J6K220385 - EVENT #107

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Analytical Data Package Prepared For

Brown and Caldwell

Yerington Air Quality - Event #107

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.: 33991

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
33128	EVENT 107	000550	J6K220386-5	JKAHW1AA	9JKAHW10	6332247
		000550	J6K220386-5	JKAHW1AE	9JKAHW10	6332250
		000550	J6K220386-5	JKAHW1AC	9JKAHW10	6332252
		000550	J6K220386-5	JKAHW1AD	9JKAHW10	6332254
		P-0786	J6K220386-1	JKAHM1AA	9JKAHM10	6332247
		P-0786	J6K220386-1	JKAHM1AE	9JKAHM10	6332250
		P-0786	J6K220386-1	JKAHM1AC	9JKAHM10	6332252
		P-0786	J6K220386-1	JKAHM1AD	9JKAHM10	6332254
		P-0787	J6K220386-2	JKAHR1AA	9JKAHR10	6332247
		P-0787	J6K220386-2	JKAHR1AE	9JKAHR10	6332250
		P-0787	J6K220386-2	JKAHR1AC	9JKAHR10	6332252
		P-0787	J6K220386-2	JKAHR1AD	9JKAHR10	6332254
		P-0788	J6K220386-3	JKAHT1AA	9JKAHT10	6332247
		P-0788	J6K220386-3	JKAHT1AE	9JKAHT10	6332250
		P-0788	J6K220386-3	JKAHT1AC	9JKAHT10	6332252
		P-0788	J6K220386-3	JKAHT1AD	9JKAHT10	6332254
		P-0789	J6K220386-4	JKAHV1AA	9JKAHV10	6332247
		P-0789	J6K220386-4	JKAHV1AE	9JKAHV10	6332250
		P-0789	J6K220386-4	JKAHV1AC	9JKAHV10	6332252
		P-0789	J6K220386-4	JKAHV1AD	9JKAHV10	6332254

SEVERN TRENT STL

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Certificate of Analysis

December 19, 2006

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

Attention: Guy Graening

Date Received at Lab	:	November21, 2006
Project Name	:	Air Quality Monitoring Yerington Mine
Project Number	:	121243
Event Number	:	107
PO Number	:	129682.001
Sample Type	:	Five (5) Filters
SDG Number	:	33128

CASE NARRATIVE

I. Introduction

On November 21, 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 J6K220386.

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:
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, batch blank and sample results are within analytical requirements.

Radium-226 Analysis:
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: 19-Dec-06

Report No. : 33991

SDG No: 33128

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC|MDA	RER2
000550	JKAHW1AA	TH-228	0.215 +- 0.223	ND	pCi/sample	90%	0.317	
		TH-230	0.474 +- 0.300	=	pCi/sample	90%	0.247	
		TH-232	0.0824 +- 0.124	ND	pCi/sample	90%	0.247	
000550	JKAHW1AE	ALPHA	3.26 +- 2.78	ND	pCi/sample	100%	4.35	
000550	JKAHW1AC	RA-226	0.201 +- 0.255	ND	pCi/sample	105%	0.423	
000550	JKAHW1AD	RA-228	0.503 +- 0.630	ND	pCi/sample	94%	1.41	
P-0786	JKAHM1AA	TH-228	0.151 +- 0.215	ND	pCi/sample	75%	0.371	
		TH-230	0.193 +- 0.229	ND	pCi/sample	75%	0.355	
		TH-232	0.0483 +- 0.108	ND	pCi/sample	75%	0.29	
P-0786	JKAHM1AE	ALPHA	2.14 +- 2.45	ND	pCi/sample	100%	4.39	
P-0786	JKAHM1AC	RA-226	0.266 +- 0.234	ND	pCi/sample	98%	0.331	
P-0786	JKAHM1AD	RA-228	0.664 +- 0.698	ND	pCi/sample	90%	1.52	
P-0787	JKAHR1AA	TH-228	0.273 +- 0.231	=	pCi/sample	92%	0.252	
		TH-230	0.0805 +- 0.151	ND	pCi/sample	92%	0.296	
		TH-232	0.00000 +- 0.0900	ND	pCi/sample	92%	0.241	
P-0787	JKAHR1AE	ALPHA	7.88 +- 4.18	=	pCi/sample	100%	4.78	
P-0787	JKAHR1AC	RA-226	0.489 +- 0.349	=	pCi/sample	95%	0.433	
P-0787	JKAHR1AD	RA-228	0.637 +- 0.697	ND	pCi/sample	87%	1.52	
P-0788	JKAHT1AA	TH-228	0.222 +- 0.233	ND	pCi/sample	79%	0.334	
		TH-230	0.480 +- 0.335	=	pCi/sample	79%	0.32	
		TH-232	0.0533 +- 0.120	ND	pCi/sample	79%	0.32	
P-0788	JKAHT1AE	ALPHA	5.39 +- 3.44	=	pCi/sample	100%	4.37	
P-0788	JKAHT1AC	RA-226	0.850 +- 0.530	=	pCi/sample	94%	0.707	
P-0788	JKAHT1AD	RA-228	0.645 +- 0.750	ND	pCi/sample	86%	1.65	
P-0789	JKAHV1AA	TH-228	0.0578 +- 0.130	ND	pCi/sample	63%	0.347	
		TH-230	0.333 +- 0.283	=	pCi/sample	63%	0.332	
		TH-232	0.0277 +- 0.124	ND	pCi/sample	63%	0.332	
P-0789	JKAHV1AE	ALPHA	1.01 +- 2.62	ND	pCi/sample	100%	5.66	
P-0789	JKAHV1AC	RA-226	0.0703 +- 0.348	ND	pCi/sample	94%	0.681	
P-0789	JKAHV1AD	RA-228	1.19 +- 0.829	ND	pCi/sample	84%	1.64	

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V5.0.3 A2002

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: 19-Dec-06

Report No. : 33991

SDG No: 33128

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: 19-Dec-06

Report No. : 33991

SDG No.: 33127

QC Type	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
BLANK QC	JKENG1AA	TH-228	0.0120 +- 0.0174	N	pCi/sample	66%			0.0287
		TH-230	0.00459 +- 0.0145	N	pCi/sample	66%			0.0338
		TH-232	0.00459 +- 0.0103	N	pCi/sample	66%			0.0275
BLANK QC	JKENK1AA	ALPHA	0.00135 +- 0.00325	N	pCi/sample	100%			0.00704
BLANK QC	JKENM1AA	RA-226	0.0301 +- 0.0579	N	pCi/sample	105%			0.104
BLANK QC	JKENQ1AA	RA-228	0.00141 +- 0.00116	N	pCi/sample	93%			0.00243
LCS	JKENG1AC	TH-230	2.02 +- 0.512	=	pCi/sample	36%	110%	0.1	0.0597
LCS	JKENK1AC	ALPHA	0.150 +- 0.0397	=	pCi/sample	100%	83%	-0.2	0.0081
LCS	JKENM1AC	RA-226	1.40 +- 0.360	=	pCi/sample	105%	102%	0.0	0.0636
LCS	JKENQ1AC	RA-228	0.0255 +- 0.00410	=	pCi/sample	94%	77%	-0.2	0.00251

Number of Results: 10

STL Richland

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V5.0.3 A2002

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: 19-Dec-06

Lab Name:	STL Richland	**SDG:**	33128	**Collection Date:**	10/30/2006 11:45:00 AM
Lot-Sample No.:	J6K220386-5	**Report No. :**	33991	**Received Date:**	11/21/2006 10:00:00 AM
Client Sample ID:	000550	**COC No. :**		**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: 6332247	**Work Order:** JKAHW1AA			**Report DB ID:** 9JKAHW10								
TH-228	**0.215**	ND	0.22	0.22	0.317	pCi/sample	90%	*0.68*	12/13/06 09:30 a	1.0	0.08379	ISOTH
						0.1	1.0	*(1.9)*		Sample	Sample	ALP171
TH-230	**0.474**	=	0.29	0.30	0.247	pCi/sample	90%	*(1.9)*	12/13/06 09:30 a	1.0	0.08379	ISOTH
						0.0678	1.0	*(3.2)*		Sample	Sample	ALP171
TH-232	**0.0824**	ND	0.12	0.12	0.247	pCi/sample	90%	*0.33*	12/13/06 09:30 a	1.0	0.08379	ISOTH
						0.0678	1.0	*(1.3)*		Sample	Sample	ALP171
Batch: 6332250	**Work Order:** JKAHW1AE			**Report DB ID:** 9JKAHW10								
ALPHA	**3.26**	ND	2.7	2.8	4.35	pCi/sample	100%	*0.75*	12/16/06 10:35 a	1.0	0.02086	E900.0
						1.73	20.0	*(2.3)*		Sample	Sample	GPC10D
Batch: 6332252	**Work Order:** JKAHW1AC			**Report DB ID:** 9JKAHW10								
RA-226	**0.201**	ND	0.25	0.25	0.423	pCi/sample	105%	*0.48*	12/12/06 01:53 p	1.0	0.24955	E903.1
						0.176	1.0	*(1.6)*		Sample	Sample	ASCNMA
Batch: 6332254	**Work Order:** JKAHW1AD			**Report DB ID:** 9JKAHW10								
RA-228	**0.503**	ND	0.62	0.63	1.41	pCi/sample	94%	*0.36*	12/13/06 06:48 a	1.0	0.24955	E904.0
						0.606	3.1	*(1.6)*		Sample	Sample	GPC4A

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: 19-Dec-06

Lab Name:	**STL Richland**	**SDG:**	33128	**Collection Date:**	10/30/2006 11:05:00 AM
Lot-Sample No.:	**J6K220386-1**	**Report No. :**	33991	**Received Date:**	11/21/2006 10:00:00 AM
Client Sample ID:	**P-0786**	**COC No. :**		**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: 6332247	**Work Order:** JKAHM1AA			**Report DB ID:** 9JKAHM10								
TH-228	**0.151**	ND	0.21	0.22	0.371	pCi/sample	75%	*0.41*	12/12/06 12:37 p	1.0	0.08508	ISOTH
						0.117	1.0	*(1.4)*		Sample	Sample	ALP175
TH-230	**0.193**	ND	0.23	0.23	0.355	pCi/sample	75%	*0.54*	12/12/06 12:37 p	1.0	0.08508	ISOTH
						0.112	1.0	*(1.7)*		Sample	Sample	ALP175
TH-232	**0.0483**	ND	0.11	0.11	0.29	pCi/sample	75%	*0.17*	12/12/06 12:37 p	1.0	0.08508	ISOTH
						0.0794	1.0	*0.89*		Sample	Sample	ALP175
Batch: 6332250	**Work Order:** JKAHM1AE			**Report DB ID:** 9JKAHM10								
ALPHA	**2.14**	ND	2.4	2.4	4.39	pCi/sample	100%	*0.49*	12/16/06 07:47 a	1.0	0.02083	E900.0
						1.75	20.0	*(1.8)*		Sample	Sample	GPC10F
Batch: 6332252	**Work Order:** JKAHM1AC			**Report DB ID:** 9JKAHM10								
RA-226	**0.266**	ND	0.23	0.23	0.331	pCi/sample	98%	*0.81*	12/12/06 01:32 p	1.0	0.25038	E903.1
						0.129	1.0	*(2.3)*		Sample	Sample	ASCBMC
Batch: 6332254	**Work Order:** JKAHM1AD			**Report DB ID:** 9JKAHM10								
RA-228	**0.664**	ND	0.66	0.70	1.52	pCi/sample	90%	*0.44*	12/13/06 05:57 a	1.0	0.25038	E904.0
						0.649	3.1	*(1.9)*		Sample	Sample	GPC3A

Number of Results: 6

Comments:

STL Richland
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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: 19-Dec-06

Lab Name: STL Richland
Lot-Sample No.: J6K220386-2
Client Sample ID: P-0787

SDG: 33128
Report No. : 33991
COC No. :

Collection Date: 10/30/2006 11:25:00 AM
Received Date: 11/21/2006 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: 6332247	**Work Order:** JKAHR1AA			**Report DB ID:** 9JKAHR10								
TH-228	0.273	=	0.23	0.23	0.252	pCi/sample	92%	*(1.1)*	12/12/06 12:37 p	1.0	0.0834	ISOTH
						0.0691	1.0	*(2.4)*		Sample	Sample	ALP176
TH-230	0.0805	ND	0.15	0.15	0.296	pCi/sample	92%	*0.27*	12/12/06 12:37 p	1.0	0.0834	ISOTH
						0.0936	1.0	*(1.1)*		Sample	Sample	ALP176
TH-232	0.00000	ND	0.0000	0.090	0.241	pCi/sample	92%	*0.*	12/12/06 12:37 p	1.0	0.0834	ISOTH
						0.0662	1.0	*0.*		Sample	Sample	ALP176
Batch: 6332250	**Work Order:** JKAHR1AE			**Report DB ID:** 9JKAHR10								
ALPHA	7.88	=	3.8	4.2	4.78	pCi/sample	100%	*(1.6)*	12/16/06 10:35 a	1.0	0.02083	E900.0
						1.94	20.0	*(3.8)*		Sample	Sample	GPC10A
Batch: 6332252	**Work Order:** JKAHR1AC			**Report DB ID:** 9JKAHR10								
RA-226	0.489	=	0.33	0.35	0.433	pCi/sample	95%	*(1.1)*	12/12/06 01:26 p	1.0	0.24943	E903.1
						0.164	1.0	*(2.8)*		Sample	Sample	ASCCSD
Batch: 6332254	**Work Order:** JKAHR1AD			**Report DB ID:** 9JKAHR10								
RA-228	0.637	ND	0.66	0.70	1.52	pCi/sample	87%	*0.42*	12/13/06 05:57 a	1.0	0.24943	E904.0
						0.655	3.1	*(1.8)*		Sample	Sample	GPC3B

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: 19-Dec-06

Lab Name:	STL Richland	**SDG:**	33128	**Collection Date:**	10/30/2006 11:40:00 AM
Lot-Sample No.:	J6K220386-3	**Report No. :**	33991	**Received Date:**	11/21/2006 10:00:00 AM
Client Sample ID:	P-0788	**COC No. :**		**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: 6332247	**Work Order:** JKAHT1AA			**Report DB ID:** 9JKAHT10								
TH-228	**0.222**	ND	0.23	0.23	0.334	pCi/sample	79%	*0.67*	12/12/06 12:37 p	1.0	0.08154	ISOTH
						0.0915	1.0	*(1.9)*		Sample	Sample	ALP177
TH-230	**0.480**	=	0.32	0.34	0.32	pCi/sample	79%	*(1.5)*	12/12/06 12:37 p	1.0	0.08154	ISOTH
						0.0877	1.0	*(2.9)*		Sample	Sample	ALP177
TH-232	**0.0533**	ND	0.12	0.12	0.32	pCi/sample	79%	*0.17*	12/12/06 12:37 p	1.0	0.08154	ISOTH
						0.0877	1.0	*0.89*		Sample	Sample	ALP177
Batch: 6332250	**Work Order:** JKAHT1AE			**Report DB ID:** 9JKAHT10								
ALPHA	**5.39**	=	3.2	3.4	4.37	pCi/sample	100%	*(1.2)*	12/16/06 10:35 a	1.0	0.02031	E900.0
						1.72	20.0	*(3.1)*		Sample	Sample	GPC10B
Batch: 6332252	**Work Order:** JKAHT1AC			**Report DB ID:** 9JKAHT10								
RA-226	**0.850**	=	0.50	0.53	0.707	pCi/sample	94%	*(1.2)*	12/12/06 01:33 p	1.0	0.24382	E903.1
						0.302	1.0	*(3.2)*		Sample	Sample	ASCDSA
Batch: 6332254	**Work Order:** JKAHT1AD			**Report DB ID:** 9JKAHT10								
RA-228	**0.645**	ND	0.75	0.75	1.65	pCi/sample	86%	*0.39*	12/13/06 05:57 a	1.0	0.24382	E904.0
						0.71	3.1	*(1.7)*		Sample	Sample	GPC3C

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: 19-Dec-06

Lab Name: STL Richland
Lot-Sample No.: J6K220386-4
Client Sample ID: P-0789

SDG: 33128
Report No. : 33991
COC No. :

Collection Date: 10/30/2006 11:10:00 AM
Received Date: 11/21/2006 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: 6332247	**Work Order:** JKAHV1AA			**Report DB ID:** 9JKAHV10								
TH-228	0.0578	ND	0.13	0.13	0.347	pCi/sample	63%	*0.17*	12/12/06 12:37 p	1.0	0.08273	ISOTH
						0.0951	1.0	*0.89*		Sample	Sample	ALP178
TH-230	0.333	=	0.28	0.28	0.332	pCi/sample	63%	*(1.)*	12/12/06 12:37 p	1.0	0.08273	ISOTH
						0.0912	1.0	*(2.3)*		Sample	Sample	ALP178
TH-232	0.0277	ND	0.12	0.12	0.332	pCi/sample	63%	*0.08*	12/12/06 12:37 p	1.0	0.08273	ISOTH
						0.0912	1.0	*0.45*		Sample	Sample	ALP178
Batch: 6332250	**Work Order:** JKAHV1AE			**Report DB ID:** 9JKAHV10								
ALPHA	1.01	ND	2.6	2.6	5.66	pCi/sample	100%	*0.18*	12/16/06 10:35 a	1.0	0.02077	E900.0
						2.39	20.0	*0.77*		Sample	Sample	GPC10C
Batch: 6332252	**Work Order:** JKAHV1AC			**Report DB ID:** 9JKAHV10								
RA-226	0.0703	ND	0.35	0.35	0.681	pCi/sample	94%	*0.1*	12/12/06 01:35 p	1.0	0.24785	E903.1
						0.283	1.0	*0.4*		Sample	Sample	ASCFSA
Batch: 6332254	**Work Order:** JKAHV1AD			**Report DB ID:** 9JKAHV10								
RA-228	1.19	ND	0.79	0.83	1.64	pCi/sample	84%	*0.72*	12/13/06 05:57 a	1.0	0.24785	E904.0
						0.707	3.1	*(2.9)*		Sample	Sample	GPC3D

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: 19-Dec-06

Lab Name:	STL Richland	SDG:	33128	Collection Date:	10/30/2006 11:10:00 AM
Lot-Sample No.:	J6K220386-4	Report No. :	33991	Received Date:	11/21/2006 10:00:00 AM
Client Sample ID:	P-0789	COC No. :		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

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: 19-Dec-06

Lab Name: STL Richland

SDG: 33127

Lot-Sample No.: J6K280000-247

Report No. : 33991

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: 6332247	Work Order: JKENG1AA			Report DB ID: JKENG1AB								
TH-228	0.0120	ND	0.017	0.017	0.0287	pCi/sample	66%	0.42	12/12/06 10:57 p	1.0	1.0	ISOTH
					0.00788	1.0		(1.4)		Sample	Sample	ALP172
TH-230	0.00459	ND	0.015	0.015	0.0338	pCi/sample	66%	0.14	12/12/06 10:57 p	1.0	1.0	ISOTH
					0.0107	1.0		0.63		Sample	Sample	ALP172
TH-232	0.00459	ND	0.010	0.010	0.0275	pCi/sample	66%	0.17	12/12/06 10:57 p	1.0	1.0	ISOTH
					0.00755	1.0		0.89		Sample	Sample	ALP172

Number of Results: 3

Comments:

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: 19-Dec-06

Lab Name: STL Richland

SDG: 33127

Lot-Sample No.: J6K280000-250

Report No. : 33991

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: 6332250	Work Order:	JKENK1AA		Report DB ID:	JKENK1AB							
ALPHA	0.00135	ND	0.0032	0.0032	0.00704	pCi/sample	100%	0.19	12/16/06 10:35 a	1.0	12.89	E900.0
					0.00282	20.0		0.83		Sample	Sample	GPC10F

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: 19-Dec-06

Lab Name: STL Richland

SDG: 33127

Lot-Sample No.: J6K280000-252

Report No. : 33991

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: 6332252	Work Order: JKENM1AA			Report DB ID: JKENM1AB								
RA-226	0.0301	ND	0.058	0.058	0.104	pCi/sample	105%	0.29	12/12/06 01:53 p	1.0	1.0	E903.1
					0.0433	1.0		(1.)		Sample	Sample	ASCPMA

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: 19-Dec-06

Lab Name: STL Richland **SDG:** 33127

Lot-Sample No.: J6K280000-254 **Report No. :** 33991 **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: 6332254	Work Order: JKENQ1AA			Report DB ID: JKENQ1AB								
RA-228	0.00141	ND	0.0011	0.0012	0.00243	pCi/sample	93%	0.58	12/13/06 06:48 a	1.0	151.01	E904.0
					0.00104	3.1		(2.4)		Sample	Sample	GPC4B

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: 19-Dec-06

Lab Name: STL Richland **SDG:** 33127

Lot-Sample No.: J6K280000-247 **Report No. :** 33991 **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: 6332247	Work Order: JKENG1AC			Report DB ID: JKENG1CS									
TH-230	2.02	=	0.28	0.51	0.0597	pCi/sample	35.68%	1.83	0.061	110%	12/12/06 10:57 p	1.0	ISOTH
							Rec Limits:	70.	130.	0.1		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: 19-Dec-06

Lab Name: STL Richland **SDG:** 33127

Lot-Sample No.: J6K280000-250 **Report No. :** 33991 **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: 6332250	**Work Order:** JKENK1AC			**Report DB ID:** JKENK1CS									
ALPHA	0.150	=	0.018	0.040	0.0081	pCi/sample	100.00%	0.181	0.0057	83%	12/17/06 09:21 a	12.76	E900.0
							Rec Limits:			-0.2		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: 19-Dec-06

Lab Name: STL Richland

SDG: 33127

Lot-Sample No.: J6K280000-252

Report No. : 33991

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: 6332252	Work Order: JKENM1AC			Report DB ID: JKENM1CS									
RA-226	1.40	=	0.19	0.36	0.0636	pCi/sample	104.73%	1.37	0.021	102%	12/12/06 01:53 p	1.0	E903.1
							Rec Limits:	70.	130.	0.0		Sample	ASCQMC

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: 19-Dec-06

Lab Name: STL Richland

SDG: 33127

Lot-Sample No.: J6K280000-254

Report No. : 33991

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: 6332254	Work Order: JKENQ1AC			Report DB ID: JKENQ1CS									
RA-228	0.0255	=	0.0029	0.0041	0.00251	pCi/sample	94.07%	0.0332	0.001	77%	12/13/06 06:48 a	150.17	E904.0
							Rec Limits:	70.	130.	-0.2		Sample	GPC4C

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 J6K220386 CHAIN OF CUSTODY RECORD 33128 COC No._____

☐ 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 Due 12/19/06

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

PROJECT NAME:

PROJECT NUMBER:

LABORATORY NAME & ADDRESS: SACRAMENTO WITH GLK020146

1/6 OF THE EXPOSED FILTER WAS UTILIZED FOR THE METALS. SULFATE ANALYSES.

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 µSv/hr	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, Fe, Mn, Mo, Ni, Pb, Mg, Mn, Na, Sr, Zn), Sulfate JKAHM			[illegible]		----	
02	[illegible]		[illegible]		1	8x10 Filter	NONE	A	PM-10 Gross Alpha, Th 228, 230, Ra 226, 228, Metals (Al, As, Cd, Cr, Co, Cu, Fe, Mn, Mo, Ni, Pb, Mg, Mn, Na, Sr, Zn), Sulfate JKAHR			[illegible]		----	
03	[illegible]		[illegible]		1	8x10 Filter	NONE	A	PM-10 Gross Alpha, Th 228, 230, Ra 226, 228, Metals (Al, As, Cd, Cr, Co, Cu, Fe, Mn, Mo, Ni, Pb, Mg, Mn, Na, Sr, Zn), Sulfate JKAHT			[illegible]		----	
04	[illegible]		[illegible]		1	8x10 Filter	NONE	A	PM-10 Gross Alpha, Th 228, 230, Ra 226, 228, Metals (Al, As, Cd, Cr, Co, Cu, Fe, Mn, Mo, Ni, Pb, Mg, Mn, Na, Sr, Zn), Sulfate JKAHV			[illegible]		----	
05	[illegible]		[illegible]		1	8x10 Filter	NONE	A	PM-10 Gross Alpha, Th 228, 230, Ra 226, 228, Metals (Al, As, Cd, Cr, Co, Cu, Fe, Mn, Mo, Ni, Pb, Mg, Mn, Na, Sr, Zn), Sulfate JKAHW			[illegible]		----	
06														----	
07														----	
08														----	
09														----	
10														----	

RECEIVED IN GOOD CONDITION
BROWN AND CALDWELL
NOV 2 2006
INITIALS

COLLECTED & RELEASED BY:	DATE	TIME	COOLER I.D.:			COMMENTS (see note on back):
RECEIVED BY:	DATE 11/17/06	TIME 09:40	RELINQUISHED BY:	DATE / /	TIME :	
[signature]	11/21/06	10:00	Steven Valmaro	11/20/06	1400	
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: 11-21-06 1000

Client: BRC SDG #: 33128 NA [ ] SAF #: Event 107 NA [ ]

Work Order Number: J6K220386 Chain of Custody # _____

Shipping Container ID: _____ Air Bill # _____

1. Custody Seals on shipping container intact? NA [✓] Yes [ ] No [ ]

2. Custody Seals dated and signed? NA [✓] Yes [ ] No [ ]

3. Chain of Custody record present? Yes [✓] No [ ]

4. Cooler temperature: _____ NA [✓] 5. Vermiculite/packing materials is NA [✓] 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 [✓] pH<2 [ ] pH>2 [ ] pH>9 [ ]
    7LT

11. Sample Location, Sample Collector Listed? * Yes [✓] No [ ]
    *For documentation only. No corrective action needed.

12. Were any anomalies identified in sample receipt? Yes [ ] No [✓]

13. Description of anomalies (include sample numbers): _____

Sample Custodian: DH Date: 11-21-06 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, 9/03, Rev. 5

THORIUM

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

12/15/2006 2:14:31 PM

Lot No., Due Date: J6K220385,J6K220386; 12/19/2006

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6332247; RTHISO Thlso by ALP

SDG, Matrix: 33127,33128; 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:

First Level Review Pam Anderson **Date** 12-15-06

STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number 6332247

Review Item	Yes (√)	No (X)	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: Sheryl R Adams Date: 12-18-16

LS-038B, Rev. 10, 8/02

STL RICHLAND

12/4/2006 8:50:34 AM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

9N ThIso PrpRc5016, SepRC~~5084~~(5003) 12/4/06

S1 Thorium-228,230,232 by Alpha Spec

01 STANDARD TEST SET

AnalyDueDate: 12/18/2006

Batch: 6332247 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: None

Balance Id:1120373922

Pipet #:

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

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:
1 **JKAGW-1-AA** J6K220385-1-SAMP 10/24/2006 11:55	0.833sa	504.03sa	50.30g,in	0.0831g	THTF0871 11/10/06,pd 10/04/04,r	500				
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
2 **JKAG1-1-AA** J6K220385-2-SAMP 10/24/2006 12:10	0.833sa	508.95sa	50.07g,in	0.0819g	THTF0872 11/10/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
3 **JKAG4-1-AA** J6K220385-3-SAMP 10/24/2006 12:30	0.833sa	501.07sa	50.19g,in	0.0834g	THTF0873 11/10/06,pd 10/04/04,r	12/4/06				
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
4 **JKAG7-1-AA** J6K220385-4-SAMP 10/24/2006 12:35	0.833sa	504.67sa	50.08g,in	0.0827g	THTF0874 11/10/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
5 **JKAHM-1-AA** J6K220386-1-SAMP 10/30/2006 11:05	0.833sa	500.21sa	51.09g,in	0.0851g	THTF0875 11/10/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
6 **JKAHR-1-AA** J6K220386-2-SAMP 10/30/2006 11:25	0.833sa,g	501.57sa,g	50.22g,in	0.0834g	THTF0881 11/10/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
7 **JKAHT-1-AA** J6K220386-3-SAMP 10/30/2006 11:40	0.833sa	513.01sa	50.22g,in	0.0815g	THTF0882 11/10/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:

STL RICHLAND

12/4/2006 8:50:35 AM

Sample Preparation/Analysis

Balance Id:11,1120373922

536403, Brown and Caldwell , Brown & Caldwell

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

Pipet #:

AnalyDueDate: 12/18/2006

Sep1 DT/Tm Tech:

Batch: 6332247 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 JKAHV-1-AA J6K220386-4-SAMP 10/30/2006 11:10	0.833sa	504.43sa	50.10g,in AmtRec: FILTER	0.0827g #Containers: 1	THTF0880 11/10/06,pd 10/04/04,r	532		Scr:	Alpha:	Beta:
9 JKAHW-1-AA J6K220386-5-SAMP 10/30/2006 11:45	0.833sa	500.83sa	50.38g,in AmtRec: FILTER	0.0838g #Containers: 1	THTF0879 11/10/06,pd 10/04/04,r	12/14/06		Scr:	Alpha:	Beta:
10 JKENG-1-AA-B J6K280000-247-BLK 10/30/2006 11:05			50.73g,in AmtRec:	50.73g #Containers: 1	THTF0883 11/10/06,pd 10/04/04,r			Scr:	Alpha:	Beta:
11 JKENG-1-AC-C J6K280000-247-LCS 10/30/2006 11:05			52.30g,in AmtRec:	52.30g #Containers: 1	THSO0095 08/17/06,pd 10/04/04,r			Scr:	Alpha:	Beta:

Comments:

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

JKAGW1AA-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

JKENG1AA-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

30

12/15/2006 1:57:01 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/15/2005, 12/20/2006, Batch: '6332247', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6332247						
AC		**CalcC**	**WoodT**	11/30/2006 8:53:46		
SC			wagarr	IsBatched	11/28/2006 10:37:01 AM	ICOC_RADCALC v4.8.24
SC			WoodT	InPrep	11/30/2006 8:53:46 AM	RICH-RC-5016 REVISION 5
SC			WoodT	Prep2C	12/4/2006 8:53:25 AM	RICH-RC-5016 REVISION 5
SC			HarveyK	InSep1	12/6/2006 11:43:40 AM	RICH-RC-5087 REV0
SC			HarveyK	Sep1C	12/8/2006 8:15:15 AM	RICH-RC-5087 REV0
SC			FABREM	Sep2C	12/11/2006 5:31:17 PM	RICH-RC-5039 REVISION 4
SC			DAWKINSO	CalcC	12/13/2006 4:54:25 PM	RICH-RD-0008 REVISION 4
AC			**WoodT**	12/4/2006 8:53:25		
AC			**HarveyK**	12/6/2006 11:43:40		
AC			**HarveyK**	12/8/2006 8:15:15		
AC			**FABREM**	12/11/2006 5:31:17		
AC			**DAWKINSO**	12/13/2006 4:54:25		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 6

