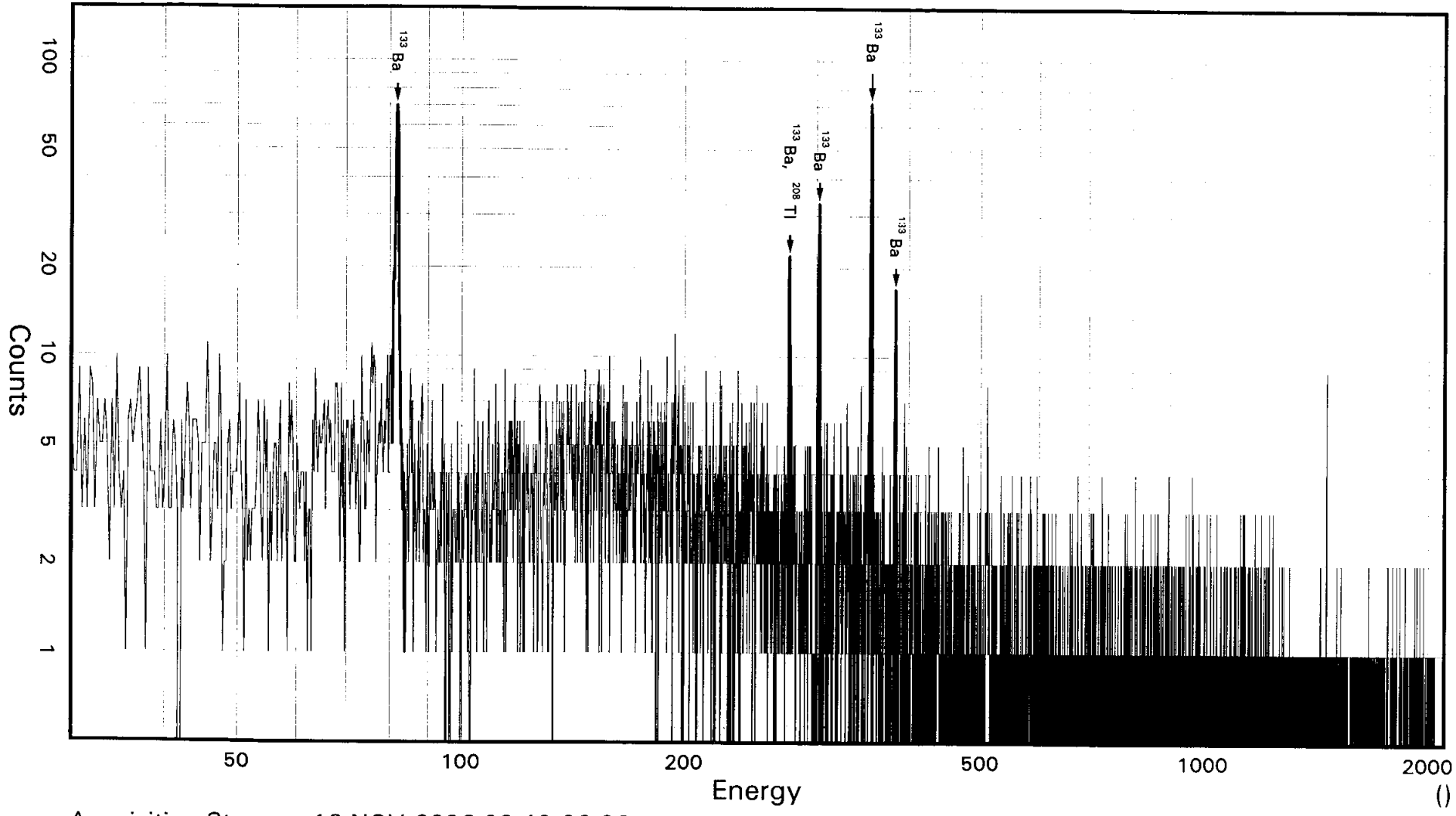
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	-5.428E+00		1.119E+01	4.093E+01	8.188E-01	-0.133
SB-124	1.371E+01		6.365E+00	3.079E+01	6.217E-01	0.445
SB-125	-1.766E+00		2.091E+01	8.047E+01	1.611E+00	-0.022
SN-126DA	-7.000E+00		5.495E+00	1.864E+01	3.780E-01	-0.375
I-131	2.555E+01		2.198E+01	9.768E+01	1.954E+00	0.262
CS-134	-1.864E+00		4.565E+00	1.831E+01	3.744E-01	-0.102
CS-137DA	-5.804E+00		5.875E+00	2.093E+01	4.243E-01	-0.277
LA-138	4.501E+00		3.192E+00	2.088E+01	4.467E-01	0.216
CE-139	-9.276E-02		1.639E+01	5.834E+01	1.191E+00	-0.002
BA-140	4.774E+01		4.386E+01	1.974E+02	3.972E+00	0.242
BALA-140	-9.106E-01		8.957E+00	4.682E+01	1.012E+00	-0.019
CE-141	1.493E+01		2.661E+01	1.012E+02	2.080E+00	0.148
CE-144	1.204E+01		1.014E+02	3.711E+02	7.673E+00	0.032
CEPR-144	2.185E+01		2.026E+02	7.412E+02	1.533E+01	0.029
PM-144	5.227E+00		4.949E+00	2.265E+01	4.578E-01	0.231
PM-146	-9.449E-01		9.432E+00	3.614E+01	7.242E-01	-0.026
EU-152	3.560E+01		2.545E+01	1.091E+02	2.183E+00	0.326
EU-154	8.388E+00		5.949E+00	3.892E+01	8.235E-01	0.216
EU-155	7.260E+01		5.322E+01	2.090E+02	4.402E+00	0.347
HF-181	-7.440E-01		7.608E+00	3.007E+01	6.032E-01	-0.025
BI-207	-1.005E+00		5.864E+00	2.296E+01	4.627E-01	-0.044
TL-208	-4.635E+00		5.952E+00	2.201E+01	4.440E-01	-0.211
BI-210M	8.141E-01		1.303E+01	5.101E+01	1.023E+00	0.016
BI-212	-6.606E+01		6.554E+01	2.335E+02	7.135E+00	-0.283
BI-214	1.522E+01		1.216E+01	5.548E+01	1.121E+00	0.274
PB-214	-5.548E+00		2.235E+01	7.774E+01	1.555E+00	-0.071
RA-223	2.943E+01		4.655E+01	1.921E+02	3.853E+00	0.153
RA-224DA	4.141E+01	+	4.331E+01	9.468E+01	1.904E+00	0.437
RA-226DA	1.522E+01		1.216E+01	5.548E+01	1.121E+00	0.274
AC-227DA	-4.091E+01		1.047E+02	3.175E+02	6.388E+00	-0.129
AC-228	1.488E+01		1.595E+01	7.360E+01	1.518E+00	0.202
RA-228DA	1.495E+01		1.603E+01	7.394E+01	1.525E+00	0.202
TH-228DA	-1.308E+01		1.680E+01	6.213E+01	1.253E+00	-0.211
TH-232DA	5.744E+01		6.535E+01	2.608E+02	5.217E+00	0.220
TH-234DA	6.804E+02		4.986E+02	2.689E+03	5.580E+01	0.253
U-234DA	5.714E+01		4.107E+01	1.706E+02	3.416E+00	0.335
U-235HP	-1.432E+02		9.644E+01	3.134E+02	6.449E+00	-0.457
NP-237DA	4.244E+01		2.372E+01	9.901E+01	1.981E+00	0.429
U-238DA	-5.548E+00		2.235E+01	7.774E+01	1.555E+00	-0.071
U-238DHP	-2.787E+02		5.009E+02	1.796E+03	3.983E+01	-0.155
AM-241HP	-6.130E+01		4.077E+01	1.356E+02	3.029E+00	-0.452

STL Richland WA.

BA133

Sample ID: JH3L61AC
Detector ID: GER13 1

Batch ID: 6311395



Acquisition Start: 13-NOV-2006 09:10:26.86
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -5.57931E-01
Slope: 2.50817E-01
Quadrature: -1.03164E-07

SAMPLE IDENTIFICATION: JH3L61AC

CONFIGURATION ID: GER13:JH3L61AC_131160910
TITLE : BA133
SAMPLE ID : JH3L61AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 09:10:26
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 30-OCT-2006 12:00:00.00
CALIB DATE: 13-NOV-2006 05:27:15.55
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: -.5579E+00 keV
ENERGY SLOPE: 2.5082E-01 keV/C
ENERGY Q COEFF: -.1032E-06 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.6847E-01 keV
FWHM SLOPE: 3.9169E-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 13-NOV-2006 09:41:19

Configuration : $DISK1:[GER13.SAMPLE]JH3L61AC_131160910.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:10:26
Sample ID : JH3L61AC 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 : 19.51 End energy : 2047.21
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.90	256	47	0.81	328.82	324	14	1.42E-01	8.7	
2	0	276.24	62	37	0.79	1104.10	1098	12	3.43E-02	23.3	
3	0	302.45	151	11	1.06	1208.68	1200	16	8.39E-02	9.6	
4	0	355.74	426	6	1.30	1421.37	1410	21	2.37E-01	5.0	
5	0	383.55	67	4	0.75	1532.38	1525	15	3.74E-02	13.7	
6	0	395.40	10	18	0.24	1579.69	1570	14	5.79E-03	90.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 09:41:19

Configuration : $DISK1:[GER13.SAMPLE]JH3L61AC_131160910.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:10:26
Sample ID : JH3L61AC 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	256	33.00	2.704E+00	9.558E+02	9.582E+02	10.29
	276.40	62	6.90	2.897E+00	1.030E+03	1.033E+03	23.90
	302.84	151	17.80	2.900E+00	9.755E+02	9.780E+02	11.00
	356.00	426	62.05*	2.903E+00	7.890E+02	7.910E+02	7.37
	383.85	67	8.70	2.902E+00	8.880E+02	8.902E+02	14.73

Flag: "*" = Keyline

Unidentified Energy Lines
Page : 2
Sample ID : JH3L61AC
Acquisition date : 13-NOV-2006 09:10:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	395.40	10	18	0.24	1579.69	1570	14	5.79E-03	90.6	2.90E+00	

Flags: "T" = Tentatively associated

Sample ID : JH3L61AC Acquisition date : 13-NOV-2006 09:10:26

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	1.045E+03	23.90	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 13-NOV-2006 09:41:21

Configuration : $DISK1:[GER13.SAMPLE]JH3L61AC_131160910.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 : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 09:10:26
Sample ID : JH3L61AC 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	7.910E+02	5.828E+01	5.301E+01	1.060E+00	14.922

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.340E+02		6.953E+01	2.171E+02	4.354E+00	-0.617
NA-22	1.478E-01		4.310E+00	1.750E+01	3.691E-01	0.008
K-40	3.816E+01		1.007E+02	4.774E+02	1.019E+01	0.080
SC-46	6.166E+00		6.583E+00	2.946E+01	6.153E-01	0.209
CR-51	-2.404E+02		1.302E+02	4.171E+02	8.345E+00	-0.576
MN-54	-3.117E+00		4.879E+00	1.820E+01	3.728E-01	-0.171
CO-57	6.217E+01		1.102E+02	4.104E+02	8.460E+00	0.151
CO-58	7.349E+00		6.147E+00	2.617E+01	5.351E-01	0.281
FE-59	9.526E+00		1.079E+01	4.643E+01	9.683E-01	0.205
CO-60	-1.379E+00		3.293E+00	1.314E+01	2.784E-01	-0.105
ZN-65	-2.013E+01		1.004E+01	3.049E+01	6.366E-01	-0.660
SE-75	-1.856E+00		1.537E+01	5.648E+01	1.133E+00	-0.033
SR-85	-3.807E+01		1.095E+01	2.978E+01	5.982E-01	-1.278
Y-88	-1.966E-01		3.836E+00	1.627E+01	3.554E-01	-0.012
NB-94	-4.984E+00		5.113E+00	1.813E+01	3.722E-01	-0.275
NB-95	-4.303E+00		6.583E+00	2.386E+01	4.866E-01	-0.180
TC-95M	4.913E+00		1.802E+01	6.535E+01	1.320E+00	0.075
ZR-95	-1.134E+01		1.167E+01	4.045E+01	8.243E-01	-0.280
ZRNB-95	-7.921E+00		1.158E+01	4.184E+01	8.530E-01	-0.189
MO-99	6.567E+02		4.359E+02	1.669E+03	3.434E+01	0.393
RH-101	3.823E+00		1.585E+01	5.686E+01	1.150E+00	0.067
RH-102M	4.440E+00		6.385E+00	2.569E+01	5.152E-01	0.173
RU-103	-3.029E+00		8.801E+00	3.243E+01	6.509E-01	-0.093
RU-106DA	-6.178E+01		6.942E+01	2.452E+02	4.954E+00	-0.252
AG-108M	4.211E+00		7.397E+00	2.915E+01	5.837E-01	0.144
AG-110M	1.962E+00		6.473E+00	2.678E+01	5.504E-01	0.073
SN-113DA	-1.212E+01		1.527E+01	4.303E+01	8.609E-01	-0.282