ICOCFractions v4.8.26

12/15/2006 1:57:01 PM

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	Mdl	Sample Date / Units	Expected	Yield	Volumes
33127	**9JKAG110**			**J6K2203852**	P-0783	FILTER	11/21/2006		10/24/2006 12:10:00 PM			
RA-226	BXTE		0	12/12/2006 1:02:00 PM	**1.081E-01**	1.587E-01	1.591E-01	5.915E-01	PCI/SA	1.033	1.0E+0	2.456E-1
RA-228	BXTF		0	12/13/2006 5:56:58	**-9.3275E-02**	3.353E-01	3.353E-01	1.728E+00	PCI/SA	0.949	1.0E+0	2.456E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**2.3067E-01**	1.048E-01	1.067E-01	2.516E-01	PCI/SA	0.92	1.0E+0	3.195E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**1.598E-01**	9.369E-02	9.469E-02	2.94E-01	PCI/SA	0.92	1.0E+0	3.195E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**3.9949E-02**	4.466E-02	4.48E-02	2.396E-01	PCI/SA	0.92	1.0E+0	3.195E-2
33127	**9JKAG410**			**J6K2203853**	P-0784	FILTER	11/21/2006		10/24/2006 12:30:00 PM			
RA-226	BXTE		0	12/12/2006 1:06:00 PM	**2.1612E-01**	1.589E-01	1.606E-01	5.518E-01	PCI/SA	1.036	1.0E+0	2.494E-1
RA-228	BXTF		0	12/13/2006 5:56:58	**1.4597E+00**	3.839E-01	4.165E-01	1.568E+00	PCI/SA	0.933	1.0E+0	2.494E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**8.2605E-02**	1.066E-01	1.069E-01	4.629E-01	PCI/SA	0.812	1.0E+0	3.344E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**2.8851E-01**	1.311E-01	1.336E-01	3.146E-01	PCI/SA	0.812	1.0E+0	3.344E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**7.8685E-02**	7.868E-02	7.9E-02	3.146E-01	PCI/SA	0.812	1.0E+0	3.344E-2
33127	**9JKAG710**			**J6K2203854**	000547	FILTER	11/21/2006		10/24/2006 12:35:00 PM			
RA-226	BXTE		0	12/12/2006 1:12:00 PM	**1.1649E-01**	1.078E-01	1.085E-01	3.898E-01	PCI/SA	1.048	1.0E+0	2.486E-1
RA-228	BXTF		0	12/13/2006 5:56:58	**-2.4878E-01**	3.255E-01	3.255E-01	1.726E+00	PCI/SA	0.948	1.0E+0	2.486E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**3.5828E-01**	1.372E-01	1.407E-01	2.865E-01	PCI/SA	0.966	1.0E+0	3.266E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**1.3651E-01**	8.203E-02	8.29E-02	2.729E-01	PCI/SA	0.966	1.0E+0	3.266E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**1.3651E-01**	8.203E-02	8.29E-02	2.729E-01	PCI/SA	0.966	1.0E+0	3.266E-2
33127	**9JKAGW10**			**J6K2203851**	P-0782	FILTER	11/21/2006		10/24/2006 11:55:00 AM			
RA-226	BXTE		0	12/12/2006 1:11:00 PM	**6.2171E-01**	2.7E-01	2.774E-01	8.795E-01	PCI/SA	0.839	1.0E+0	2.481E-1
RA-228	BXTF		0	12/13/2006 5:56:58	**4.8303E-01**	3.742E-01	4.146E-01	1.94E+00	PCI/SA	0.773	1.0E+0	2.481E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**1.4306E-01**	8.427E-02	8.516E-02	2.452E-01	PCI/SA	0.958	1.0E+0	3.313E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**2.1414E-01**	9.734E-02	9.906E-02	2.335E-01	PCI/SA	0.958	1.0E+0	3.313E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**0.0E+00**	0.0E+00	4.353E-02	2.335E-01	PCI/SA	0.958	1.0E+0	3.313E-2
33128	**9JKAHM10**			**J6K2203861**	P-0786	FILTER	11/21/2006		10/30/2006 11:05:00 AM			
RA-226	BXTE		0	12/12/2006 1:32:00 PM	**2.6637E-01**	1.132E-01	1.168E-01	3.305E-01	PCI/SA	0.978	1.0E+0	2.504E-1
RA-228	BXTF		0	12/13/2006 5:57:08	**6.6355E-01**	3.296E-01	3.49E-01	1.516E+00	PCI/SA	0.896	1.0E+0	2.504E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**1.5117E-01**	1.069E-01	1.077E-01	3.709E-01	PCI/SA	0.748	1.0E+0	3.508E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**1.9314E-01**	1.132E-01	1.145E-01	3.554E-01	PCI/SA	0.748	1.0E+0	3.508E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**4.8284E-02**	5.398E-02	5.415E-02	2.896E-01	PCI/SA	0.748	1.0E+0	3.508E-2
33128	**9JKAHR10**			**J6K2203862**	P-0787	FILTER	11/21/2006		10/30/2006 11:25:00 AM			
RA-226	BXTE		0	12/12/2006 1:26:00 PM	**4.8919E-01**	1.674E-01	1.746E-01	4.325E-01	PCI/SA	0.952	1.0E+0	2.494E-1
RA-228	BXTF		0	12/13/2006 5:57:08	**6.3712E-01**	3.283E-01	3.484E-01	1.523E+00	PCI/SA	0.874	1.0E+0	2.494E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**2.729E-01**	1.13E-01	1.155E-01	2.518E-01	PCI/SA	0.922	1.0E+0	3.34E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**8.0461E-02**	7.526E-02	7.558E-02	2.961E-01	PCI/SA	0.922	1.0E+0	3.34E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**0.0E+00**	0.0E+00	4.498E-02	2.413E-01	PCI/SA	0.922	1.0E+0	3.34E-2
33128	**9JKAHT10**			**J6K2203863**	P-0788	FILTER	11/21/2006		10/30/2006 11:40:00 AM			
RA-226	BXTE		0	12/12/2006 1:33:00 PM	**8.4953E-01**	2.515E-01	2.648E-01	7.072E-01	PCI/SA	0.945	1.0E+0	2.438E-1
RA-228	BXTF		0	12/13/2006 5:57:08	**6.4491E-01**	3.741E-01	3.749E-01	1.649E+00	PCI/SA	0.865	1.0E+0	2.438E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**2.2247E-01**	1.147E-01	1.164E-01	3.336E-01	PCI/SA	0.794	1.0E+0	3.154E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**4.7965E-01**	1.621E-01	1.676E-01	3.197E-01	PCI/SA	0.794	1.0E+0	3.154E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**5.3294E-02**	5.958E-02	5.977E-02	3.197E-01	PCI/SA	0.794	1.0E+0	3.154E-2
33128	**9JKAHV10**			**J6K2203864**	P-0789	FILTER	11/21/2006		10/30/2006 11:10:00 AM			
RA-226	BXTE		0	12/12/2006 1:35:00 PM	**7.035E-02**	1.738E-01	1.739E-01	6.81E-01	PCI/SA	0.939	1.0E+0	2.479E-1
RA-228	BXTF		0	12/13/2006 5:57:08	**1.188E+00**	3.952E-01	4.147E-01	1.645E+00	PCI/SA	0.835	1.0E+0	2.479E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**5.7836E-02**	6.466E-02	6.487E-02	3.469E-01	PCI/SA	0.628	1.0E+0	3.273E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**3.3251E-01**	1.385E-01	1.417E-01	3.324E-01	PCI/SA	0.628	1.0E+0	3.273E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**2.7709E-02**	6.196E-02	6.201E-02	3.324E-01	PCI/SA	0.628	1.0E+0	3.273E-2
33128	**9JKAHW10**			**J6K2203865**	000550	FILTER	11/21/2006		10/30/2006 11:45:00 AM			
RA-226	BXTE		0	12/12/2006 1:53:00 PM	**2.0095E-01**	1.255E-01	1.274E-01	4.229E-01	PCI/SA	1.055	1.0E+0	2.496E-1
RA-228	BXTF		0	12/13/2006 6:48:07	**5.0342E-01**	3.105E-01	3.151E-01	1.412E+00	PCI/SA	0.944	1.0E+0	2.496E-1
TH-228	9NS1		0	12/13/2006 9:30:36	**2.1523E-01**	1.097E-01	1.113E-01	3.168E-01	PCI/SA	0.898	1.0E+0	3.379E-2

6332247, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 9,
**Results Inserted | ReTestInserted | Updated | NotInserted => 31 | 0 | 0 | 0.
**Diff RptDb | Qtims => *wo:JKENG1AA=> , mat:FILTER | Air *wo:JKENG1AA=> , mat:FILTER | Air *wo:JKENG1AA=> , 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	MDA	Sample Date / Units	Expected	Yield	Volumes	
TH-230	9NS1	0		12/13/2006 9:30:36	**4.7394E-01**	1.442E-01	1.5E-01	2.472E-01	PCI/SA		0.898	1.0E+0	3.379E-2
TH-232	9NS1	0		12/13/2006 9:30:36	**8.2424E-02**	6.182E-02	6.223E-02	2.472E-01	PCI/SA		0.898	1.0E+0	3.379E-2
33127	**JKENG1AB**			**J6K280000247**	INTRA-LAB BLANK	FILTER	11/21/2006		10/30/2006 11:05:00 AM				
TH-228	9NS1	0	B	12/12/2006 10:57:38	**1.1979E-02**	8.638E-03	8.706E-03	2.874E-02	PCI/SA		0.656	1.0E+0	1.0E+0
TH-230	9NS1	0	B	12/12/2006 10:57:38	**4.5893E-03**	7.256E-03	7.268E-03	3.378E-02	PCI/SA		0.656	1.0E+0	1.0E+0
TH-232	9NS1	0	B	12/12/2006 10:57:38	**4.5892E-03**	5.131E-03	5.148E-03	2.753E-02	PCI/SA		0.656	1.0E+0	1.0E+0
33127	**JKENG1CS**			**J6K280000247**	INTRA-LAB CHECK	FILTER	11/21/2006		10/30/2006 11:05:00 AM				
TH-230	9NS1	0	S	12/12/2006 10:57:38	**2.017E+00**	1.42E-01	2.561E-01	5.974E-02	PCI/SA	1.8335E+00	0.357	1.0E+0	1.0E+0

6332247. **Samples Inserted | Updated | NotUpdated => 2 | 0 | 9,
**Results Inserted | ReTestInserted | Updated | NotInserted => 31 | 0 | 0 | 0.
**Diff RptDb | Qtims => *wo:JKENG1AA=> , mat:FILTER | Air *wo:JKENG1AA=> , mat:FILTER | Air *wo:JKENG1AA=> , 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 Alpiso Wo Blk Subt.										
Calc	S1	FILTER	JKAGW1AA	TH-228	1.43E-01	(8.52E-02)		PCI/SA	R	6.72E-02	2.45E-01		96%	
Calc	S1	FILTER	JKAGW1AA	TH-230	2.14E-01	(9.91E-02)		PCI/SA	R	6.40E-02	2.34E-01		96%	
Calc	S1	FILTER	JKAGW1AA	TH-232	0.00E+00	(4.35E-02)	U4	PCI/SA	R	6.40E-02	2.34E-01		96%	
Calc	S1	FILTER	JKAG11AA	TH-228	2.31E-01	(1.07E-01)		PCI/SA	R	6.90E-02	2.52E-01		92%	
Calc	S1	FILTER	JKAG11AA	TH-230	1.60E-01	(9.47E-02)		PCI/SA	R	9.29E-02	2.94E-01		92%	
Calc	S1	FILTER	JKAG11AA	TH-232	3.99E-02	(4.48E-02)	U4	PCI/SA	R	6.57E-02	2.40E-01		92%	
Calc	S1	FILTER	JKAG41AA	TH-228	8.26E-02	(1.07E-01)	U4	PCI/SA	R	1.57E-01	4.63E-01		81%	
Calc	S1	FILTER	JKAG41AA	TH-230	2.89E-01	(1.34E-01)		PCI/SA	R	8.63E-02	3.15E-01		81%	
Calc	S1	FILTER	JKAG41AA	TH-232	7.87E-02	(7.90E-02)	U4	PCI/SA	R	8.63E-02	3.15E-01		81%	
Calc	S1	FILTER	JKAG71AA	TH-228	3.58E-01	(1.41E-01)		PCI/SA	R	7.86E-02	2.87E-01		97%	
Calc	S1	FILTER	JKAG71AA	TH-230	1.37E-01	(8.29E-02)		PCI/SA	R	7.49E-02	2.73E-01		97%	
Calc	S1	FILTER	JKAG71AA	TH-232	1.37E-01	(8.29E-02)		PCI/SA	R	7.49E-02	2.73E-01		97%	
Calc	S1	FILTER	JKAHM1AA	TH-228	1.51E-01	(1.08E-01)	U4	PCI/SA	R	1.17E-01	3.71E-01		75%	
Calc	S1	FILTER	JKAHM1AA	TH-230	1.93E-01	(1.15E-01)		PCI/SA	R	1.12E-01	3.55E-01		75%	
Calc	S1	FILTER	JKAHM1AA	TH-232	4.83E-02	(5.42E-02)	U4	PCI/SA	R	7.94E-02	2.90E-01		75%	
Calc	S1	FILTER	JKAHR1AA	TH-228	2.73E-01	(1.15E-01)		PCI/SA	R	6.91E-02	2.52E-01		92%	
Calc	S1	FILTER	JKAHR1AA	TH-230	8.05E-02	(7.56E-02)	U4	PCI/SA	R	9.36E-02	2.96E-01		92%	
Calc	S1	FILTER	JKAHR1AA	TH-232	0.00E+00	(4.50E-02)	U4	PCI/SA	R	6.62E-02	2.41E-01		92%	
Calc	S1	FILTER	JKAHT1AA	TH-228	2.22E-01	(1.16E-01)		PCI/SA	R	9.15E-02	3.34E-01		79%	
Calc	S1	FILTER	JKAHT1AA	TH-230	4.80E-01	(1.68E-01)		PCI/SA	R	8.77E-02	3.20E-01		79%	
Calc	S1	FILTER	JKAHT1AA	TH-232	5.33E-02	(5.98E-02)	U4	PCI/SA	R	8.77E-02	3.20E-01		79%	
Calc	S1	FILTER	JKAHV1AA	TH-228	5.78E-02	(6.49E-02)	U4	PCI/SA	R	9.51E-02	3.47E-01		63%	
Calc	S1	FILTER	JKAHV1AA	TH-230	3.33E-01	(1.42E-01)		PCI/SA	R	9.12E-02	3.32E-01		63%	
Calc	S1	FILTER	JKAHV1AA	TH-232	2.77E-02	(6.20E-02)	U4	PCI/SA	R	9.12E-02	3.32E-01		63%	
Calc	S1	FILTER	JKAHW1AA	TH-228	2.15E-01	(1.11E-01)		PCI/SA	R	1.00E-01	3.17E-01		90%	
Calc	S1	FILTER	JKAHW1AA	TH-230	4.74E-01	(1.50E-01)		PCI/SA	R	6.78E-02	2.47E-01		90%	
Calc	S1	FILTER	JKAHW1AA	TH-232	8.24E-02	(6.22E-02)	U4	PCI/SA	R	6.78E-02	2.47E-01		90%	
Calc	S1	FILTER	JKENG1AA	TH-228	1.20E-02	(8.71E-03)	U4	PCI/SA	R	7.88E-03	2.87E-02	B	66%	
Calc	S1	FILTER	JKENG1AA	TH-230	4.59E-03	(7.27E-03)	U4	PCI/SA	R	1.07E-02	3.38E-02	B	66%	
Calc	S1	FILTER	JKENG1AA	TH-232	4.59E-03	(5.15E-03)	U4	PCI/SA	R	7.55E-03	2.75E-02	B	66%	
Calc	S1	FILTER	JKENG1AC	TH-230	2.02E+00	(2.56E-01)		PCI/SA	R	1.64E-02	5.97E-02	S	36%	110%

P Anderson
12-15-06

() - (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:42
RADCALC v4.8.26
STL Richland

Batch Nbr: 6332247

Alpha Spec, ThIso by ALP , Calculated Results

Detailed Report

12/15/2006 11:47:33 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	S1	FILTER	*STLE	AlpIsoWoBS	**JKAGW1AA**	**PCI/SA**		10/24/06 11:55	12/12/06 12:37			1	1.00 Sa	
536403,P-0782					,J6K220385-1 v4.8.26		FILTER					THTF0871 Alq		0.08313 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	12/12/06 08:27	TH-228	4	1	ALP171	ED	N	N	2.9087E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0498E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	12.029384		
1	12/12/06 08:27	TH-229	560	3	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)	12.029384		
2	12/12/06 08:27	TH-230	6	1	ALP171	ED	N	N	2.9087E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	12.029384		
3	12/12/06 08:27	TH-232	0	0	ALP171	ED	N	N	2.9087E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	12.029384		

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
	12/13/06	TH-228	R	**0.143063**		7.00749E-03	0.025149	0.025149	1.00 Sa	96%		0.245169		
				(0.085158)		(4.1275E-03)	(0.014913)	(0.014913)	(0.014142)			0.067239		
	12/13/06	TH-229	R	**20.831117**		1.11819E+00	3.844347	3.844347	1.00 Sa	96%				
				(1.530445)		(4.7411E-02)	(0.199674)	(0.199674)	(0.014142)					
	12/13/06	TH-230	R	**0.214142**		1.10118E-02	0.039519	0.039519	1.00 Sa	96%		0.233531		
				(0.099062)		(5.0053E-03)	(0.018166)	(0.018166)	(0.014142)			0.064047		
	12/13/06	TH-232	R	**0.00E00**	**U4**	0.00000E+00	0.00E00	0.00E00	1.00 Sa	96%		0.233531		
				(0.04353)		(2.2384E-03)	(0.008033)	(0.008033)	(0.014142)			0.064047		

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	**JKAG11AA**	**PCI/SA**		10/24/06 12:10	12/12/06 12:37			1	1.00 Sa	
536403,P-0783					,J6K220385-2 v4.8.26		FILTER					THTF0872 Alq		0.08195 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	12/12/06 08:27	TH-228	6	1	ALP172	ED	N	N	2.9949E-01		N	92%	N		1.0000E+00	4.5045E-01	1.0498E+00	
			499.4666666	998.95			Y		(8.985E-03)			6%			(0.000E+00)	12.202604		
1	12/12/06 08:27	TH-229	563	4	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)	12.202604		
2	12/12/06 08:27	TH-230	5	2	ALP172	ED	N	N	2.9949E-01		N	92%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)			6%			(0.000E+00)	12.202604		
3	12/12/06 08:27	TH-232	1	0	ALP172	ED	N	N	2.9949E-01		N	92%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)			6%			(0.000E+00)	12.202604		

() - (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: 6332247

Alpha Spec, Thiso by ALP , Calculated Results

12/15/2006 11:47:33 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
	12/13/06	TH-228	R	**0.230668**		1.10118E-02	0.039973	0.039973	1.00 Sa	92%		0.251554		
				(0.106705)		(5.0053E-03)	(0.018374)	(0.018374)	(0.014142)			0.06899		
	12/13/06	TH-229	R	**20.614458**		1.12320E+00	3.750359	3.750359	1.00 Sa	92%				
				(1.513733)		(4.7548E-02)	(0.194588)	(0.194588)	(0.014142)					
	12/13/06	TH-230	R	**0.159797**		8.00858E-03	0.029072	0.029072	1.00 Sa	92%		0.294024		
				(0.09469)		(4.6954E-03)	(0.01716)	(0.01716)	(0.014142)			0.092936		
	12/13/06	TH-232	R	**0.039949**	U4	2.00214E-03	0.007268	0.007268	1.00 Sa	92%		0.239616		
				(0.044796)		(2.2384E-03)	(0.008141)	(0.008141)	(0.014142)			0.065716		

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	**JKAG41AA**	**PCI/SA**		10/24/06 12:30	12/12/06 12:37			1	1.00 Sa	
536403,P-0784					,J6K220385-3 v4.8.26		FILTER					THTF0873 Alq		0.083438 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	12/12/06 08:27	TH-228	3	3	ALP173	ED	N	N	2.5374E-01		N	81%	N		1.0000E+00	4.5045E-01	1.0498E+00	
			499.4666666	998.95			Y		(7.612E-03)			5%			(0.000E+00)	11.984949		
1	12/12/06 08:27	TH-229	422	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)	11.984949		
2	12/12/06 08:27	TH-230	6	1	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)	11.984949		
3	12/12/06 08:27	TH-232	2	1	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)	11.984949		

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
	12/13/06	TH-228	R	**0.082605**	U4	3.00325E-03	0.014575	0.014575	1.00 Sa	81%		0.462859		
				(0.106896)		(3.8771E-03)	(0.018846)	(0.018846)	(0.014142)			0.156904		
	12/13/06	TH-229	R	**17.912192**		8.41898E-01	3.31792	3.31792	1.00 Sa	81%				
				(1.386414)		(4.1166E-02)	(0.190335)	(0.190335)	(0.014142)					
	12/13/06	TH-230	R	**0.288512**		1.10118E-02	0.053442	0.053442	1.00 Sa	81%		0.314636		
				(0.13365)		(5.0053E-03)	(0.0246)	(0.0246)	(0.014142)			0.08629		
	12/13/06	TH-232	R	**0.078685**	U4	3.00322E-03	0.014575	0.014575	1.00 Sa	81%		0.314635		
				(0.078998)		(3.0032E-03)	(0.014613)	(0.014613)	(0.014142)			0.08629		

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	**JKAG71AA**	**PCI/SA**		10/24/06 12:35	12/12/06 12:37			1	1.00 Sa	
536403,000547					,J6K220385-4 v4.8.26		FILTER					THTF0874 Alq		0.082661 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	12/12/06 08:27	TH-228	8	1	ALP174	ED	N	N	2.4814E-01		N	97%	N		1.0000E+00	4.5045E-01	1.0498E+00	
			499.4666666	998.95			Y		(7.444E-03)			6%			(0.000E+00)	12.097571		

() - (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: 6332247 Alpha Spec, Thlso by ALP , Calculated Results 12/15/2006 11:47:33 AM

1	12/12/06 08:27	TH-229	489	3	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)	12.097571	
2	12/12/06 08:27	TH-230	3	0	ALP174	ED	N	N	2.4814E-01	N	97%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(7.444E-03)		6%		(0.000E+00)	12.097571	
3	12/12/06 08:27	TH-232	3	0	ALP174	ED	N	N	2.4814E-01	N	97%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(7.444E-03)		6%		(0.000E+00)	12.097571	

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/lLcC	BlkLcC/MDC	StdDvMdC/LcC
	12/13/06	TH-228	R	**0.358284**		1.50160E-02	0.062629	0.062629	1.00 Sa	97%		0.286532		
				(0.140745)		(5.7507E-03)	(0.024386)	(0.024386)	(0.014142)			0.078583		
	12/13/06	TH-229	R	**21.434726**		9.76041E-01	3.933446	3.933446	1.00 Sa	97%				
				(1.612705)		(4.4308E-02)	(0.21403)	(0.21403)	(0.014142)					
	12/13/06	TH-230	R	**0.136514**		6.00641E-03	0.025051	0.025051	1.00 Sa	97%		0.272938		
				(0.082899)		(3.6094E-03)	(0.015157)	(0.015157)	(0.014142)			0.074855		
	12/13/06	TH-232	R	**0.136514**		6.00641E-03	0.025051	0.025051	1.00 Sa	97%		0.272938		
				(0.082899)		(3.6094E-03)	(0.015157)	(0.015157)	(0.014142)			0.074855		

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	**JKAHM1AA**	**PCI/SA**		10/30/06 11:05	12/12/06 12:37			1	1.00 Sa	
536403,P-0786					,J6K220386-1 v4.8.26		FILTER					THTF0875 Alq		0.08508 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	12/12/06 08:27	TH-228	4	2	ALP175	ED	N	N	2.9360E-01		N	75%	N		1.0000E+00	4.5045E-01	1.0436E+00	
			499.4666666	998.95			Y		(8.808E-03)			5%			(0.000E+00)	11.753615		
1	12/12/06 08:27	TH-229	446	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)	11.753615		
2	12/12/06 08:27	TH-230	5	2	ALP175	ED	N	N	2.9360E-01		N	75%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.808E-03)			5%			(0.000E+00)	11.753615		
3	12/12/06 08:27	TH-232	1	0	ALP175	ED	N	N	2.9360E-01		N	75%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.808E-03)			5%			(0.000E+00)	11.753615		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/lLcC	BlkLcC/MDC	StdDvMdC/LcC
	12/13/06	TH-228	R	**0.151173**	**U4**	6.00644E-03	0.027359	0.027359	1.00 Sa	75%		0.370874		
				(0.107731)		(4.2472E-03)	(0.019445)	(0.019445)	(0.014142)			0.117227		
	12/13/06	TH-229	R	**16.048261**		8.89949E-01	3.031167	3.031167	1.00 Sa	75%				
				(1.228621)		(4.2318E-02)	(0.170423)	(0.170423)	(0.014142)					
	12/13/06	TH-230	R	**0.193135**		8.00858E-03	0.036479	0.036479	1.00 Sa	75%		0.355366		
				(0.114521)		(4.6954E-03)	(0.021547)	(0.021547)	(0.014142)			0.112325		
	12/13/06	TH-232	R	**0.048284**	**U4**	2.00214E-03	0.00912	0.00912	1.00 Sa	75%		0.289606		
				(0.054152)		(2.2384E-03)	(0.010217)	(0.010217)	(0.014142)			0.079426		

() - (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: 6332247 Alpha Spec, ThIso by ALP , Calculated Results 12/15/2006 11:47:33 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	**JKAHR1AA**	**PCI/SA**		10/30/06 11:25	12/12/06 12:37			1	1.00 Sa	
536403,P-0787					,J6K220386-2 v4.8.26		FILTER					THTF0881 Alq		0.083405 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	12/12/06 08:27	TH-228	7	1	ALP176	ED	N	N	2.9146E-01		N	92%	N		1.0000E+00	4.5045E-01	1.0436E+00	
			499.4666666	998.95			Y		(8.744E-03)			6%			(0.000E+00)	11.989742		
1	12/12/06 08:27	TH-229	547	1	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)	11.989742		
2	12/12/06 08:27	TH-230	3	2	ALP176	ED	N	N	2.9146E-01		N	92%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.744E-03)			6%			(0.000E+00)	11.989742		
3	12/12/06 08:27	TH-232	0	0	ALP176	ED	N	N	2.9146E-01		N	92%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.744E-03)			6%			(0.000E+00)	11.989742		

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
	12/13/06	TH-228	R	**0.272905**		1.30139E-02	0.048418	0.048418	1.00 Sa	92%		0.251829		
				(0.115468)		(5.3909E-03)	(0.020331)	(0.020331)	(0.014142)			0.069065		
	12/13/06	TH-229	R	**20.274998**		1.09417E+00	3.754087	3.754087	1.00 Sa	92%				
				(1.494356)		(4.6837E-02)	(0.196233)	(0.196233)	(0.014142)					
	12/13/06	TH-230	R	**0.080461**	U4	4.00430E-03	0.014898	0.014898	1.00 Sa	92%		0.296093		
				(0.075582)		(3.7456E-03)	(0.013973)	(0.013973)	(0.014142)			0.09359		
	12/13/06	TH-232	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 Sa	92%		0.241302		
				(0.044979)		(2.2384E-03)	(0.008328)	(0.008328)	(0.014142)			0.066178		

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	**JKAHT1AA**	**PCI/SA**		10/30/06 11:40	12/12/06 12:37			1	1.00 Sa	
536403,P-0788					,J6K220386-3 v4.8.26		FILTER					THTF0882 Alq		0.081545 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	12/12/06 08:27	TH-228	4	0	ALP177	ED	N	N	2.6130E-01		N	79%	N		1.0000E+00	4.5045E-01	1.0436E+00	
			499.4666666	998.95			Y		(7.839E-03)			5%			(0.000E+00)	12.263209		
1	12/12/06 08:27	TH-229	424	1	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)	12.263209		
2	12/12/06 08:27	TH-230	9	0	ALP177	ED	N	N	2.6130E-01		N	79%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.839E-03)			5%			(0.000E+00)	12.263209		
3	12/12/06 08:27	TH-232	1	0	ALP177	ED	N	N	2.6130E-01		N	79%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.839E-03)			5%			(0.000E+00)	12.263209		

() - (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: 6332247

Alpha Spec, Thiso by ALP , Calculated Results

12/15/2006 11:47:33 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
	12/13/06	TH-228	R	**0.222475**		8.00854E-03	0.038591	0.038591	1.00 Sa	79%		0.333602		
				(0.116365)		(4.1275E-03)	(0.020085)	(0.020085)	(0.014142)			0.091492		
	12/13/06	TH-229	R	**17.924873**		8.47904E-01	3.24493	3.24493	1.00 Sa	79%				
				(1.384452)		(4.1239E-02)	(0.185429)	(0.185429)	(0.014142)					
	12/13/06	TH-230	R	**0.479649**		1.80192E-02	0.08683	0.08683	1.00 Sa	79%		0.31966		
				(0.167638)		(6.0893E-03)	(0.03001)	(0.03001)	(0.014142)			0.087668		
	12/13/06	TH-232	R	**0.053294**	**U4**	2.00214E-03	0.009648	0.009648	1.00 Sa	79%		0.31966		
				(0.059774)		(2.2384E-03)	(0.010809)	(0.010809)	(0.014142)			0.087668		

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	**JKAHV1AA**	**PCI/SA**		10/30/06 11:10	12/12/06 12:37			1	1.00 Sa	
536403,P-0789					,J6K220386-4 v4.8.26		FILTER					THTF0880 Alq		0.082734 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	12/12/06 08:27	TH-228	1	0	ALP178	ED	N	N	3.1338E-01		N	63%	N		1.0000E+00	4.5045E-01	1.0436E+00	
			499.4666666	998.95			Y		(9.401E-03)			4%			(0.000E+00)	12.08699		
1	12/12/06 08:27	TH-229	402	2	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)	12.08699		
2	12/12/06 08:27	TH-230	6	0	ALP178	ED	N	N	3.1338E-01		N	63%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(9.401E-03)			4%			(0.000E+00)	12.08699		
3	12/12/06 08:27	TH-232	1	1	ALP178	ED	N	N	3.1338E-01		N	63%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(9.401E-03)			4%			(0.000E+00)	12.08699		

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
	12/13/06	TH-228	R	**0.057836**	**U4**	2.00214E-03	0.010178	0.010178	1.00 Sa	63%		0.346901		
				(0.064871)		(2.2384E-03)	(0.011404)	(0.011404)	(0.014142)			0.095139		
	12/13/06	TH-229	R	**13.948563**		8.02856E-01	2.561915	2.561915	1.00 Sa	63%				
				(1.089694)		(4.0168E-02)	(0.149452)	(0.149452)	(0.014142)					
	12/13/06	TH-230	R	**0.332506**		1.20128E-02	0.061071	0.061071	1.00 Sa	63%		0.332396		
				(0.141736)		(5.0053E-03)	(0.025838)	(0.025838)	(0.014142)			0.091161		
	12/13/06	TH-232	R	**0.027709**	**U4**	1.00108E-03	0.005089	0.005089	1.00 Sa	63%		0.332396		
				(0.062009)		(2.2384E-03)	(0.011386)	(0.011386)	(0.014142)			0.091161		

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	**JKAHW1AA**	**PCI/SA**		10/30/06 11:45	12/13/06 09:30			1	1.00 Sa	
536403,000550					,J6K220386-5 v4.8.26		FILTER					THTF0879 Alq		0.083794 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	12/13/06 05:20	TH-228	6	2	ALP171	ED	N	N	2.9087E-01		N	90%	N		1.0000E+00	4.5045E-01	1.0445E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	11.934031		

() - (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: 6332247 Alpha Spec, ThIso by ALP , Calculated Results 12/15/2006 11:47:33 AM

1	12/13/06 05:20	TH-229	532	2	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)	11.934031	
2	12/13/06 05:20	TH-230	12	1	ALP171	ED	N	N	2.9087E-01	N	90%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(8.726E-03)		6%		(0.000E+00)	11.934031	
3	12/13/06 05:20	TH-232	2	0	ALP171	ED	N	N	2.9087E-01	N	90%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(8.726E-03)		6%		(0.000E+00)	11.934031	