Sample ID : JH3L61AC Acquisition date : 13-NOV-2006 09:10:26

---- Non-Identified Nuclides ----

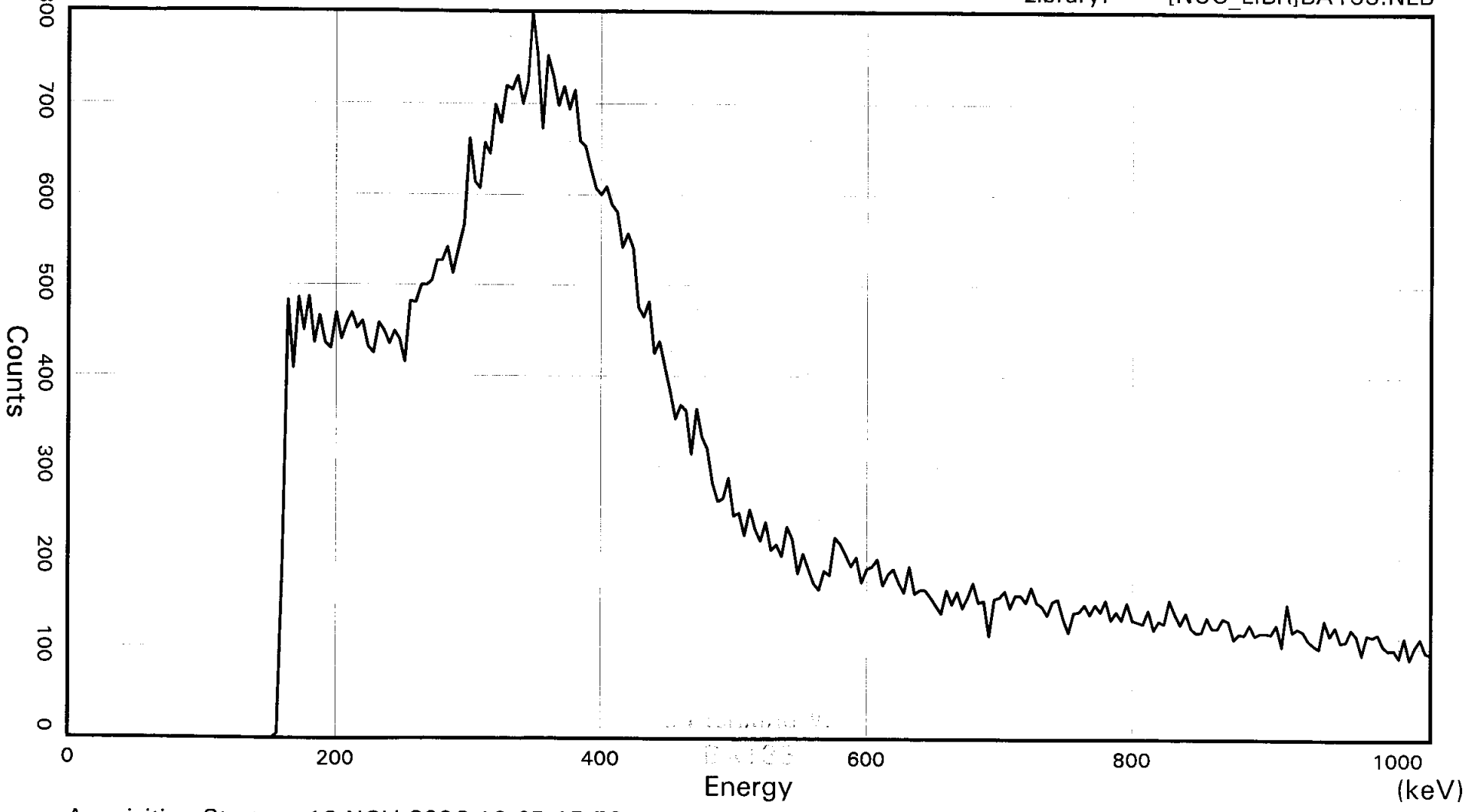
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-8.336E+00		7.281E+00	2.528E+01	5.103E-01	-0.330
SB-125	1.117E+01		2.265E+01	8.901E+01	1.782E+00	0.125
SN-126DA	-2.532E+00		6.056E+00	2.233E+01	4.524E-01	-0.113
I-131	2.106E+01		2.824E+01	1.103E+02	2.206E+00	0.191
CS-134	-1.342E+00		6.608E+00	2.476E+01	5.058E-01	-0.054
CS-137DA	8.547E+00		7.690E+00	3.142E+01	6.363E-01	0.272
LA-138	3.769E+00		4.460E+00	2.203E+01	4.695E-01	0.171
CE-139	1.764E+01		1.450E+01	5.514E+01	1.124E+00	0.320
BA-140	4.747E+01		4.980E+01	2.039E+02	4.100E+00	0.233
BALA-140	-5.645E+00		9.613E+00	4.042E+01	8.705E-01	-0.140
CE-141	3.696E+01		3.166E+01	1.202E+02	2.469E+00	0.307
CE-144	9.530E-01		1.011E+02	3.703E+02	7.643E+00	0.003
CEPR-144	-8.161E-01		2.020E+02	7.396E+02	1.527E+01	-0.001
PM-144	7.011E+00		6.820E+00	2.777E+01	5.609E-01	0.252
PM-146	4.412E+00		1.024E+01	3.990E+01	7.995E-01	0.111
EU-152	4.294E+01		3.355E+01	1.301E+02	2.603E+00	0.330
EU-154	1.647E+00		1.222E+01	5.004E+01	1.056E+00	0.033
EU-155	-3.832E+01		4.975E+01	1.698E+02	3.565E+00	-0.226
HF-181	3.443E+00		8.856E+00	3.497E+01	7.015E-01	0.098
BI-207	-4.135E+00		5.031E+00	1.777E+01	3.581E-01	-0.233
TL-208	-7.186E+00		8.403E+00	3.230E+01	6.512E-01	-0.222
BI-210M	-1.089E+01		1.696E+01	6.035E+01	1.210E+00	-0.180
BI-212	7.713E+01		8.839E+01	3.620E+02	1.106E+01	0.213
PB-212	-5.443E+01		2.367E+01	7.500E+01	1.508E+00	-0.726
BI-214	-2.539E+01		1.676E+01	6.423E+01	1.297E+00	-0.395
PB-214	8.570E+00		2.790E+01	9.525E+01	1.905E+00	0.090
RA-223	-6.329E+01		6.629E+01	2.302E+02	4.615E+00	-0.275
RA-224DA	-5.519E+01		2.400E+01	7.604E+01	1.529E+00	-0.726
RA-226DA	-2.569E+01		1.674E+01	6.409E+01	1.294E+00	-0.401
AC-227DA	5.180E+01		8.869E+01	3.244E+02	6.524E+00	0.160
AC-228	-2.606E+01		1.820E+01	7.021E+01	1.446E+00	-0.371
RA-228DA	-2.618E+01		1.828E+01	7.053E+01	1.452E+00	-0.371
TH-228DA	-2.028E+01		2.372E+01	9.116E+01	1.838E+00	-0.222
TH-232DA	1.364E+01		6.850E+01	2.524E+02	5.049E+00	0.054
TH-234DA	1.413E+03		7.810E+02	3.542E+03	7.337E+01	0.399
U-234DA	4.395E+01		4.537E+01	1.785E+02	3.574E+00	0.246
U-235HP	-2.369E+01		1.129E+02	4.041E+02	8.304E+00	-0.059
NP-237DA	-3.993E+00		2.471E+01	8.920E+01	1.785E+00	-0.045
U-238DA	8.570E+00		2.790E+01	9.525E+01	1.905E+00	0.090
U-238DHP	-3.879E+01		2.947E+02	1.069E+03	2.358E+01	-0.036
AM-241HP	2.015E+01		3.037E+01	1.150E+02	2.555E+00	0.175

STL Richland WA.

BA133

Sample ID: JH3MC1AC
Detector ID: NAI1 1

BatchID: 6311395
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 13-NOV-2006 10:05:15.58
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: JH3MC1AC

CONFIGURATION ID: NAI1:JH3MC1AC_131161005
TITLE : BA133
SAMPLE ID : JH3MC1AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 10:05:15
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 7-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 13-NOV-2006 10:35:21

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH3MC1AC_131161005.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 7-NOV-2006 12:00:00	Acquisition date	: 13-NOV-2006 10:05:15
Sample ID	: JH3MC1AC	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:	6.5	4.3	4.6	3.7	4.3	1.8	2.8	5.1
88:	2.5	-1.0	0.8	0.0	0.3	0.2	-0.4	0.3
96:	-0.6	-1.9	-2.2	-2.9	-3.8	-1.2	-1.9	-1.9
104:	-3.8	-3.2	-2.5	-4.0	-3.8	-2.7	-4.9	-3.4
112:	-2.9	-3.9						

List of Suspicious Channels

81 82 83 87

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	8.99E+00	0.00E+00	1.02E+00
2	3.39E+00	0.00E+00	1.04E+00
3	1.63E+00	0.00E+00	1.05E+00
4	1.05E+00	0.00E+00	1.06E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	731.	9.26

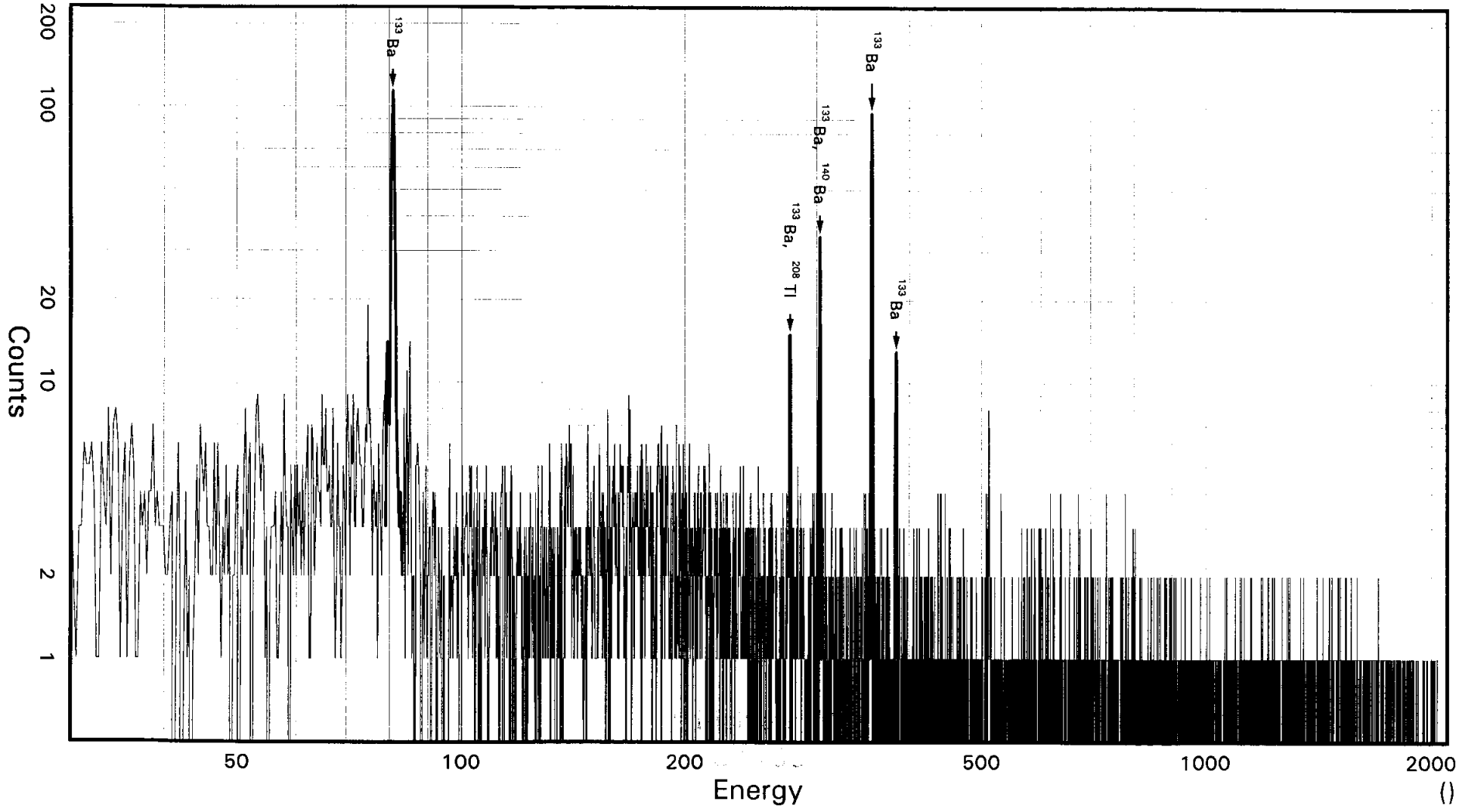
Total Activity :	731.	

STL Richland WA.

BA133

Sample ID: JH3MJ1AC
Detector ID: GER12 1

Batch ID: 6311395



Acquisition Start: 13-NOV-2006 10:05:24.11
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.14421E+01
Slope: 2.47679E-01
Quadrature: 4.29113E-09

SAMPLE IDENTIFICATION: JH3MJ1AC

CONFIGURATION ID: GER12:JH3MJ1AC_131161005
TITLE : BA133
SAMPLE ID : JH3MJ1AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 10:05:24
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 7-NOV-2006 12:00:00.00
CALIB DATE: 13-NOV-2006 05:12:54.60
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: 1.1442E+01 keV
ENERGY SLOPE: 2.4768E-01 keV/C
ENERGY Q COEFF: 4.2911E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.4166E-01 keV
FWHM SLOPE: 3.4564E-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 13-NOV-2006 10:35:41

Configuration : $DISK1:[GER12.SAMPLE]JH3MJ1AC_131161005.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 7-NOV-2006 12:00:00 Acquisition date : 13-NOV-2006 10:05:24
Sample ID : JH3MJ1AC 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 : 11.69 End energy : 2040.72
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.93	387	68	0.80	280.57	273	17	2.15E-01	7.1	
2	0	276.48	50	16	0.95	1070.07	1064	11	2.75E-02	21.3	
3	0	302.97	123	20	0.76	1177.02	1169	16	6.84E-02	12.1	
4	0	356.03	455	23	1.09	1391.22	1380	19	2.53E-01	5.3	
5	0	383.95	73	8	1.18	1503.95	1495	19	4.03E-02	15.5	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 10:35:42

Configuration	: $DISK1:[GER12.SAMPLE]JH3MJ1AC_131161005.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: BA133		
Sample date	: 7-NOV-2006 12:00:00	Acquisition date	: 13-NOV-2006 10:05:24
Sample ID	: JH3MJ1AC	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 DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	387	33.00	2.899E+00	1.347E+03	1.349E+03	8.98
	276.40	50	6.90	3.105E+00	7.709E+02	7.717E+02	21.97
	302.84	123	17.80	3.109E+00	7.415E+02	7.423E+02	13.27
	356.00	455	62.05*	3.111E+00	7.857E+02	7.865E+02	7.58
	383.85	73	8.70	3.111E+00	8.933E+02	8.943E+02	16.39

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Sample ID : JH3MJ1AC
Acquisition date : 13-NOV-2006 10:05:24

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
BA-140	12.79D	0.46	162.64	6.70	--- Not Found ---		Abun.
			304.84	4.50	4.045E+03	13.27	
			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	7.822E+02	21.97	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

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 10:35:44

Configuration	: $DISK1:[GER12.SAMPLE]JH3MJ1AC_131161005.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	: 7-NOV-2006 12:00:00	Acquisition date	: 13-NOV-2006 10:05:24
Sample ID	: JH3MJ1AC	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	7.865E+02	5.966E+01	3.875E+01	7.751E-01	20.296

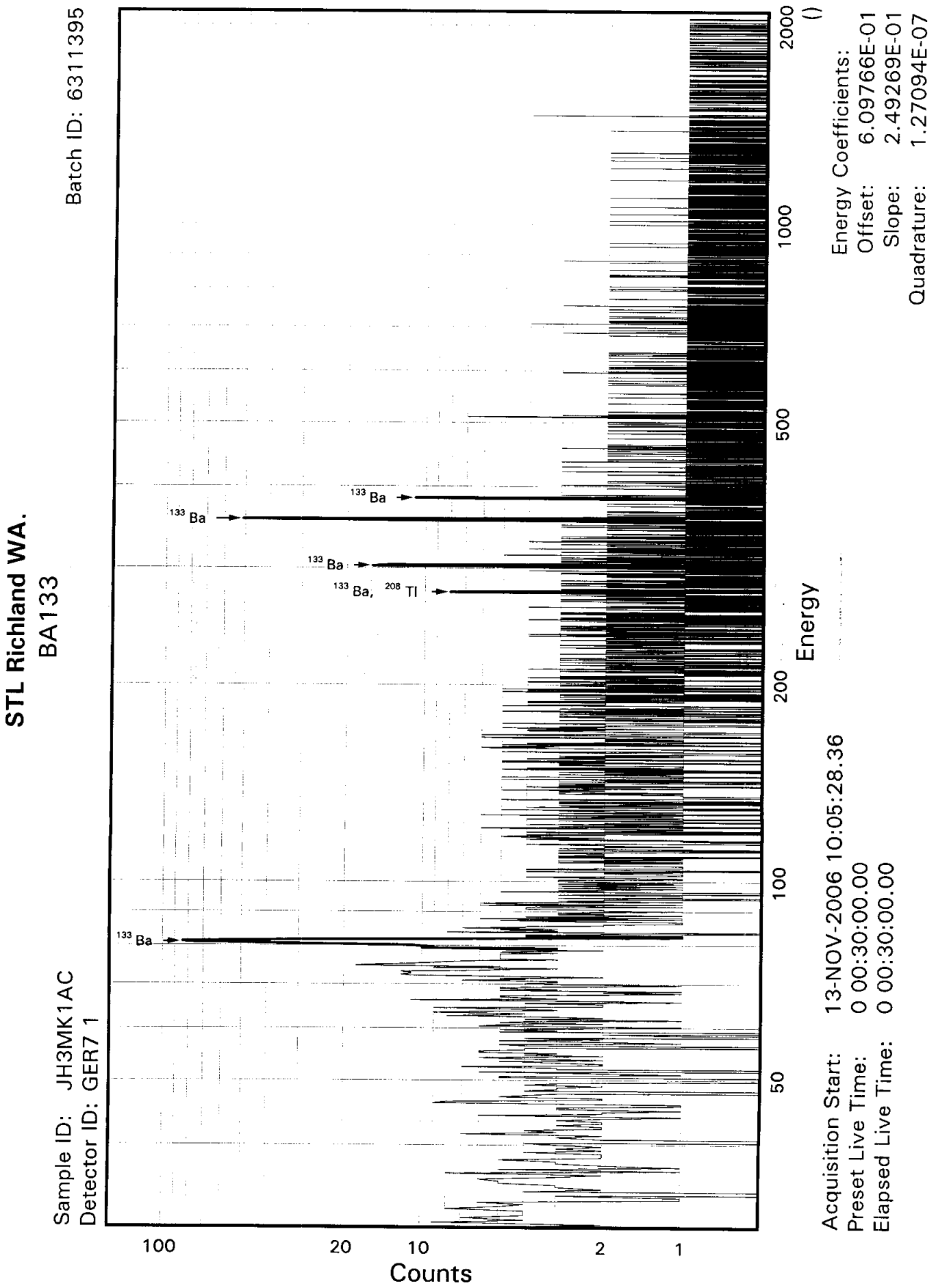
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.471E+01		3.836E+01	1.621E+02	3.251E+00	0.091
NA-22	9.898E-01		3.414E+00	1.478E+01	3.115E-01	0.067
K-40	1.911E+01		4.804E+01	2.402E+02	5.121E+00	0.080
SC-46	-2.527E+00		3.191E+00	1.212E+01	2.530E-01	-0.208
CR-51	-6.938E+01		6.400E+01	2.154E+02	4.309E+00	-0.322
MN-54	3.437E+00		3.306E+00	1.566E+01	3.207E-01	0.219
CO-57	-8.308E+01		7.501E+01	2.528E+02	5.208E+00	-0.329
CO-58	1.357E+00		3.441E+00	1.529E+01	3.126E-01	0.089
FE-59	2.416E+00		5.639E+00	2.600E+01	5.417E-01	0.093
CO-60	1.132E+00		1.998E+00	1.059E+01	2.240E-01	0.107
ZN-65	3.739E-01		6.963E+00	2.933E+01	6.118E-01	0.013
SE-75	7.877E+00		1.098E+01	4.314E+01	8.653E-01	0.183
SR-85	-2.569E+01		8.613E+00	2.382E+01	4.785E-01	-1.078
Y-88	-5.951E-02		2.914E+00	1.291E+01	2.817E-01	-0.005
NB-94	1.951E+00		3.404E+00	1.519E+01	3.116E-01	0.128
NB-95	-5.940E+00		3.046E+00	7.217E+00	1.471E-01	-0.823
TC-95M	6.943E+00		1.212E+01	4.669E+01	9.431E-01	0.149
ZR-95	1.273E+00		6.405E+00	2.717E+01	5.534E-01	0.047
ZRNB-95	-1.154E+01		5.719E+00	1.264E+01	2.577E-01	-0.913
MO-99	1.722E+01		4.681E+01	1.726E+02	3.549E+00	0.100
RH-101	8.448E+00		1.155E+01	4.426E+01	8.952E-01	0.191
RH-102M	4.714E-01		4.713E+00	1.863E+01	3.735E-01	0.025
RU-103	-6.313E+00		4.751E+00	1.559E+01	3.130E-01	-0.405
RU-106DA	-6.509E+01		4.964E+01	1.676E+02	3.385E+00	-0.388
AG-108M	-1.530E+01		5.838E+00	1.597E+01	3.197E-01	-0.958
AG-110M	1.375E+00		5.490E+00	2.288E+01	4.700E-01	0.060
SN-113DA	6.560E+00		8.883E+00	3.598E+01	7.197E-01	0.182