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
	12/13/06	TH-228	R	**0.215234**		1.00107E-02	0.038332	0.038332	1.00 Sa	90%		0.316822		
				(0.111315)		(5.1045E-03)	(0.019724)	(0.019724)	(0.014142)			0.100142		
	12/13/06	TH-229	R	**19.648421**		1.06313E+00	3.655055	3.655055	1.00 Sa	90%				
				(1.45565)		(4.6201E-02)	(0.193012)	(0.193012)	(0.014142)					
	12/13/06	TH-230	R	**0.47394**		2.30246E-02	0.088164	0.088164	1.00 Sa	90%		0.247191		
				(0.149952)		(7.0075E-03)	(0.027516)	(0.027516)	(0.014142)			0.067793		
	12/13/06	TH-232	R	**0.082424**	**U4**	4.00427E-03	0.015333	0.015333	1.00 Sa	90%		0.247191		
				(0.062228)		(3.0032E-03)	(0.011548)	(0.011548)	(0.014142)			0.067793		

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	**JKENG1AA**	**PCI/SA**	**B**	10/30/06 11:05	12/12/06 22:57			1	1.00 Sa	
0,INTRA-LAB BLANK					,J6K280000-247		FILTER					THTF0883 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	12/12/06 18:47	TH-228	3	1	ALP172	ED	N	N	2.9949E-01		N	66%	N		1.0000E+00	4.5045E-01	1.0441E+00	
			499.4666666	998.95			Y		(8.985E-03)			4%			(0.000E+00)	1.00		
1	12/12/06 18:47	TH-229	398	4	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	12/12/06 18:47	TH-230	2	2	ALP172	ED	N	N	2.9949E-01		N	66%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)			4%			(0.000E+00)	1.00		
3	12/12/06 18:47	TH-232	1	0	ALP172	ED	N	N	2.9949E-01		N	66%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)			4%			(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
	12/15/06	TH-228	R	**0.011979**	**U4**	5.00536E-03	0.02547	0.02547	1.00 Sa	66%		0.028739		
				(0.008706)		(3.6094E-03)	(0.018462)	(0.018462)	(0.017321)			0.007882		
	12/15/06	TH-229	R	**1.192482**		7.92846E-01	2.647312	2.647312	1.00 Sa	66%				
				(0.094232)		(3.9993E-02)	(0.155368)	(0.155368)	(0.017321)					
	12/15/06	TH-230	R	**0.004589**	**U4**	2.00217E-03	0.010188	0.010188	1.00 Sa	66%		0.033776		
				(0.007268)		(3.1656E-03)	(0.016126)	(0.016126)	(0.017321)			0.010676		
	12/15/06	TH-232	R	**0.004589**	**U4**	2.00214E-03	0.010188	0.010188	1.00 Sa	66%		0.027526		
				(0.005148)		(2.2384E-03)	(0.011415)	(0.011415)	(0.017321)			0.007549		

() - (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: 6332247

Alpha Spec, Thlso by ALP , Calculated Results

12/15/2006 11:47:33 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	**JKENG1AC**	**PCI/SA**	**S**	10/30/06 11:05	12/12/06 22:57		THSO0095	1	1.00 Sa	
0,INTRA-LAB CHECK					,J6K280000-247		FILTER					THSO0095 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	12/12/06 18:47	TH-229	185	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	12/12/06 18:47	TH-230	203	1	ALP173	ED	N	N	2.5374E-01		N	36%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)			3%			(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
	12/15/06	TH-229	R	**0.65398**		3.68393E-01	1.451837	1.451837	1.00 Sa	36%				
				(0.062656)		(2.7269E-02)	(0.115957)	(0.115957)	(0.017321)					
	12/15/06	TH-230	R	**2.017026**		4.05432E-01	4.477798	4.477798	1.00 Sa	36%	110%	0.059744		
				(0.256128)		(2.8544E-02)	(0.516883)	(0.516883)	(0.017321)			0.016385		

() - (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:11

RADCALC v4.8.26

STL Richland

SEVERN TRENT **STL**

THORIUM ISOTOPIC COUNTING REQUEST 1647

C.R. Technician CB
Date Counted 12/12/06
C.R. Analyst AD
Date Analyzed 12/12/06

Counting Time
Sample 500 Minutes
Background See Alpha Analysis Report BRC

SOP's
Operating: RICHRD008
Review: RICHRD0016 633247

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)		
JKAGWIAA		10		0	See Alpha Analysis Report for ROI Information			171	
JKAGIAA		10		0	See Alpha Analysis Report for ROI Information			172	
JKAG4IAA		10		0	See Alpha Analysis Report for ROI Information			173	
JKAG7IAA		10		0	See Alpha Analysis Report for ROI Information			174	
JKAHMIAA		10		0	See Alpha Analysis Report for ROI Information			175	
JKAHRIAA		10		0	See Alpha Analysis Report for ROI Information			176	
JKAHTIAA		10		0	See Alpha Analysis Report for ROI Information			177	
JKAHVIAA		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: OD

Date: 12/12/06

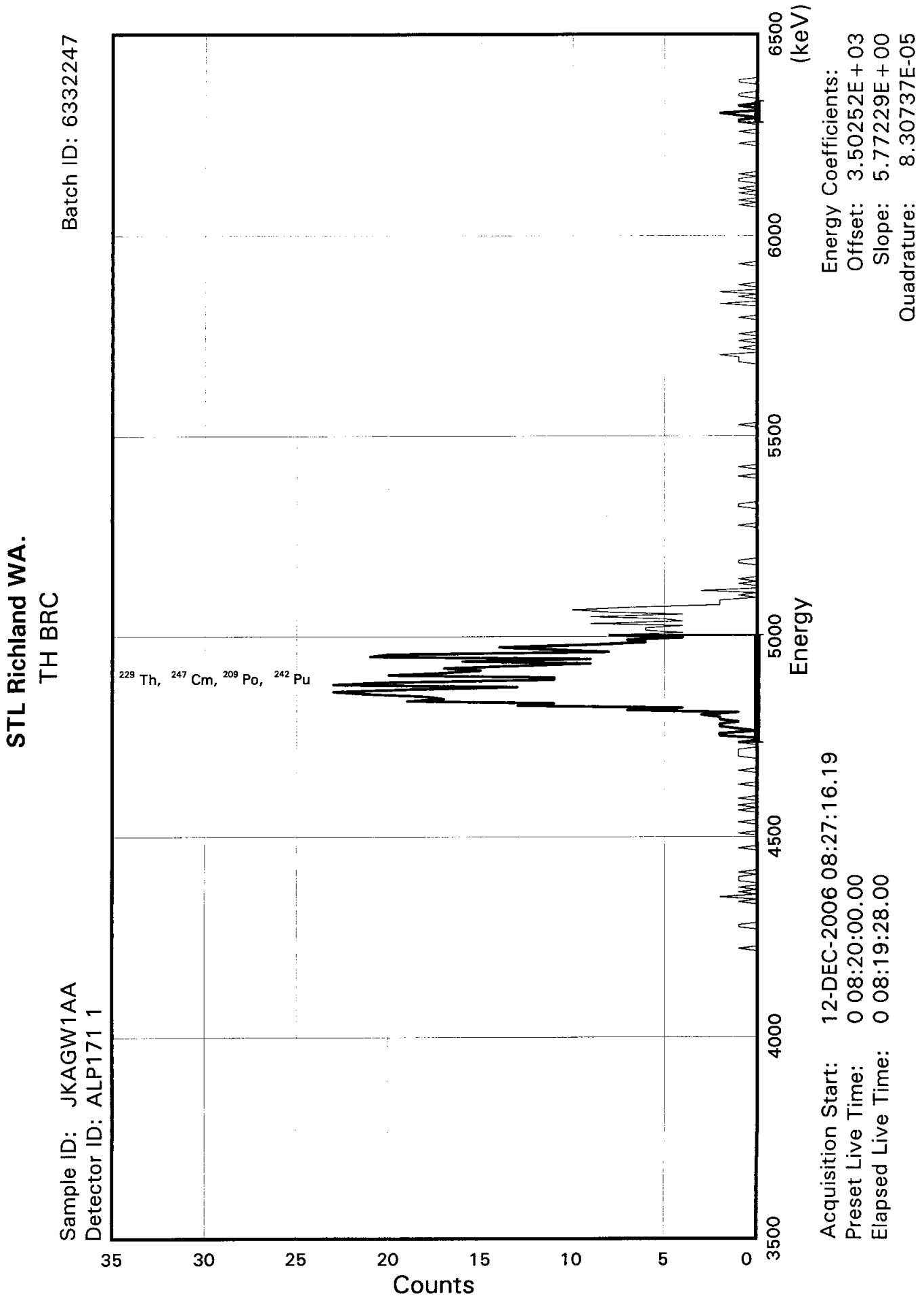
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAGW1AA

Detector: ALP171 1
Report Date: 12-Dec-06 06:50 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	134.0	313	336
TH-229	560	3	1.118	4845.3	401.1	215	284
TH-230	6	1	0.011	4687.7	121.9	190	211
TH-232	0	0	0.000	4013.0	115.7	73	93

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6332247
Sample ID: JKAGW1AA
Detector ID: ALP171 1
229 Th, 247 Cm, 209 Po, 242 Pu
Counts
35
30
25
20
15
10
5
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.50252E+03
Slope: 5.77229E+00
Quadrature: 8.30737E-05

SAMPLE IDENTIITY: JKAGW1AA

TITLE : TH BRC

DETECTOR : ALP171 1
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JKAGW1AA_121260827A.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:00:15

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

OFFSET : 3502.52 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 5.77229 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 8.307370E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JKAGW1AA

Detector: ALP171 1
Report Date: 12-Dec-06 04:47 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	5165.6	267.7	259	305	0.00	0.00	M
PO-209	474	2	0	0.947	4933.9	267.3	213	259	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5355.1	267.9	292	338	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6088.8	268.9	418	464	0.00	0.00	M
TH-227	-9999	-9999	0	-10.010	6088.8	268.9	418	464	0.00	0.00	M
TH-228	-9999	-9999	0	-10.010	5473.9	268.1	312	358	0.00	0.00	M
TH-229	474	2	0	0.947	4896.0	267.3	213	259	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4738.4	267.1	186	232	0.00	0.00	M I
TH-232	0	1	0	-0.001	4063.7	272.0	69	116	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5370.9	268.0	295	341	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4825.3	267.2	201	247	0.00	0.00	M I
U-235	10	0	4	0.020	4448.5	266.7	136	182	0.00	0.00	S
PU-236	9	16	13	0.001	5818.4	268.5	371	417	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4838.7	267.3	203	249	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5549.8	268.2	325	371	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4248.7	272.3	101	148	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5207.3	261.9	267	312	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5536.3	268.2	323	369	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5257.5	267.8	275	321	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6163.5	263.1	431	476	0.00	0.00	M
PU-242	474	2	0	0.947	4951.2	267.3	213	259	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5326.0	267.9	287	333	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5855.6	268.6	378	424	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5437.2	268.0	306	352	0.00	0.00	M
CM-247	474	2	0	0.947	4921.1	267.3	213	259	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5129.3	267.6	253	299	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: JKAGW1AA
Detector: ALP171 1
Report Date: 12-Dec-06 04:47 PM
Acquire Date: 12-DEC-2006 08:27:16.19

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

Cnt	F	Chn	Cnt	F	Chn
0		451	0		501
0		452	0		502
0		453	0		503
0		454	0		504
0		455	0		505
1	@	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			
0	@	464			
0	-	465			
0	-	466			
0	-	467			
0	-	468			
1	-	469			
0	-	470			
0	-	471			
0	-	472			
0	-	473			
1	-	474			
0	-	475			
0	-	476			
0		477			
1		478			
1		479			
0		480			
1		481			
2		482			
0		483			
0		484			
1		485			
0		486			
0		487			
0		488			
1		489			
1		490			
0		491			
0		492			
0		493			
0		494			
1		495			
1		496			
0		497			
0		498			
0		499			
0		500			

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:47:49

```
Configuration     : $DISK1:[ALP171.SAMPLE]JKAGW1AA_121260827A.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID         : JKAGW1AA             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      :  3519.84 keV         End energy       :  6479.71 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4896.04	474	0	144.31	240.58	213	46	1.58E-02	4.6	
2	0	6301.14	6	0	34.63	481.50	478	9	2.00E-04	40.8	

VMS Nuclide Identification Report V3.0 Generated 12-DEC-2006 16:47:53

```
Configuration     : $DISK1:[ALP171.SAMPLE]JKAGW1AA_121260827A.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID         : JKAGW1AA             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                     1
 Number of lines tentatively identified by NID    1       50.00%
```

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]JKAGW1AA_121260827A.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4896.04	213	259	474	473	0.05		
6301.13	478	487	6	6	0.00		

End of Report

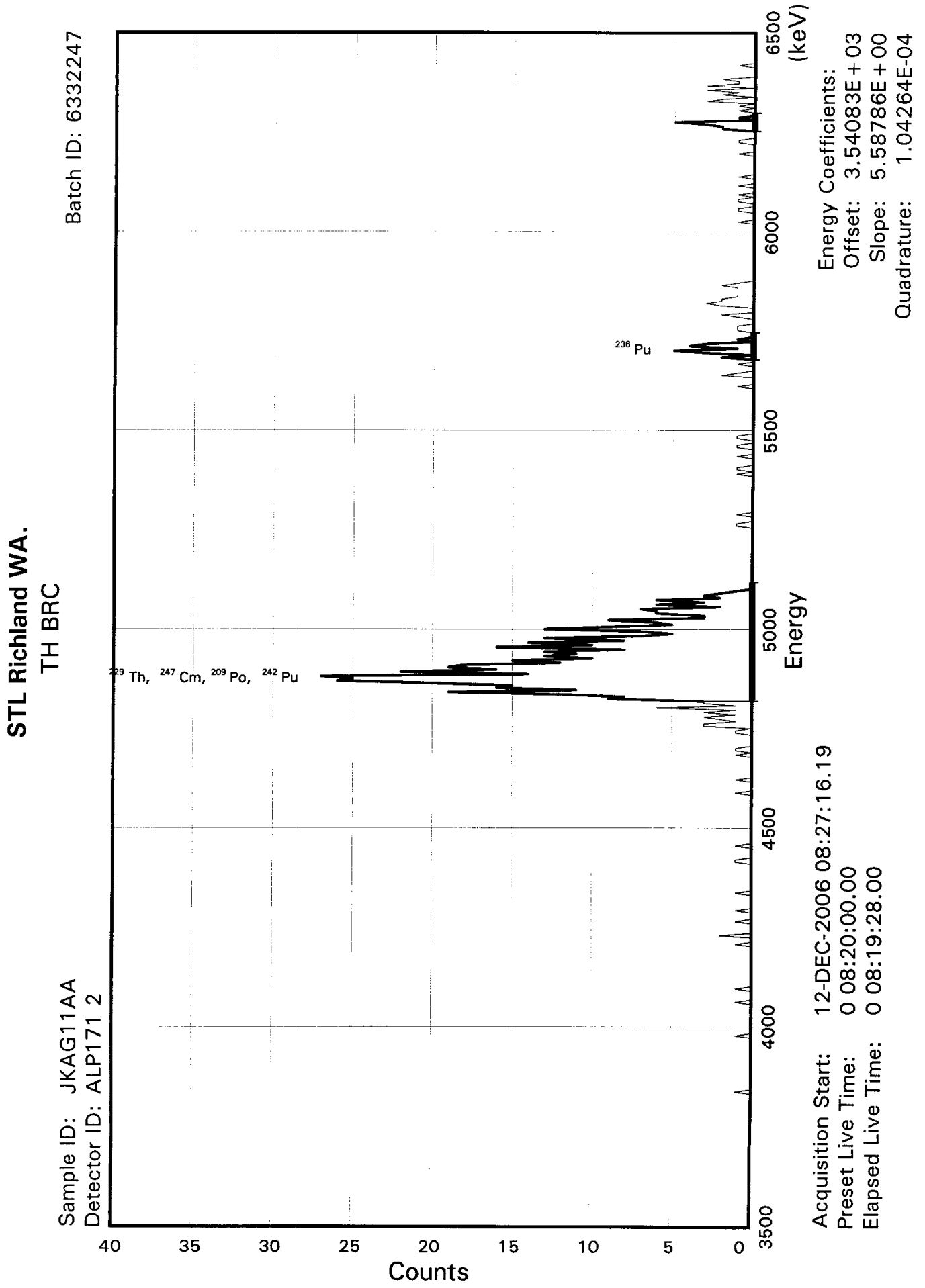
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAG11AA

Detector: ALP171 2
Report Date: 12-Dec-06 06:51 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	1	0.011	5423.2	130.1	320	343
TH-229	563	4	1.123	4845.3	377.8	213	280
TH-230	5	2	0.008	4687.7	129.5	186	209
TH-232	1	0	0.002	4013.0	112.1	69	89

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6332247
Sample ID: JKAG11AA
Detector ID: ALP171 2
229 Th, 247 Cm, 209 Po, 242 Pu
236 Pu
Counts
Energy
(keV)
Energy Coefficients:
Offset: 3.54083E+03
Slope: 5.58786E+00
Quadrature: 1.04264E-04
Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

SAMPLE IDENTIITY: JKAG11AA

TITLE : TH BRC

DETECTOR : ALP171 2
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JKAG11AA_121260827B.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:00:27

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

OFFSET : 3540.83 keV CONSTANT FWHM : 10.50000 Channels
SLOPE : 5.58786 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 1.042640E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JKAG11AA

Detector: ALP171 2
Report Date: 12-Dec-06 04:48 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	5149.5	299.5	276	329	0.00	0.00	M I
PO-209	536	3	0	1.070	4917.8	299.0	228	281	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5339.0	299.9	309	362	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6072.6	295.6	439	491	0.00	0.00	M
TH-227	-9999	-9999	0	-10.010	6072.6	295.6	439	491	0.00	0.00	M
TH-228	-9999	-9999	0	-10.010	5457.8	300.1	330	383	0.00	0.00	M I
TH-229	536	3	0	1.070	4879.9	299.0	228	281	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4722.3	298.7	200	253	0.00	0.00	M I
TH-232	4	2	4	0.007	4047.6	297.3	80	133	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5354.8	299.9	312	365	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4809.2	298.8	215	268	0.00	0.00	M I
U-235	-9999	-9999	0	-10.010	4432.4	303.7	148	202	0.00	0.00	M
PU-236	18	11	0	0.025	5802.3	68.0	380	392	0.00	0.00	P
NP-237	-9999	-9999	0	-10.010	4822.6	298.9	218	271	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5533.6	300.3	344	397	0.00	0.00	M I
U-238	-9999	-9999	0	-10.010	4232.6	297.7	113	166	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5191.2	299.6	283	336	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5520.2	300.2	341	394	0.00	0.00	M I
AM-242M	-9999	-9999	0	-10.010	5241.4	299.7	292	345	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6147.3	301.4	452	505	0.00	0.00	M
PU-242	536	3	0	1.070	4935.1	299.0	228	281	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5309.9	299.8	304	357	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5839.4	295.2	398	450	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5421.1	300.0	324	377	0.00	0.00	M
CM-247	536	3	0	1.070	4905.0	299.0	228	281	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5113.2	299.4	269	322	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: JKAG11AA
Detector: ALP171 2
Report Date: 12-Dec-06 04:48 PM
Acquire Date: 12-DEC-2006 08:27:16.19

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

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:47:57

```
Configuration     : $DISK1:[ALP171.SAMPLE]JKAG11AA_121260827B.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID         : JKAG11AA             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      :  3557.59 keV         End energy       :  6429.15 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4879.91	536	0	89.41	238.58	228	53	1.79E-02	4.3	
2	0	5705.34	18	0	33.53	384.60	380	12	6.01E-04	23.6	
3	0	6270.25	13	0	27.94	484.08	481	8	4.34E-04	27.7	

VMS Nuclide Identification Report V3.0 Generated 12-DEC-2006 16:48:00

```
Configuration     : $DISK1:[ALP171.SAMPLE]JKAG11AA_121260827B.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID         : JKAG11AA             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	
			---	---			
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	1.03	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]JKAG11AA_121260827B.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4879.91	228	281	536	534	0.09		
5705.34	380	392	18	19	-0.24		
6270.25	481	489	13	13	0.00		

End of Report

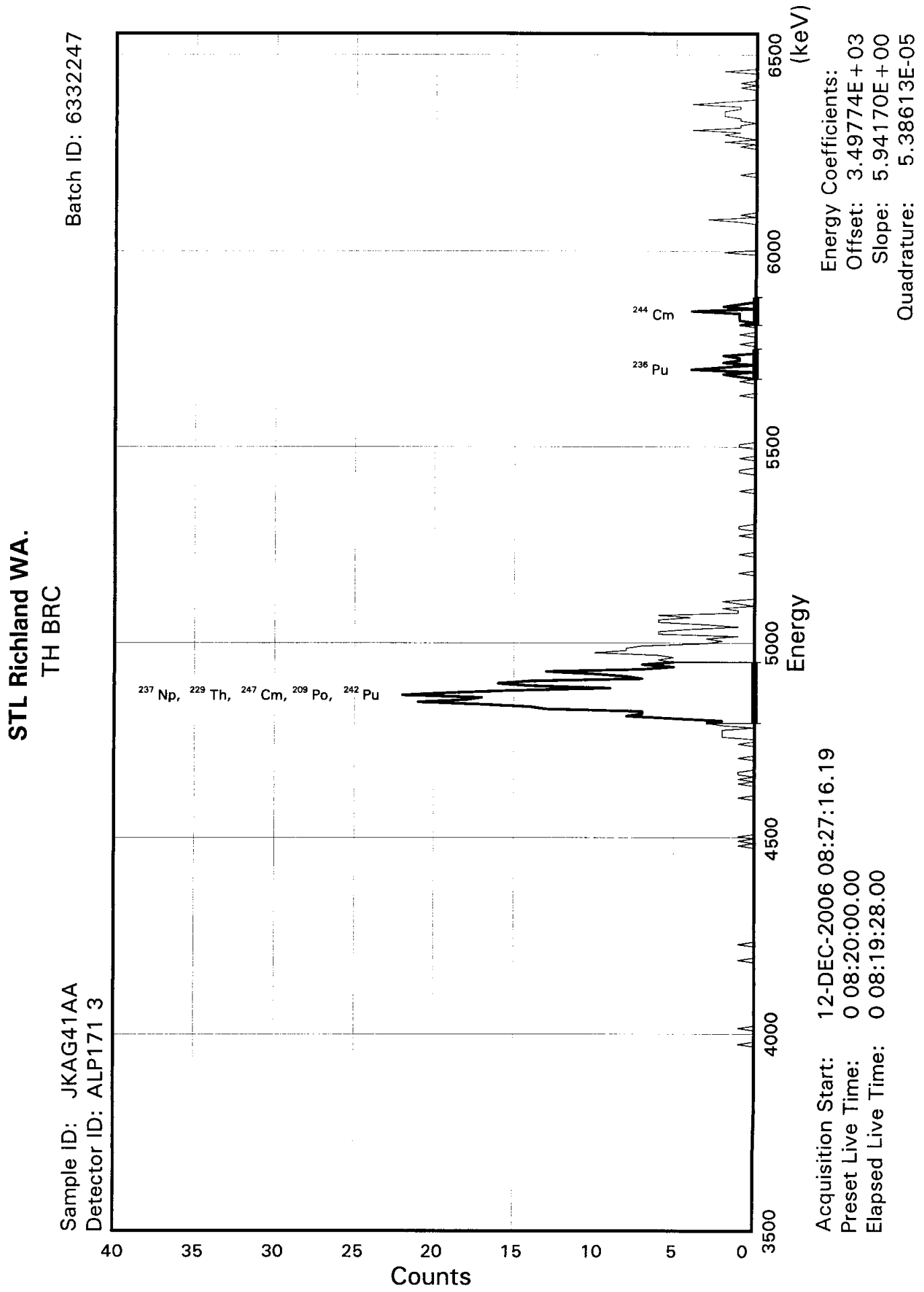
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAG41AA

Detector: ALP171 3
Report Date: 12-Dec-06 06:51 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	3	0.003	5423.2	119.5	308	328
TH-229	422	3	0.842	4845.3	381.9	208	272
TH-230	6	1	0.011	4687.7	119.3	185	205
TH-232	2	1	0.003	4013.0	119.0	72	92

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6332247
Sample ID: JKAG41AA
Detector ID: ALP171 3
^{237}Np, ^{229}Th, ^{247}Cm, ^{209}Po, ^{242}Pu
^{236}Pu
^{244}Cm
Counts
Energy
(keV)
Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.49774E+03
Slope: 5.94170E+00
Quadrature: 5.38613E-05

SAMPLE IDENTIITY: JKAG41AA

TITLE : TH BRC

DETECTOR : ALP171 3
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JKAG41AA_121260827C.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:00:42

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

OFFSET : 3497.74 keV CONSTANT FWHM : 9.50000 Channels
SLOPE : 5.94170 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 5.386130E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JKAG41AA

Detector: ALP171 3
Report Date: 12-Dec-06 04:48 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	5137.4	155.3	263	289	0.00	0.00	M
PO-209	319	1	0	0.638	4905.7	155.1	218	244	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5326.9	155.3	295	321	0.00	0.00	M
AC-227	5	1	5	0.008	6060.5	149.7	418	443	0.00	0.00	S
TH-227	5	1	5	0.008	6060.5	149.7	418	443	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5445.7	155.4	315	341	0.00	0.00	M
TH-229	319	1	0	0.638	4867.8	155.1	218	244	0.00	0.00	P
TH-230	12	1	14	0.024	4710.2	155.1	192	218	0.00	0.00	S
TH-232	2	1	0	0.003	4035.5	154.7	78	104	0.00	0.00	
U-232	-9999	-9999	0	-10.010	5342.7	155.4	298	324	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4797.1	155.1	206	232	0.00	0.00	S I
U-235	3	1	0	0.005	4420.3	154.9	143	169	0.00	0.00	
PU-236	15	12	0	0.018	5790.2	77.8	365	378	0.00	0.00	P
NP-237	319	1	0	0.638	4810.5	155.1	218	244	0.00	0.00	P
PU-238	-9999	-9999	0	-10.010	5521.5	155.4	327	353	0.00	0.00	M
U-238	2	0	0	0.004	4220.5	154.8	109	135	0.00	0.00	
PU-239	-9999	-9999	0	-10.010	5179.1	155.3	270	296	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5508.1	155.4	325	351	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5229.3	155.3	279	305	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6135.2	155.7	430	456	0.00	0.00	M
PU-242	319	1	0	0.638	4923.0	155.1	218	244	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5297.8	155.3	290	316	0.00	0.00	M
CM-244	12	7	0	0.017	5827.3	71.8	388	400	0.00	0.00	P
CM-246	-9999	-9999	0	-10.010	5409.0	155.4	309	335	0.00	0.00	M
CM-247	319	1	0	0.638	4892.9	155.1	218	244	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5101.1	155.2	257	283	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JKAG41AA
Detector: ALP171 3
Report Date: 12-Dec-06 04:48 PM
Acquire Date: 12-DEC-2006 08:27:16.19

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

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:48:04

```
Configuration     : $DISK1:[ALP171.SAMPLE]JKAG41AA_121260827C.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID         : JKAG41AA             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      :  3515.56 keV         End energy       :  6554.00 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4867.81	319	0	83.18	230.11	218	26	1.06E-02	5.6	
2	0	5698.05	15	0	41.59	369.08	365	13	5.01E-04	25.8	
3	0	5838.75	12	0	41.59	392.60	388	12	4.00E-04	28.9	

VMS Nuclide Identification Report V3.0 Generated 12-DEC-2006 16:48:07

```
Configuration     : $DISK1:[ALP171.SAMPLE]JKAG41AA_121260827C.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID         : JKAG41AA             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-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	1.03	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-244	18.10Y	1.01	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]JKAG41AA_121260827C.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4867.80	218	244	319	303	0.90		
5698.05	365	378	15	15	0.00		
5838.74	388	400	12	12	0.00		

End of Report

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

Sample Identity: JKAG71AA

Detector: ALP171 4
Report Date: 12-Dec-06 06:52 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	8	1	0.015	5423.2	138.8	306	331
TH-229	489	3	0.976	4845.3	399.8	202	274
TH-230	3	0	0.006	4687.7	111.1	174	194
TH-232	3	0	0.006	4013.0	111.1	53	73

End of Alpha Region Report
(Produced by ANAL Report)

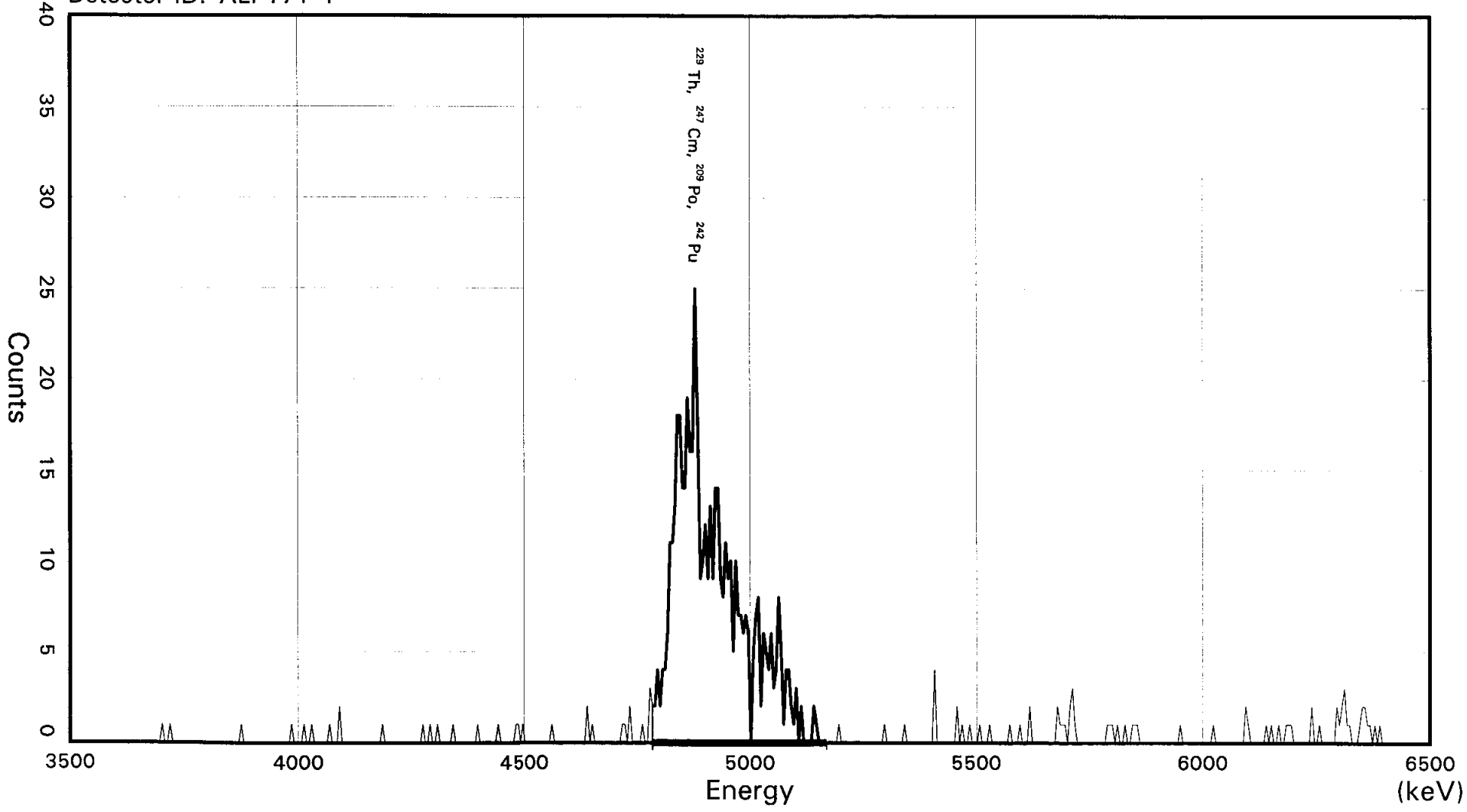
STL Richland WA.

TH BRC

Sample ID: JKAG71AA

Detector ID: ALP171 4

Batch ID: 6332247



Acquisition Start: 12-DEC-2006 08:27:16.19

Preset Live Time: 0 08:20:00.00

Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:

Offset: 3.63541E+03

Slope: 5.55677E+00

Quadrature: -9.33907E-06

SAMPLE IDENTIITY: JKAG71AA

TITLE : TH BRC

DETECTOR : ALP171 4
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JKAG71AA_121260827D.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:00:51

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

OFFSET : 3635.41 keV CONSTANT FWHM : 11.00000 Channels
SLOPE : 5.55677 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.933907E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JKAG71AA

Detector: ALP171 4
Report Date: 12-Dec-06 04:48 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	5149.0	383.0	256	325	0.00	0.00	M I
PO-209	488	3	0	0.974	4917.3	383.1	207	276	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5338.5	383.0	290	359	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6072.1	382.8	422	491	0.00	0.00	M
TH-227	-9999	-9999	0	-10.010	6072.1	382.8	422	491	0.00	0.00	M
TH-228	-9999	-9999	0	-10.010	5457.3	383.0	311	380	0.00	0.00	M
TH-229	488	3	0	0.974	4879.4	383.1	207	276	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4721.8	383.1	179	248	0.00	0.00	M I
TH-232	8	0	4	0.016	4047.1	383.3	57	126	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5354.3	383.0	293	362	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4808.7	383.1	194	263	0.00	0.00	M I
U-235	-9999	-9999	0	-10.010	4431.9	383.2	126	195	0.00	0.00	M
PU-236	-9999	-9999	0	-10.010	5801.8	382.9	373	442	0.00	0.00	M
NP-237	-9999	-9999	0	-10.010	4822.1	383.1	197	266	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5533.1	383.0	325	394	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4232.1	383.3	90	159	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5190.7	383.0	263	332	0.00	0.00	M I
AM-241	-9999	-9999	0	-10.010	5519.7	383.0	322	391	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5240.9	383.0	272	341	0.00	0.00	M I
CM-242	-9999	-9999	0	-10.010	6146.8	382.8	435	504	0.00	0.00	M
PU-242	488	3	0	0.974	4934.6	383.1	207	276	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5309.4	383.0	284	353	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5838.9	382.9	380	449	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5420.6	388.5	304	374	0.00	0.00	M
CM-247	488	3	0	0.974	4904.5	383.1	207	276	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5112.7	383.1	249	318	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: JKAG71AA
Detector: ALP171 4
Report Date: 12-Dec-06 04:48 PM
Acquire Date: 12-DEC-2006 08:27:16.19

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

Cnt	F	Chn
0	-	501
0	-	502
0	-	503
0	-	504
0		505
0		506
0		507
0		508
0		509
0		510
0		511
0		512

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:48:10

```
Configuration     : $DISK1:[ALP171.SAMPLE]JKAG71AA_121260827D.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID         : JKAG71AA             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      :  3652.08 keV         End energy       :  6478.02 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4879.40	488	0	122.25	223.95	207	69	1.63E-02	4.5	

VMS Nuclide Identification Report V3.0 Generated 12-DEC-2006 16:48:12

```
Configuration     : $DISK1:[ALP171.SAMPLE]JKAG71AA_121260827D.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID         : JKAG71AA             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]JKAG71AA_121260827D.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4879.39	207	276	488	485	0.14		

End of Report

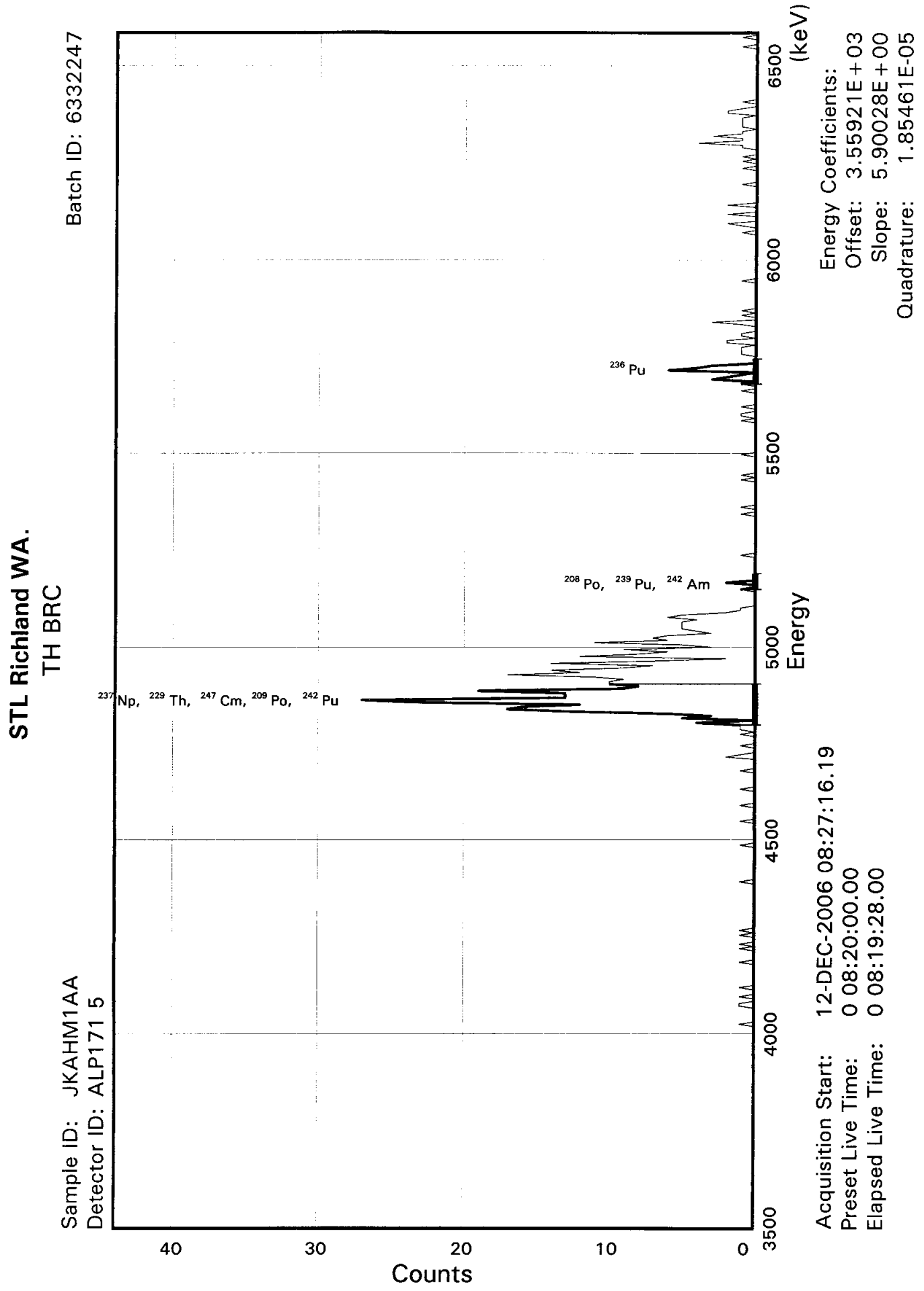
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAHM1AA

Detector: ALP171 5
Report Date: 12-Dec-06 06:53 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	2	0.006	5423.2	118.2	301	321
TH-229	446	3	0.890	4845.3	354.5	203	263
TH-230	5	2	0.008	4687.7	135.9	176	199
TH-232	1	0	0.002	4013.0	118.1	62	82

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6332247
Sample ID: JKAHM1AA
Detector ID: ALP171 5
237Np, 229Th, 247Cm, 209Po, 242Pu
208Po, 239Pu, 242Am
236Pu
Counts
40
30
20
10
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.55921E+03
Slope: 5.90028E+00
Quadrature: 1.85461E-05

SAMPLE IDENTIITY: JKAHM1AA

TITLE : TH BRC

DETECTOR : ALP171 5
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JKAHM1AA_121260827E.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:01:04

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

OFFSET : 3559.21 keV CONSTANT FWHM : 8.00000 Channels
SLOPE : 5.90028 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 1.854610E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JKAHM1AA

Detector: ALP171 5
Report Date: 12-Dec-06 04:48 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	4	1	0	0.007	5132.9	41.4	269	276	0.00	0.00	P
PO-209	214	1	0	0.427	4901.2	106.4	210	228	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5322.4	106.4	288	306	0.00	0.00	M
AC-227	2	4	4	0.001	6056.0	106.5	412	430	0.00	0.00	S
TH-227	2	4	4	0.001	6056.0	106.5	412	430	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5441.2	106.4	308	326	0.00	0.00	M
TH-229	214	1	0	0.427	4863.3	106.4	210	228	0.00	0.00	P
TH-230	5	2	1	0.007	4705.7	106.3	183	201	0.00	0.00	S
TH-232	2	0	0	0.004	4031.0	106.3	69	87	0.00	0.00	
U-232	-9999	-9999	0	-10.010	5338.2	106.4	290	308	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4792.6	106.3	198	216	0.00	0.00	S I
U-235	1	0	0	0.002	4415.8	106.3	134	152	0.00	0.00	
PU-236	20	0	0	0.040	5785.6	65.1	359	370	0.00	0.00	P
NP-237	214	1	0	0.427	4806.0	106.4	210	228	0.00	0.00	P
PU-238	-9999	-9999	0	-10.010	5517.0	106.4	321	339	0.00	0.00	M
U-238	4	0	0	0.008	4216.0	106.3	100	118	0.00	0.00	
PU-239	4	1	0	0.007	5174.6	41.4	269	276	0.00	0.00	P
AM-241	-9999	-9999	0	-10.010	5503.6	106.4	318	336	0.00	0.00	M
AM-242M	4	1	0	0.007	5224.8	41.4	269	276	0.00	0.00	P
CM-242	-9999	-9999	0	-10.010	6130.7	106.5	424	442	0.00	0.00	M
PU-242	214	1	0	0.427	4918.5	106.4	210	228	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5293.3	106.4	283	301	0.00	0.00	M
CM-244	15	17	0	0.013	5822.8	106.5	372	390	0.00	0.00	
CM-246	-9999	-9999	0	-10.010	5404.5	106.4	302	320	0.00	0.00	M
CM-247	214	1	0	0.427	4888.4	106.4	210	228	0.00	0.00	P
CM-248	52	2	0	0.102	5096.6	106.4	249	267	0.00	0.00	H

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JKAHM1AA
Detector: ALP171 5
Report Date: 12-Dec-06 04:48 PM
Acquire Date: 12-DEC-2006 08:27:16.19

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	4	+	251	0	@	301	0		351	0		401	0		451	0		501
		2	0		52	0	+	102	0	+	152	0	-	202	5	+	252	1	+	302	0		352	0		402	0		452	0		502
0		3	0		53	0	+	103	0		153	0	-	203	5	+	253	0	@	303	0		353	0		403	1		453	0		503
0		4	0		54	0	+	104	0		154	0	-	204	5	+	254	0	@	304	0		354	1		404	0		454	0		504
0		5	0		55	0	+	105	0		155	0	-	205	5	+	255	1	@	305	0		355	0		405	0		455	0		505
0		6	0		56	1	+	106	0		156	1	-	206	4	+	256	0	@	306	1		356	0		406	1		456	1		506
0		7	0		57	0	+	107	1		157	0	-	207	6	+	257	0	@	307	0		357	0		407	0		457	0		507
0		8	0		58	0	+	108	0		158	1	-	208	5	+	258	0	@	308	0		358	0		408	1		458	0		508
0		9	0		59	0	+	109	0		159	1	-	209	2	+	259	0	@	309	1	+	359	0		409	0		459	0		509
0		10	0		60	0	+	110	0		160	1	-	210	1	+	260	0	@	310	0	+	360	0		410	0		460	1		510
0		11	0		61	0	+	111	0		161	4	@	211	1	+	261	0	@	311	3	+	361	0		411	0		461	0		511
0		12	0		62	1	+	112	0		162	0	@	212	0	+	262	0	@	312	2	+	362	0	@	412	1		462	0		512
0		13	0		63	0	+	113	0		163	5	@	213	0	+	263	0	@	313	1	+	363	0	@	413	1		463			
0		14	0		64	1	+	114	0		164	3	@	214	0	+	264	0	@	314	0	+	364	0	@	414	4		464			
0		15	0		65	0	+	115	0		165	6	@	215	0	+	265	0	@	315	6	+	365	0	@	415	1		465			
0		16	0		66	0	+	116	0		166	13	@	216	0	+	266	0	@	316	4	+	366	0	@	416	1		466			
0		17	0		67	0	+	117	0		167	17	@	217	0	+	267	1	@	317	3	+	367	0	@	417	3		467			
0		18	0		68	1	+	118	1		168	16	@	218	0		268	0	@	318	0	+	368	0	@	418	1		468			
0		19	0	+	69	0		119	0		169	12	@	219	1	+	269	1	@	319	0	+	369	0	@	419	1		469			
0		20	0	+	70	1		120	0		170	23	@	220	0	@	270	0	@	320	0		370	0	@	420	0		470			
0		21	0	+	71	0		121	0		171	27	@	221	0	@	271	0	@	321	0		371	0	@	421	1		471			
0		22	0	+	72	0		122	0		172	13	@	222	2	@	272	0	@	322	1	+	372	0	@	422	1		472			
0		23	0	+	73	0		123	0		173	13	@	223	0	@	273	0	@	323	1	+	373	0	@	423	1		473			
0		24	0	+	74	0		124	0		174	13	@	224	0	@	274	0	@	324	1	+	374	0	-	424	1		474			
0		25	0	+	75	0		125	1		175	19	@	225	0	@	275	0	@	325	1	+	375	1	@	425	1		475			
0		26	0	+	76	0		126	0		176	9	@	226	0		276	0	@	326	0	+	376	0	@	426	0		476			
0		27	0	+	77	0		127	0		177	8	@	227	0		277	0	@	327	2	+	377	0	@	427	2		477			
0		28	0	+	78	0		128	0		178	10		228	0		278	1	@	328	2	+	378	1	@	428	2		478			
0		29	1	+	79	0		129	0		179	10		229	0		279	0	@	329	0	+	379	2	@	429	1		479			
0		30	0	+	80	0		130	0		180	9		230	0		280	0	@	330	1	+	380	0	@	430	0		480			
0		31	0	+	81	0		131	0		181	11		231	0		281	0	@	331	1	+	381	0	-	431	0		481			
0		32	0	+	82	0		132	1		182	17		232	0		282	0	@	332	0	+	382	0	-	432	1		482			
0		33	0	+	83	0		133	0	+	183	12		233	0	+	283	0	@	333	0	+	383	2	-	433	0		483			
0		34	0	+	84	0	+	134	0	+	184	14		234	1	+	284	0	@	334	0	+	384	0	-	434	0		484			
0		35	0	+	85	0	+	135	0	+	185	9		235	0	+	285	0	@	335	1	+	385	0	-	435	0		485			
0		36	0	+	86	0	+	136	0	+	186	7		236	0	+	286	0	@	336	3	+	386	0	-	436	0		486			
0		37	1	+	87	0	+	137	0	+	187	14		237	0	+	287	0	+	337	0	+	387	2	-	437	0		487			
0		38	1		88	0	+	138	0	+	188	7		238	0	@	288	0	+	338	0	+	388	0	-	438	0		488			
0		39	0		89	0	+	139	0	+	189	2		239	0	@	289	0	+	339	1	+	389	0	-	439	0		489			
0		40	0		90	0	+	140	1	+	190	12		240	0	@	290	0		340	0	+	390	0	-	440	0		490			
0		41	1		91	1	+	141	0	+	191	8		241	0	@	291	0		341	1		391	0	-	441	0		491			
0		42	0		92	0	+	142	0	+	192	6		242	0	@	292	0		342	0		392	0	-	442	0		492			
0		43	0		93	0	+	143	0	+	193	9		243	0	@	293	1		343	0		393	0		443	0		493			
0		44	0		94	0	+	144	0	+	194	3		244	0	@	294	0		344	0		394	0		444	0		494			
0		45	1		95	0	+	145	0	+	195	5		245	0	@	295	1		345	0		395	0		445	0		495			
0		46	0		96	0	+	146	2	+	196	11		246	0	@	296	1		346	0		396	1		446	0		496			
0		47	0		97	0	+	147	1	+	197	6		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	0		398	0		448	0		498			
0		49	0		99	0	+	149	0	@	199	6	+	249	0	@	299	1		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 12-DEC-2006 16:48:15

```
Configuration     : $DISK1:[ALP171.SAMPLE]JKAHM1AA_121260827E.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID         : JKAHM1AA             Sample quantity  : 0.00000E+00 LITER
Sample type       : disk                 Sample geometry  :
Detector name     : ALP171 1             Detector geometry:
Elapsed live time: 0 08:19:28.00         Elapsed real time: 0 08:19:28.00   0.0%
Start energy      :  3576.91 keV         End energy       :  6585.01 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4863.29	214	0	64.90	220.87	210	18	7.14E-03	6.8	
2	0	5162.50	4	0	23.60	271.50	269	7	1.33E-04	50.0	
3	0	5716.86	20	0	29.50	365.27	359	11	6.67E-04	22.4	

VMS Nuclide Identification Report V3.0 Generated 12-DEC-2006 16:48:17

Configuration	: $DISK1:[ALP171.SAMPLE]JKAHM1AA_121260827E.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 24-OCT-2006 12:00:00	Acquisition date	: 12-DEC-2006 08:27:16
Sample ID	: JKAHM1AA	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	1.03	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	1.03	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-239	24110.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
AM-242M	141.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
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]JKAHM1AA_121260827E.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4863.28	210	228	214	212	0.14		
5162.50	269	276	4	3	0.50		
5716.85	359	370	20	20	0.00		

End of Report

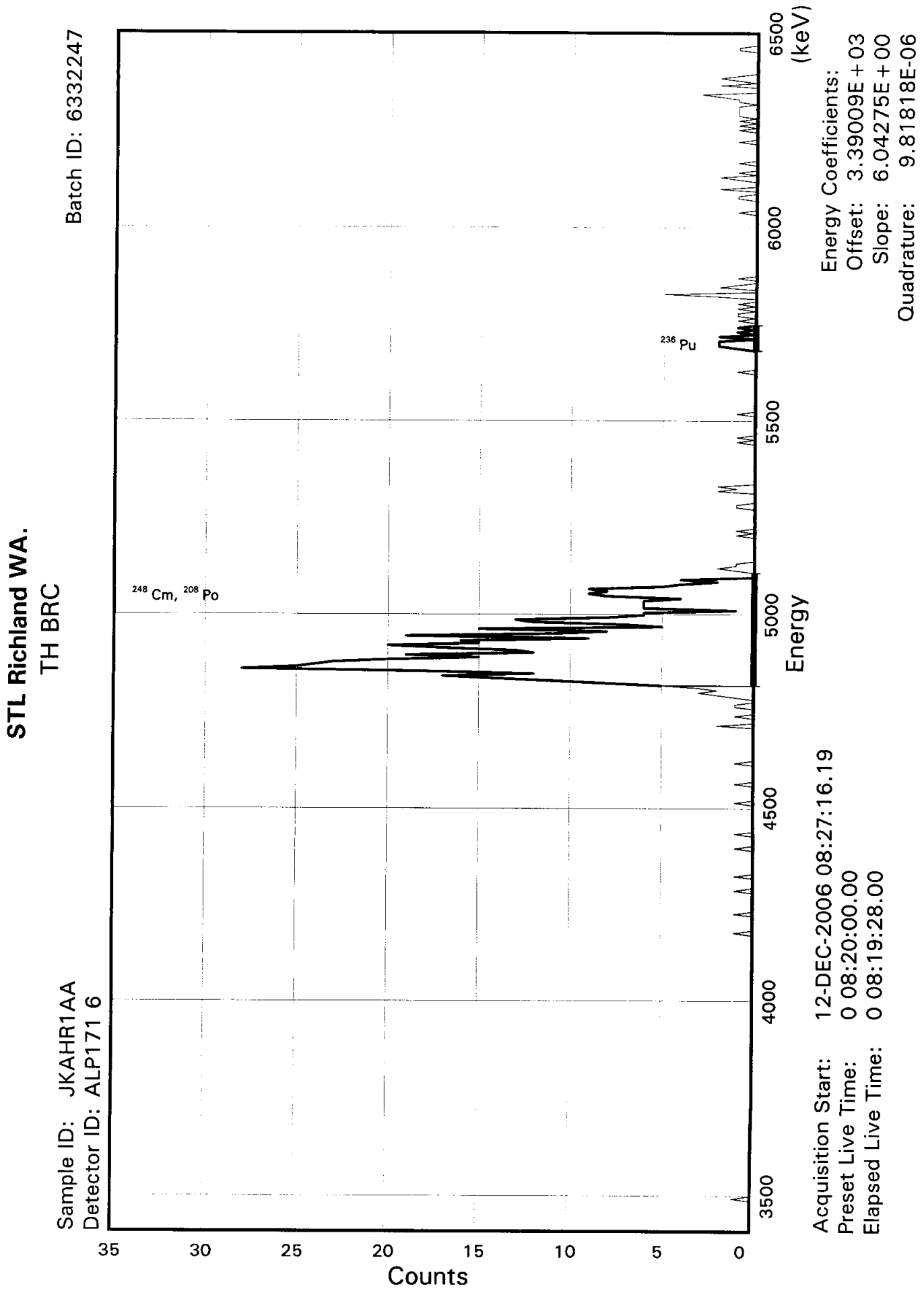
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAHR1AA

Detector: ALP171 6
Report Date: 12-Dec-06 06:54 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	7	1	0.013	5423.2	157.3	318	344
TH-229	547	1	1.094	4845.3	387.1	226	290
TH-230	3	2	0.004	4687.7	120.9	200	220
TH-232	0	0	0.000	4013.0	120.9	88	108

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6332247
Sample ID: JKAHR1AA
Detector ID: ALP171 6
248 Cm, 208 Po
236 Pu
Counts
35
30
25
20
15
10
5
0
3500
4000
4500
5000
5500
6000
6500
Energy
(keV)
Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.39009E+03
Slope: 6.04275E+00
Quadrature: 9.81818E-06

SAMPLE IDENTITY: JKAHR1AA

TITLE : TH BRC

DETECTOR : ALP171 6
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JKAHR1AA_121260827F.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:01:17

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

OFFSET : 3390.09 keV CONSTANT FWHM : 8.00000 Channels
SLOPE : 6.04275 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 9.818180E-06 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JKAHR1AA
Detector: ALP171 6
Report Date: 12-Dec-06 04:48 PM
Acquire Date: 12-DEC-2006 08:27:16.19

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

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

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:48:20

```
Configuration     : $DISK1:[ALP171.SAMPLE]JKAHR1AA_121260827F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID         : JKAHR1AA             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      :  3408.22 keV         End energy       :  6486.55 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5046.07	530	0	60.43	273.92	236	48	1.77E-02	4.3	
2	0	5698.12	11	0	24.17	381.71	379	11	3.67E-04	30.2	

VMS Nuclide Identification Report V3.0 Generated 12-DEC-2006 16:48:22

Configuration	: $DISK1:[ALP171.SAMPLE]JKAHR1AA_121260827F.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 24-OCT-2006 12:00:00	Acquisition date	: 12-DEC-2006 08:27:16
Sample ID	: JKAHR1AA	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	1.03	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-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-248	3.39E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Grand Total Activity :	0.000E+00	0.000E+00

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

```
  Error Report   (Date: 12-Dec-06   04:48 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
```

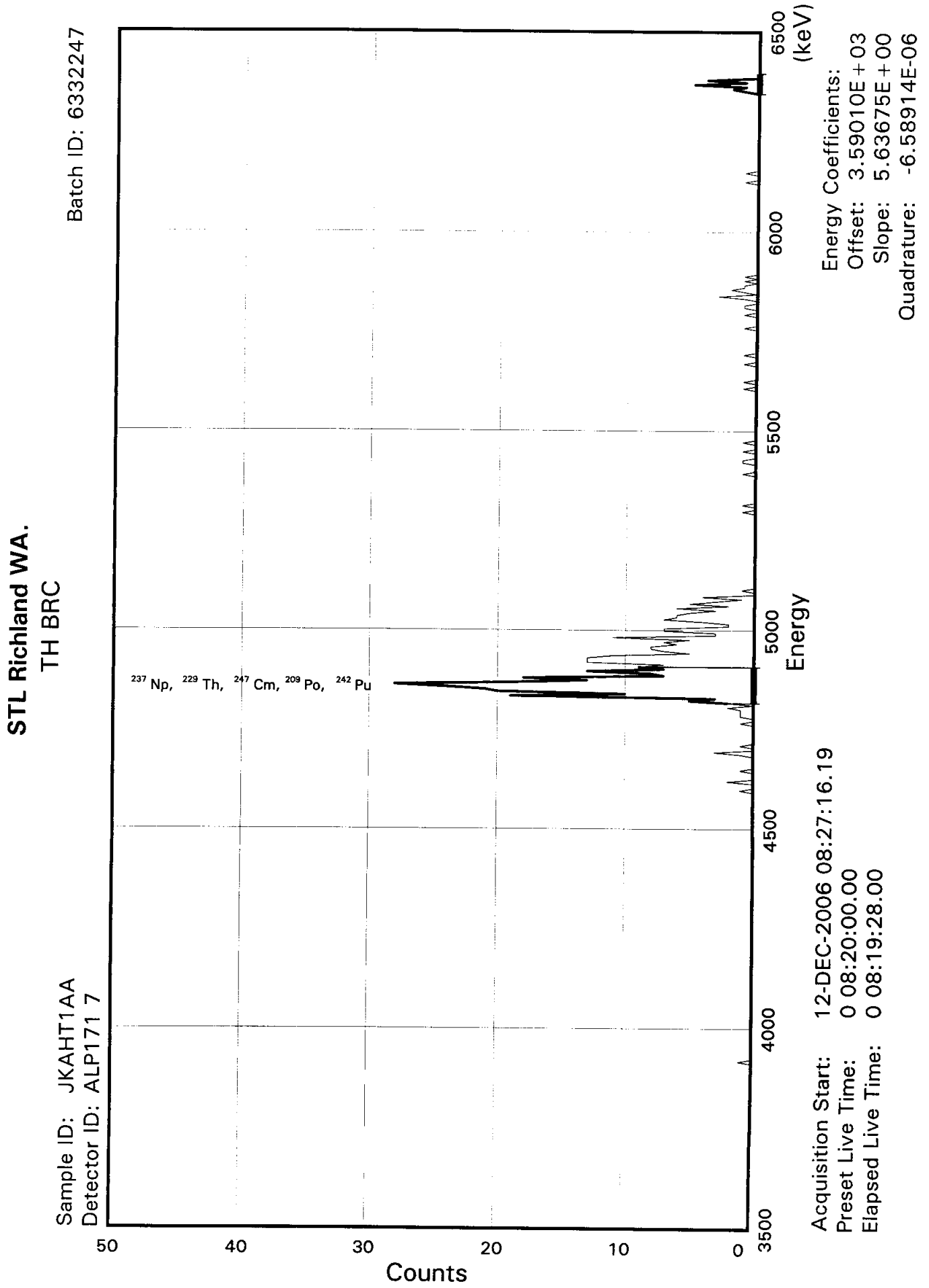
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAHT1AA

Detector: ALP171 7
Report Date: 12-Dec-06 06:55 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	0	0.008	5423.2	123.9	310	332
TH-229	424	1	0.848	4845.3	349.3	208	270
TH-230	9	0	0.018	4687.7	124.0	178	200
TH-232	1	0	0.002	4013.0	129.6	57	80

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6332247
Sample ID: JKAHT1AA
Detector ID: ALP171 7
237 Np, 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: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.59010E+03
Slope: 5.63675E+00
Quadrature: -6.58914E-06

SAMPLE IDENTIITY: JKAHT1AA

TITLE : TH BRC

DETECTOR : ALP171 7
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JKAHT1AA_121260827G.CNF;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:01:34

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

OFFSET : 3590.10 keV CONSTANT FWHM : 6.50000 Channels
SLOPE : 5.63675 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.658914E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JKAHT1AA

Detector: ALP171 7
Report Date: 12-Dec-06 04:48 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	5128.1	90.1	266	282	0.00	0.00	M
PO-209	240	0	0	0.481	4896.4	90.1	218	234	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5317.6	90.1	299	315	0.00	0.00	M
AC-227	0	1	0	-0.001	6051.2	90.1	430	446	0.00	0.00	S
TH-227	0	1	0	-0.001	6051.2	90.1	430	446	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5436.4	90.1	321	337	0.00	0.00	M
TH-229	240	0	0	0.481	4858.5	90.1	218	234	0.00	0.00	P
TH-230	5	0	0	0.010	4700.9	90.1	190	206	0.00	0.00	S
TH-232	0	0	0	0.000	4026.2	90.2	70	86	0.00	0.00	
U-232	-9999	-9999	0	-10.010	5333.4	90.1	302	318	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4787.8	90.1	205	221	0.00	0.00	S I
U-235	0	0	0	0.000	4411.0	90.2	139	155	0.00	0.00	
PU-236	3	5	4	0.002	5780.9	90.1	382	398	0.00	0.00	S
NP-237	240	0	0	0.481	4801.2	90.1	218	234	0.00	0.00	P
PU-238	-9999	-9999	0	-10.010	5512.2	90.1	334	350	0.00	0.00	M
U-238	0	0	0	0.000	4211.2	90.2	103	119	0.00	0.00	
PU-239	-9999	-9999	0	-10.010	5169.8	90.1	273	289	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5498.8	90.1	332	348	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5220.0	90.1	282	298	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6125.9	90.1	443	459	0.00	0.00	M
PU-242	240	0	0	0.481	4913.7	90.1	218	234	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5288.5	90.1	294	310	0.00	0.00	M
CM-244	10	15	4	0.006	5818.0	90.1	388	404	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5399.7	90.1	314	330	0.00	0.00	M
CM-247	240	0	0	0.481	4883.6	90.1	218	234	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5091.8	90.1	259	275	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JKAHT1AA
Detector: ALP171 7
Report Date: 12-Dec-06 04:48 PM
Acquire Date: 12-DEC-2006 08:27:16.19

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

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:48:23

```
Configuration     : $DISK1:[ALP171.SAMPLE]JKAHT1AA_121260827G.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID         : JKAHT1AA             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      :  3607.01 keV         End energy       :  6474.39 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4858.51	240	0	39.46	225.09	218	16	8.01E-03	6.5	
2	0	6367.88	14	0	28.18	493.08	489	9	4.67E-04	26.7	

VMS Nuclide Identification Report V3.0 Generated 12-DEC-2006 16:48:25

Configuration	: $DISK1:[ALP171.SAMPLE]JKAHT1AA_121260827G.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 24-OCT-2006 12:00:00	Acquisition date	: 12-DEC-2006 08:27:16
Sample ID	: JKAHT1AA	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	1	
Number of lines tentatively identified by NID	1	50.00%

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	
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]JKAHT1AA_121260827G.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4858.51	218	234	240	226	0.90		
6367.88	489	498	14	14	0.00		

End of Report

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

Sample Identity: JKAHV1AA

Detector: ALP171 8
Report Date: 12-Dec-06 06:56 PM
Acquire Date: 12-DEC-2006 08:27:16.19
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	0	0.002	5423.2	117.7	306	326
TH-229	402	2	0.803	4845.3	341.3	208	266
TH-230	6	0	0.012	4687.7	135.4	181	204
TH-232	1	1	0.001	4013.0	117.7	66	86

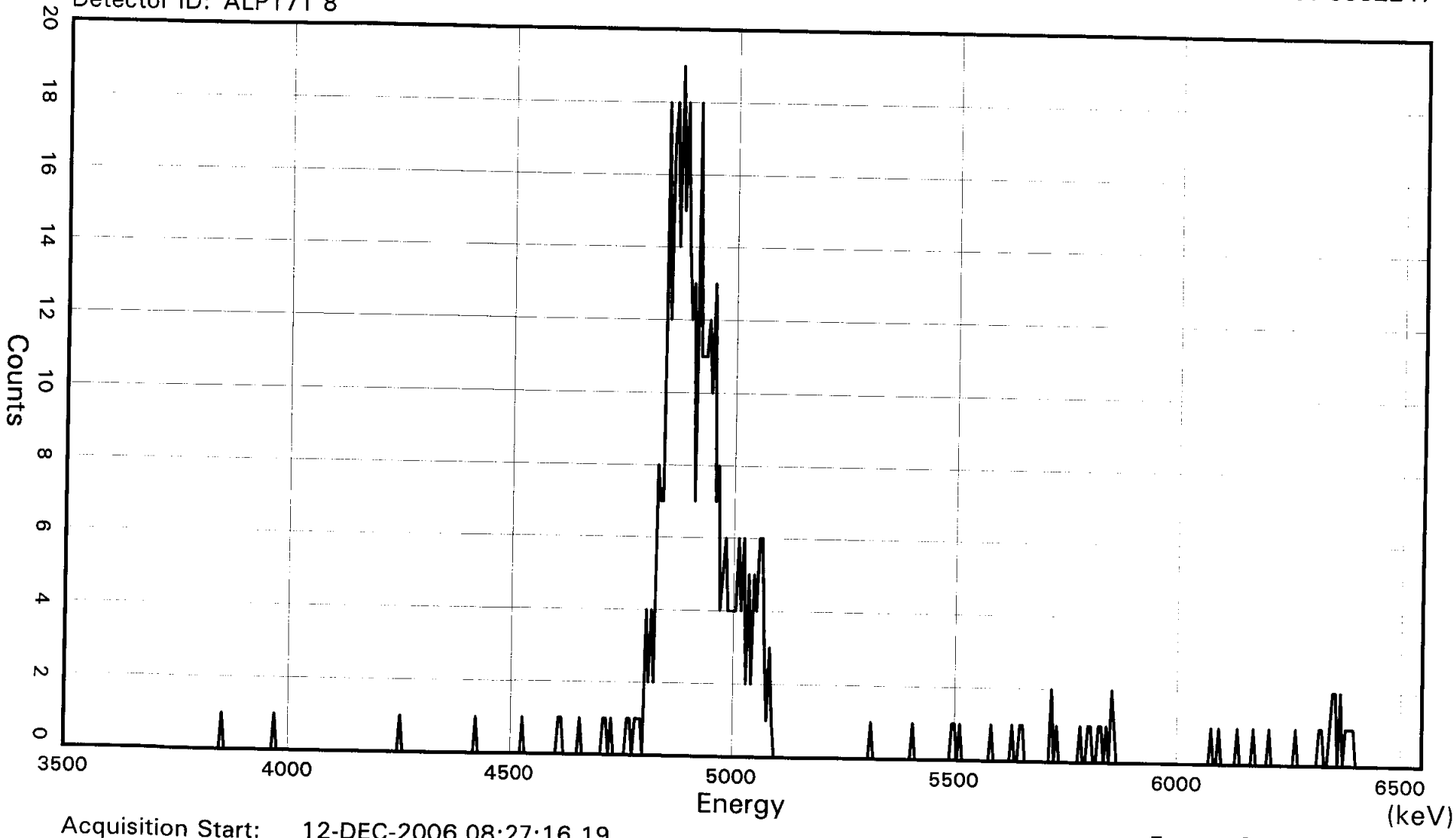
End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.