Sample ID : JH3MJ1AC Acquisition date : 13-NOV-2006 10:05:24

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	2.503E+00		4.059E+00	1.774E+01	3.581E-01	0.141
SB-125	-7.899E+00		1.637E+01	6.073E+01	1.216E+00	-0.130
SN-126DA	-6.361E-02		3.779E+00	1.530E+01	3.099E-01	-0.004
I-131	-3.137E+00		1.172E+01	4.398E+01	8.797E-01	-0.071
CS-134	-3.057E+00		5.194E+00	1.951E+01	3.983E-01	-0.157
CS-137DA	2.503E+00		4.433E+00	1.913E+01	3.874E-01	0.131
LA-138	-6.473E+00		4.721E+00	1.587E+01	3.378E-01	-0.408
CE-139	-2.820E+01		1.245E+01	3.768E+01	7.680E-01	-0.748
BA-140	3.531E+01		1.667E+01	8.856E+01	1.781E+00	0.399
BALA-140	-6.421E-01		8.039E+00	3.496E+01	7.518E-01	-0.018
LA-140	-2.824E+01		3.446E+01	1.301E+02	2.798E+00	-0.217
CE-141	-1.722E+00		1.623E+01	5.934E+01	1.218E+00	-0.029
CE-144	-1.298E+02		6.845E+01	2.150E+02	4.435E+00	-0.604
CEPR-144	-2.596E+02		1.369E+02	4.300E+02	8.871E+00	-0.604
PM-144	-4.036E-01		4.836E+00	1.880E+01	3.796E-01	-0.021
PM-146	4.059E+00		7.571E+00	3.067E+01	6.145E-01	0.132
EU-152	1.470E+01		2.113E+01	8.576E+01	1.715E+00	0.171
EU-154	1.619E+00		9.385E+00	4.025E+01	8.483E-01	0.040
EU-155	-4.395E+01		3.657E+01	1.248E+02	2.618E+00	-0.352
HF-181	-6.162E+00		5.093E+00	1.716E+01	3.443E-01	-0.359
BI-207	-1.149E+00		5.341E+00	2.035E+01	4.098E-01	-0.056
TL-208	-3.371E+00		5.484E+00	2.033E+01	4.099E-01	-0.166
BI-210M	-1.657E+01		1.241E+01	4.126E+01	8.274E-01	-0.402
BI-212	1.063E+02		6.421E+01	2.951E+02	9.014E+00	0.360
PB-212	-1.587E+00		1.710E+01	6.260E+01	1.259E+00	-0.025
BI-214	1.729E+00		9.967E+00	3.990E+01	8.054E-01	0.043
PB-214	-1.740E+01		2.071E+01	6.452E+01	1.290E+00	-0.270
RA-223	8.216E+01		4.271E+01	1.839E+02	3.687E+00	0.447
RA-224DA	-1.596E+00		1.720E+01	6.297E+01	1.266E+00	-0.025
RA-226DA	1.635E+00		9.956E+00	3.983E+01	8.040E-01	0.041
AC-227DA	7.741E+01		6.532E+01	2.586E+02	5.200E+00	0.299
AC-228	2.188E+01		1.354E+01	6.469E+01	1.331E+00	0.338
RA-228DA	2.192E+01		1.357E+01	6.481E+01	1.334E+00	0.338
TH-228DA	-9.438E+00		1.536E+01	5.693E+01	1.148E+00	-0.166
TH-232DA	3.155E+01		4.788E+01	1.921E+02	3.842E+00	0.164
TH-234DA	4.824E+02		5.161E+02	2.392E+03	4.952E+01	0.202
U-234DA	6.602E+01		3.718E+01	1.513E+02	3.030E+00	0.436
U-235HP	3.530E+01		7.079E+01	2.675E+02	5.494E+00	0.132
NP-237DA	-3.585E+01		1.746E+01	5.240E+01	1.049E+00	-0.684
U-238DA	-1.740E+01		2.071E+01	6.452E+01	1.290E+00	-0.270
U-238DHP	-2.132E+02		2.763E+02	9.298E+02	2.047E+01	-0.229
AM-241HP	-2.153E+01		2.616E+01	8.848E+01	1.962E+00	-0.243


STL Richland WA.
BA133
Batch ID: 6311395
Sample ID: JH3MK1AC
Detector ID: GER7 1
133 Ba
133 Ba
133 Ba
133 Ba, 208 Tl
133 Ba
Counts
100
20
10
2
1
Energy
50
100
200
500
1000
2000
()
Energy Coefficients:
Offset: 6.09766E-01
Slope: 2.49269E-01
Quadrature: 1.27094E-07
Acquisition Start: 13-NOV-2006 10:05:28.36
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JH3MK1AC

CONFIGURATION ID: GER7:JH3MK1AC_131161005
TITLE : BA133
SAMPLE ID : JH3MK1AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 10:05:28
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 7-NOV-2006 12:00:00.00
CALIB DATE: 13-NOV-2006 05:25:09.46
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: 6.0977E-01 keV
ENERGY SLOPE: 2.4927E-01 keV/C
ENERGY Q COEFF: 1.2709E-07 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 5.0504E-01 keV
FWHM SLOPE: 3.7958E-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 13-NOV-2006 10:35:57

Configuration : $DISK1:[GER7.SAMPLE]JH3MK1AC_131161005.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 7-NOV-2006 12:00:00 Acquisition date : 13-NOV-2006 10:05:28
Sample ID : JH3MK1AC 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 : 20.55 End energy : 2051.15
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*	4	52	0.59	298.75	293	11	2.45E-03	349.6	
2	0	80.99	312	52	0.73	322.42	315	15	1.73E-01	7.6	
3	0	276.31	31	6	0.96	1105.40	1099	11	1.73E-02	23.2	
4	0	302.86	78	14	1.30	1211.78	1205	12	4.33E-02	15.0	
5	0	355.94	287	11	1.26	1424.46	1417	21	1.59E-01	6.5	
6	0	383.87	44	3	0.94	1536.33	1530	13	2.44E-02	17.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 10:35:58

Configuration : $DISK1:[GER7.SAMPLE]JH3MK1AC_131161005.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 7-NOV-2006 12:00:00
Sample ID : JH3MK1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Energy tolerance : 1.50
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 13-NOV-2006 10:05:28
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.19 0.0%
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy

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	312	33.00	1.923E+00	1.640E+03	1.642E+03	9.34
	276.40	31	6.90	2.076E+00	7.253E+02	7.261E+02	23.79
	302.84	78	17.80	2.078E+00	7.018E+02	7.026E+02	15.96
	356.00	287	62.05*	2.080E+00	7.398E+02	7.406E+02	8.48
	383.85	44	8.70	2.080E+00	8.095E+02	8.104E+02	18.08

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JH3MK1AC

Acquisition date : 13-NOV-2006 10:05:28

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.09	4	52	0.59	298.75	293	11	2.45E-03	****	1.91E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JH3MK1AC

Acquisition date : 13-NOV-2006 10:05:28

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	7.360E+02	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			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 10:36:00

Configuration : $DISK1:[GER7.SAMPLE]JH3MK1AC_131161005.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 : 7-NOV-2006 12:00:00 Acquisition date : 13-NOV-2006 10:05:28
Sample ID : JH3MK1AC 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 ----

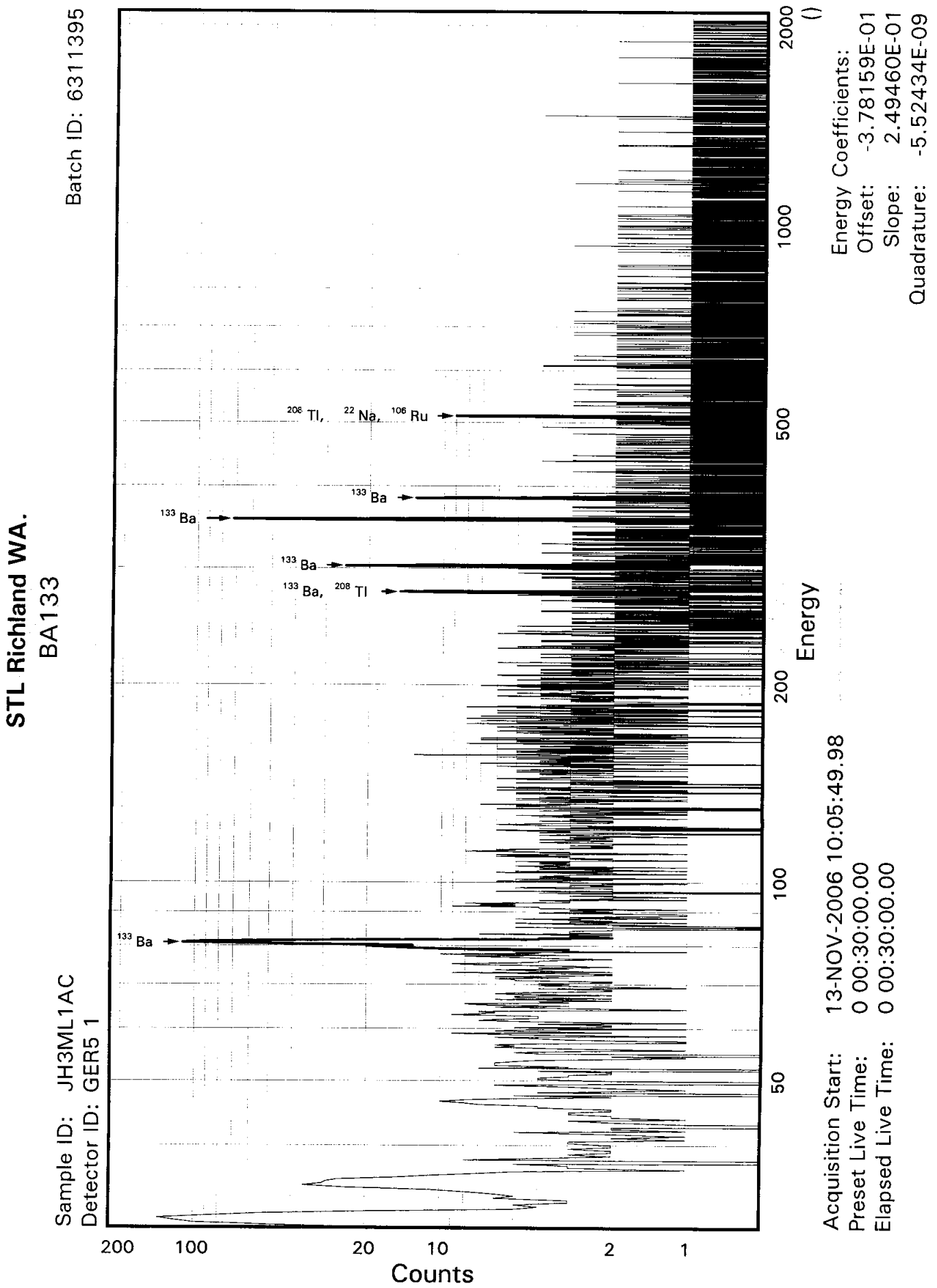
Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.406E+02	6.280E+01	4.593E+01	9.187E-01	16.123

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.711E+01		6.019E+01	2.348E+02	4.710E+00	-0.073
NA-22	3.581E+00		3.483E+00	1.862E+01	3.949E-01	0.192
K-40	9.483E+00		6.101E+01	3.034E+02	6.519E+00	0.031
SC-46	1.515E-01		4.260E+00	1.898E+01	3.979E-01	0.008
CR-51	4.168E+01		9.804E+01	3.851E+02	7.705E+00	0.108
MN-54	7.234E+00		6.205E+00	2.796E+01	5.740E-01	0.259
CO-57	-1.315E+02		1.028E+02	3.505E+02	7.245E+00	-0.375
CO-58	-5.011E+00		2.906E+00	4.731E+00	9.695E-02	-1.059
FE-59	1.219E+01		1.002E+01	4.780E+01	1.001E+00	0.255
CO-60	-5.858E-02		2.459E+00	1.257E+01	2.676E-01	-0.005
ZN-65	-6.425E+00		6.587E+00	2.474E+01	5.185E-01	-0.260
SE-75	-7.399E+00		1.305E+01	4.819E+01	9.668E-01	-0.154
SR-85	-2.817E+01		1.102E+01	3.184E+01	6.399E-01	-0.885
Y-88	1.870E+00		3.184E+00	1.713E+01	3.773E-01	0.109
NB-94	-1.076E+00		4.390E+00	1.830E+01	3.767E-01	-0.059
NB-95	-4.129E+00		5.975E+00	2.213E+01	4.520E-01	-0.187
TC-95M	9.498E+00		1.790E+01	6.750E+01	1.365E+00	0.141
ZR-95	-1.982E+01		1.031E+01	2.926E+01	5.973E-01	-0.678
ZRNB-95	-7.829E+00		1.133E+01	4.195E+01	8.569E-01	-0.187
MO-99	4.465E+00		5.810E+01	2.160E+02	4.457E+00	0.021
RH-101	-7.387E+00		1.576E+01	5.547E+01	1.123E+00	-0.133
RH-102M	3.212E-01		5.939E+00	2.426E+01	4.866E-01	0.013
RU-103	3.772E-01		8.172E+00	3.234E+01	6.493E-01	0.012
RU-106DA	5.163E+01		4.975E+01	2.356E+02	4.765E+00	0.219
AG-108M	-2.404E+01		7.541E+00	1.692E+01	3.389E-01	-1.421
AG-110M	-6.702E+00		6.867E+00	2.486E+01	5.123E-01	-0.270
SN-113DA	-1.292E+01		9.371E+00	3.189E+01	6.380E-01	-0.405

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	3.851E+00		6.032E+00	2.653E+01	5.360E-01	0.145
SB-125	4.728E+00		2.208E+01	8.984E+01	1.799E+00	0.053
SN-126DA	-9.902E-01		3.753E+00	1.603E+01	3.252E-01	-0.062
I-131	6.806E+00		1.369E+01	5.597E+01	1.119E+00	0.122
CS-134	-4.362E+00		6.327E+00	2.332E+01	4.773E-01	-0.187
CS-137DA	-1.855E+00		4.247E+00	1.772E+01	3.593E-01	-0.105
LA-138	5.349E+00		7.223E+00	3.375E+01	7.238E-01	0.158
CE-139	-4.183E+00		1.480E+01	5.339E+01	1.090E+00	-0.078
BA-140	7.409E+00		2.718E+01	1.165E+02	2.344E+00	0.064
BALA-140	-1.017E+01		7.215E+00	1.356E+01	2.941E-01	-0.750
LA-140	-4.288E+01		3.041E+01	5.716E+01	1.239E+00	-0.750
CE-141	-6.537E+00		2.389E+01	8.797E+01	1.811E+00	-0.074
CE-144	3.144E+01		9.481E+01	3.661E+02	7.580E+00	0.086
CEPR-144	6.288E+01		1.896E+02	7.322E+02	1.516E+01	0.086
PM-144	-2.995E+00		5.133E+00	1.984E+01	4.012E-01	-0.151
PM-146	7.561E+00		8.880E+00	3.919E+01	7.854E-01	0.193
EU-152	4.599E+00		2.390E+01	9.613E+01	1.923E+00	0.048
EU-154	4.623E+00		1.079E+01	5.154E+01	1.093E+00	0.090
EU-155	-7.094E+00		5.279E+01	1.905E+02	4.019E+00	-0.037
HF-181	2.067E+00		7.118E+00	3.015E+01	6.049E-01	0.069
BI-207	-2.465E+00		6.617E+00	2.481E+01	5.001E-01	-0.099
TL-208	-1.344E+01		6.934E+00	2.304E+01	4.649E-01	-0.583
BI-210M	-5.136E+00		1.481E+01	5.595E+01	1.122E+00	-0.092
BI-212	1.242E+01		8.164E+01	3.402E+02	1.040E+01	0.037
PB-212	5.582E+00		2.301E+01	9.254E+01	1.861E+00	0.060
BI-214	-1.778E+00		1.536E+01	6.087E+01	1.230E+00	-0.029
PB-214	8.178E-01		2.409E+01	7.860E+01	1.572E+00	0.010
RA-223	2.296E+01		6.332E+01	2.485E+02	4.983E+00	0.092
RA-224DA	5.615E+00		2.315E+01	9.308E+01	1.872E+00	0.060
RA-226DA	-1.779E+00		1.536E+01	6.087E+01	1.230E+00	-0.029
AC-227DA	6.612E+00		8.823E+01	3.350E+02	6.740E+00	0.020
AC-228	-8.957E+00		1.740E+01	7.167E+01	1.479E+00	-0.125
RA-228DA	-8.974E+00		1.744E+01	7.181E+01	1.482E+00	-0.125
TH-228DA	-3.764E+01		1.941E+01	6.451E+01	1.302E+00	-0.583
TH-232DA	4.054E+01		6.358E+01	2.556E+02	5.112E+00	0.159
TH-234DA	7.548E+02		6.841E+02	3.356E+03	6.974E+01	0.225
U-234DA	2.751E+01		5.087E+01	1.972E+02	3.950E+00	0.139
U-235HP	1.281E+01		1.023E+02	3.853E+02	7.937E+00	0.033
NP-237DA	-1.988E+00		2.356E+01	8.869E+01	1.775E+00	-0.022
U-238DA	8.178E-01		2.409E+01	7.860E+01	1.572E+00	0.010
U-238DHP	9.701E+02		4.185E+02	1.679E+03	3.739E+01	0.578
AM-241HP	2.484E+00		3.716E+01	1.375E+02	3.084E+00	0.018


STL Richland WA.
BA133
Batch ID: 6311395
Sample ID: JH3ML1AC
Detector ID: GER5 1
133 Ba
133 Ba
133 Ba
133 Ba, 208 Tl
208 Tl, 22 Na, 106 Ru
Counts
200
100
20
10
2
1
Energy
50
100
200
500
1000
2000
()
Acquisition Start: 13-NOV-2006 10:05:49.98
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00
Energy Coefficients:
Offset: -3.78159E-01
Slope: 2.49460E-01
Quadrature: -5.52434E-09

SAMPLE IDENTIFICATION: JH3ML1AC

CONFIGURATION ID: GER5:JH3ML1AC_131161005
TITLE : BA133
SAMPLE ID : JH3ML1AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 10:05:49
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 30-OCT-2006 12:00:00.00
CALIB DATE: 13-NOV-2006 05:12:56.18
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: -.3782E+00 keV
ENERGY SLOPE: 2.4946E-01 keV/C
ENERGY Q COEFF: -.5524E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 7.6876E-01 keV
FWHM SLOPE: 2.5349E-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 13-NOV-2006 10:36:05

Configuration : RDND06$DKA100:[GER5.SAMPLE]JH3ML1AC_131161005.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 10:05:49
Sample ID : JH3ML1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.25 0.0%
Start energy : 19.58 End energy : 2042.83
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.93	547	124	0.97	125.52	117	16	3.04E-01	6.2	
2	0	35.15	175	51	1.23	142.40	133	17	9.70E-02	12.1	
3	0	80.92	410	57	0.74	325.90	318	15	2.28E-01	6.3	
4	0	276.37	62	16	1.04	1109.42	1101	17	3.43E-02	19.9	
5	0	302.96	107	24	1.15	1216.03	1207	22	5.95E-02	15.7	
6	0	355.98	322	5	1.01	1428.56	1419	18	1.79E-01	5.8	
7	0	383.87	48	4	1.00	1540.37	1532	16	2.68E-02	17.1	
8	0	511.23*	6	10	1.41	2050.97	2044	14	3.57E-03	136.5	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 13-NOV-2006 10:36:05

Configuration : RDND06$DKA100:[GER5.SAMPLE]JH3ML1AC_131161005.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BA133
Sample date : 30-OCT-2006 12:00:00 Acquisition date : 13-NOV-2006 10:05:49
Sample ID : JH3ML1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.25 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	410	33.00	1.924E+00	2.155E+03	2.160E+03	8.36
	276.40	62	6.90	2.077E+00	1.435E+03	1.439E+03	20.59
	302.84	107	17.80	2.080E+00	9.645E+02	9.670E+02	16.58
	356.00	322	62.05*	2.082E+00	8.316E+02	8.337E+02	7.90
	383.85	48	8.70	2.081E+00	8.877E+02	8.900E+02	17.93

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JH3ML1AC Acquisition date : 13-NOV-2006 10:05:49

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.93	547	124	0.97	125.52	117	16	3.04E-01	6.2	1.68E+00	
0	35.15	175	51	1.23	142.40	133	17	9.70E-02	12.1	1.72E+00	
0	511.23	6	10	1.41	2050.97	2044	14	3.57E-03	****	2.07E+00	T

Flags: "T" = Tentatively associated

Sample ID : JH3ML1AC
Acquisition date : 13-NOV-2006 10:05:49

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
NA-22	2.60Y	0.01	511.00	179.68	5.806E+00	136.56	Abun.
			1274.54*	99.94	--- Not Found ---		
		% Abundances Found =		64.26			
RU-106DA	368.20D	0.04	511.85	20.60	5.146E+01	136.56	Abun.
			621.84*	9.80	--- Not Found ---		
		% Abundances Found =		67.76			
TL-208	1.41E+10Y	0.00	277.35	6.80	1.456E+03	20.59	Abun.
			510.84	21.60	4.781E+01	136.56	
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		22.71			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 13-NOV-2006 10:36:06

Configuration	: RDND06$DKA100:[GER5.SAMPLE]JH3ML1AC_131161005.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	: 30-OCT-2006 12:00:00	Acquisition date	: 13-NOV-2006 10:05:49
Sample ID	: JH3ML1AC	Sample quantity	: 1.0000 SAMPL
Sample type	:	Sample geometry	: BA133T15
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.25 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	8.337E+02	6.588E+01	4.637E+01	9.273E-01	17.981

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-5.265E+01		7.614E+01	2.786E+02	5.589E+00	-0.189
NA-22	1.705E+00		2.980E+00	1.592E+01	3.376E-01	0.107
NA-24	-4.050E+00		4.056E+00	Half-Life too short		
K-40	4.647E+00		7.597E+01	3.434E+02	7.378E+00	0.014
SC-46	8.620E+00		5.484E+00	2.746E+01	5.758E-01	0.314
CR-51	-7.505E+01		1.417E+02	5.012E+02	1.003E+01	-0.150
MN-54	3.735E+00		5.429E+00	2.424E+01	4.976E-01	0.154
CO-57	-3.107E+01		1.383E+02	4.848E+02	1.002E+01	-0.064
CO-58	-5.099E+00		6.880E+00	2.531E+01	5.187E-01	-0.201
FE-59	3.683E+00		3.688E+00	2.708E+01	5.669E-01	0.136
CO-60	5.108E+00		3.855E+00	2.056E+01	4.378E-01	0.248
ZN-65	-1.473E+01		1.042E+01	3.467E+01	7.267E-01	-0.425
SE-75	-1.136E+01		1.722E+01	6.096E+01	1.223E+00	-0.186
SR-85	6.037E+00		9.082E+00	3.328E+01	6.688E-01	0.181
Y-88	1.916E+00		3.383E+00	1.803E+01	3.972E-01	0.106
NB-94	-1.330E-01		5.747E+00	2.323E+01	4.781E-01	-0.006
NB-95	-2.356E+00		4.705E+00	1.950E+01	3.983E-01	-0.121
TC-95M	-1.359E+01		2.331E+01	8.217E+01	1.662E+00	-0.165
ZR-95	-6.591E+00		8.311E+00	3.189E+01	6.509E-01	-0.207
ZRNB-95	-3.699E+00		8.404E+00	3.517E+01	7.184E-01	-0.105
MO-99	2.847E+02		4.815E+02	1.781E+03	3.674E+01	0.160
RH-101	1.117E+01		2.016E+01	7.484E+01	1.515E+00	0.149
RH-102M	-1.040E+00		6.657E+00	2.610E+01	5.235E-01	-0.040
RU-103	-5.265E+00		1.028E+01	3.799E+01	7.629E-01	-0.139
RU-106DA	2.050E+01		6.388E+01	2.622E+02	5.304E+00	0.078
AG-108M	-2.374E+01		8.340E+00	2.190E+01	4.386E-01	-1.084
AG-110M	1.070E+00		6.951E+00	2.974E+01	6.127E-01	0.036

Sample ID : JH3ML1AC Acquisition date : 13-NOV-2006 10:05:49

---- Non-Identified Nuclides ----

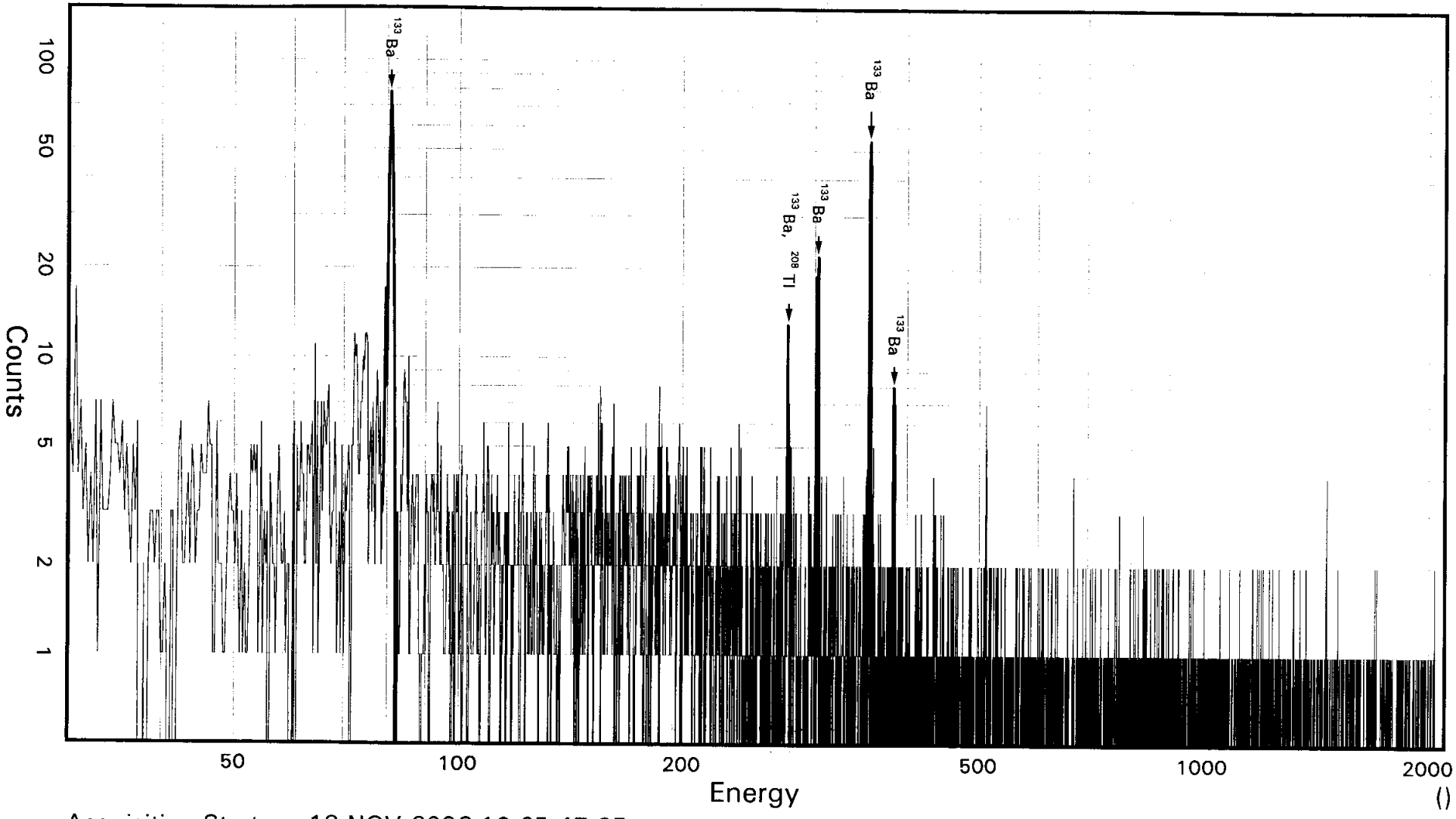
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	1.157E+01		1.288E+01	5.372E+01	1.075E+00	0.215
SB-124	-2.647E+00		7.699E+00	2.911E+01	5.880E-01	-0.091
SB-125	9.287E-01		2.544E+01	9.948E+01	1.992E+00	0.009
SN-126DA	3.197E+00		4.463E+00	2.098E+01	4.256E-01	0.152
I-131	-3.832E+01		2.782E+01	9.478E+01	1.896E+00	-0.404
CS-134	3.972E+00		6.713E+00	2.917E+01	5.971E-01	0.136
CS-137DA	6.784E-01		6.966E+00	2.865E+01	5.810E-01	0.024
LA-138	2.472E+00		4.521E+00	2.389E+01	5.123E-01	0.103
CE-139	6.294E+00		1.903E+01	7.053E+01	1.440E+00	0.089
BA-140	3.953E+01		5.356E+01	2.283E+02	4.594E+00	0.173
BALA-140	1.588E+01		1.881E+01	9.286E+01	2.014E+00	0.171
LA-140	5.345E-04		6.331E-04	Half-Life too short		
CE-141	4.030E+01		3.998E+01	1.490E+02	3.067E+00	0.270
CE-144	-9.938E+00		1.346E+02	4.765E+02	9.865E+00	-0.021
CEPR-144	-1.479E+01		2.695E+02	9.550E+02	1.977E+01	-0.015
PM-144	4.601E+00		6.175E+00	2.660E+01	5.378E-01	0.173
PM-146	-1.434E+00		9.603E+00	3.779E+01	7.574E-01	-0.038
EU-152	-1.010E+01		3.266E+01	1.188E+02	2.376E+00	-0.085
EU-154	4.766E+00		8.329E+00	4.451E+01	9.436E-01	0.107
EU-155	1.628E+01		7.216E+01	2.607E+02	5.499E+00	0.062
HF-181	1.120E+01		9.311E+00	4.165E+01	8.358E-01	0.269
BI-207	1.175E+00		7.318E+00	2.878E+01	5.802E-01	0.041
TL-208	-2.167E+00		6.524E+00	2.533E+01	5.110E-01	-0.086
BI-210M	-3.814E+00		1.973E+01	7.225E+01	1.449E+00	-0.053
BI-212	-6.921E+01		8.077E+01	2.975E+02	9.095E+00	-0.233
PB-212	7.671E-01		2.897E+01	1.108E+02	2.228E+00	0.007
BI-214	2.880E+01		1.911E+01	7.976E+01	1.612E+00	0.361
PB-214	-2.605E+00		2.209E+01	7.962E+01	1.592E+00	-0.033
RA-223	7.461E+01		7.410E+01	2.933E+02	5.881E+00	0.254
RA-224DA	7.778E-01		2.937E+01	1.123E+02	2.260E+00	0.007
RA-226DA	2.866E+01		1.910E+01	7.968E+01	1.610E+00	0.360
AC-227DA	-2.530E+02		1.088E+02	3.343E+02	6.727E+00	-0.757
AC-228	2.170E+01		1.814E+01	9.334E+01	1.927E+00	0.232
RA-228DA	2.180E+01		1.822E+01	9.377E+01	1.936E+00	0.232
TH-228DA	-6.117E+00		1.841E+01	7.148E+01	1.442E+00	-0.086
TH-232DA	1.507E+02		7.992E+01	3.315E+02	6.631E+00	0.454
TH-234DA	5.345E+02		8.375E+02	3.676E+03	7.640E+01	0.145
U-234DA	1.143E+02		5.652E+01	2.324E+02	4.654E+00	0.492
U-235HP	9.623E+01		1.302E+02	4.821E+02	9.930E+00	0.200
NP-237DA	-1.688E+01		2.540E+01	8.939E+01	1.789E+00	-0.189
U-238DA	-2.605E+00		2.209E+01	7.962E+01	1.592E+00	-0.033
U-238DHP	-2.677E+02		4.792E+02	1.790E+03	3.986E+01	-0.150
AM-241HP	9.671E+00		4.730E+01	1.720E+02	3.859E+00	0.056

STL Richland WA.