TH BRC

Sample ID: JKAHV1AA
Detector ID: ALP171 8

Batch ID: 6332247



Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:
Offset: 3.53365E+03
Slope: 5.88613E+00
Quadrature: -2.17993E-06

SAMPLE IDENTIITY: JKAHV1AA

TITLE : TH BRC

DETECTOR : ALP171 8
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JKAHV1AA_121260827H.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:01:59

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

OFFSET : 3533.65 keV CONSTANT FWHM : 7.66667 Channels
SLOPE : 5.88613 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.217993E-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: JKAHV1AA
Detector: ALP171 8
Report Date: 12-Dec-06 04:48 PM
Acquire Date: 12-DEC-2006 08:27:16.19

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

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

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:48:29

Configuration	: $DISK1:[ALP171.SAMPLE]JKAHV1AA_121260827H.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 24-OCT-2006 12:00:00	Acquisition date	: 12-DEC-2006 08:27:16
Sample ID	: JKAHV1AA	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	: 3551.31 keV	End energy	: 6546.78 keV
Sensitivity	: 3.00	Sum Sensitivity	: 1.00

No peaks were found

VMS Nuclide Identification Report V3.0 Generated 12-DEC-2006 16:48:30

Configuration	: $DISK1:[ALP171.SAMPLE]JKAHV1AA_121260827H.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 24-OCT-2006 12:00:00	Acquisition date	: 12-DEC-2006 08:27:16
Sample ID	: JKAHV1AA	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

**** 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: 12-Dec-06  04:48 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
```

STL RICHLAND

SEVERN TRENT **STL**

THORIUM ISOTOPIC COUNTING REQUEST

12/13
0307

12/13 1340

C.R. Technician: OD
Date Counted: 12/12/06
C.R. Analyst: OD 12/
Date Analyzed: 12/13/06 OD

Counting Time
Sample: 500 Minutes

Background: See Alpha Analysis Report BRC

SOP's
Operating: RICHRD008
Review: RICHRD0016 12/14 633240

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)		
JKAHW1AA		10		0	See Alpha Analysis Report for ROI Information			171	
JKENG1AA		10		0	See Alpha Analysis Report for ROI Information			172	
JKENG1AC		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: OD

Date: 12/13/06

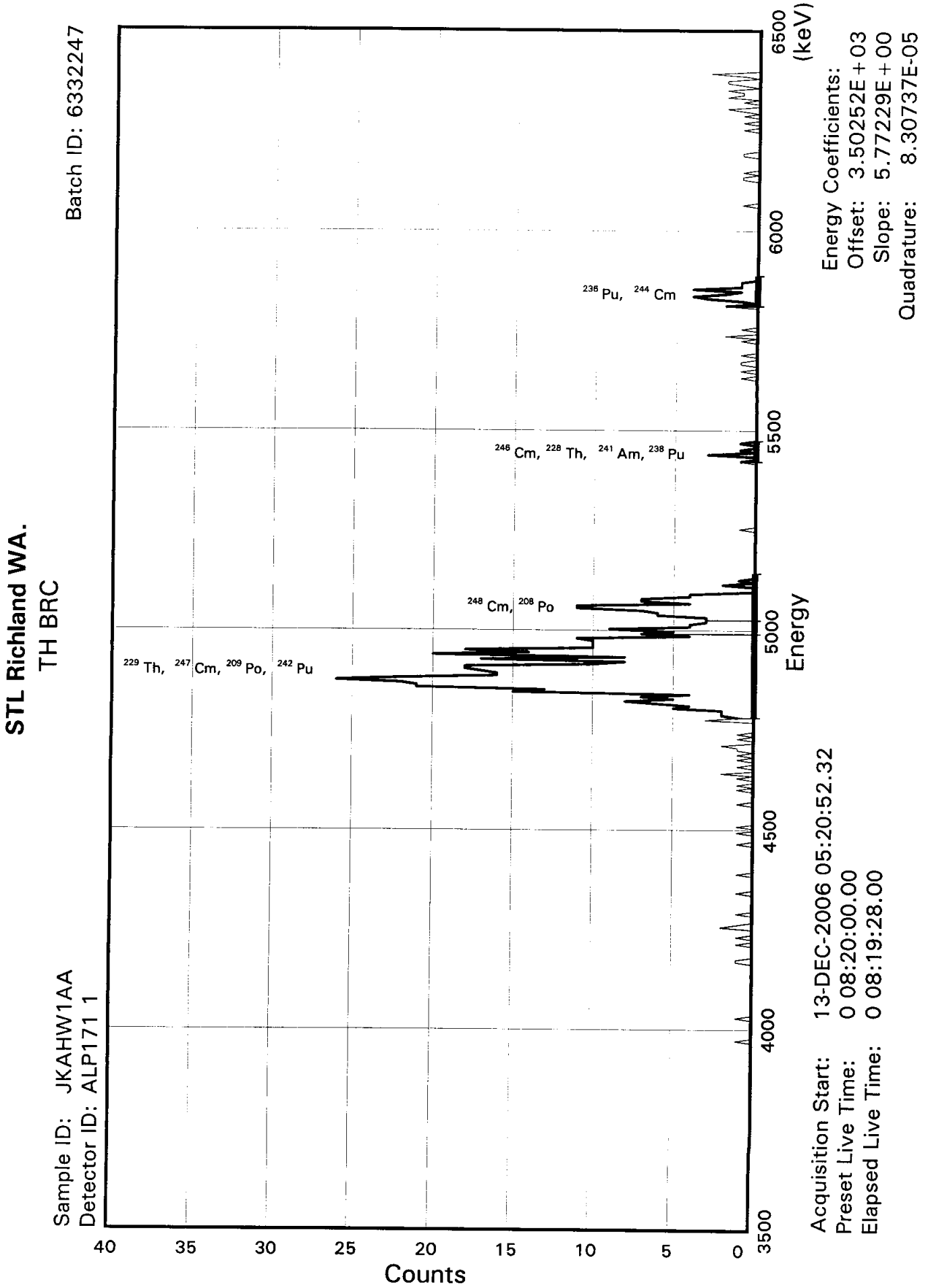
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAHW1AA

Detector: ALP171 1
Report Date: 13-Dec-06 03:12 PM
Acquire Date: 13-DEC-2006 05:20:52.32
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	2	0.010	5423.2	139.8	316	340
TH-229	532	2	1.063	4845.3	377.9	217	282
TH-230	12	1	0.023	4687.7	121.9	189	210
TH-232	2	0	0.004	4013.0	115.7	73	93

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6332247
Sample ID: JKAHW1AA
Detector ID: ALP171 1
229 Th, 247 Cm, 209 Po, 242 Pu
248 Cm, 208 Po
248 Cm, 228 Th, 241 Am, 238 Pu
236 Pu, 244 Cm
Counts
40
35
30
25
20
15
10
5
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 13-DEC-2006 05:20:52.32
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.50252E+03
Slope: 5.77229E+00
Quadrature: 8.30737E-05

SAMPLE IDENTIITY: JKAHW1AA

TITLE : TH BRC

DETECTOR : ALP171 1
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JKAHW1AA_131260520A.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 13-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 13-DEC-2006 05:20:52 CALIB DATE : 06-DEC-2006 00:00:15

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

OFFSET : 3502.52 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 5.77229 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 8.307370E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JKAHW1AA

Detector: ALP171 1
Report Date: 13-Dec-06 01:41 PM
Acquire Date: 13-DEC-2006 05:20:52.32
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	79	0	0	0.158	5168.9	151.2	257	283	0.00	0.00	P
PO-209	450	2	0	0.899	4937.2	244.1	221	263	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5358.4	244.7	300	342	0.00	0.00	M I
AC-227	3	2	6	0.004	6092.0	239.7	426	467	0.00	0.00	S
TH-227	3	2	6	0.004	6092.0	239.7	426	467	0.00	0.00	S
TH-228	6	1	0	0.011	5477.2	52.5	331	340	0.00	0.00	P
TH-229	450	2	0	0.899	4899.3	244.1	221	263	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4741.7	243.9	194	236	0.00	0.00	M I
TH-232	3	1	2	0.005	4067.0	248.9	77	120	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5374.2	244.7	303	345	0.00	0.00	M I
U-234	-9999	-9999	0	-10.010	4828.6	244.0	209	251	0.00	0.00	M I
U-235	6	0	1	0.011	4451.8	243.6	144	186	0.00	0.00	S
PU-236	19	20	0	0.018	5821.7	75.9	398	411	0.00	0.00	P
NP-237	-9999	-9999	0	-10.010	4842.0	244.1	211	253	0.00	0.00	M I
PU-238	6	1	0	0.011	5553.0	52.5	331	340	0.00	0.00	P
U-238	-9999	-9999	0	-10.010	4252.0	249.1	109	152	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5210.6	238.7	275	316	0.00	0.00	M I
AM-241	6	1	0	0.011	5539.6	52.5	331	340	0.00	0.00	P
AM-242M	-9999	-9999	0	-10.010	5260.8	244.6	283	325	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6166.7	239.8	439	480	0.00	0.00	M
PU-242	450	2	0	0.899	4954.5	244.1	221	263	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5329.3	244.6	295	337	0.00	0.00	M I
CM-244	19	20	0	0.018	5858.8	75.9	398	411	0.00	0.00	P
CM-246	6	1	0	0.011	5440.5	52.5	331	340	0.00	0.00	P
CM-247	450	2	0	0.899	4924.4	244.1	221	263	0.00	0.00	P
CM-248	79	0	0	0.158	5132.6	151.2	257	283	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JKAHW1AA
Detector: ALP171 1
Report Date: 13-Dec-06 01:41 PM
Acquire Date: 13-DEC-2006 05:20:52.32

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

VMS Peak Search Report V1.9 Generated 13-DEC-2006 13:41:25

Configuration	: $DISK1:[ALP171.SAMPLE]JKAHW1AA_131260520A.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 24-OCT-2006 12:00:00	Acquisition date	: 13-DEC-2006 05:20:52
Sample ID	: JKAHW1AA	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	: 3519.84 keV	End energy	: 6479.71 keV
Sensitivity	: 3.00	Sum Sensitivity	: 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4899.32	450	0	109.67	241.15	221	42	1.50E-02	4.7	
2	0	5058.37	79	0	46.18	268.50	257	26	2.64E-03	11.3	
3	0	5442.65	6	0	34.63	334.50	331	9	2.00E-04	40.8	
4	0	5842.61	19	0	40.41	403.06	398	13	6.34E-04	22.9	

VMS Nuclide Identification Report V3.0 Generated 13-DEC-2006 13:41:30

Configuration	: $DISK1:[ALP171.SAMPLE]JKAHW1AA_131260520A.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 24-OCT-2006 12:00:00	Acquisition date	: 13-DEC-2006 05:20:52
Sample ID	: JKAHW1AA	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	4	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	4	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	1.03	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	
TH-228	1.91Y	1.05	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/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-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
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	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-244	18.10Y	1.01	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]JKAHW1AA_131260520A.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4899.31	221	263	450	456	-0.28		
5058.36	257	283	79	108	-3.26	35	0.00
5442.64	331	340	6	6	0.00		
5842.60	398	411	19	20	-0.23		

End of Report

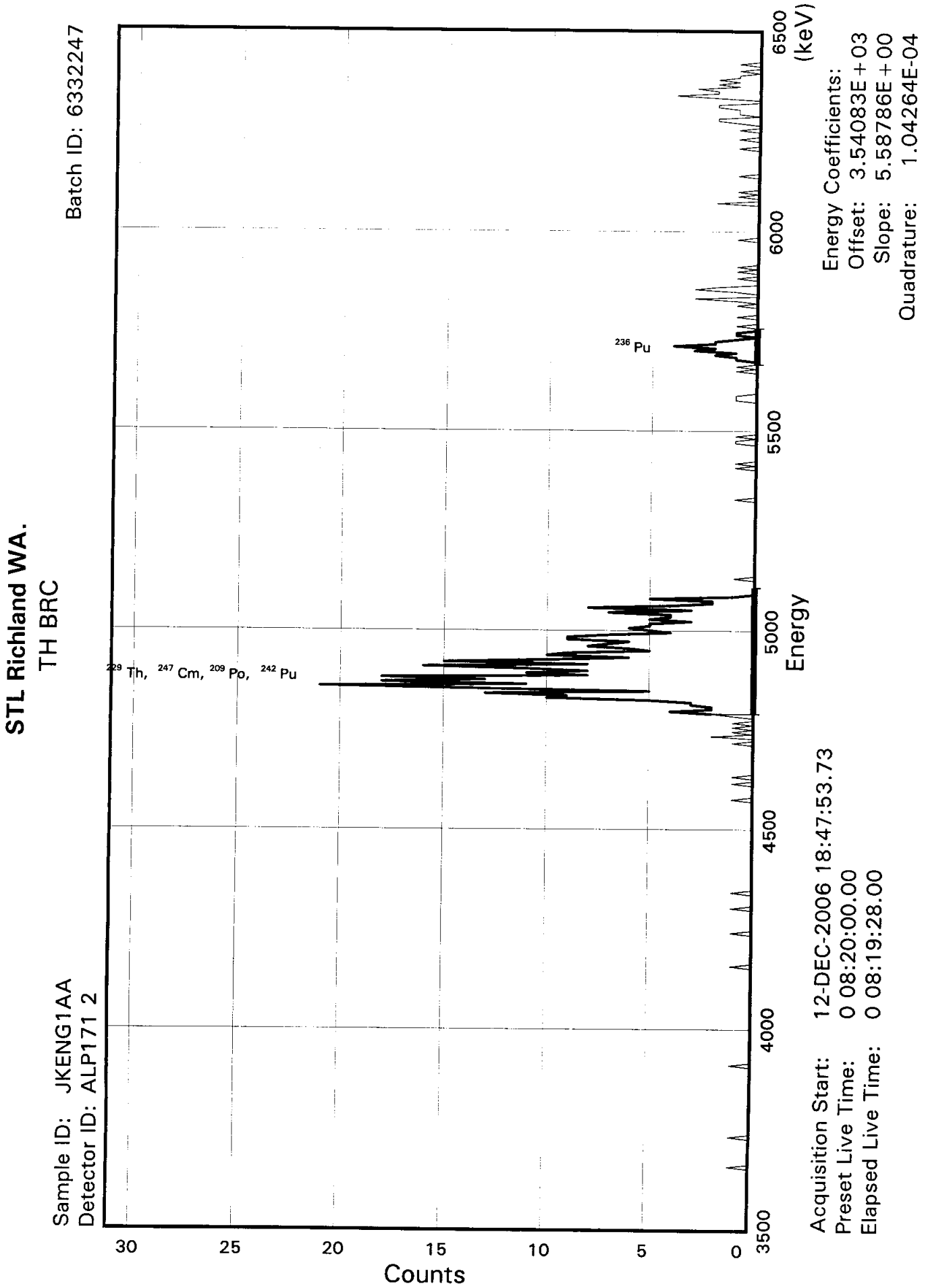
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKENG1AA

Detector: ALP171 2
Report Date: 13-Dec-06 02:45 PM
Acquire Date: 12-DEC-2006 18:47:53.73
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	1	0.005	5423.2	130.1	317	340
TH-229	398	4	0.793	4845.3	355.3	214	277
TH-230	2	2	0.002	4687.7	112.6	189	209
TH-232	1	0	0.002	4013.0	134.5	65	89

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6332247
Sample ID: JKENG1AA
Detector ID: ALP171 2
229 Th, 247 Cm, 209 Po, 242 Pu
236 Pu
Counts
30
25
20
15
10
5
0
3500
4000
4500
5000
5500
6000
6500
Energy
(keV)
Energy Coefficients:
Offset: 3.54083E+03
Slope: 5.58786E+00
Quadrature: 1.04264E-04
Acquisition Start: 12-DEC-2006 18:47:53.73
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

SAMPLE IDENTIITY: JKENG1AA

TITLE : TH BRC

DETECTOR : ALP171 2
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JKENG1AA_121261847B.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 13-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 18:47:53 CALIB DATE : 06-DEC-2006 00:00:27

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

OFFSET : 3540.83 keV CONSTANT FWHM : 10.50000 Channels
SLOPE : 5.58786 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 1.042640E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JKENG1AA

Detector: ALP171 2
Report Date: 13-Dec-06 03:08 AM
Acquire Date: 12-DEC-2006 18:47:53.73
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	5155.0	316.4	271	327	0.00	0.00	M I
PO-209	395	3	0	0.788	4923.3	315.9	223	279	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5344.5	316.8	304	360	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6078.1	312.6	434	489	0.00	0.00	M
TH-227	-9999	-9999	0	-10.010	6078.1	312.6	434	489	0.00	0.00	M
TH-228	-9999	-9999	0	-10.010	5463.3	317.0	325	381	0.00	0.00	M I
TH-229	395	3	0	0.788	4885.4	315.9	223	279	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4727.8	315.5	195	251	0.00	0.00	M I
TH-232	1	1	2	0.001	4053.1	314.1	75	131	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5360.3	316.8	307	363	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4814.7	315.7	210	266	0.00	0.00	M I
U-235	-9999	-9999	0	-10.010	4437.9	320.5	143	200	0.00	0.00	M
PU-236	21	14	0	0.028	5807.7	90.7	378	394	0.00	0.00	P
NP-237	-9999	-9999	0	-10.010	4828.1	315.7	213	269	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5539.1	317.2	339	395	0.00	0.00	M I
U-238	-9999	-9999	0	-10.010	4238.1	314.5	108	164	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5196.7	316.5	278	334	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5525.7	317.2	336	392	0.00	0.00	M I
AM-242M	-9999	-9999	0	-10.010	5246.9	316.6	287	343	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6152.8	318.5	447	503	0.00	0.00	M
PU-242	395	3	0	0.788	4940.6	315.9	223	279	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5315.4	316.7	299	355	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5844.9	312.2	393	448	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5426.6	317.0	319	375	0.00	0.00	M
CM-247	395	3	0	0.788	4910.5	315.9	223	279	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5118.7	316.3	264	320	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: JKENG1AA
Detector: ALP171 2
Report Date: 13-Dec-06 03:08 AM
Acquire Date: 12-DEC-2006 18:47:53.73

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

Cnt	F	Chn
2	-	501
1	-	502
2	-	503
1		504
1		505
0		506
1		507
0		508
0		509
1		510
0		511
0		512

VMS Peak Search Report V1.9 Generated 13-DEC-2006 03:08:31

Configuration	: $DISK1:[ALP171.SAMPLE]JKENG1AA_121261847B.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 24-OCT-2006 12:00:00	Acquisition date	: 12-DEC-2006 18:47:53
Sample ID	: JKENG1AA	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	: 3557.59 keV	End energy	: 6429.15 keV
Sensitivity	: 3.00	Sum Sensitivity	: 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4885.39	395	0	94.99	239.55	223	56	1.32E-02	5.0	
2	0	5710.44	21	0	33.53	385.50	378	16	7.01E-04	21.8	

VMS Nuclide Identification Report V3.0 Generated 13-DEC-2006 03:08:35

Configuration	: $DISK1:[ALP171.SAMPLE]JKENG1AA_121261847B.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 24-OCT-2006 12:00:00	Acquisition date	: 12-DEC-2006 18:47:53
Sample ID	: JKENG1AA	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-236	2.86Y	1.03	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]JKENG1AA_121261847B.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4885.38	223	279	395	394	0.05		
5710.44	378	394	21	21	0.00		

End of Report

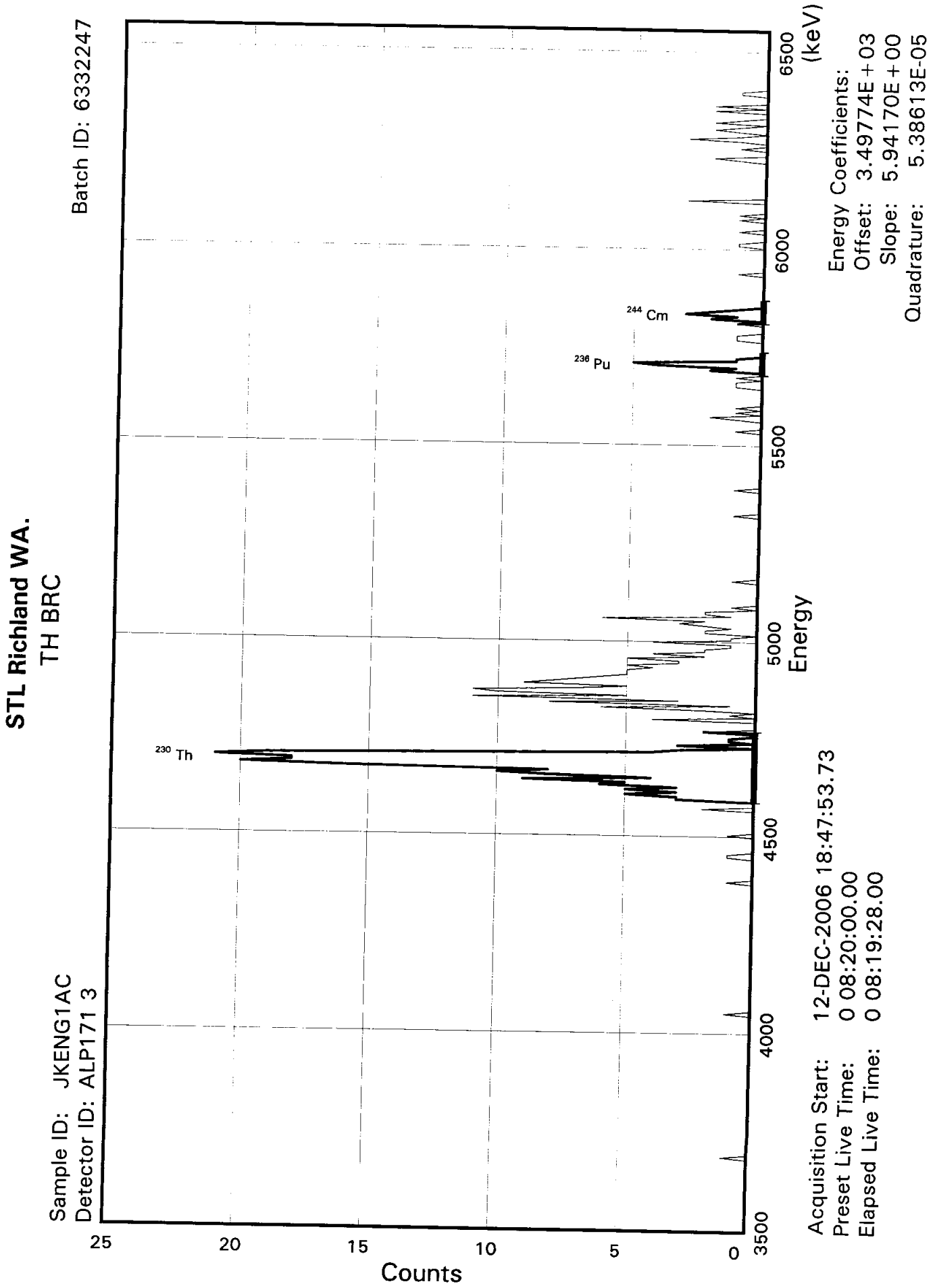
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKENG1AC

Detector: ALP171 3
Report Date: 13-Dec-06 02:47 PM
Acquire Date: 12-DEC-2006 18:47:53.73
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	4	0.000	5423.2	137.4	305	328
TH-229	185	2	0.368	4845.3	358.0	209	269
TH-230	203	1	0.405	4687.7	131.2	184	206
TH-232	1	1	0.001	4013.0	136.9	72	95

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6332247
Sample ID: JKENG1AC
Detector ID: ALP171 3
230 Th
236 Pu
244 Cm
Counts
25
20
15
10
5
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 12-DEC-2006 18:47:53.73
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.49774E+03
Slope: 5.94170E+00
Quadrature: 5.38613E-05

SAMPLE IDENTIITY: JKENG1AC

TITLE : TH BRC

DETECTOR : ALP171 3
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JKENG1AC_121261847C.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 13-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 18:47:53 CALIB DATE : 06-DEC-2006 00:00:42

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

OFFSET : 3497.74 keV CONSTANT FWHM : 9.50000 Channels
SLOPE : 5.94170 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 5.386130E-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: JKENG1AC
Detector: ALP171 3
Report Date: 13-Dec-06 03:08 AM
Acquire Date: 12-DEC-2006 18:47:53.73

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

0 50 0 100 0 150 18 200 1 250 0 300 1 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 13-DEC-2006 03:08:39

Configuration	: $DISK1:[ALP171.SAMPLE]JKENG1AC_121261847C.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 24-OCT-2006 12:00:00	Acquisition date	: 12-DEC-2006 18:47:53
Sample ID	: JKENG1AC	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	: 3515.56 keV	End energy	: 6554.00 keV
Sensitivity	: 3.00	Sum Sensitivity	: 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4691.51	211	0	47.53	200.55	184	30	7.04E-03	6.9	
2	0	5704.04	14	0	29.71	370.08	366	10	4.67E-04	26.7	
3	0	5831.42	10	0	29.71	391.37	388	10	3.34E-04	31.6	

VMS Nuclide Identification Report V3.0 Generated 13-DEC-2006 03:08:42

Configuration	: $DISK1:[ALP171.SAMPLE]JKENG1AC_121261847C.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 24-OCT-2006 12:00:00	Acquisition date	: 12-DEC-2006 18:47:53
Sample ID	: JKENG1AC	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	0	
Number of lines tentatively identified by NID	3	100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PU-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-244	18.10Y	1.01	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: 13-Dec-06   03:08 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

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

12/18/2006 1:54:39 PM

Lot No., Due Date: J6K220385,J6K220386; 12/19/2006

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6332250; RALPHA-A Alpha by GPC-Am

SDG, Matrix: 33127,33128; 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 _____ **Date** _____

STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 4 332250

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 A Adam Date: 12-19-06

LS-038B, Rev. 10, 8/02

12/13/2006 1:01:44 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922
Pipet #:

AnalyDueDate: 12/18/2006

Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech: WoodT / ARA

Batch: 6332250 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: None All Tests: 6332247 9NS1, 6332250 BAS7, 6332252 BXTE, 6332254 BXTF,

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 JKAGW-1-AE J6K220385-1-SAMP 10/24/2006 11:55	0.833sa	12.53g,in	AmtRec: FILTER #Containers: 1	1.5	0.6	150	10A	0902	12/16/06 K	Scr: Alpha: Beta:
2 JKAG1-1-AE J6K220385-2-SAMP 10/24/2006 12:10	0.833sa	12.53g,in	AmtRec: FILTER #Containers: 1		0.5		10B			Scr: Alpha: Beta:
3 JKAG4-1-AE J6K220385-3-SAMP 10/24/2006 12:30	0.833sa	12.54g,in	AmtRec: FILTER #Containers: 1		0.6		10C			Scr: Alpha: Beta:
4 JKAG7-1-AE J6K220385-4-SAMP 10/24/2006 12:35	0.833sa	12.53g,in	AmtRec: FILTER #Containers: 1		0.6		10d			Scr: Alpha: Beta:
5 JKAHM-1-AE J6K220386-1-SAMP 10/30/2006 11:05	0.833sa	12.51g,in	AmtRec: FILTER #Containers: 1		0.4		10F			Scr: Alpha: Beta:
6 JKAHR-1-AE J6K220386-2-SAMP 10/30/2006 11:25	0.833sa,g	12.54g,in	AmtRec: FILTER #Containers: 1		0.5		10A	1152	12/16/06 K	Scr: Alpha: Beta:
7 JKAHT-1-AE J6K220386-3-SAMP 10/30/2006 11:40	0.833sa	12.51g,in	AmtRec: FILTER #Containers: 1		0.5		10B			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 ICOC v4.8.26

STL RICHLAND

135

STL RICHLAND

12/13/2006 1:01:45 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922
Pipet #:

AnalyDueDate: 12/18/2006

Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech: WoodT

Batch: 6332250 **FILTER** **pCi/sampl** **PM, Quote: SA , 63174**
SEQ Batch, Test: None

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 JKAHV-1-AE J6K220386-4-SAMP 10/30/2006 11:10	0.833sa	12.58g,in AmtRec: FILTER	#Containers: 1	1.5	0.7	150	10C Scr:	1152 Alpha:	12/16/06 K Beta:	
9 JKAHW-1-AE J6K220386-5-SAMP 10/30/2006 11:45	0.833sa	12.54g,in AmtRec: FILTER	#Containers: 1		0.7		10d Scr:	Alpha:	Beta:	
10 JKENK-1-AA-B J6K280000-250-BLK 10/24/2006 11:55		12.89g,in AmtRec:	#Containers: 1		∅		10F Scr:	Alpha:	Beta:	
11 JKENK-1-AC-C J6K280000-250-LCS 10/24/2006 11:55		12.76g,in AmtRec:	ASC0423 10/23/06,pd 02/09/06,r #Containers: 1		0.5		10A Scr:	1036 Alpha:	12/17/06 K Beta:	

Comments:

1% collodion added to ea. sump. 12/14/06 APA

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

JKAGW1AE-SAMP Constituent List:
ALPHA RDL:20 pCi/sam LCL: UCL: RPD:
JKENK1AA-BLK:
ALPHA RDL:20 pCi/sam LCL: UCL: RPD:
JKENK1AC-LCS:

JKAGW1AE-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

12/18/2006 1:26:57 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/18/2005, 12/23/2006, Batch: '6332250', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6332250						
AC		**CalcC**	**WoodT**	11/30/2006 8:54:00		
SC			wagarr	IsBatched	11/28/2006 10:37:01 AM	ICOC_RADCALC v4.8.24
SC			WoodT	InPrep	11/30/2006 8:54:00 AM	RICH-RC-5016 REVISION 5
SC			WoodT	Prep2C	12/4/2006 8:00:15 AM	RICH-RC-5016 REVISION 5
SC			AshworthA	InPrep2	12/13/2006 7:32:37 AM	RICH-RC-5014 REVISION 6
SC			AshworthA	Prep2C	12/14/2006 3:23:06 PM	RICH-RC-5014 REVISION 6
SC			DAWKINSO	InCnt1	12/14/2006 3:37:38 PM	RICH-RD-0003 REVISION 4
SC			StringerR	CalcC	12/17/2006 11:28:09 AM	RICH-RD-0003 REVISION 4
AC			**WoodT**	12/4/2006 8:00:15		
AC			**AshworthA**	12/13/2006 7:32:37		
AC			**AshworthA**	12/14/2006 3:23:06		
AC			**DAWKINSO**	12/14/2006 3:37:38		
AC			**StringerR**	12/17/2006 11:28:09		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 6

ICOCFractions v4.8.26

12/18/2006 1:26:56 PM

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	Mda	Sample Date / Units	Expected	Yield	Volumes
33127	**9JKAG110**			**J6K2203852**	P-0783	FILTER	11/21/2006		10/24/2006 12:10:00 PM			
ALPHA	BAS7		0	12/16/2006 7:47:04	**2.5819E+00**	1.258E+00	1.291E+00	4.329E+00	PCI/SA	1.0	1.0E+0	2.051E-2
RA-226	BXTE		0	12/12/2006 1:02:00 PM	**1.081E-01**	1.587E-01	1.591E-01	5.915E-01	PCI/SA	1.033	1.0E+0	2.456E-1
RA-228	BXTF		0	12/13/2006 5:56:58	**-9.3275E-02**	3.353E-01	3.353E-01	1.728E+00	PCI/SA	0.949	1.0E+0	2.456E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**2.3067E-01**	1.048E-01	1.067E-01	2.516E-01	PCI/SA	0.92	1.0E+0	3.195E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**1.598E-01**	9.369E-02	9.469E-02	2.94E-01	PCI/SA	0.92	1.0E+0	3.195E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**3.9949E-02**	4.466E-02	4.48E-02	2.396E-01	PCI/SA	0.92	1.0E+0	3.195E-2
33127	**9JKAG410**			**J6K2203853**	P-0784	FILTER	11/21/2006		10/24/2006 12:30:00 PM			
ALPHA	BAS7		0	12/16/2006 7:47:04	**4.2505E+00**	1.654E+00	1.724E+00	5.627E+00	PCI/SA	1.0	1.0E+0	2.085E-2
RA-226	BXTE		0	12/12/2006 1:06:00 PM	**2.1612E-01**	1.589E-01	1.606E-01	5.518E-01	PCI/SA	1.036	1.0E+0	2.494E-1
RA-228	BXTF		0	12/13/2006 5:56:58	**1.4597E+00**	3.839E-01	4.165E-01	1.568E+00	PCI/SA	0.933	1.0E+0	2.494E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**8.2605E-02**	1.066E-01	1.069E-01	4.629E-01	PCI/SA	0.812	1.0E+0	3.344E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**2.8851E-01**	1.311E-01	1.336E-01	3.146E-01	PCI/SA	0.812	1.0E+0	3.344E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**7.8685E-02**	7.868E-02	7.9E-02	3.146E-01	PCI/SA	0.812	1.0E+0	3.344E-2
33127	**9JKAG710**			**J6K2203854**	000547	FILTER	11/21/2006		10/24/2006 12:35:00 PM			
ALPHA	BAS7		0	12/16/2006 7:47:04	**5.9384E+00**	1.643E+00	1.783E+00	4.383E+00	PCI/SA	1.0	1.0E+0	2.068E-2
RA-226	BXTE		0	12/12/2006 1:12:00 PM	**1.1649E-01**	1.078E-01	1.085E-01	3.898E-01	PCI/SA	1.048	1.0E+0	2.486E-1
RA-228	BXTF		0	12/13/2006 5:56:58	**-2.4878E-01**	3.255E-01	3.255E-01	1.726E+00	PCI/SA	0.948	1.0E+0	2.486E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**3.5828E-01**	1.372E-01	1.407E-01	2.865E-01	PCI/SA	0.966	1.0E+0	3.266E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**1.3651E-01**	8.203E-02	8.29E-02	2.729E-01	PCI/SA	0.966	1.0E+0	3.266E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**1.3651E-01**	8.203E-02	8.29E-02	2.729E-01	PCI/SA	0.966	1.0E+0	3.266E-2
33127	**9JKAGW10**			**J6K2203851**	P-0782	FILTER	11/21/2006		10/24/2006 11:55:00 AM			
ALPHA	BAS7		0	12/16/2006 7:47:04	**5.5897E+00**	1.67E+00	1.794E+00	4.814E+00	PCI/SA	1.0	1.0E+0	2.071E-2
RA-226	BXTE		0	12/12/2006 1:11:00 PM	**6.2171E-01**	2.7E-01	2.774E-01	8.795E-01	PCI/SA	0.839	1.0E+0	2.481E-1
RA-228	BXTF		0	12/13/2006 5:56:58	**4.8303E-01**	3.742E-01	4.146E-01	1.94E+00	PCI/SA	0.773	1.0E+0	2.481E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**1.4306E-01**	8.427E-02	8.516E-02	2.452E-01	PCI/SA	0.958	1.0E+0	3.313E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**2.1414E-01**	9.734E-02	9.906E-02	2.335E-01	PCI/SA	0.958	1.0E+0	3.313E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**0.0E+00**	0.0E+00	4.353E-02	2.335E-01	PCI/SA	0.958	1.0E+0	3.313E-2
33128	**9JKAHM10**			**J6K2203861**	P-0786	FILTER	11/21/2006		10/30/2006 11:05:00 AM			
ALPHA	BAS7		0	12/16/2006 7:47:04	**2.1413E+00**	1.197E+00	1.223E+00	4.385E+00	PCI/SA	1.0	1.0E+0	2.083E-2
RA-226	BXTE		0	12/12/2006 1:32:00 PM	**2.6637E-01**	1.132E-01	1.168E-01	3.305E-01	PCI/SA	0.978	1.0E+0	2.504E-1
RA-228	BXTF		0	12/13/2006 5:57:08	**6.6355E-01**	3.296E-01	3.49E-01	1.516E+00	PCI/SA	0.896	1.0E+0	2.504E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**1.5117E-01**	1.069E-01	1.077E-01	3.709E-01	PCI/SA	0.748	1.0E+0	3.508E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**1.9314E-01**	1.132E-01	1.145E-01	3.554E-01	PCI/SA	0.748	1.0E+0	3.508E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**4.8284E-02**	5.398E-02	5.415E-02	2.896E-01	PCI/SA	0.748	1.0E+0	3.508E-2
33128	**9JKAHR10**			**J6K2203862**	P-0787	FILTER	11/21/2006		10/30/2006 11:25:00 AM			
ALPHA	BAS7		0	12/16/2006 10:35:32	**7.876E+00**	1.877E+00	2.092E+00	4.779E+00	PCI/SA	1.0	1.0E+0	2.083E-2
RA-226	BXTE		0	12/12/2006 1:26:00 PM	**4.8919E-01**	1.674E-01	1.746E-01	4.325E-01	PCI/SA	0.952	1.0E+0	2.494E-1
RA-228	BXTF		0	12/13/2006 5:57:08	**6.3712E-01**	3.283E-01	3.484E-01	1.523E+00	PCI/SA	0.874	1.0E+0	2.494E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**2.729E-01**	1.13E-01	1.155E-01	2.518E-01	PCI/SA	0.922	1.0E+0	3.34E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**8.0461E-02**	7.526E-02	7.558E-02	2.961E-01	PCI/SA	0.922	1.0E+0	3.34E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**0.0E+00**	0.0E+00	4.498E-02	2.413E-01	PCI/SA	0.922	1.0E+0	3.34E-2
33128	**9JKAHT10**			**J6K2203863**	P-0788	FILTER	11/21/2006		10/30/2006 11:40:00 AM			
ALPHA	BAS7		0	12/16/2006 10:35:32	**5.387E+00**	1.606E+00	1.718E+00	4.37E+00	PCI/SA	1.0	1.0E+0	2.031E-2
RA-226	BXTE		0	12/12/2006 1:33:00 PM	**8.4953E-01**	2.515E-01	2.648E-01	7.072E-01	PCI/SA	0.945	1.0E+0	2.438E-1
RA-228	BXTF		0	12/13/2006 5:57:08	**6.4491E-01**	3.741E-01	3.749E-01	1.649E+00	PCI/SA	0.865	1.0E+0	2.438E-1
TH-228	9NS1		0	12/12/2006 12:37:00	**2.2247E-01**	1.147E-01	1.164E-01	3.336E-01	PCI/SA	0.794	1.0E+0	3.154E-2
TH-230	9NS1		0	12/12/2006 12:37:00	**4.7965E-01**	1.621E-01	1.676E-01	3.197E-01	PCI/SA	0.794	1.0E+0	3.154E-2
TH-232	9NS1		0	12/12/2006 12:37:00	**5.3294E-02**	5.958E-02	5.977E-02	3.197E-01	PCI/SA	0.794	1.0E+0	3.154E-2
33128	**9JKAHV10**			**J6K2203864**	P-0789	FILTER	11/21/2006		10/30/2006 11:10:00 AM			
ALPHA	BAS7		0	12/16/2006 10:35:32	**1.011E+00**	1.303E+00	1.308E+00	5.655E+00	PCI/SA	1.0	1.0E+0	2.077E-2
RA-226	BXTE		0	12/12/2006 1:35:00 PM	**7.035E-02**	1.738E-01	1.739E-01	6.81E-01	PCI/SA	0.939	1.0E+0	2.479E-1

6332250, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 9,
**Results Inserted | ReTestInserted | Updated | NotInserted => 11 | 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	Mda	Sample Date / Units	Expected	Yield	Volumes	
RA-228	BXTF	0		12/13/2006 5:57:08	**1.188E+00**	3.952E-01	4.147E-01	1.645E+00	PCI/SA		0.835	1.0E+0	2.479E-1
TH-228	9NS1	0		12/12/2006 12:37:00	**5.7836E-02**	6.466E-02	6.487E-02	3.469E-01	PCI/SA		0.628	1.0E+0	3.273E-2
TH-230	9NS1	0		12/12/2006 12:37:00	**3.3251E-01**	1.385E-01	1.417E-01	3.324E-01	PCI/SA		0.628	1.0E+0	3.273E-2
TH-232	9NS1	0		12/12/2006 12:37:00	**2.7709E-02**	6.196E-02	6.201E-02	3.324E-01	PCI/SA		0.628	1.0E+0	3.273E-2
33128	**9JKAHW10**			**J6K2203865**	000550	FILTER	11/21/2006		10/30/2006 11:45:00 AM				
ALPHA	BAS7	0		12/16/2006 10:35:32	**3.2617E+00**	1.34E+00	1.392E+00	4.353E+00	PCI/SA		1.0	1.0E+0	2.086E-2
RA-226	BXTE	0		12/12/2006 1:53:00 PM	**2.0095E-01**	1.255E-01	1.274E-01	4.229E-01	PCI/SA		1.055	1.0E+0	2.496E-1
RA-228	BXTF	0		12/13/2006 6:48:07	**5.0342E-01**	3.105E-01	3.151E-01	1.412E+00	PCI/SA		0.944	1.0E+0	2.496E-1
TH-228	9NS1	0		12/13/2006 9:30:36	**2.1523E-01**	1.097E-01	1.113E-01	3.168E-01	PCI/SA		0.898	1.0E+0	3.379E-2
TH-230	9NS1	0		12/13/2006 9:30:36	**4.7394E-01**	1.442E-01	1.5E-01	2.472E-01	PCI/SA		0.898	1.0E+0	3.379E-2
TH-232	9NS1	0		12/13/2006 9:30:36	**8.2424E-02**	6.182E-02	6.223E-02	2.472E-01	PCI/SA		0.898	1.0E+0	3.379E-2
33127	**JKENK1AB**			**J6K280000250**	INTRA-LAB BLANK	FILTER	11/21/2006		10/24/2006 11:55:00 AM				
ALPHA	BAS7	0	B	12/16/2006 10:35:32	**1.3548E-03**	1.616E-03	1.624E-03	7.043E-03	PCI/SA		1.0	1.0E+0	1.289E+1
33127	**JKENK1CS**			**J6K280000250**	INTRA-LAB CHECK	FILTER	11/21/2006		10/24/2006 11:55:00 AM				
ALPHA	BAS7	0	S	12/17/2006 9:21:04	**1.4976E-01**	9.158E-03	1.983E-02	8.095E-03	PCI/SA	1.8114E-01	1.0	1.0E+0	1.276E+1

6332250, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 9,
**Results Inserted | ReTestInserted | Updated | NotInserted => 11 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 6332250

Alpha Beta, Alpha by GPC-Am , Results

12/17/2006 11:26:20 AM

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	**JKAGW1AE**	ALPHA	**5.59E+00**	**(1.79E+00)**		PCI/SA	R	1.95E+00	4.81E+00		100%	
Calc	S7	FILTER	**JKAG11AE**	ALPHA	**2.58E+00**	**(1.29E+00)**		PCI/SA	R	1.70E+00	4.33E+00		100%	
Calc	S7	FILTER	**JKAG41AE**	ALPHA	**4.25E+00**	**(1.72E+00)**		PCI/SA	R	2.38E+00	5.63E+00		100%	
Calc	S7	FILTER	**JKAG71AE**	ALPHA	**5.94E+00**	**(1.78E+00)**		PCI/SA	R	1.74E+00	4.38E+00		100%	
Calc	S7	FILTER	**JKAHM1AE**	ALPHA	**2.14E+00**	**(1.22E+00)**		PCI/SA	R	1.75E+00	4.39E+00		100%	
Calc	S7	FILTER	**JKAHR1AE**	ALPHA	**7.88E+00**	**(2.09E+00)**		PCI/SA	R	1.94E+00	4.78E+00		100%	
Calc	S7	FILTER	**JKAHT1AE**	ALPHA	**5.39E+00**	**(1.72E+00)**		PCI/SA	R	1.72E+00	4.37E+00		100%	
Calc	S7	FILTER	**JKAHV1AE**	ALPHA	**1.01E+00**	**(1.31E+00)**	**U4**	PCI/SA	R	2.39E+00	5.66E+00		100%	
Calc	S7	FILTER	**JKAHW1AE**	ALPHA	**3.26E+00**	**(1.39E+00)**		PCI/SA	R	1.73E+00	4.35E+00		100%	
Calc	S7	FILTER	**JKENK1AA**	ALPHA	**1.35E-03**	**(1.62E-03)**	**U4**	PCI/SA	R	2.82E-03	7.04E-03	**B**	100%	
Calc	S7	FILTER	**JKENK1AC**	ALPHA	**1.50E-01**	**(1.98E-02)**		PCI/SA	R	3.31E-03	8.10E-03	**S**	100%	83%

CRDL not

P Anderson
12-18-06

() - (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:11
RADCALC v4.8.26
STL Richland

Batch Nbr: 6332250

Alpha Beta, Alpha by GPC-Am , Calculated Results

12/17/2006 11:26:21 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	S7	FILTER	*STLE	GabWoBS	**JKAGW1AE**	**PCI/SA**		10/24/06 11:55	12/16/06 07:47			1	1.00 Sa	
536403,P-0782					,J6K220385-1 v4.8.26		FILTER			00.6				0.020708 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	12/16/06 09:02	ALPHA	23	21	GPC10A	1.5	N	N	4.3326E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.968E-02)	(0.000E+00)		8%			(0.000E+00)	48.290346		

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
	12/17/06	ALPHA	R	**5.589655**		1.11333E-01	0.256967	0.256967	1.00 Sa	100%		4.813599		
				(1.794273)		(3.3260E-02)	(0.081398)	(0.081398)	(0.014142)			1.954428		

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	**JKAG11AE**	**PCI/SA**		10/24/06 12:10	12/16/06 07:47			1	1.00 Sa	
536403,P-0783					,J6K220385-2 v4.8.26		FILTER			00.5				0.020508 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	12/16/06 09:02	ALPHA	12	15	GPC10B	1.5	N	N	4.2537E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.608E-02)	(0.000E+00)		8%			(0.000E+00)	48.761723		

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
	12/17/06	ALPHA	R	**2.581864**		5.00000E-02	0.117546	0.117546	1.00 Sa	100%		4.328629		
				(1.291431)		(2.4358E-02)	(0.058478)	(0.058478)	(0.014142)			1.698867		

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	**JKAG41AE**	**PCI/SA**		10/24/06 12:30	12/16/06 07:47			1	1.00 Sa	
536403,P-0784					,J6K220385-3 v4.8.26		FILTER			00.6				0.020847 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	12/16/06 09:02	ALPHA	23	33	GPC10C	1.5	N	N	4.4395E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.865E-02)	(0.000E+00)		8%			(0.000E+00)	47.96847		

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
	12/17/06	ALPHA	R	**4.25054**		8.73333E-02	0.196717	0.196717	1.00 Sa	100%		5.626574		
				(1.724467)		(3.3974E-02)	(0.079152)	(0.079152)	(0.014142)			2.375042		

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	**JKAG71AE**	**PCI/SA**		10/24/06 12:35	12/16/06 07:47			1	1.00 Sa	
536403,000547					,J6K220385-4 v4.8.26		FILTER			00.6				0.020682 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	12/16/06 09:02	ALPHA	23	17	GPC10D	1.5	N	N	4.3768E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.937E-02)	(0.000E+00)		8%			(0.000E+00)	48.351663		

() - (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: 6332250

Alpha Beta, Alpha by GPC-Am , Calculated Results

12/17/2006 11:26:21 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
	12/17/06	ALPHA	R	**5.938369**		1.19333E-01	0.272652	0.272652	1.00 Sa	100%		4.382841		
				(1.783099)		(3.3019E-02)	(0.080633)	(0.080633)	(0.014142)			1.742931		

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	**JKAHM1AE**	**PCI/SA**		10/30/06 11:05	12/16/06 07:47			1	1.00 Sa	
536403,P-0786					,J6K220386-1 v4.8.26		FILTER			00.4				0.020833 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	12/16/06 09:02	ALPHA	12	18	GPC10F	1.5	N	N	4.4429E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.956E-02)	(0.000E+00)		8%			(0.000E+00)	48.000975		

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
	12/17/06	ALPHA	R	**2.141312**		4.40000E-02	0.099034	0.099034	1.00 Sa	100%		4.385025		
				(1.222987)		(2.4604E-02)	(0.056327)	(0.056327)	(0.014142)			1.753936		

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	**JKAHR1AE**	**PCI/SA**		10/30/06 11:25	12/16/06 10:35			1	1.00 Sa	
536403,P-0787					,J6K220386-2 v4.8.26		FILTER			00.5				0.020826 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	12/16/06 11:50	ALPHA	30	21	GPC10A	1.5	N	N	4.3390E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.973E-02)	(0.000E+00)		8%			(0.000E+00)	48.016336		

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
	12/17/06	ALPHA	R	**7.876006**		1.58000E-01	0.364142	0.364142	1.00 Sa	100%		4.779242		
				(2.092243)		(3.7647E-02)	(0.094865)	(0.094865)	(0.014142)			1.940479		

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	**JKAHT1AE**	**PCI/SA**		10/30/06 11:40	12/16/06 10:35			1	1.00 Sa	
536403,P-0788					,J6K220386-3 v4.8.26		FILTER			00.5				0.020313 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	12/16/06 11:50	ALPHA	20	15	GPC10B	1.5	N	N	4.2537E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.608E-02)	(0.000E+00)		8%			(0.000E+00)	49.229284		

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
	12/17/06	ALPHA	R	**5.387016**		1.03333E-01	0.242928	0.242928	1.00 Sa	100%		4.370135		
				(1.718162)		(3.0804E-02)	(0.076446)	(0.076446)	(0.014142)			1.715156		

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	**JKAHV1AE**	**PCI/SA**		10/30/06 11:10	12/16/06 10:35			1	1.00 Sa	
536403,P-0789					,J6K220386-4 v4.8.26		FILTER			00.7				0.020774 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: 6332250

Alpha Beta, Alpha by GPC-Am , Calculated Results

12/17/2006 11:26:22 AM

0	12/16/06 11:50	ALPHA	13	33	GPC10C	1.5	N	N	4.4325E-01	1.0000E+00	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.861E-02)	(0.000E+00)		8%		(0.000E+00)	48.136584		

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
	12/17/06	ALPHA	R	**1.010981**	U4	2.06667E-02	0.046625	0.046625	1.00 Sa	100%		5.655261		
				(1.30846)		(2.6642E-02)	(0.060296)	(0.060296)	(0.014142)			2.387151		

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	**JKAHW1AE**	**PCI/SA**		10/30/06 11:45	12/16/06 10:35			1	1.00 Sa	
536403,000550					,J6K220386-5 v4.8.26		FILTER			00.7				0.020857 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	12/16/06 11:50	ALPHA	15	17	GPC10D	1.5	N	N	4.3701E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.932E-02)	(0.000E+00)		8%			(0.000E+00)	47.945494		

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
	12/17/06	ALPHA	R	**3.261738**		6.60000E-02	0.151027	0.151027	1.00 Sa	100%		4.352666		
				(1.392493)		(2.7105E-02)	(0.063997)	(0.063997)	(0.014142)			1.730931		

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	**JKENK1AA**	**PCI/SA**	**B**	10/24/06 11:55	12/16/06 10:35			1	1.00 Sa	
0,INTRA-LAB BLANK					,J6K280000-250		FILTER			00.0				12.89 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	12/16/06 11:50	ALPHA	8	18	GPC10F	1.5	N	N	4.4710E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.975E-02)	(0.000E+00)		8%			(0.000E+00)	0.07758		

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
	12/17/06	ALPHA	R	**0.001355**	U4	1.73333E-02	0.038768	0.038768	1.00 Sa	100%		0.007043		
				(0.001624)		(2.0677E-02)	(0.046423)	(0.046423)	(0.014142)			0.002817		

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	**JKENK1AC**	**PCI/SA**	**S**	10/24/06 11:55	12/17/06 09:21		ASC0423	1	1.00 Sa	
0,INTRA-LAB CHECK					,J6K280000-250		FILTER			00.5		ASC0423 Alq		12.76 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	12/17/06 10:36	ALPHA	283	23	GPC10A	1.5	N	N	4.3390E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.973E-02)	(0.000E+00)		8%			(0.000E+00)	0.07837		

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
	12/17/06	ALPHA	R	**0.149756**		1.84067E+00	4.242174	4.242174	1.00 Sa	100%	83%	0.008095		
				(0.01983)		(1.1256E-01)	(0.516661)	(0.516661)	(0.014142)			0.003315		

() - (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

UST Number: JKAGW1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JKAGW1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4419

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00023	00000	0150	00000	1000	16-DEC-2006 09:02:04.98

Bkg File: [quad10.bkgrnd]2006-12-16_0533.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00021	0500	0.04	00000	1000	16-DEC-2006 05:33:04.11