BA133

Sample ID: JH3MM1AC
Detector ID: GER6 1

Batch ID: 6311395



Acquisition Start: 13-NOV-2006 10:05:47.95
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -1.16882E-03
Slope: 2.49484E-01
Quadrature: 7.22075E-09

SAMPLE IDENTIFICATION: JH3MM1AC

CONFIGURATION ID: GER6:JH3MM1AC_131161005
TITLE : BA133
SAMPLE ID : JH3MM1AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 10:05:47
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 7-NOV-2006 12:00:00.00
CALIB DATE: 13-NOV-2006 05:11:25.93
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: -.1169E-02 keV
ENERGY SLOPE: 2.4948E-01 keV/C
ENERGY Q COEFF: 7.2208E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.9076E-01 keV
FWHM SLOPE: 6.5845E-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 13-NOV-2006 10:36:13

Configuration : $DISK1:[GER6.SAMPLE]JH3MM1AC_131161005.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 7-NOV-2006 12:00:00 Acquisition date : 13-NOV-2006 10:05:47
Sample ID : JH3MM1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
Start energy : 19.96 End energy : 2044.26
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	342	30	1.01	323.96	316	15	1.90E-01	6.4	
2	0	276.76	50	13	0.86	1109.29	1102	17	2.76E-02	21.8	
3	0	302.90	134	0	1.59	1214.05	1205	21	7.44E-02	8.6	
4	0	356.05	324	14	1.48	1427.09	1417	18	1.80E-01	6.2	
5	0	383.83	46	4	1.63	1538.45	1529	15	2.53E-02	17.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 10:36:14

Configuration : $DISK1:[GER6.SAMPLE]JH3MM1AC_131161005.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 7-NOV-2006 12:00:00 Acquisition date : 13-NOV-2006 10:05:47
Sample ID : JH3MM1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	342	33.00	2.166E+00	1.593E+03	1.595E+03	8.43
	276.40	50	6.90	2.334E+00	1.029E+03	1.030E+03	22.43
	302.84	134	17.80	2.337E+00	1.074E+03	1.075E+03	10.18
	356.00	324	62.05*	2.339E+00	7.443E+02	7.451E+02	8.18
	383.85	46	8.70	2.338E+00	7.457E+02	7.465E+02	18.39

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JH3MM1AC

Acquisition date : 13-NOV-2006 10:05:47

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	1.044E+03	22.43	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 13-NOV-2006 10:36:16

Configuration : $DISK1:[GER6.SAMPLE]JH3MM1AC_131161005.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 : 7-NOV-2006 12:00:00
Sample ID : JH3MM1AC
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 : 13-NOV-2006 10:05:47
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.24 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	7.451E+02	6.098E+01	6.236E+01	1.247E+00	11.948

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	8.576E+01		5.849E+01	2.653E+02	5.322E+00	0.323
NA-22	-1.601E+00		3.429E+00	1.407E+01	2.977E-01	-0.114
K-40	9.292E+00		7.979E+01	3.847E+02	8.246E+00	0.024
SC-46	1.344E+00		5.266E+00	2.209E+01	4.624E-01	0.061
CR-51	-1.130E+02		1.136E+02	3.865E+02	7.733E+00	-0.292
MN-54	-2.396E+00		6.830E+00	2.579E+01	5.290E-01	-0.093
CO-57	-1.848E+02		8.729E+01	2.732E+02	5.641E+00	-0.677
CO-58	-5.211E+00		6.554E+00	2.335E+01	4.781E-01	-0.223
FE-59	-8.899E+00		6.583E+00	2.126E+01	4.444E-01	-0.419
CO-60	1.632E+00		3.973E+00	1.822E+01	3.871E-01	0.090
ZN-65	1.666E+01		8.319E+00	4.379E+01	9.165E-01	0.381
SE-75	-8.075E+00		1.476E+01	5.364E+01	1.076E+00	-0.151
SR-85	2.081E+00		1.089E+01	4.035E+01	8.108E-01	0.052
Y-88	1.617E+00		3.671E+00	1.761E+01	3.868E-01	0.092
NB-94	5.372E+00		5.765E+00	2.506E+01	5.154E-01	0.214
NB-95	-5.056E+00		6.796E+00	2.459E+01	5.020E-01	-0.206
TC-95M	6.919E+00		1.722E+01	6.480E+01	1.310E+00	0.107
ZR-95	-1.012E+00		1.038E+01	4.122E+01	8.408E-01	-0.025
ZRNB-95	-9.587E+00		1.289E+01	4.662E+01	9.517E-01	-0.206
MO-99	4.790E+01		5.705E+01	2.177E+02	4.487E+00	0.220
RH-101	1.503E+01		1.679E+01	6.382E+01	1.292E+00	0.235
RH-102M	4.021E+00		6.083E+00	2.574E+01	5.162E-01	0.156
RU-103	-5.683E+00		6.380E+00	2.299E+01	4.617E-01	-0.247
RU-106DA	-7.459E+01		5.779E+01	1.948E+02	3.938E+00	-0.383
AG-108M	2.393E+00		8.894E+00	3.393E+01	6.796E-01	0.071
AG-110M	9.845E-02		8.192E+00	3.257E+01	6.705E-01	0.003
SN-113DA	1.598E+01		1.141E+01	4.850E+01	9.703E-01	0.329

Sample ID : JH3MM1AC Acquisition date : 13-NOV-2006 10:05:47

---- Non-Identified Nuclides ----

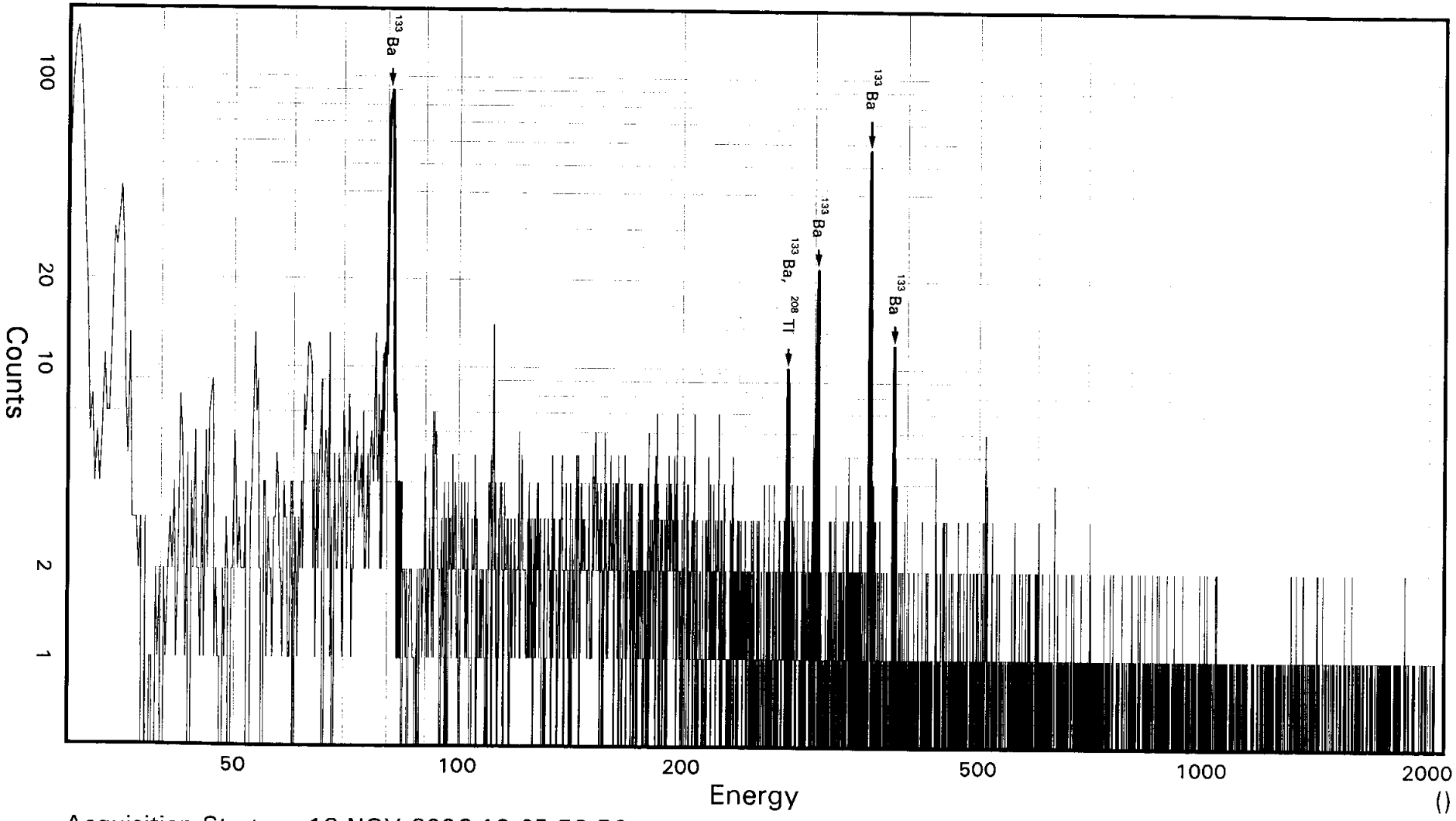
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	8.006E+00		6.845E+00	2.961E+01	5.980E-01	0.270
SB-125	3.168E+01		1.896E+01	8.728E+01	1.748E+00	0.363
SN-126DA	-9.059E+00		4.719E+00	1.341E+01	2.720E-01	-0.675
I-131	-3.085E+01		1.646E+01	5.251E+01	1.050E+00	-0.588
CS-134	-8.230E+00		6.880E+00	2.330E+01	4.766E-01	-0.353
CS-137DA	-3.651E+00		4.897E+00	1.827E+01	3.702E-01	-0.200
LA-138	1.087E+01		5.983E+00	3.170E+01	6.785E-01	0.343
CE-139	3.731E+00		1.358E+01	5.010E+01	1.022E+00	0.074
BA-140	-1.735E+01		2.552E+01	9.493E+01	1.910E+00	-0.183
BALA-140	-8.858E+00		1.259E+01	4.790E+01	1.036E+00	-0.185
LA-140	-3.734E+01		5.305E+01	2.019E+02	4.367E+00	-0.185
CE-141	-1.851E+01		2.468E+01	8.631E+01	1.775E+00	-0.214
CE-144	3.205E+01		9.306E+01	3.544E+02	7.330E+00	0.090
CEPR-144	1.752E+02		1.791E+02	7.115E+02	1.471E+01	0.246
PM-144	2.946E+00		4.650E+00	2.072E+01	4.188E-01	0.142
PM-146	7.688E+00		9.466E+00	4.009E+01	8.035E-01	0.192
EU-152	5.648E+01		2.865E+01	1.236E+02	2.472E+00	0.457
EU-154	-4.492E+00		9.623E+00	3.948E+01	8.355E-01	-0.114
EU-155	1.836E+01		4.522E+01	1.717E+02	3.615E+00	0.107
HF-181	-4.701E+00		8.713E+00	3.218E+01	6.456E-01	-0.146
BI-207	-1.192E+01		6.649E+00	2.119E+01	4.271E-01	-0.563
TL-208	4.040E+00		7.797E+00	3.369E+01	6.795E-01	0.120
BI-210M	-6.246E+00		1.644E+01	6.070E+01	1.218E+00	-0.103
BI-212	2.367E+01		7.266E+01	3.107E+02	9.497E+00	0.076
PB-212	1.893E+01		2.238E+01	9.020E+01	1.814E+00	0.210
BI-214	-6.972E+00		1.492E+01	6.054E+01	1.223E+00	-0.115
PB-214	9.700E+00		2.723E+01	9.620E+01	1.924E+00	0.101
RA-223	7.053E+01		6.373E+01	2.577E+02	5.168E+00	0.274
RA-224DA	1.904E+01		2.251E+01	9.074E+01	1.825E+00	0.210
RA-226DA	-6.972E+00		1.492E+01	6.054E+01	1.223E+00	-0.115
AC-227DA	-9.316E+01		9.964E+01	3.382E+02	6.803E+00	-0.275
AC-228	8.367E+00		2.195E+01	9.248E+01	1.907E+00	0.090
RA-228DA	8.384E+00		2.199E+01	9.266E+01	1.911E+00	0.090
TH-228DA	1.131E+01		2.183E+01	9.432E+01	1.903E+00	0.120
TH-232DA	2.648E+01		6.343E+01	2.449E+02	4.898E+00	0.108
TH-234DA	6.987E+02		6.785E+02	3.207E+03	6.658E+01	0.218
U-234DA	8.712E+01		4.692E+01	1.951E+02	3.906E+00	0.447
U-235HP	-5.269E+00		1.028E+02	3.761E+02	7.740E+00	-0.014
NP-237DA	1.177E+01		2.082E+01	8.248E+01	1.651E+00	0.143
U-238DA	9.700E+00		2.723E+01	9.620E+01	1.924E+00	0.101
U-238DHP	-4.727E+01		3.775E+02	1.339E+03	2.972E+01	-0.035
AM-241HP	-5.098E+01		3.113E+01	9.937E+01	2.222E+00	-0.513

STL Richland WA.

BA133

Sample ID: JH3NN1AC
Detector ID: GER8 1

Batch ID: 6311395



Acquisition Start: 13-NOV-2006 10:05:53.56
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.48791E-01
Slope: 2.49505E-01
Quadrature: 1.57420E-08

SAMPLE IDENTIFICATION: JH3NN1AC

CONFIGURATION ID: GER8:JH3NN1AC_131161005
TITLE : BA133
SAMPLE ID : JH3NN1AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 10:05:53
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 7-NOV-2006 12:00:00.00
CALIB DATE: 13-NOV-2006 05:11:58.71
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: 1.4879E-01 keV
ENERGY SLOPE: 2.4950E-01 keV/C
ENERGY Q COEFF: 1.5742E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.7056E-01 keV
FWHM SLOPE: 1.9926E-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 13-NOV-2006 10:36:29

Configuration : $DISK1:[GER8.SAMPLE]JH3NN1AC_131161005.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 7-NOV-2006 12:00:00 Acquisition date : 13-NOV-2006 10:05:53
Sample ID : JH3NN1AC 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 : 20.11 End energy : 2045.15
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	30.77	617	112	1.08	122.74	114	35	3.43E-01	5.3	1.02E+00
2	1	35.12	150	51	1.20	140.16	114	35	8.36E-02	16.2	
3	0	46.62*	1	17	0.66	186.25	182	11	7.64E-04	703.5	
4	0	53.87	22	30	0.81	215.31	207	12	1.23E-02	53.7	
5	0	80.90	479	57	1.25	323.64	314	21	2.66E-01	6.1	
6	0	111.34	32	19	0.37	445.64	438	15	1.78E-02	34.4	
7	0	207.67	16	15	0.41	831.69	821	15	8.90E-03	58.3	
8	0	276.44	54	14	1.28	1107.27	1097	18	3.02E-02	20.9	
9	0	302.79	120	12	1.46	1212.88	1203	17	6.66E-02	11.4	
10	0	356.02	307	11	1.08	1426.19	1417	21	1.70E-01	6.3	
11	0	383.83	47	11	0.89	1537.61	1530	15	2.60E-02	21.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 10:36:30

Configuration : $DISK1:[GER8.SAMPLE]JH3NN1AC_131161005.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 7-NOV-2006 12:00:00 Acquisition date : 13-NOV-2006 10:05:53
Sample ID : JH3NN1AC 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 DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	479	33.00	2.202E+00	2.197E+03	2.199E+03	8.14
	276.40	54	6.90	2.371E+00	1.106E+03	1.107E+03	21.59
	302.84	120	17.80	2.374E+00	9.456E+02	9.466E+02	12.59
	356.00	307	62.05*	2.376E+00	6.930E+02	6.938E+02	8.28
	383.85	47	8.70	2.375E+00	7.537E+02	7.545E+02	22.09

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JH3NN1AC

Acquisition date : 13-NOV-2006 10:05:53

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	30.77	617	112	1.08	122.74	114	35	3.43E-01	5.3	1.93E+00	
1	35.12	150	51	1.20	140.16	114	35	8.36E-02	16.2	1.97E+00	
0	46.62	1	17	0.66	186.25	182	11	7.64E-04	****	2.06E+00	
0	53.87	22	30	0.81	215.31	207	12	1.23E-02	53.7	2.10E+00	
0	111.34	32	19	0.37	445.64	438	15	1.78E-02	34.4	2.27E+00	
0	207.67	16	15	0.41	831.69	821	15	8.90E-03	58.3	2.35E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JH3NN1AC

Acquisition date : 13-NOV-2006 10:05:53

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	1.122E+03	21.59	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 13-NOV-2006 10:36:31

Configuration : $DISK1:[GER8.SAMPLE]JH3NN1AC_131161005.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 : 7-NOV-2006 12:00:00
Sample ID : JH3NN1AC
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 : 13-NOV-2006 10:05:53
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	6.938E+02	5.747E+01	4.429E+01	8.859E-01	15.663

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-4.117E+01		5.570E+01	2.003E+02	4.019E+00	-0.205
NA-22	4.475E+00		2.595E+00	1.605E+01	3.396E-01	0.279
K-40	3.474E+01		4.312E+01	2.233E+02	4.785E+00	0.156
SC-46	6.266E+00		5.327E+00	2.446E+01	5.119E-01	0.256
CR-51	2.713E+01		9.589E+01	3.678E+02	7.359E+00	0.074
MN-54	2.820E+00		3.615E+00	1.750E+01	3.590E-01	0.161
CO-57	1.822E+01		1.095E+02	3.983E+02	8.225E+00	0.046
CO-58	-1.699E+00		4.116E+00	1.647E+01	3.373E-01	-0.103
FE-59	1.100E-01		5.636E+00	2.640E+01	5.519E-01	0.004
CO-60	5.298E+00		3.549E+00	1.888E+01	4.011E-01	0.281
ZN-65	-2.652E+00		9.670E+00	3.854E+01	8.064E-01	-0.069
SE-75	9.410E-02		1.308E+01	4.991E+01	1.001E+00	0.002
SR-85	-2.637E+01		1.031E+01	3.122E+01	6.274E-01	-0.844
Y-88	1.722E+00		1.668E+00	1.210E+01	2.656E-01	0.142
NB-94	-9.071E+00		4.256E+00	1.061E+01	2.181E-01	-0.855
NB-95	1.586E+00		2.811E+00	1.497E+01	3.055E-01	0.106
TC-95M	-9.133E+00		1.950E+01	5.896E+01	1.192E+00	-0.155
ZR-95	1.104E+01		5.551E+00	3.312E+01	6.756E-01	0.333
ZRNB-95	3.007E+00		5.329E+00	2.838E+01	5.792E-01	0.106
MO-99	-9.973E+01		5.618E+01	1.786E+02	3.680E+00	-0.558
RH-101	-1.301E+01		1.569E+01	5.498E+01	1.113E+00	-0.237
RH-102M	-3.204E+00		5.801E+00	2.136E+01	4.285E-01	-0.150
RU-103	1.177E+01		5.694E+00	2.869E+01	5.760E-01	0.410
RU-106DA	4.021E+01		5.557E+01	2.395E+02	4.841E+00	0.168
AG-108M	-3.229E+01		7.848E+00	1.221E+01	2.445E-01	-2.645
AG-110M	1.754E+00		5.453E+00	2.427E+01	4.995E-01	0.072
SN-113DA	1.270E+01		9.569E+00	4.189E+01	8.381E-01	0.303

Sample ID : JH3NN1AC Acquisition date : 13-NOV-2006 10:05:53

---- Non-Identified Nuclides ----

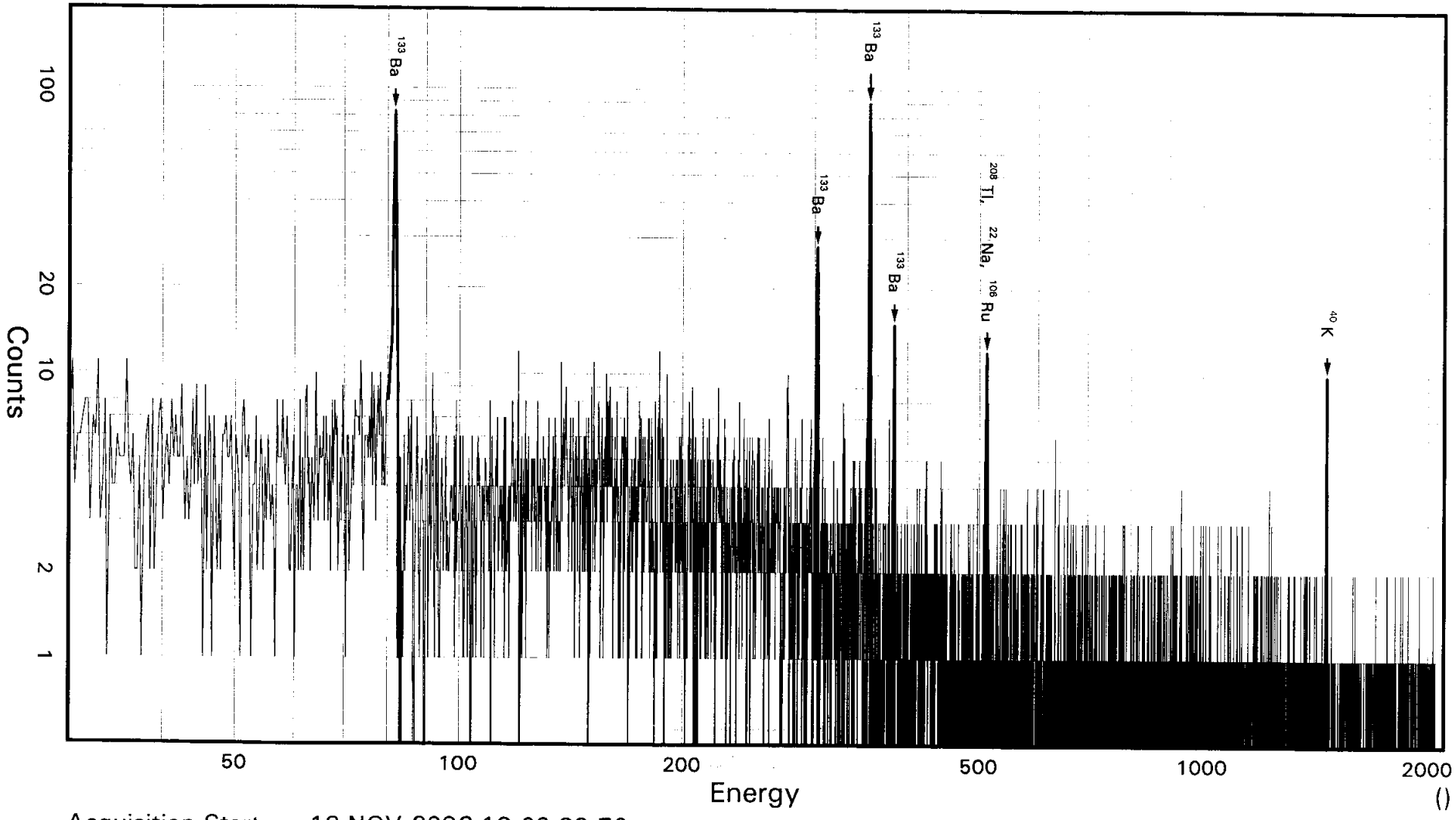
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	3.331E+00		5.740E+00	2.457E+01	4.962E-01	0.136
SB-125	-2.630E+01		2.153E+01	7.216E+01	1.445E+00	-0.364
SN-126DA	-4.211E+00		3.750E+00	1.320E+01	2.677E-01	-0.319
I-131	-2.314E+01		1.551E+01	5.067E+01	1.013E+00	-0.457
CS-134	3.339E+00		3.404E+00	1.817E+01	3.717E-01	0.184
CS-137DA	-2.901E+00		4.149E+00	1.612E+01	3.267E-01	-0.180
LA-138	-2.334E+00		2.338E+00	6.082E+00	1.301E-01	-0.384
CE-139	-9.386E+00		1.544E+01	5.309E+01	1.084E+00	-0.177
BA-140	6.716E-01		1.524E+01	7.224E+01	1.453E+00	0.009
BALA-140	1.509E-01		6.091E+00	3.222E+01	6.967E-01	0.005
LA-140	6.354E-01		2.567E+01	1.358E+02	2.937E+00	0.005
CE-141	4.979E+01		2.753E+01	1.082E+02	2.225E+00	0.460
CE-144	1.935E+02		9.874E+01	3.995E+02	8.262E+00	0.484
CEPR-144	3.859E+02		1.974E+02	7.986E+02	1.651E+01	0.483
PM-144	2.105E-01		5.359E+00	2.171E+01	4.389E-01	0.010
PM-146	4.861E+00		7.802E+00	3.339E+01	6.691E-01	0.146
EU-152	-3.423E+00		2.887E+01	1.080E+02	2.161E+00	-0.032
EU-154	1.256E+01		7.284E+00	4.504E+01	9.530E-01	0.279
EU-155	2.041E+01		5.033E+01	1.891E+02	3.982E+00	0.108
HF-181	1.477E+01		6.601E+00	3.260E+01	6.542E-01	0.453
BI-207	-4.919E-01		5.578E+00	2.220E+01	4.475E-01	-0.022
TL-208	2.196E-01		5.721E+00	2.360E+01	4.760E-01	0.009
BI-210M	7.505E+00		1.627E+01	6.351E+01	1.274E+00	0.118
BI-212	3.390E+01		8.034E+01	3.370E+02	1.030E+01	0.101
PB-212	1.104E+01		2.143E+01	8.401E+01	1.690E+00	0.131
BI-214	4.839E+00		1.156E+01	4.997E+01	1.010E+00	0.097
PB-214	-1.638E+01		1.970E+01	6.611E+01	1.322E+00	-0.248
RA-223	4.055E+00		5.958E+01	2.262E+02	4.537E+00	0.018
RA-224DA	1.111E+01		2.156E+01	8.450E+01	1.700E+00	0.131
RA-226DA	4.839E+00		1.156E+01	4.997E+01	1.010E+00	0.097
AC-227DA	-1.278E+02		8.985E+01	3.014E+02	6.064E+00	-0.424
AC-228	4.700E+00		1.192E+01	5.618E+01	1.159E+00	0.084
RA-228DA	4.709E+00		1.194E+01	5.629E+01	1.161E+00	0.084
TH-228DA	6.149E-01		1.602E+01	6.608E+01	1.333E+00	0.009
TH-232DA	9.161E+01		6.447E+01	2.668E+02	5.337E+00	0.343
TH-234DA	-3.976E+02		6.929E+02	2.689E+03	5.580E+01	-0.148
U-234DA	-1.375E+01		5.023E+01	1.822E+02	3.648E+00	-0.075
U-235HP	4.187E+01		1.122E+02	4.111E+02	8.460E+00	0.102
NP-237DA	9.274E-01		2.063E+01	7.876E+01	1.576E+00	0.012
U-238DA	-1.638E+01		1.970E+01	6.611E+01	1.322E+00	-0.248
U-238DHP	1.094E+03		4.767E+02	1.883E+03	4.176E+01	0.581
AM-241HP	-1.681E+02		4.423E+01	1.249E+02	2.792E+00	-1.345

STL Richland WA.

BA133

Sample ID: JH3NR1AC
Detector ID: GER13 1

Batch ID: 6311395



Acquisition Start: 13-NOV-2006 10:06:00.72
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -5.57931E-01
Slope: 2.50817E-01
Quadrature: -1.03164E-07

SAMPLE IDENTIFICATION: JH3NR1AC

CONFIGURATION ID: GER13:JH3NR1AC_131161006
TITLE : BA133
SAMPLE ID : JH3NR1AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 10:06:00
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 7-NOV-2006 12:00:00.00
CALIB DATE: 13-NOV-2006 05:27:15.55
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: -.5579E+00 keV
ENERGY SLOPE: 2.5082E-01 keV/C
ENERGY Q COEFF: -.1032E-06 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.6847E-01 keV
FWHM SLOPE: 3.9169E-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 13-NOV-2006 10:36:45

Configuration : $DISK1:[GER13.SAMPLE]JH3NR1AC_131161006.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 7-NOV-2006 12:00:00 Acquisition date : 13-NOV-2006 10:06:00
Sample ID : JH3NR1AC 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 : 19.51 End energy : 2047.21
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.90	241	61	0.60	328.82	322	14	1.34E-01	9.6	
2	0	302.68	145	21	1.28	1209.62	1202	16	8.05E-02	11.2	
3	0	355.77	408	25	1.01	1421.51	1411	20	2.27E-01	5.8	
4	0	383.56	71	3	1.07	1532.45	1526	13	3.94E-02	13.0	
5	0	511.04*	38	6	2.61	2041.42	2030	23	2.09E-02	31.1	
6	0	1460.80*	0	4	1.30	5840.43	5828	22	2.48E-04	*****	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 10:36:46

Configuration	: $DISK1:[GER13.SAMPLE]JH3NR1AC_131161006.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: BA133		
Sample date	: 7-NOV-2006 12:00:00	Acquisition date	: 13-NOV-2006 10:06:00
Sample ID	: JH3NR1AC	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: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
K-40	1460.81	0	10.67*	2.719E+00	5.133E+00	5.133E+00	2046.22

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	241	33.00	2.704E+00	9.015E+02	9.025E+02	11.02
	276.40	------	6.90	2.897E+00	------ Line Not Found		------
	302.84	145	17.80	2.900E+00	9.350E+02	9.360E+02	12.41
	356.00	408	62.05*	2.903E+00	7.554E+02	7.562E+02	7.90
	383.85	71	8.70	2.902E+00	9.352E+02	9.362E+02	14.05

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JH3NR1AC

Acquisition date : 13-NOV-2006 10:06:00

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	511.04	38	6	2.61	2041.42	2030	23	2.09E-02	31.1	2.89E+00	T

Flags: "T" = Tentatively associated

Sample ID : JH3NR1AC
Acquisition date : 13-NOV-2006 10:06:00

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
NA-22	2.60Y	0.01	511.00	179.68	2.428E+01	31.54	Abun.
			1274.54*	99.94	--- Not Found ---		
		% Abundances Found =		64.26			
RU-106DA	368.20D	0.02	511.85	20.60	2.132E+02	31.54	Abun.
			621.84*	9.80	--- Not Found ---		
		% Abundances Found =		67.76			
TL-208	1.41E+10Y	0.00	277.35	6.80	--- Not Found ---		Abun.
			510.84	21.60	2.011E+02	31.54	
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		17.27			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 13-NOV-2006 10:36:48

Configuration : $DISK1:[GER13.SAMPLE]JH3NR1AC_131161006.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 : 7-NOV-2006 12:00:00
Sample ID : JH3NR1AC
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 : 13-NOV-2006 10:06:00
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.39 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
K-40	5.133E+00	1.050E+02	1.029E+02	2.197E+00	0.050
BA-133	7.562E+02	5.978E+01	5.602E+01	1.120E+00	13.498