```
UST Number: JKAG11AE   Isotope: 112       (QREPORT Rev 11-OCT-98)

  Detector: 10-B          File: [quad10.sample.B]JKAG11AE.112
 Dish Size: 15        Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4414

Cycle  Alpha   Beta     Min   Guard   Volts      Finish Date/Time
   1   00012   00000   0150   00000   1000   16-DEC-2006 09:02:04.98

   Bkg File: [quad10.bkgrnd]2006-12-16_0533.B_15        (QREPORT Rev 11-OCT-98)

Cycle  Count    Min      CPM     Guard   Volts         Date/Time
 Bkg   00015   0500       0.03   00000   1000   16-DEC-2006 05:33:04.11
```

UST Number: JKAG41AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C File: [quad10.sample.C]JKAG41AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.C_15;4425

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00023	00000	0150	00000	1000	16-DEC-2006 09:02:04.98

Bkg File: [quad10.bkgrnd]2006-12-16_0533.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00033	0500	0.07	00000	1000	16-DEC-2006 05:33:04.11

```
UST Number: JKAG71AE   Isotope: 112       (QREPORT Rev 11-OCT-98)

  Detector: 10-D          File: [quad10.sample.D]JKAG71AE.112
 Dish Size: 15        Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.D_15;4418

Cycle  Alpha   Beta     Min   Guard   Volts      Finish Date/Time
   1   00023   00000   0150   00000   1000   16-DEC-2006 09:02:04.98

   Bkg File: [quad10.bkgrnd]2006-12-16_0533.D_15        (QREPORT Rev 11-OCT-98)

Cycle  Count    Min      CPM     Guard   Volts         Date/Time
 Bkg   00017   0500       0.03   00000   1000   16-DEC-2006 05:33:04.11
```

UST Number: JKAHM1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-F File: [quad10.sample.F]JKAHM1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.F_15;4410

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00012	00000	0150	00000	1000	16-DEC-2006 09:02:04.98

Bkg File: [quad10.bkgrnd]2006-12-16_0533.F_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00018	0500	0.04	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKAHR1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JKAHR1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4419

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00030	00000	0150	00000	1000	16-DEC-2006 11:50:32.87

Bkg File: [quad10.bkgrnd]2006-12-16_0533.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00021	0500	0.04	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKAHT1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JKAHT1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4414

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00020	00000	0150	00000	1000	16-DEC-2006 11:50:32.87

Bkg File: [quad10.bkgrnd]2006-12-16_0533.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00015	0500	0.03	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKAHV1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C File: [quad10.sample.C]JKAHV1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.C_15;4425

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00013	00000	0150	00000	1000	16-DEC-2006 11:50:32.87

Bkg File: [quad10.bkgrnd]2006-12-16_0533.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00033	0500	0.07	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKAHW1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-D File: [quad10.sample.D]JKAHW1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.D_15;4418

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00015	00000	0150	00000	1000	16-DEC-2006 11:50:32.87

Bkg File: [quad10.bkgrnd]2006-12-16_0533.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00017	0500	0.03	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKENK1AA Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-F File: [quad10.sample.F]JKENK1AA.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.F_15;4410

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00008	00000	0150	00000	1000	16-DEC-2006 11:50:32.87

Bkg File: [quad10.bkgrnd]2006-12-16_0533.F_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00018	0500	0.04	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKENK1AC Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JKENK1AC.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4420

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00283	00000	0150	00000	1000	17-DEC-2006 10:36:04.70

Bkg File: [quad10.bkgrnd]2006-12-16_2026.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00023	0500	0.05	00000	1000	16-DEC-2006 20:26:53.75

12/13/2006 1:01:48 PM

Sample Preparation/Analysis

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

Balance Id:1120373922

Pipet #: _____

AnalyDueDate: 12/18/2006

Sep1 DT/Tm Tech:

Batch: 6332250 pCi/sampl
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

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:

JKENK1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JKENK1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

RADIUM 228

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

12/14/2006 8:35:06 AM

Lot No., Due Date: J6K220385,J6K220386; 12/19/2006

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6332254; RRA228 Ra-228 by GPC

SDG, Matrix: 33127,33128; FILTER

	Yes	No	N/A
1.0 COC			
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		
2.0 QC Batch			
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			
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			
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			
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** 12-14-06

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 6 332254

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 A Adam Date: 12-14-06

LS-038B, Rev. 10, 8/02

STL RICHLAND

12/1/2006 12:08:32 PM

536403, Brown and Caldwell , Brown & Caldwell

AnalyDueDate: 12/18/2006

Sample Preparation/Analysis

BX Ra-226/228 PrpRC5016, SepRC5005
TF Radium-228 by GPC
01 STANDARD TEST SET

Balance Id:11,1120373922,11,1120373922

Pipet #:

Sep1 DT/Tm Tech: AL 12/4/06 13:00

Sep2 DT/Tm Tech: AL 12/12/06 12:05

Batch: 6332254 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6332252, BXTE

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 JKAGW-1-AD J6K220385-1-SAMP	0.833sa	504.03sa	150.11g,in	0.2481g	RATA24851 11/22/06	0.8393	in 31.7 3x50	2A	1744	12/12/06 OP
								3A	0552	10/13/06
10/24/2006 11:55		AmtRec: FILTER	#Containers: 1				Scr:		Alpha:	Beta:
2 JKAG1-1-AD J6K220385-2-SAMP	0.833sa	508.95sa	150.07g,in	0.2456g	RATA24852 11/22/06	1.0331	31.6	2B	1744	12/12/06 OP
								3B	0552	10/13/06
10/24/2006 12:10		AmtRec: FILTER	#Containers: 1				Scr:		Alpha:	Beta:
3 JKAG4-1-AD J6K220385-3-SAMP	0.833sa	501.07sa	150.04g,in	0.2494g	RATA24853 11/22/06	1.0358	31.0	2C	1744	12/12/06 OP
								3C	0552	10/13/06
10/24/2006 12:30		AmtRec: FILTER	#Containers: 1				Scr:		Alpha:	Beta:
4 JKAG7-1-AD J6K220385-4-SAMP	0.833sa	504.67sa	150.64g,in	0.2486g	RATA24854 11/22/06	1.0482	31.1	2D	1744	12/12/06 OP
								3D	0552	10/13/06
10/24/2006 12:35		AmtRec: FILTER	#Containers: 1				Scr:		Alpha:	Beta:

STL RICHLAND

12/1/2006 12:08:33 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

Balance Id:11,11,11,11,11,1120373922,11,

Pipet #:

AnalyDueDate: 12/18/2006

Sep1 DT/Tm Tech:

Batch: 6332254 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: 6332252, 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 JKAHM-1-AD J6K220386-1-SAMP	0.833sa	500.21sa	150.35g,in	0.2504g	RATA24855 11/22/06	0.9785	lin 31.5 3x50	3A	1730	12/12/06
								4A	0552	10/13/06
10/30/2006 11:05		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:		Beta:
6 JKAHR-1-AD J6K220386-2-SAMP	0.833sa	501.57sa	150.19g,in	0.2494g	RATA24856 11/22/06	0.9516	31.6	3B	1730	12/12/06
								4B	0552	10/13/06
10/30/2006 11:25		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:		Beta:
7 JKAHT-1-AD J6K220386-3-SAMP	0.833sa	513.01sa	150.16g,in	0.2438g	RATA24857 11/22/06	0.9446	31.5	3C	1730	12/12/06
								4C	0552	10/13/06
10/30/2006 11:40		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:		Beta:
8 JKAHV-1-AD J6K220386-4-SAMP	0.833sa	504.43sa	150.09g,in	0.2479g	RATA24858 11/22/06	0.9389	30.6	3D	173	12/12/06
								4D	0552	10/13/06
10/30/2006 11:10		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:		Beta:

12/1/2006 12:08:33 PM

536403, Brown and Caldwell , Brown & Caldwell

AnalyDueDate: 12/18/2006

Sample Preparation/Analysis

BX Ra-226/228 PrpRC5016, SepRC5005
TF Radium-228 by GPC
01 STANDARD TEST SET

Balance Id:11,11,11,11,11,11,11,11,11,112

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Batch: 6332254 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: 6332252, BXTE

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 JKAHW-1-AD J6K220386-5-SAMP	0.833sa	500.83sa	150.04g,in	0.2496g	RATA24859 11/22/06	1.0546	lin 30.83x50	4A	1730	12/12/06 [illegible]
								4F	0647	10/13/06
10/30/2006 11:45		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:		Beta:
10 JKENQ-1-AA-B J6K280000-254-BLK	0.833sa		151.01g,in	151.01g	RATA24860 11/22/06	1.0242	31.4	4B	1730	12/12/06 [illegible]
								4B	0647	10/13/06
10/30/2006 11:05		AmtRec:	#Containers: 1				Scr:	Alpha:		Beta:
11 JKENQ-1-AC-C J6K280000-254-LCS	0.833sa		150.17g,in	150.17g	RASC4275 11/20/06	1.0473	30.9	4C	1730	12/12/06 [illegible]
								4C	0647	10/13/06
10/30/2006 11:05		AmtRec:	#Containers: 1				Scr:	Alpha:		Beta:

Comments:

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

JKAGW1AD-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:

12/14/2006 8:24:09 AM

ICOC Fraction Transfer/Status Report

ByDate: 12/14/2005, 12/19/2006, Batch: '6332254', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6332254						
AC		**CalcC**	**WoodT**	11/30/2006 8:54:22		
SC			wagarr	IsBatched	11/28/2006 10:37:01 AM	ICOC_RADCALC v4.8.24
SC			WoodT	InPrep	11/30/2006 8:54:22 AM	RICH-RC-5016 REVISION 5
SC			LongA	Sep1C	12/4/2006 1:21:00 PM	/RICH-RC-5005 REVISION 5
SC			LongA	Sep2C	12/12/2006 12:16:08 PM	RICH-RC-5005 REVISION 4
SC			DAWKINSO	InCnt1	12/12/2006 5:16:09 PM	RICH-RD-0003 REVISION 4
SC			BlackCL	CalcC	12/13/2006 8:25:00 AM	RICH-RD-0003 REVISION 4
AC			**LongA**	12/4/2006 1:21:00 PM		
AC			**LongA**	12/12/2006 12:16:08		
AC			**DAWKINSO**	12/12/2006 5:16:09		
AC			**BlackCL**	12/13/2006 8:25:00		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 5

ICOCFractions v4.8.26

12/14/2006 8:24:08 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	Mda	Sample Date / Units	Expected	Yield	Volumes	
33127	**9JKAG110**			**J6K2203852**	P-0783	FILTER	11/21/2006		10/24/2006 12:10:00 PM				
RA-228	BXTF	0		12/13/2006 5:56:58	**-9.3275E-02**	3.353E-01	3.353E-01	1.728E+00	PCI/SA		0.949	1.0E+0	2.456E-1
33127	**9JKAG410**			**J6K2203853**	P-0784	FILTER	11/21/2006		10/24/2006 12:30:00 PM				
RA-228	BXTF	0		12/13/2006 5:56:58	**1.4597E+00**	3.839E-01	4.165E-01	1.568E+00	PCI/SA		0.933	1.0E+0	2.494E-1
33127	**9JKAG710**			**J6K2203854**	000547	FILTER	11/21/2006		10/24/2006 12:35:00 PM				
RA-228	BXTF	0		12/13/2006 5:56:58	**-2.4878E-01**	3.255E-01	3.255E-01	1.726E+00	PCI/SA		0.948	1.0E+0	2.486E-1
33127	**9JKAGW10**			**J6K2203851**	P-0782	FILTER	11/21/2006		10/24/2006 11:55:00 AM				
RA-228	BXTF	0		12/13/2006 5:56:58	**4.8303E-01**	3.742E-01	4.146E-01	1.94E+00	PCI/SA		0.773	1.0E+0	2.481E-1
33128	**9JKAHM10**			**J6K2203861**	P-0786	FILTER	11/21/2006		10/30/2006 11:05:00 AM				
RA-228	BXTF	0		12/13/2006 5:57:08	**6.6355E-01**	3.296E-01	3.49E-01	1.516E+00	PCI/SA		0.896	1.0E+0	2.504E-1
33128	**9JKAHR10**			**J6K2203862**	P-0787	FILTER	11/21/2006		10/30/2006 11:25:00 AM				
RA-228	BXTF	0		12/13/2006 5:57:08	**6.3712E-01**	3.283E-01	3.484E-01	1.523E+00	PCI/SA		0.874	1.0E+0	2.494E-1
33128	**9JKAHT10**			**J6K2203863**	P-0788	FILTER	11/21/2006		10/30/2006 11:40:00 AM				
RA-228	BXTF	0		12/13/2006 5:57:08	**6.4491E-01**	3.741E-01	3.749E-01	1.649E+00	PCI/SA		0.865	1.0E+0	2.438E-1
33128	**9JKAHV10**			**J6K2203864**	P-0789	FILTER	11/21/2006		10/30/2006 11:10:00 AM				
RA-228	BXTF	0		12/13/2006 5:57:08	**1.188E+00**	3.952E-01	4.147E-01	1.645E+00	PCI/SA		0.835	1.0E+0	2.479E-1
33128	**9JKAHW10**			**J6K2203865**	000550	FILTER	11/21/2006		10/30/2006 11:45:00 AM				
RA-228	BXTF	0		12/13/2006 6:48:07	**5.0342E-01**	3.105E-01	3.151E-01	1.412E+00	PCI/SA		0.944	1.0E+0	2.496E-1
33127	**JKENQ1AB**			**J6K280000254**	INTRA-LAB BLANK	FILTER	11/21/2006		10/30/2006 11:05:00 AM				
RA-228	BXTF	0	B	12/13/2006 6:48:07	**1.4066E-03**	5.433E-04	5.818E-04	2.425E-03	PCI/SA		0.935	1.0E+0	1.51E+2
33127	**JKENQ1CS**			**J6K280000254**	INTRA-LAB CHECK	FILTER	11/21/2006		10/30/2006 11:05:00 AM				
RA-228	BXTF	0	S	12/13/2006 6:48:07	**2.5466E-02**	1.434E-03	2.051E-03	2.509E-03	PCI/SA	3.3202E-02	0.941	1.0E+0	1.502E+2

6332254, **Samples Inserted | Updated | NotUpdated => 11 | 0 | 0,
**Results Inserted | ReTestInserted | Updated | NotInserted => 11 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 6332254

Alpha Beta, Ra-228 by GPC , Results

12/13/2006 8:24:51 AM

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	JKAGW1AD	RA-228	1.09E+00	(7.31E-01)	U4	PCI/SA	R	1.29E+00	3.02E+00		77%	
Calc	TF	FILTER	JKAGW1AD	RA-228	8.42E-01	(7.65E-01)	U4	PCI/SA	R	1.43E+00	3.35E+00		77%	
Calc	TF	FILTER	JKAGW1AD	RA-228	-4.80E-01	(6.54E-01)	U4	PCI/SA	R	1.59E+00	3.72E+00		77%	
Calc	TF	FILTER	JKAGW1AD	RA-228	4.83E-01	(4.15E-01)	U4	PCI/SA	A	8.28E-01	1.94E+00		77%	
Calc	TF	FILTER	JKAGW1AD	RA-228	2.10E+00	(2.98E+00)	U4	PCI/SA	R	5.92E+00	1.38E+01		77%	
Calc	TF	FILTER	JKAG11AD	RA-228	5.19E-01	(5.95E-01)	U4	PCI/SA	R	1.17E+00	2.69E+00		95%	
Calc	TF	FILTER	JKAG11AD	RA-228	0.00E+00	(5.91E-01)	U4	PCI/SA	R	1.30E+00	2.98E+00		95%	
Calc	TF	FILTER	JKAG11AD	RA-228	-7.99E-01	(5.56E-01)	U4	PCI/SA	R	1.44E+00	3.31E+00		95%	
Calc	TF	FILTER	JKAG11AD	RA-228	-9.33E-02	(3.35E-01)	U4	PCI/SA	A	7.51E-01	1.73E+00		95%	
Calc	TF	FILTER	JKAG11AD	RA-228	-1.43E-01	(2.28E+00)	U4	PCI/SA	R	5.03E+00	1.16E+01		95%	
Calc	TF	FILTER	JKAG41AD	RA-228	3.33E+00	(8.81E-01)		PCI/SA	R	1.04E+00	2.44E+00		93%	
Calc	TF	FILTER	JKAG41AD	RA-228	5.76E-01	(6.04E-01)	U4	PCI/SA	R	1.15E+00	2.71E+00		93%	
Calc	TF	FILTER	JKAG41AD	RA-228	4.74E-01	(6.48E-01)	U4	PCI/SA	R	1.28E+00	3.00E+00		93%	
Calc	TF	FILTER	JKAG41AD	RA-228	1.46E+00	(4.17E-01)		PCI/SA	A	6.68E-01	1.57E+00		93%	
Calc	TF	FILTER	JKAG41AD	RA-228	3.00E-01	(2.46E+00)	U4	PCI/SA	R	5.31E+00	1.22E+01		93%	
Calc	TF	FILTER	JKAG71AD	RA-228	1.19E+00	(6.72E-01)		PCI/SA	R	1.17E+00	2.68E+00		95%	
Calc	TF	FILTER	JKAG71AD	RA-228	-9.92E-01	(4.64E-01)	U4	PCI/SA	R	1.29E+00	2.98E+00		95%	
Calc	TF	FILTER	JKAG71AD	RA-228	-9.41E-01	(5.36E-01)	U4	PCI/SA	R	1.44E+00	3.31E+00		95%	
Calc	TF	FILTER	JKAG71AD	RA-228	-2.49E-01	(3.26E-01)	U4	PCI/SA	A	7.50E-01	1.73E+00		95%	
Calc	TF	FILTER	JKAG71AD	RA-228	-2.89E-01	(2.04E+00)	U4	PCI/SA	R	4.56E+00	1.07E+01		95%	
Calc	TF	FILTER	JKAHM1AD	RA-228	1.39E+00	(6.52E-01)		PCI/SA	R	1.02E+00	2.38E+00		90%	
Calc	TF	FILTER	JKAHM1AD	RA-228	1.39E-01	(5.30E-01)	U4	PCI/SA	R	1.12E+00	2.62E+00		90%	
Calc	TF	FILTER	JKAHM1AD	RA-228	4.59E-01	(6.24E-01)	U4	PCI/SA	R	1.23E+00	2.88E+00		90%	
Calc	TF	FILTER	JKAHM1AD	RA-228	6.64E-01	(3.49E-01)		PCI/SA	A	6.49E-01	1.52E+00		90%	
Calc	TF	FILTER	JKAHM1AD	RA-228	3.84E+00	(2.76E+00)	U4	PCI/SA	R	4.98E+00	1.16E+01		90%	
Calc	TF	FILTER	JKAHR1AD	RA-228	1.15E+00	(6.25E-01)		PCI/SA	R	1.03E+00	2.39E+00		87%	
Calc	TF	FILTER	JKAHR1AD	RA-228	5.79E-01	(5.93E-01)	U4	PCI/SA	R	1.13E+00	2.63E+00		87%	
Calc	TF	FILTER	JKAHR1AD	RA-228	1.87E-01	(5.92E-01)	U4	PCI/SA	R	1.24E+00	2.89E+00		87%	
Calc	TF	FILTER	JKAHR1AD	RA-228	6.37E-01	(3.48E-01)		PCI/SA	A	6.55E-01	1.52E+00		87%	
Calc	TF	FILTER	JKAHR1AD	RA-228	9.53E-01	(2.51E+00)	U4	PCI/SA	R	5.23E+00	1.22E+01		87%	
Calc	TF	FILTER	JKAHT1AD	RA-228	5.32E-01	(5.79E-01)	U4	PCI/SA	R	1.12E+00	2.59E+00		86%	
Calc	TF	FILTER	JKAHT1AD	RA-228	4.39E-01	(6.17E-01)	U4	PCI/SA	R	1.23E+00	2.85E+00		86%	
Calc	TF	FILTER	JKAHT1AD	RA-228	9.64E-01	(7.42E-01)	U4	PCI/SA	R	1.35E+00	3.13E+00		86%	
Calc	TF	FILTER	JKAHT1AD	RA-228	6.45E-01	(3.75E-01)		PCI/SA	A	7.10E-01	1.65E+00		86%	
Calc	TF	FILTER	JKAHT1AD	RA-228	-1.05E+00	(2.39E+00)	U4	PCI/SA	R	5.54E+00	1.28E+01		86%	
Calc	TF	FILTER	JKAHV1AD	RA-228	1.24E+00	(6.71E-01)		PCI/SA	R	1.11E+00	2.58E+00		84%	
Calc	TF	FILTER	JKAHV1AD	RA-228	1.80E+00	(7.96E-01)		PCI/SA	R	1.22E+00	2.84E+00		84%	
Calc	TF	FILTER	JKAHV1AD	RA-228	5.25E-01	(6.82E-01)	U4	PCI/SA	R	1.34E+00	3.12E+00		84%	

() - (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 v4.8.26
STL Richland

Batch Nbr: 6332254

Alpha Beta, Ra-228 by GPC , Results

12/13/2006 8:24:51 AM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	TF	FILTER	**JKAHV1AD**	RA-228	**1.19E+00**	**(4.15E-01)**		PCI/SA	A	7.07E-01	1.64E+00		84%	
Calc	TF	FILTER	**JKAHV1AD**	RA-228	**9.40E-01**	**(2.80E+00)**	**U4**	PCI/SA	R	5.87E+00	1.36E+01		84%	
Calc	TF	FILTER	**JKAHW1AD**	RA-228	**4.22E-01**	**(4.89E-01)**	**U4**	PCI/SA	R	9.52E-01	2.22E+00		94%	
Calc	TF	FILTER	**JKAHW1AD**	RA-228	**7.19E-01**	**(5.70E-01)**	**U4**	PCI/SA	R	1.05E+00	2.44E+00		94%	
Calc	TF	FILTER	**JKAHW1AD**	RA-228	**3.69E-01**	**(5.73E-01)**	**U4**	PCI/SA	R	1.15E+00	2.68E+00		94%	
Calc	TF	FILTER	**JKAHW1AD**	RA-228	**5.03E-01**	**(3.15E-01)**	**U4**	PCI/SA	A	6.06E-01	1.41E+00		94%	
Calc	TF	FILTER	**JKAHW1AD**	RA-228	**7.82E+00**	**(3.36E+00)**		PCI/SA	R	5.22E+00	1.22E+01		94%	
Calc	TF	FILTER	**JKENQ1AA**	RA-228	**1.89E-03**	**(9.83E-04)**		PCI/SA	R	1.64E-03	3.81E-03	**B**	93%	
Calc	TF	FILTER	**JKENQ1AA**	RA-228	**3.17E-03**	**(1.21E-03)**		PCI/SA	R	1.80E-03	4.19E-03	**B**	93%	
Calc	TF	FILTER	**JKENQ1AA**	RA-228	**-8.41E-04**	**(7.86E-04)**	**U4**	PCI/SA	R	1.98E-03	4.60E-03	**B**	93%	
Calc	TF	FILTER	**JKENQ1AA**	RA-228	**1.41E-03**	**(5.82E-04)**		PCI/SA	A	1.04E-03	2.43E-03	**B**	93%	
Calc	TF	FILTER	**JKENQ1AA**	RA-228	**4.86E-03**	**(4.68E-03)**	**U4**	PCI/SA	R	8.89E-03	2.07E-02	**B**	93%	
Calc	TF	FILTER	**JKENQ1AC**	RA-228	**2.69E-02**	**(3.61E-03)**		PCI/SA	R	1.71E-03	3.94E-03	**S**	94%	81%
Calc	TF	FILTER	**JKENQ1AC**	RA-228	**2.40E-02**	**(3.40E-03)**		PCI/SA	R	1.88E-03	4.33E-03	**S**	94%	72%
Calc	TF	FILTER	**JKENQ1AC**	RA-228	**2.55E-02**	**(3.64E-03)**		PCI/SA	R	2.06E-03	4.76E-03	**S**	94%	77%
Calc	TF	FILTER	**JKENQ1AC**	RA-228	**2.55E-02**	**(2.05E-03)**		PCI/SA	A	1.09E-03	2.51E-03	**S**	94%	77%
Calc	TF	FILTER	**JKENQ1AC**	RA-228	**1.95E-02**	**(6.45E-03)**		PCI/SA	R	9.11E-03	2.11E-02	**S**	94%	59%

P Anderson
12-13-06

() - (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:55
RADCALC v4.8.26
STL Richland

Batch Nbr: 6332254

Alpha Beta, Ra-228 by GPC , Calculated Results

12/13/2006 8:24:52 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	TF	FILTER	*STLE	Ra228WoBS	JKAGW1AD	PCI/SA		10/24/06 11:55	12/13/06 05:56	12/04/06 13:00	RATA24851	1	1.00 SA	
536403,P-0782					,J6K220385-1 v4.8.26		FILTER			31.7	12/12/06 12:05	RATA24851 Alq	84%	0.248084 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	12/12/06 15:54	RA-228	18	91	GPC2A	1	N	N	4.2610E-01	1.0000E+00	N	77%	N		1.4688E+00	4.5045E-01	1.0136E+00	
			50	400			Y		(1.179E-02)	(0.000E+00)		6%			(0.000E+00)	4.030898		
1	12/12/06 16:49	RA-228	16	91	GPC2A	1	N	N	4.2610E-01	1.0000E+00	N	77%	N		1.6301E+00	4.5045E-01	1.0136E+00	
			50	400			Y		(1.179E-02)	(0.000E+00)		6%			(0.000E+00)	4.030898		
2	12/12/06 17:44	RA-228	9	91	GPC2A	1	N	N	4.2610E-01	1.0000E+00	N	77%	N		1.8090E+00	4.5045E-01	1.0136E+00	
			50	400			Y		(1.179E-02)	(0.000E+00)		6%			(0.000E+00)	4.030898		
3	12/13/06 05:56	RA-228	15	97	GPC3A	1	N	N	4.6832E-01	1.0000E+00	N	77%	N		7.1902E+00	4.5045E-01	1.0136E+00	
			50	400			N		(4.164E-02)	(0.000E+00)		6%			(0.000E+00)	4.030898		

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
	12/13/06	RA-228	R	**1.086898**	U4	1.32500E-01	0.590551	0.590551	1.00 SA	77%		3.017553		
				(0.731033)		(8.8141E-02)	(0.396009)	(0.396009)	(0.014142)			1.28724		
	12/13/06	RA-228	R	**0.84207**	U4	9.25000E-02	0.457527	0.457527	1.00 SA	77%		3.348795		
				(0.764537)		(8.3479E-02)	(0.41472)	(0.41472)	(0.014142)			1.428542		
	12/13/06	RA-228	R	**-0.479881**	U4	-4.75000E-02	-0.260737	-0.260737	1.00 SA	77%		3.716398		
				(0.654033)		(6.4566E-02)	(0.355101)	(0.355101)	(0.014142)			1.585355		
	12/13/06	RA-228	A	**0.483029**	U4	5.91667E-02	0.262447	0.262447	1.00 SA	77%		1.940425		
				(0.414553)		(4.5833E-02)	(0.224824)	(0.224824)	(0.008165)			0.827754		
	12/13/06	RA-228	R	**2.100764**	U4	5.75000E-02	1.141421	1.141421	1.00 SA	77%		13.811522		
				(2.982134)		(8.1279E-02)	(1.619215)	(1.619215)	(0.014142)			5.919176		

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	JKAG11AD	PCI/SA		10/24/06 12:10	12/13/06 05:56	12/04/06 13:00	RATA24852	1	1.00 SA	
536403,P-0783					,J6K220385-2 v4.8.26		FILTER			31.6	12/12/06 12:05	RATA24852 Alq	103%	0.24562 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	12/12/06 15:54	RA-228	19	120	GPC2B	1	N	N	4.4376E-01	1.0000E+00	N	95%	N		1.4688E+00	4.5045E-01	1.0136E+00	
			50	400			Y		(1.047E-02)	(0.000E+00)		8%			(0.000E+00)	4.071329		
1	12/12/06 16:49	RA-228	15	120	GPC2B	1	N	N	4.4376E-01	1.0000E+00	N	95%	N		1.6301E+00	4.5045E-01	1.0136E+00	
			50	400			Y		(1.047E-02)	(0.000E+00)		8%			(0.000E+00)	4.071329		
2	12/12/06 17:44	RA-228	10	120	GPC2B	1	N	N	4.4376E-01	1.0000E+00	N	95%	N		1.8090E+00	4.5045E-01	1.0136E+00	
			50	400			Y		(1.047E-02)	(0.000E+00)		8%			(0.000E+00)	4.071329		

() - (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: 6332254

Alpha Beta, Ra-228 by GPC , Calculated Results

12/13/2006 8:24:52 AM

3	12/13/06 05:56	RA-228	14	114	GPC3B	1	N	N	4.9158E-01	1.0000E+00	N	95%	N	7.1902E+00	4.5045E-01	1.0136E+00	
			50	400			N		(5.491E-02)	(0.000E+00)		8%		(0.000E+00)	4.071329		

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
	12/13/06	RA-228	R	**0.518681**	U4	8.00000E-02	0.27902	0.27902	1.00 SA	95%		2.686686		
				(0.594641)		(9.1378E-02)	(0.319554)	(0.319554)	(0.014142)			1.168333		
	12/13/06	RA-228	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 SA	95%		2.981607		
				(0.591147)		(8.2158E-02)	(0.318003)	(0.318003)	(0.014142)			1.296583		
	12/13/06	RA-228	R	**-0.798505**	U4	-1.00000E-01	-0.429549	-0.429549	1.00 SA	95%		3.308903		
				(0.555897)		(6.8920E-02)	(0.298206)	(0.298206)	(0.014142)			1.438911		
	12/13/06	RA-228	A	**-0.093275**	U4	-6.66667E-03	-0.050176	-0.050176	1.00 SA	95%		1.727662		
				(0.33534)		(4.6963E-02)	(0.180175)	(0.180175)	(0.008165)			0.751292		
	12/13/06	RA-228	R	**-0.143255**	U4	-5.00000E-03	-0.077063	-0.077063	1.00 SA	95%		11.611323		
				(2.276457)		(7.9451E-02)	(1.224595)	(1.224595)	(0.014142)			5.032207		

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	**JKAG41AD**	**PCI/SA**		10/24/06 12:30	12/13/06 05:56	12/04/06 13:00	RATA24853	1	1.00 SA	
536403,P-0784					,J6K220385-3 v4.8.26		FILTER			31.0	12/12/06 12:05	RATA24853 Alq	104%	→ 0.249433 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	12/12/06 15:54	RA-228	36	89	GPC2C	1	N	N	4.3040E-01	1.0000E+00	N	93%	N		1.4688E+00	4.5045E-01	1.0136E+00	
			50	400			Y		(9.361E-03)	(0.000E+00)		7%			(0.000E+00)	4.009095		
1	12/12/06 16:49	RA-228	15	89	GPC2C	1	N	N	4.3040E-01	1.0000E+00	N	93%	N		1.6301E+00	4.5045E-01	1.0136E+00	
			50	400			Y		(9.361E-03)	(0.000E+00)		7%			(0.000E+00)	4.009095		
2	12/12/06 17:44	RA-228	14	89	GPC2C	1	N	N	4.3040E-01	1.0000E+00	N	93%	N		1.8090E+00	4.5045E-01	1.0136E+00	
			50	400			Y		(9.361E-03)	(0.000E+00)		7%			(0.000E+00)	4.009095		
3	12/13/06 05:56	RA-228	15	116	GPC3C	1	N	N	4.7006E-01	1.0000E+00	N	93%	N		7.1902E+00	4.5045E-01	1.0136E+00	
			50	400			N		(4.623E-02)	(0.000E+00)		7%			(0.000E+00)	4.009095		

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
	12/13/06	RA-228	R	**3.329553**		4.97500E-01	1.818919	1.818919	1.00 SA	93%		2.43873		
				(0.880922)		(1.2230E-01)	(0.471871)	(0.471871)	(0.014142)			1.038613		
	12/13/06	RA-228	R	**0.57561**	U4	7.75000E-02	0.314453	0.314453	1.00 SA	93%		2.706433		
				(0.604019)		(8.0971E-02)	(0.329568)	(0.329568)	(0.014142)			1.152623		
	12/13/06	RA-228	R	**0.473945**	U4	5.75000E-02	0.258914	0.258914	1.00 SA	93%		3.003523		
				(0.648383)		(7.8462E-02)	(0.353953)	(0.353953)	(0.014142)			1.279149		
	12/13/06	RA-228	A	**1.459703**		2.10833E-01	0.797428	0.797428	1.00 SA	93%		1.568215		
				(0.416502)		(5.5446E-02)	(0.225231)	(0.225231)	(0.008165)			0.667876		
	12/13/06	RA-228	R	**0.299972**	U4	1.00000E-02	0.163873	0.163873	1.00 SA	93%		12.248845		
				(2.460294)		(8.2006E-02)	(1.34402)	(1.34402)	(0.014142)			5.314655		

() - (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: 6332254

Alpha Beta, Ra-228 by GPC , Calculated Results

12/13/2006 8:24:53 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
4	Calc	TF	FILTER	*STLE	Ra228WoBS	JKAG71AD	PCI/SA		10/24/06 12:35	12/13/06 05:56	12/04/06 13:00	RATA24854	1	1.00 SA	
536403,000547					,J6K220385-4 v4.8.26		FILTER			31.1	12/12/06 12:05	RATA24854 Alq	105% ,	0.248644 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	12/12/06 15:54	RA-228	24	119	GPC2D	1	N	N	4.3783E-01	1.0000E+00	N	95%	N		1.4688E+00	4.5045E-01	1.0136E+00	
			50	400			Y		(1.309E-02)	(0.000E+00)		8%			(0.000E+00)	4.021816		
1	12/12/06 16:49	RA-228	8	119	GPC2D	1	N	N	4.3783E-01	1.0000E+00	N	95%	N		1.6301E+00	4.5045E-01	1.0136E+00	
			50	400			Y		(1.309E-02)	(0.000E+00)		8%			(0.000E+00)	4.021816		
2	12/12/06 17:44	RA-228	9	119	GPC2D	1	N	N	4.3783E-01	1.0000E+00	N	95%	N		1.8090E+00	4.5045E-01	1.0136E+00	
			50	400			Y		(1.309E-02)	(0.000E+00)		8%			(0.000E+00)	4.021816		
3	12/13/06 05:56	RA-228	11	92	GPC3D	1	N	N	4.8173E-01	1.0000E+00	N	95%	N		7.1902E+00	4.5045E-01	1.0136E+00	
			50	400			N		(4.555E-02)	(0.000E+00)		8%			(0.000E+00)	4.021816		

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
	12/13/06	RA-228	R	**1.186403**		1.82500E-01	0.646077	0.646077	1.00 SA	95%		2.68409		
				(0.671716)		(1.0170E-01)	(0.364251)	(0.364251)	(0.014142)			1.166565		
	12/13/06	RA-228	R	**-0.991987**	U4	-1.37500E-01	-0.540204	-0.540204	1.00 SA	95%		2.978727		
				(0.463788)		(6.2799E-02)	(0.250999)	(0.250999)	(0.014142)			1.294621		
	12/13/06	RA-228	R	**-0.940751**	U4	-1.17500E-01	-0.512303	-0.512303	1.00 SA	95%		3.305707		
				(0.535993)		(6.5907E-02)	(0.290668)	(0.290668)	(0.014142)			1.436733		
	12/13/06	RA-228	A	**-0.248778**	U4	-2.41667E-02	-0.135477	-0.135477	1.00 SA	95%		1.725993		
				(0.325507)		(4.5499E-02)	(0.176436)	(0.176436)	(0.008165)			0.750155		
	12/13/06	RA-228	R	**-0.289229**	U4	-1.00000E-02	-0.157505	-0.157505	1.00 SA	95%		10.689282		
				(2.040409)		(7.0534E-02)	(1.111111)	(1.111111)	(0.014142)			4.56354		

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	JKAHM1AD	PCI/SA		10/30/06 11:05	12/13/06 05:57	12/04/06 13:00	RATA24855	1	1.00 SA	
536403,P-0786					,J6K220386-1 v4.8.26		FILTER			31.5	12/12/06 12:05	RATA24855 Alq	98%	0.250378 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	12/12/06 15:49	RA-228	23	96	GPC3A	1	N	N	4.6743E-01	1.0000E+00	N	90%	N		1.4566E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.156E-02)	(0.000E+00)		7%			(0.000E+00)	3.993962		
1	12/12/06 16:40	RA-228	13	96	GPC3A	1	N	N	4.6743E-01	1.0000E+00	N	90%	N		1.6012E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.156E-02)	(0.000E+00)		7%			(0.000E+00)	3.993962		
2	12/12/06 17:30	RA-228	15	96	GPC3A	1	N	N	4.6743E-01	1.0000E+00	N	90%	N		1.7602E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.156E-02)	(0.000E+00)		7%			(0.000E+00)	3.993962		
3	12/13/06 05:57	RA-228	19	101	GPC4A	1	N	N	4.8478E-01	1.0000E+00	N	90%	N		7.1925E+00	4.5045E-01	1.0116E+00	
			50	400			N		(2.056E-02)	(0.000E+00)		7%			(0.000E+00)	3.993962		

() - (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 v4.8.26

STL Richland

Batch Nbr: 6332254

Alpha Beta, Ra-228 by GPC , Calculated Results

12/13/2006 8:24:53 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
	12/13/06	RA-228	R	**1.392516**		2.20000E-01	0.765106	0.765106	1.00 SA	90%		2.382224		
				(0.652382)		(9.8995E-02)	(0.356234)	(0.356234)	(0.014142)			1.020185		
	12/13/06	RA-228	R	**0.139167**	U4	2.00000E-02	0.076464	0.076464	1.00 SA	90%		2.618848		
				(0.530241)		(7.6158E-02)	(0.291309)	(0.291309)	(0.014142)			1.121519		
	12/13/06	RA-228	R	**0.458955**	U4	6.00000E-02	0.252169	0.252169	1.00 SA	90%		2.878885		
				(0.624304)		(8.1240E-02)	(0.342768)	(0.342768)	(0.014142)			1.23288		
	12/13/06	RA-228	A	**0.663546**		1.00000E-01	0.36458	0.36458	1.00 SA	90%		1.516498		
				(0.349048)		(4.9666E-02)	(0.191269)	(0.191269)	(0.008165)			0.649439		
	12/13/06	RA-228	R	**3.842476**	U4	1.27500E-01	2.111215	2.111215	1.00 SA	90%		11.592058		
				(2.763492)		(9.0726E-02)	(1.514408)	(1.514408)	(0.014142)			4.982273		

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	**JKAHR1AD**	**PCI/SA**		10/30/06 11:25	12/13/06 05:57	12/04/06 13:00	RATA24856	1	1.00 SA	