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	5.061E+01		6.308E+01	2.551E+02	5.116E+00	0.198
NA-22	-3.797E+00		4.434E+00	1.595E+01	3.364E-01	-0.238
SC-46	-4.123E+00		4.739E+00	2.020E+01	4.219E-01	-0.204
CR-51	-2.987E+01		9.749E+01	3.503E+02	7.009E+00	-0.085
MN-54	4.307E+00		4.879E+00	2.102E+01	4.305E-01	0.205
CO-57	-1.505E+02		1.128E+02	3.837E+02	7.910E+00	-0.392
CO-58	2.241E+00		4.045E+00	1.764E+01	3.608E-01	0.127
FE-59	7.335E+00		7.607E+00	3.486E+01	7.270E-01	0.210
CO-60	-6.444E+00		4.505E+00	1.462E+01	3.097E-01	-0.441
ZN-65	-3.455E+01		1.085E+01	2.583E+01	5.393E-01	-1.337
SE-75	1.141E+01		1.733E+01	6.518E+01	1.307E+00	0.175
SR-85	1.825E+01		8.368E+00	3.245E+01	6.519E-01	0.563
Y-88	6.504E-02		3.687E+00	1.574E+01	3.440E-01	0.004
NB-94	2.626E+00		4.941E+00	2.052E+01	4.213E-01	0.128
NB-95	2.441E+00		5.010E+00	2.095E+01	4.272E-01	0.117
TC-95M	1.162E+01		1.832E+01	6.686E+01	1.351E+00	0.174
ZR-95	-5.250E+00		1.074E+01	3.927E+01	8.002E-01	-0.134
ZRNB-95	4.928E+00		9.539E+00	3.997E+01	8.150E-01	0.123
MO-99	5.922E+01		5.811E+01	2.189E+02	4.505E+00	0.270
RH-101	7.997E+00		1.480E+01	5.418E+01	1.096E+00	0.148
RH-102M	3.186E+00		5.993E+00	2.407E+01	4.827E-01	0.132
RU-103	7.438E+00		8.051E+00	3.241E+01	6.506E-01	0.229
RU-106DA	3.210E+01		5.792E+01	2.349E+02	4.747E+00	0.137
AG-108M	-1.105E+01		7.949E+00	2.677E+01	5.360E-01	-0.413
AG-110M	1.957E+00		6.739E+00	2.751E+01	5.654E-01	0.071
SN-113DA	-3.807E+00		1.054E+01	3.791E+01	7.584E-01	-0.100

Sample ID : JH3NR1AC Acquisition date : 13-NOV-2006 10:06:00

---- Non-Identified Nuclides ----

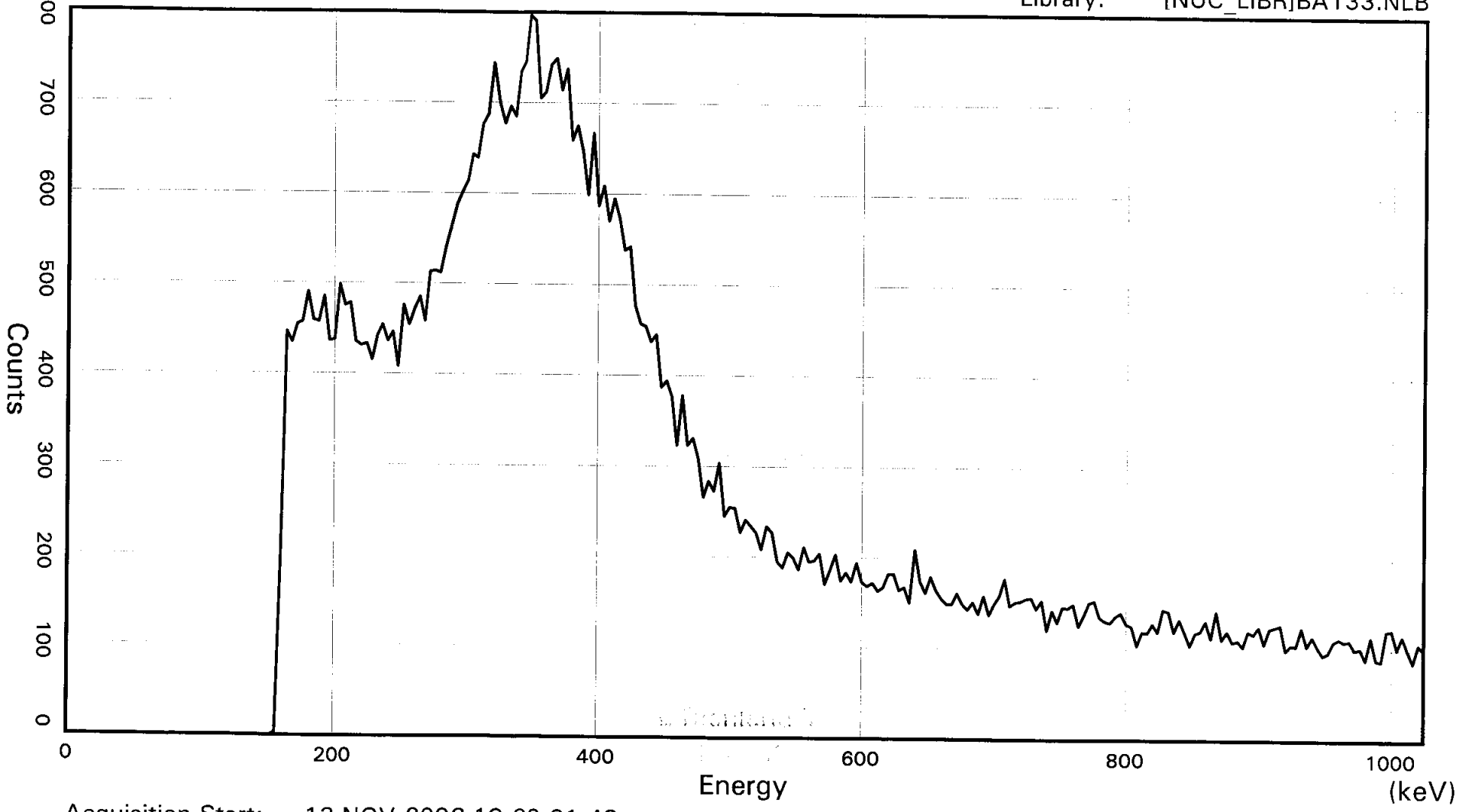
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-8.197E+00		6.359E+00	2.177E+01	4.395E-01	-0.376
SB-125	-1.435E+01		2.528E+01	9.102E+01	1.822E+00	-0.158
SN-126DA	-6.503E+00		6.119E+00	2.120E+01	4.294E-01	-0.307
I-131	-1.508E+01		1.537E+01	5.225E+01	1.045E+00	-0.289
CS-134	-8.587E+00		5.764E+00	1.849E+01	3.778E-01	-0.464
CS-137DA	-1.283E+01		7.205E+00	2.303E+01	4.664E-01	-0.557
LA-138	2.840E+00		5.577E+00	2.486E+01	5.300E-01	0.114
CE-139	-8.244E+00		1.484E+01	5.184E+01	1.057E+00	-0.159
BA-140	-6.923E+00		3.957E+01	1.445E+02	2.906E+00	-0.048
BALA-140	9.306E+00		1.056E+01	4.911E+01	1.058E+00	0.189
LA-140	3.722E+01		4.418E+01	2.050E+02	4.415E+00	0.182
CE-141	-2.077E+00		2.597E+01	9.388E+01	1.928E+00	-0.022
CE-144	4.437E+01		9.720E+01	3.641E+02	7.515E+00	0.122
CEPR-144	8.696E+01		1.943E+02	7.275E+02	1.502E+01	0.120
PM-144	4.343E+00		5.372E+00	2.250E+01	4.545E-01	0.193
PM-146	-7.129E+00		8.830E+00	3.158E+01	6.327E-01	-0.226
EU-152	-8.160E+00		3.584E+01	1.273E+02	2.546E+00	-0.064
EU-154	-8.018E+00		1.183E+01	4.388E+01	9.258E-01	-0.183
EU-155	7.803E+00		4.935E+01	1.779E+02	3.736E+00	0.044
HF-181	-4.376E+00		8.230E+00	2.987E+01	5.992E-01	-0.147
BI-207	-3.181E+00		6.201E+00	2.227E+01	4.487E-01	-0.143
TL-208	-1.697E+01		8.129E+00	2.847E+01	5.740E-01	-0.596
BI-210M	-2.874E+00		2.057E+01	7.427E+01	1.490E+00	-0.039
BI-212	8.661E+01		8.570E+01	3.567E+02	1.090E+01	0.243
PB-212	9.034E+00		2.352E+01	8.744E+01	1.758E+00	0.103
BI-214	3.083E-01		1.581E+01	6.726E+01	1.358E+00	0.005
PB-214	2.869E+01		2.644E+01	9.657E+01	1.931E+00	0.297
RA-223	5.235E+01		6.758E+01	2.579E+02	5.172E+00	0.203
RA-224DA	9.087E+00		2.366E+01	8.796E+01	1.768E+00	0.103
RA-226DA	3.083E-01		1.581E+01	6.726E+01	1.358E+00	0.005
AC-227DA	-1.163E+02		9.565E+01	3.140E+02	6.316E+00	-0.370
AC-228	4.587E+00		2.227E+01	9.314E+01	1.918E+00	0.049
RA-228DA	4.596E+00		2.231E+01	9.332E+01	1.921E+00	0.049
TH-228DA	-4.750E+01		2.276E+01	7.972E+01	1.607E+00	-0.596
TH-232DA	9.154E+00		7.782E+01	2.817E+02	5.634E+00	0.032
TH-234DA	9.031E+02		6.123E+02	2.901E+03	6.009E+01	0.311
U-234DA	1.394E+00		5.125E+01	1.891E+02	3.787E+00	0.007
U-235HP	2.037E+01		1.069E+02	3.909E+02	8.032E+00	0.052
NP-237DA	1.030E+01		2.181E+01	8.288E+01	1.659E+00	0.124
U-238DA	2.869E+01		2.644E+01	9.657E+01	1.931E+00	0.297
U-238DHP	2.840E+02		3.160E+02	1.191E+03	2.628E+01	0.238
AM-241HP	-2.648E+01		3.097E+01	1.085E+02	2.411E+00	-0.244

STL Richland WA.

BA133

Sample ID: JH3NT1AC
Detector ID: NAI1 1

BatchID: 6311395
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 13-NOV-2006 10:39:01.48
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: JH3NT1AC

CONFIGURATION ID: NAI1:JH3NT1AC_131161039
TITLE : BA133
SAMPLE ID : JH3NT1AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 10:39:01
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 7-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 13-NOV-2006 11:09:06

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH3NT1AC_131161039.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 7-NOV-2006 12:00:00	Acquisition date	: 13-NOV-2006 10:39:01
Sample ID	: JH3NT1AC	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:	7.6	4.5	2.3	2.3	2.3	3.5	4.0	4.7
88:	3.1	-0.8	-1.5	0.3	1.8	-0.5	1.7	-2.0
96:	-1.1	-2.4	-3.3	-0.3	-4.2	-1.6	-2.7	-1.9
104:	-3.2	-3.7	-2.2	-4.2	-4.7	-4.1	-3.9	-3.2
112:	-3.8	-2.8						

List of Suspicious Channels

81 82 83 84 85 86 87

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.13E+01	0.00E+00	1.02E+00
2	5.58E+00	0.00E+00	1.04E+00
3	2.52E+00	0.00E+00	1.05E+00
4	1.19E+00	0.00E+00	1.06E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	746.	9.87

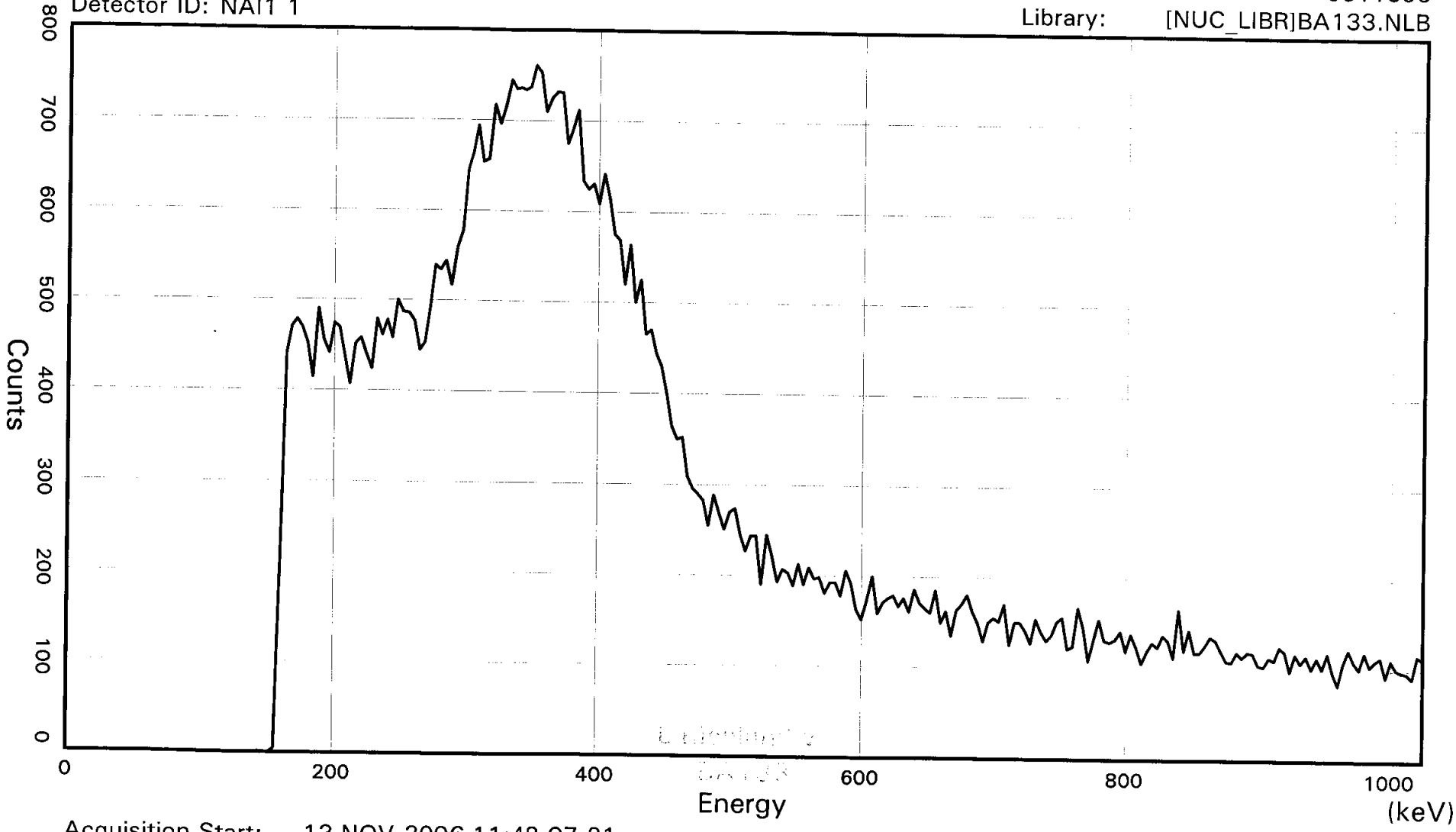
Total Activity :	746.	

STL Richland WA.

BA133

Sample ID: JH3NV1AC
Detector ID: NAI1 1

BatchID: 6311395
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 13-NOV-2006 11:48:07.21
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: JH3NV1AC

CONFIGURATION ID: NAI1:JH3NV1AC_131161148
TITLE : BA133
SAMPLE ID : JH3NV1AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 11:48:07
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 7-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 13-NOV-2006 12:18:12

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH3NV1AC_131161148.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 7-NOV-2006 12:00:00	Acquisition date	: 13-NOV-2006 11:48:07
Sample ID	: JH3NV1AC	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.69 0.0%
Sample Multiplier	: 1.00	Rejection Coeff.	: 0.00
Gain shift type	: ITER	Threshold Shift	: No
Weighting type	: DERIVED	Calculated counts	: No
Iterations	: 5		

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	6.2	4.5	4.5	4.9	4.2	2.8	2.9	2.2
88:	2.1	1.5	-0.8	0.1	0.8	-0.8	-1.2	-0.4
96:	0.6	-3.2	-2.7	-2.1	-3.8	-0.8	-1.4	-2.5
104:	-3.1	-5.0	-2.1	-3.6	-1.7	-3.4	-2.8	-3.6
112:	-3.1	-3.6						

List of Suspicious Channels

81 82 83 84 85 86 87

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	6.54E+00	0.00E+00	1.03E+00
2	2.71E+00	0.00E+00	1.05E+00
3	1.87E+00	0.00E+00	1.06E+00
4	1.41E+00	0.00E+00	1.06E+00
5	1.06E+00	0.00E+00	1.07E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	749.	9.38

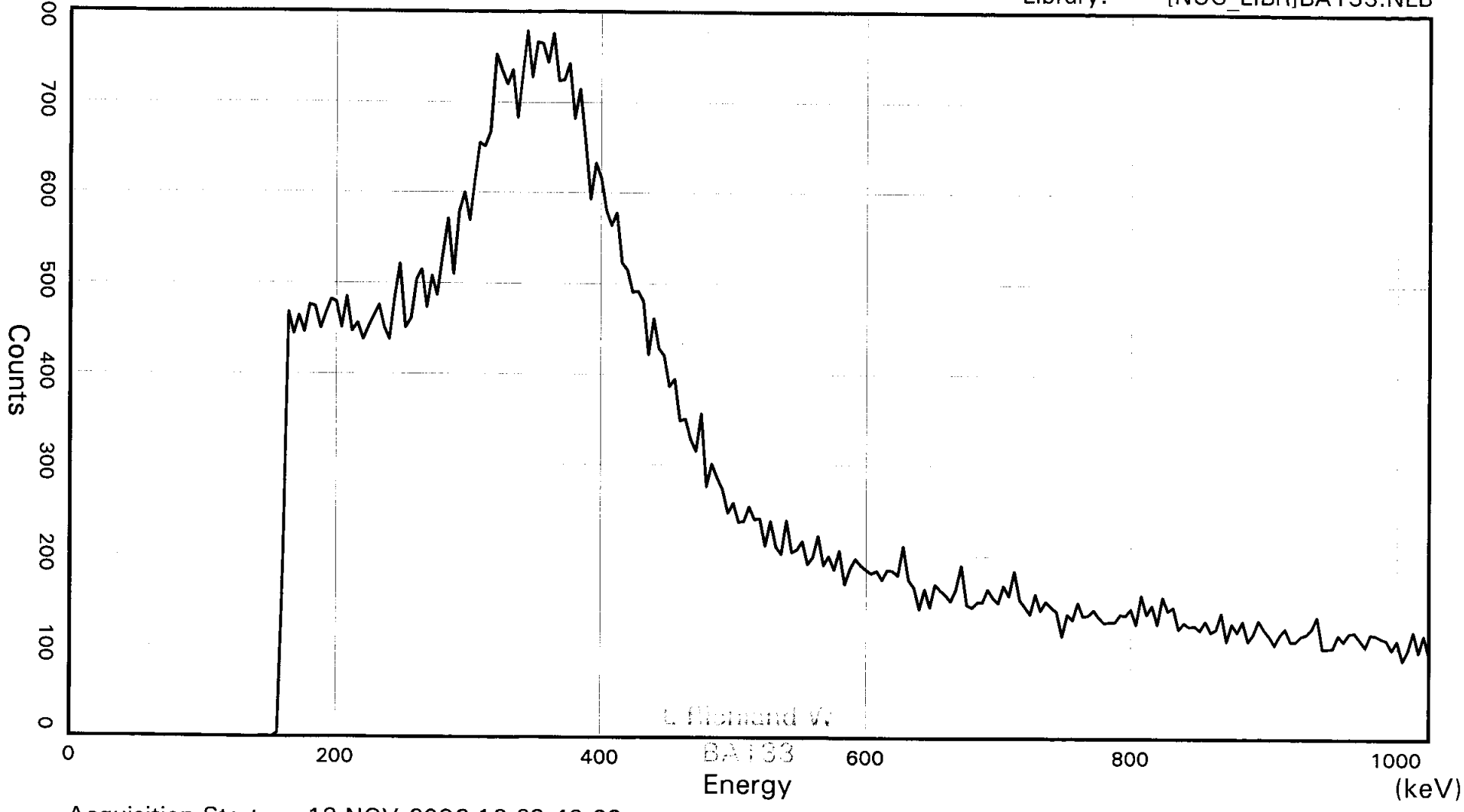
Total Activity :	749.	

STL Richland WA.

BA133

Sample ID: JH3NW1AC
Detector ID: NAI1 1

BatchID: 6311395
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 13-NOV-2006 12:38:49.09
Preset Live Time: 0 00:30:00
Elapsed Live Time: 0 00:30:00
Weighting: DERIVED

Start Channel: 80
End Channel: 113
Iterations: 5
Gain shift: Iter

SAMPLE IDENTIFICATION: JH3NW1AC

CONFIGURATION ID: NAI1:JH3NW1AC_131161238
TITLE : BA133
SAMPLE ID : JH3NW1AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 12:38:49
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 7-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 13-NOV-2006 13:08:54

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH3NW1AC_131161238.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 7-NOV-2006 12:00:00	Acquisition date	: 13-NOV-2006 12:38:49
Sample ID	: JH3NW1AC	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.69 0.0%
Sample Multiplier	: 1.00	Rejection Coeff.	: 0.00
Gain shift type	: ITER	Threshold Shift	: No
Weighting type	: DERIVED	Calculated counts	: No
Iterations	: 5		

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	8.0	5.6	4.3	4.2	1.4	2.4	5.2	2.3
88:	2.9	2.2	-0.3	1.7	0.8	-1.0	1.3	-0.9
96:	0.6	-1.8	-3.7	-2.1	-3.4	-2.9	-2.9	-1.9
104:	-4.7	-5.0	-4.5	-3.2	-3.4	-5.4	-2.9	-4.0
112:	-3.1	-4.1						

List of Suspicious Channels

81 82 86 87 88

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.21E+01	0.00E+00	1.02E+00
2	4.96E+00	0.00E+00	1.05E+00
3	1.87E+00	0.00E+00	1.06E+00
4	9.83E-01	0.00E+00	1.07E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	746.	9.04

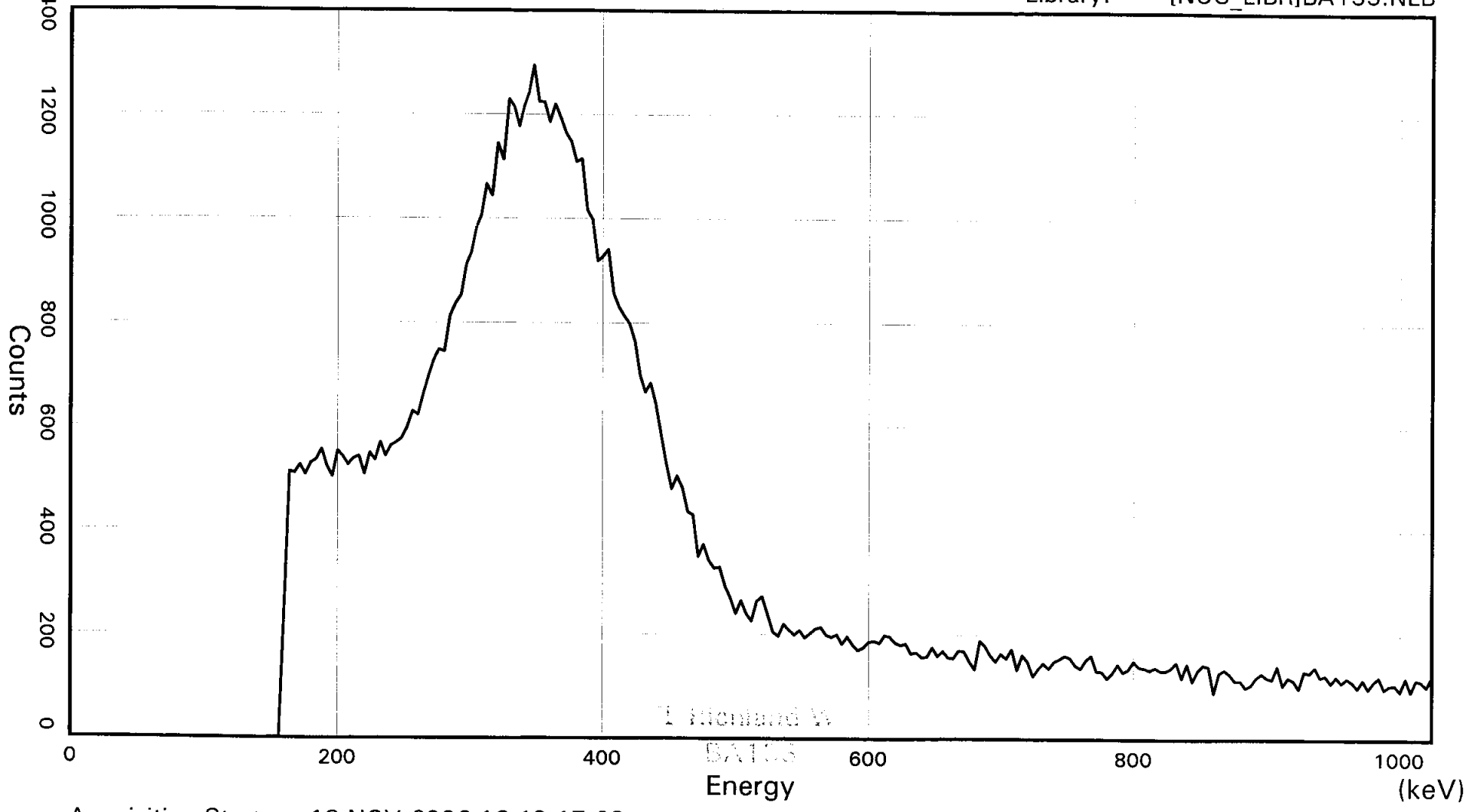
Total Activity :	746.	

STL Richland WA.

BA133

Sample ID: JH5P51AA
Detector ID: NAI1 1

BatchID: 6311395
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 13-NOV-2006 13:10:17.23
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: JH5P51AA

CONFIGURATION ID: NAI1:JH5P51AA_131161310
TITLE : BA133
SAMPLE ID : JH5P51AA

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 13:10:17
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 7-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 13-NOV-2006 13:40:22

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH5P51AA_131161310.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 7-NOV-2006 12:00:00	Acquisition date	: 13-NOV-2006 13:10:17
Sample ID	: JH5P51AA	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.81 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:	10.8	7.9	9.9	8.1	6.7	5.7	6.5	6.5
88:	3.3	2.5	0.1	1.3	1.4	-1.8	0.6	-0.3
96:	-0.2	-4.3	-3.8	-5.6	-6.8	-3.0	-5.4	-5.8
104:	-6.6	-6.4	-5.8	-6.6	-7.1	-5.3	-6.1	-7.5
112:	-7.7	-8.6						

List of Suspicious Channels

80	81	82	83	84	85	86	87	88

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	2.03E+01	0.00E+00	1.04E+00
2	3.55E+00	0.00E+00	1.07E+00
3	1.25E+00	0.00E+00	1.08E+00
4	1.05E+00	0.00E+00	1.08E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	1.477E+03	12.0

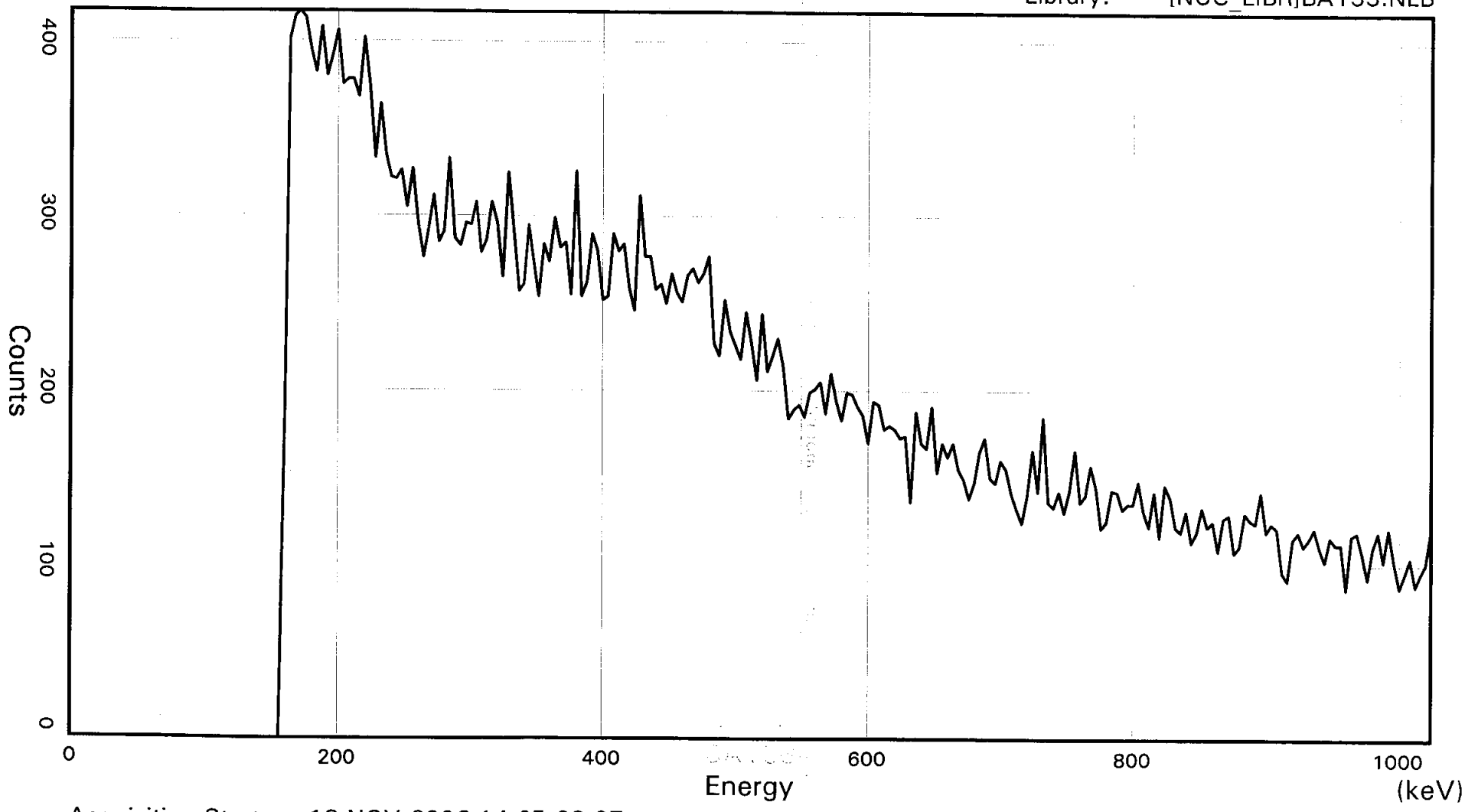
Total Activity :	1.477E+03	

STL Richland WA.

BA133

Sample ID: JH5P51AC
Detector ID: NAI1 1

BatchID: 6311395
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 13-NOV-2006 14:05:23.07
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: JH5P51AC

CONFIGURATION ID: NAI1:JH5P51AC_131161405
TITLE : BA133
SAMPLE ID : JH5P51AC

REPORT DATE: 13-NOV-06
ACQUIRE DATE: 13-NOV-06 14:05:23
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 18-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
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

VMS NAI Report V1.2 Generated 13-NOV-2006 14:35:28

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JH5P51AC_131161405.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 18-NOV-2006 12:00:00	Acquisition date	: 13-NOV-2006 14:05:23
Sample ID	: JH5P51AC	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.56 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:	0.9	-1.1	2.1	0.2	-1.3	-1.3	0.8	0.1
88:	-1.9	0.2	-0.1	2.0	0.5	0.8	-1.5	2.6
96:	-0.9	-0.6	1.1	0.1	-1.0	-1.7	1.1	-0.2
104:	0.7	-1.2	-1.6	2.4	0.3	0.3	-0.3	-0.5
112:	-0.7	0.7						

List of Suspicious Channels

None

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.35E+00	0.00E+00	9.93E-01
2	5.97E-01	0.00E+00	9.92E-01

Sample ID : JH5P51AC Acquisition date : 13-NOV-2006 14:05:23

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	15.2	4.54

Total Activity :	15.2	