536403,P-0787					,J6K220386-2 v4.8.26		FILTER			31.6	12/12/06 12:05	RATA24856 Alq	95%	0.249433 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	12/12/06 15:49	RA-228	22	102	GPC3B	1	N	N	4.9158E-01	1.0000E+00	N	87%	N		1.4566E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(5.491E-02)	(0.000E+00)		7%			(0.000E+00)	4.009087		
1	12/12/06 16:40	RA-228	17	102	GPC3B	1	N	N	4.9158E-01	1.0000E+00	N	87%	N		1.6012E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(5.491E-02)	(0.000E+00)		7%			(0.000E+00)	4.009087		
2	12/12/06 17:30	RA-228	14	102	GPC3B	1	N	N	4.9158E-01	1.0000E+00	N	87%	N		1.7602E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(5.491E-02)	(0.000E+00)		7%			(0.000E+00)	4.009087		
3	12/13/06 05:57	RA-228	14	100	GPC4B	1	N	N	4.7321E-01	1.0000E+00	N	87%	N		7.1925E+00	4.5045E-01	1.0116E+00	
			50	400			N		(9.029E-03)	(0.000E+00)		7%			(0.000E+00)	4.009087		

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
	12/13/06	RA-228	R	**1.145618**		1.85000E-01	0.627078	0.627078	1.00 SA	87%		2.392027		
				(0.624677)		(9.7147E-02)	(0.340374)	(0.340374)	(0.014142)			1.028807		
	12/13/06	RA-228	R	**0.578648**	U4	8.50000E-02	0.316735	0.316735	1.00 SA	87%		2.629625		
				(0.593217)		(8.6241E-02)	(0.324292)	(0.324292)	(0.014142)			1.130997		
	12/13/06	RA-228	R	**0.18709**	U4	2.50000E-02	0.102407	0.102407	1.00 SA	87%		2.890732		
				(0.591676)		(7.8978E-02)	(0.323822)	(0.323822)	(0.014142)			1.243299		
	12/13/06	RA-228	A	**0.637118**		9.83333E-02	0.34874	0.34874	1.00 SA	87%		1.522739		
				(0.348363)		(5.0676E-02)	(0.190287)	(0.190287)	(0.008165)			0.654928		
	12/13/06	RA-228	R	**0.952976**	U4	3.00000E-02	0.521631	0.521631	1.00 SA	87%		12.166468		
				(2.507997)		(7.8899E-02)	(1.372537)	(1.372537)	(0.014142)			5.225482		

() - (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: 6332254

Alpha Beta, Ra-228 by GPC , Calculated Results

12/13/2006 8:24:53 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
7	Calc	TF	FILTER	*STLE	Ra228WoBS	JKAHT1AD	PCI/SA		10/30/06 11:40	12/13/06 05:57	12/04/06 13:00	RATA24857	1	1.00 SA	
536403,P-0788					,J6K220386-3 v4.8.26		FILTER			31.5	12/12/06 12:05	RATA24857 Alq	94%	0.243822 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	12/12/06 15:49	RA-228	17	104	GPC3C	1	N	N	4.7333E-01	1.0000E+00	N	86%	N		1.4566E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.655E-02)	(0.000E+00)		7%			(0.000E+00)	4.101348		
1	12/12/06 16:40	RA-228	16	104	GPC3C	1	N	N	4.7333E-01	1.0000E+00	N	86%	N		1.6012E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.655E-02)	(0.000E+00)		7%			(0.000E+00)	4.101348		
2	12/12/06 17:30	RA-228	19	104	GPC3C	1	N	N	4.7333E-01	1.0000E+00	N	86%	N		1.7602E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.655E-02)	(0.000E+00)		7%			(0.000E+00)	4.101348		
3	12/13/06 05:57	RA-228	12	109	GPC4C	1	N	N	4.8166E-01	1.0000E+00	N	86%	N		7.1925E+00	4.5045E-01	1.0116E+00	
			50	400			N		(1.241E-02)	(0.000E+00)		7%			(0.000E+00)	4.101348		

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
	12/13/06	RA-228	R	**0.531928**	U4	8.00000E-02	0.284613	0.284613	1.00 SA	86%		2.589933		
				(0.578515)		(8.6313E-02)	(0.309187)	(0.309187)	(0.014142)			1.115438		
	12/13/06	RA-228	R	**0.438573**	U4	6.00000E-02	0.234663	0.234663	1.00 SA	86%		2.847188		
				(0.616675)		(8.3964E-02)	(0.329733)	(0.329733)	(0.014142)			1.226233		
	12/13/06	RA-228	R	**0.964242**	U4	1.20000E-01	0.515927	0.515927	1.00 SA	86%		3.129898		
				(0.741706)		(9.0830E-02)	(0.395951)	(0.395951)	(0.014142)			1.347992		
	12/13/06	RA-228	A	**0.644914**		8.66667E-02	0.345068	0.345068	1.00 SA	86%		1.648724		
				(0.374922)		(5.0277E-02)	(0.200304)	(0.200304)	(0.008165)			0.710076		
	12/13/06	RA-228	R	**-1.048614**	U4	-3.25000E-02	-0.561071	-0.561071	1.00 SA	86%		12.824776		
				(2.391003)		(7.4035E-02)	(1.278997)	(1.278997)	(0.014142)			5.541296		

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	JKAHV1AD	PCI/SA		10/30/06 11:10	12/13/06 05:57	12/04/06 13:00	RATA24858	1	1.00 SA	
536403,P-0789					,J6K220386-4 v4.8.26		FILTER			30.6	12/12/06 12:05	RATA24858 Alq	94%	0.247854 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	12/12/06 15:49	RA-228	22	102	GPC3D	1	N	N	4.7942E-01	1.0000E+00	N	84%	N		1.4566E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.533E-02)	(0.000E+00)		7%			(0.000E+00)	4.034634		
1	12/12/06 16:40	RA-228	25	102	GPC3D	1	N	N	4.7942E-01	1.0000E+00	N	84%	N		1.6012E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.533E-02)	(0.000E+00)		7%			(0.000E+00)	4.034634		
2	12/12/06 17:30	RA-228	16	102	GPC3D	1	N	N	4.7942E-01	1.0000E+00	N	84%	N		1.7602E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.533E-02)	(0.000E+00)		7%			(0.000E+00)	4.034634		
3	12/13/06 05:57	RA-228	15	109	GPC4D	1	N	N	4.6305E-01	1.0000E+00	N	84%	N		7.1925E+00	4.5045E-01	1.0116E+00	
			50	400			N		(2.144E-02)	(0.000E+00)		7%			(0.000E+00)	4.034634		

() - (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: 6332254

Alpha Beta, Ra-228 by GPC , Calculated Results

12/13/2006 8:24:53 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
	12/13/06	RA-228	R	**1.237299**		1.85000E-01	0.672971	0.672971	1.00 SA	84%		2.583456		
				(0.670646)		(9.7147E-02)	(0.363086)	(0.363086)	(0.014142)			1.11114		
	12/13/06	RA-228	R	**1.801344**		2.45000E-01	0.979757	0.979757	1.00 SA	84%		2.840068		
				(0.795981)		(1.0314E-01)	(0.429933)	(0.429933)	(0.014142)			1.221509		
	12/13/06	RA-228	R	**0.525361**	U4	6.50000E-02	0.285746	0.285746	1.00 SA	84%		3.122071		
				(0.6817)		(8.3890E-02)	(0.370481)	(0.370481)	(0.014142)			1.342798		
	12/13/06	RA-228	A	**1.188001**		1.65000E-01	0.646158	0.646158	1.00 SA	84%		1.644601		
				(0.414738)		(5.4886E-02)	(0.224581)	(0.224581)	(0.008165)			0.70734		
	12/13/06	RA-228	R	**0.940328**	U4	2.75000E-02	0.511447	0.511447	1.00 SA	84%		13.591401		
				(2.796737)		(8.1739E-02)	(1.520922)	(1.520922)	(0.014142)			5.872537		

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	**JKAHW1AD**	**PCI/SA**		10/30/06 11:45	12/13/06 06:48	12/04/06 13:00	RATA24859	1	1.00 SA	
536403,000550					,J6K220386-5 v4.8.26		FILTER			30.8	12/12/06 12:05	RATA24859 Alq	105%	0.249552 SA	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/12/06 15:50	RA-228	16	99	GPC4A	1	N	N	4.8463E-01	1.0000E+00	N	94%	N		1.4578E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(2.055E-02)	(0.000E+00)		8%			(0.000E+00)	4.007175		
1	12/12/06 16:40	RA-228	18	99	GPC4A	1	N	N	4.8463E-01	1.0000E+00	N	94%	N		1.6026E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(2.055E-02)	(0.000E+00)		8%			(0.000E+00)	4.007175		
2	12/12/06 17:30	RA-228	15	99	GPC4A	1	N	N	4.8463E-01	1.0000E+00	N	94%	N		1.7617E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(2.055E-02)	(0.000E+00)		8%			(0.000E+00)	4.007175		
3	12/13/06 06:48	RA-228	25	101	GPC4A	1	N	N	4.8463E-01	1.0000E+00	N	94%	N		7.9178E+00	4.5045E-01	1.0116E+00	
			50	400			N		(2.055E-02)	(0.000E+00)		8%			(0.000E+00)	4.007175		

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
	12/13/06	RA-228	R	**0.42175**	U4	7.25000E-02	0.230965	0.230965	1.00 SA	94%		2.218445		
				(0.489342)		(8.3778E-02)	(0.267712)	(0.267712)	(0.014142)			0.95214		
	12/13/06	RA-228	R	**0.719445**	U4	1.12500E-01	0.393993	0.393993	1.00 SA	94%		2.438801		
				(0.570442)		(8.8424E-02)	(0.311722)	(0.311722)	(0.014142)			1.046715		
	12/13/06	RA-228	R	**0.369078**	U4	5.25000E-02	0.20212	0.20212	1.00 SA	94%		2.68096		
				(0.573232)		(8.1356E-02)	(0.313746)	(0.313746)	(0.014142)			1.150648		
	12/13/06	RA-228	A	**0.503425**	U4	7.91667E-02	0.275693	0.275693	1.00 SA	94%		1.412238		
				(0.315076)		(4.8827E-02)	(0.172329)	(0.172329)	(0.008165)			0.606122		
	12/13/06	RA-228	R	**7.819924**		2.47500E-01	4.282462	4.282462	1.00 SA	94%		12.153097		
				(3.358494)		(1.0311E-01)	(1.825717)	(1.825717)	(0.014142)			5.223408		

() - (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:10 RADCALC v4.8.26
STL Richland

Batch Nbr: 6332254

Alpha Beta, Ra-228 by GPC , Calculated Results

12/13/2006 8:24:54 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
10	Calc	TF	FILTER	*STLE	Ra228WoBS	JKENQ1AA	PCI/SA	B	10/30/06 11:05	12/13/06 06:48	12/04/06 13:00	RATA24860	1	1.00 Sa	
0,INTRA-LAB BLANK					,J6K280000-254		FILTER			31.4	12/12/06 12:05	RATA24860 Alq	102%	151.01 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	12/12/06 15:50	RA-228	22	100	GPC4B	1	N	N	4.7305E-01	1.0000E+00	N	93%	N		1.4578E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(9.026E-03)	(0.000E+00)		7%			(0.000E+00)	0.006622		
1	12/12/06 16:40	RA-228	27	100	GPC4B	1	N	N	4.7305E-01	1.0000E+00	N	93%	N		1.6026E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(9.026E-03)	(0.000E+00)		7%			(0.000E+00)	0.006622		
2	12/12/06 17:30	RA-228	9	100	GPC4B	1	N	N	4.7305E-01	1.0000E+00	N	93%	N		1.7617E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(9.026E-03)	(0.000E+00)		7%			(0.000E+00)	0.006622		
3	12/13/06 06:48	RA-228	17	100	GPC4B	1	N	N	4.7305E-01	1.0000E+00	N	93%	N		7.9178E+00	4.5045E-01	1.0116E+00	
			50	400			N		(9.026E-03)	(0.000E+00)		7%			(0.000E+00)	0.006622		

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
	12/13/06	RA-228	R	**0.00189**		1.90000E-01	0.62631	0.62631	1.00 Sa	93%		0.00381		
				(0.000983)		(9.7082E-02)	(0.324139)	(0.324139)	(0.017321)			0.001636		
	12/13/06	RA-228	R	**0.003171**		2.90000E-01	1.050901	1.050901	1.00 Sa	93%		0.004188		
				(0.001209)		(1.0689E-01)	(0.396865)	(0.396865)	(0.017321)			0.001799		
	12/13/06	RA-228	R	**-0.000841**	U4	-7.00000E-02	-0.278853	-0.278853	1.00 Sa	93%		0.004604		
				(0.000786)		(6.5000E-02)	(0.259949)	(0.259949)	(0.017321)			0.001977		
	12/13/06	RA-228	A	**0.001407**		1.36667E-01	0.466119	0.466119	1.00 Sa	93%		0.002425		
				(0.000582)		(5.2784E-02)	(0.191526)	(0.191526)	(0.01)			0.001042		
	12/13/06	RA-228	R	**0.004862**	U4	9.00000E-02	1.611345	1.611345	1.00 Sa	93%		0.020693		
				(0.00468)		(8.6168E-02)	(1.548426)	(1.548426)	(0.017321)			0.008888		

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	JKENQ1AC	PCI/SA	S	10/30/06 11:05	12/13/06 06:48	12/04/06 13:00	RASC4275	1	1.00 SA	
0,INTRA-LAB CHECK					,J6K280000-254		FILTER			30.9	12/12/06 12:05	RASC4275 Alq	105%	150.17 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	12/12/06 15:50	RA-228	152	113	GPC4C	1	N	N	4.8161E-01	1.0000E+00	N	94%	N		1.4578E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.241E-02)	(0.000E+00)		8%			(0.000E+00)	0.006659		
1	12/12/06 16:40	RA-228	126	113	GPC4C	1	N	N	4.8161E-01	1.0000E+00	N	94%	N		1.6026E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.241E-02)	(0.000E+00)		8%			(0.000E+00)	0.006659		
2	12/12/06 17:30	RA-228	122	113	GPC4C	1	N	N	4.8161E-01	1.0000E+00	N	94%	N		1.7617E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.241E-02)	(0.000E+00)		8%			(0.000E+00)	0.006659		
3	12/13/06 06:48	RA-228	32	109	GPC4C	1	N	N	4.8161E-01	1.0000E+00	N	94%	N		7.9178E+00	4.5045E-01	1.0116E+00	
			50	400			N		(1.241E-02)	(0.000E+00)		8%			(0.000E+00)	0.006659		

() - (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: 6332254

Alpha Beta, Ra-228 by GPC , Calculated Results

12/13/2006 8:24:54 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
	12/13/06	RA-228	R	**0.026924**		2.75750E+00	8.872479	8.872479	1.00 SA	94%	81%	0.003942		
				(0.003607)		(2.4800E-01)	(1.09216)	(1.09216)	(0.017321)			0.001707		
	12/13/06	RA-228	R	**0.024017**		2.23750E+00	7.914439	7.914439	1.00 SA	94%	72%	0.004333		
				(0.003403)		(2.2607E-01)	(1.040132)	(1.040132)	(0.017321)			0.001877		
	12/13/06	RA-228	R	**0.025457**		2.15750E+00	8.389227	8.389227	1.00 SA	94%	77%	0.004764		
				(0.003645)		(2.2250E-01)	(1.116085)	(1.116085)	(0.017321)			0.002063		
	12/13/06	RA-228	A	**0.025466**		2.38417E+00	8.392048	8.392048	1.00 SA	94%	77%	0.002509		
				(0.002051)		(1.3421E-01)	(0.625419)	(0.625419)	(0.01)			0.001087		
	12/13/06	RA-228	R	**0.019489**		3.67500E-01	6.42239	6.42239	1.00 SA	94%	59%	0.021079		
				(0.006454)		(1.1611E-01)	(2.099671)	(2.099671)	(0.017321)			0.009108		

() - (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

UST Number: JKAGW1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-A File: [quad2.sample.A]JKAGW1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.A_1;3692

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00018	0050	01181	1810	12-DEC-2006 15:54:12.94
2	00000	00016	0050	01156	1810	12-DEC-2006 16:49:28.78
3	00000	00009	0050	01167	1810	12-DEC-2006 17:44:44.38

Bkg File: [quad2.bkgrnd]2006-12-12_0446.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00091	0400	0.23	09348	1810	12-DEC-2006 04:46:29.01

UST Number: JKAGW1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JKAGW1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.A_1;5608

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01257	1920	13-DEC-2006 05:56:58.45

Bkg File: [quad3.bkgrnd]2006-12-13_0233.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00097	0400	0.24	09949	1920	13-DEC-2006 02:33:31.21

UST Number: JKAG11AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-B File: [quad2.sample.B]JKAG11AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.B_1;3689

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01181	1810	12-DEC-2006 15:54:12.94
2	00000	00015	0050	01156	1810	12-DEC-2006 16:49:28.78
3	00000	00010	0050	01167	1810	12-DEC-2006 17:44:44.38

Bkg File: [quad2.bkgrnd]2006-12-12_0446.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00120	0400	0.30	09348	1810	12-DEC-2006 04:46:29.01

UST Number: JKAG11AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JKAG11AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.B_1;5616

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00014	0050	01257	1920	13-DEC-2006 05:56:58.45

Bkg File: [quad3.bkgrnd]2006-12-13_0233.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00114	0400	0.29	09949	1920	13-DEC-2006 02:33:31.21

UST Number: JKAG41AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-C File: [quad2.sample.C]JKAG41AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.C_1;3690

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00036	0050	01181	1810	12-DEC-2006 15:54:12.94
2	00000	00015	0050	01156	1810	12-DEC-2006 16:49:28.78
3	00000	00014	0050	01167	1810	12-DEC-2006 17:44:44.38

Bkg File: [quad2.bkgrnd]2006-12-12_0446.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00089	0400	0.22	09348	1810	12-DEC-2006 04:46:29.01

UST Number: JKAG41AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JKAG41AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.C_1;5621

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01257	1920	13-DEC-2006 05:56:58.45

Bkg File: [quad3.bkgrnd]2006-12-13_0233.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00116	0400	0.29	09949	1920	13-DEC-2006 02:33:31.21

UST Number: JKAG71AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-D File: [quad2.sample.D]JKAG71AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.D_1;3689

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00024	0050	01181	1810	12-DEC-2006 15:54:12.94
2	00000	00008	0050	01156	1810	12-DEC-2006 16:49:28.78
3	00000	00009	0050	01167	1810	12-DEC-2006 17:44:44.38

Bkg File: [quad2.bkgrnd]2006-12-12_0446.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00119	0400	0.30	09348	1810	12-DEC-2006 04:46:29.01

UST Number: JKAG71AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JKAG71AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.D_1;5606

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00011	0050	01257	1920	13-DEC-2006 05:56:58.45

Bkg File: [quad3.bkgrnd]2006-12-13_0233.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00092	0400	0.23	09949	1920	13-DEC-2006 02:33:31.21

UST Number: JKAHM1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JKAHM1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.A_1;5607

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00023	0050	01255	1920	12-DEC-2006 15:49:45.25
2	00000	00013	0050	01236	1920	12-DEC-2006 16:40:00.04
3	00000	00015	0050	01239	1920	12-DEC-2006 17:30:14.76

Bkg File: [quad3.bkgrnd]2006-12-12_0446.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00096	0400	0.24	09949	1920	12-DEC-2006 04:46:38.54

UST Number: JKAHM1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JKAHM1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.A_1;5625

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01210	1850	13-DEC-2006 05:57:08.63

Bkg File: [quad4.bkgrnd]2006-12-13_0228.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00101	0400	0.25	09662	1850	13-DEC-2006 02:28:35.44

UST Number: JKAHR1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JKAHR1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.B_1;5615

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00022	0050	01255	1920	12-DEC-2006 15:49:45.25
2	00000	00017	0050	01236	1920	12-DEC-2006 16:40:00.04
3	00000	00014	0050	01239	1920	12-DEC-2006 17:30:14.76

Bkg File: [quad3.bkgrnd]2006-12-12_0446.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00102	0400	0.26	09949	1920	12-DEC-2006 04:46:38.54

UST Number: JKAHR1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JKAHR1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.B_1;5624

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00014	0050	01210	1850	13-DEC-2006 05:57:08.63

Bkg File: [quad4.bkgrnd]2006-12-13_0228.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00100	0400	0.25	09662	1850	13-DEC-2006 02:28:35.44

UST Number: JKAHT1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JKAHT1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.C_1;5620

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00017	0050	01255	1920	12-DEC-2006 15:49:45.25
2	00000	00016	0050	01236	1920	12-DEC-2006 16:40:00.04
3	00000	00019	0050	01239	1920	12-DEC-2006 17:30:14.76

Bkg File: [quad3.bkgrnd]2006-12-12_0446.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00104	0400	0.26	09949	1920	12-DEC-2006 04:46:38.54

UST Number: JKAHT1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JKAHT1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.C_1;5627

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00012	0050	01210	1850	13-DEC-2006 05:57:08.63

Bkg File: [quad4.bkgrnd]2006-12-13_0228.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00109	0400	0.27	09662	1850	13-DEC-2006 02:28:35.44

UST Number: JKAHV1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JKAHV1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.D_1;5605

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00022	0050	01255	1920	12-DEC-2006 15:49:45.25
2	00000	00025	0050	01236	1920	12-DEC-2006 16:40:00.04
3	00000	00016	0050	01239	1920	12-DEC-2006 17:30:14.76

Bkg File: [quad3.bkgrnd]2006-12-12_0446.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00102	0400	0.26	09949	1920	12-DEC-2006 04:46:38.54

UST Number: JKAHV1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-D File: [quad4.sample.D]JKAHV1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.D_1;5641

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01210	1850	13-DEC-2006 05:57:08.63

Bkg File: [quad4.bkgrnd]2006-12-13_0228.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00109	0400	0.27	09662	1850	13-DEC-2006 02:28:35.44

UST Number: JKAHW1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JKAHW1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.A_1;5624

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00016	0050	01212	1850	12-DEC-2006 15:50:12.34
2	00000	00018	0050	01205	1850	12-DEC-2006 16:40:27.05
3	00000	00015	0050	01206	1850	12-DEC-2006 17:30:41.71

Bkg File: [quad4.bkgrnd]2006-12-12_0446.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00099	0400	0.25	09666	1850	12-DEC-2006 04:46:54.39

UST Number: JKAHW1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JKAHW1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.A_1;5625

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00025	0050	01209	1850	13-DEC-2006 06:48:07.67

Bkg File: [quad4.bkgrnd]2006-12-13_0228.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00101	0400	0.25	09662	1850	13-DEC-2006 02:28:35.44

UST Number: JKENQ1AA Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JKENQ1AA.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.B_1;5623

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00022	0050	01212	1850	12-DEC-2006 15:50:12.34
2	00000	00027	0050	01205	1850	12-DEC-2006 16:40:27.05
3	00000	00009	0050	01206	1850	12-DEC-2006 17:30:41.71

Bkg File: [quad4.bkgrnd]2006-12-12_0446.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00100	0400	0.25	09666	1850	12-DEC-2006 04:46:54.39

UST Number: JKENQ1AA Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JKENQ1AA.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.B_1;5624

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00017	0050	01209	1850	13-DEC-2006 06:48:07.67

Bkg File: [quad4.bkgrnd]2006-12-13_0228.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00100	0400	0.25	09662	1850	13-DEC-2006 02:28:35.44

UST Number: JKENQ1AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JKENQ1AC.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.C_1;5626

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00152	0050	01212	1850	12-DEC-2006 15:50:12.34
2	00000	00126	0050	01205	1850	12-DEC-2006 16:40:27.05
3	00000	00122	0050	01206	1850	12-DEC-2006 17:30:41.71

Bkg File: [quad4.bkgrnd]2006-12-12_0446.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00113	0400	0.28	09666	1850	12-DEC-2006 04:46:54.39

UST Number: JKENQ1AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JKENQ1AC.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.C_1;5627

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00032	0050	01209	1850	13-DEC-2006 06:48:07.67

Bkg File: [quad4.bkgrnd]2006-12-13_0228.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00109	0400	0.27	09662	1850	13-DEC-2006 02:28:35.44

12/1/2006 12:08:34 PM

Sample Preparation/Analysis

BX Ra-226/228 PrpRC5016, SepRC5005
TF Radium-228 by GPC
01 STANDARD TEST SET

Balance Id:11,11,11,11,11,11,11,11,11,112

Pipet #: _____

AnalyDueDate: 12/18/2006

Sep1 DT/Tm Tech:

Batch: 6332254 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:
RA-228DA	RDL:3.10E+00	pCi/sam	LCL:	UCL:	RPD:					
JKENQ1AA-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:					
JKENQ1AC-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

JKAGW1AD-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JKENQ1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JKENQ1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

RADIUM 226

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

12/14/2006 3:15:50 PM

Lot No., Due Date: J6K220385,J6K220386; 12/19/2006

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6332252; RRA2267 Ra-226 by ASC-7

SDG, Matrix: 33127,33128; 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:

First Level Review Pam Anderson **Date** 12-14-06

STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 6332252

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: Sheryl A. Adam Date: 12-18-06

LS-038B, Rev. 10, 8/02

STL RICHLAND

12/1/2006 12:08:30 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: 12/18/2006

Batch: 6332252 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: 6332254, BXTF

Balance Id:11,1120373922,1120403183
Pipet #:
Sep1 DT/Tm Tech: AL 12/4/06 13:00
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 JKAGW-1-AC J6K220385-1-SAMP	0.833sa	504.03sa	150.11g,in	0.2481g	RATA24851 11/22/06	7.5088 6.302 1.1915		G10	2024 12/7/06 1437 IRH 12/12/06 1011	12/4/06
10/24/2006 11:55		AmtRec: FILTER	#Containers: 1					Scr:	Alpha:	Beta:
2 JKAG1-1-AC J6K220385-2-SAMP	0.833sa	508.95sa	150.07g,in	0.2456g	RATA24852 11/22/06	7.5280 7.277 0.9680		G13	2024 12/7/06 1437 2RC 12/12/06 1002	12/4/06
10/24/2006 12:10		AmtRec: FILTER	#Containers: 1					Scr:	Alpha:	Beta:
3 JKAG4-1-AC J6K220385-3-SAMP	0.833sa	501.07sa	150.04g,in	0.2494g	RATA24853 11/22/06	7.4896 7.758 0.9654		G6	2024 12/7/06 1437 7VA 12/12/06 1006	12/4/06
10/24/2006 12:30		AmtRec: FILTER	#Containers: 1					Scr:	Alpha:	Beta:
4 JKAG7-1-AC J6K220385-4-SAMP	0.833sa	504.67sa	150.64g,in	0.2486g	RATA24854 11/22/06	7.4511 7.810 0.9540		G10	2100 12/7/06 1437 ASA 12/12/06 1012	12/4/06
10/24/2006 12:35		AmtRec: FILTER	#Containers: 1					Scr:	Alpha:	Beta:

200

STL RICHLAND

12/1/2006 12:08:30 PM

Sample Preparation/Analysis

Balance Id:11,11,11,11,11,1120373922,11,

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: 12/18/2006

Sep1 DT/Tm Tech:

Batch: 6332252 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6332254, 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 JKAHM-1-AC J6K220386-1-SAMP	0.833sa	500.21sa	150.35g,in	0.2504g	RATA24855 11/22/06	7.5569 7.393	G13	2100	12/4/06 WD	
						1.0222			12/7/06	1437 R
								BMC	12/12/06	1032 P
10/30/2006 11:05		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:		Beta:
6 JKAHR-1-AC J6K220386-2-SAMP	0.833sa	501.57sa	150.19g,in	0.2494g	RATA24856 11/22/06	7.5088 7.145	G6	2100	12/4/06 WD	
						1.0509			12/7/06	1437 P
								CSD	12/12/06	1026 P
10/30/2006 11:25		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:		Beta:
7 JKAHT-1-AC J6K220386-3-SAMP	0.833sa	513.01sa	150.16g,in	0.2438g	RATA24857 11/22/06	7.4799 7.065	G7	2100	12/4/06 WD	
						1.0587			12/7/06	1437 P
								DSA	12/12/06	1033 P
10/30/2006 11:40		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:		Beta:
8 JKAHV-1-AC J6K220386-4-SAMP	0.833sa	504.43sa	150.09g,in	0.2479g	RATA24858 11/22/06	7.4992 7.041	G12	2100	12/4/06 WD	
						1.0651			12/7/06	1437 P
								FSA	12/12/06	1035 P
10/30/2006 11:10		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:		Beta:

STL RICHLAND

12/1/2006 12:08:31 PM

Sample Preparation/Analysis

Balance Id:11,11,11,11,11,11,11,11,11,112

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: 12/18/2006

Batch: 6332252 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6332254, BXTF

Sep1 DT/Tm Tech:

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 JKAHW-1-AC J6K220386-5-SAMP	0.833sa	500.83sa	150.04g,in	0.2496g	RATA24859 11/22/06	7.4992 7.909	G5	2101	12/4/06 OD	
						0.9482			12/7/06	1450 p
									NMA 12/12/06	1053 p
10/30/2006 11:45		AmtRec: FILTER	#Containers: 1					Scr:	Alpha:	Beta:
10 JKENM-1-AA-B J6K280000-252-BLK	0.833sa		151.01g,in	151.01g	RATA24860 11/22/06	7.5088 7.69	911	2102	12/4/06 OD	
						0.9764			12/7/06	1450 p
									DMA 12/12/06	1053 p
10/24/2006 11:55		AmtRec:	#Containers: 1					Scr:	Alpha:	Beta:
11 JKENM-1-AC-C J6K280000-252-LCS	0.833sa		150.17g,in	150.17g	RASC4275 11/20/06	7.5502 7.908	G12	2136	12/4/06 OD	
						0.9548			12/7/06	1450 p
									QMC 12/12/06	1053 p
10/24/2006 11:55		AmtRec:	#Containers: 1					Scr:	Alpha:	Beta:

Comments:

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

JKAGW1AC-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:

12/14/2006 2:33:32 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/14/2005, 12/19/2006, Batch: '6332252', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6332252						
AC		**CalcC**	**WoodT**	11/30/2006 8:54:13		
SC			wagarr	IsBatched	11/28/2006 10:37:01 AM	ICOC_RADCALC v4.8.24
SC			WoodT	InPrep	11/30/2006 8:54:13 AM	RICH-RC-5016 REVISION 5
SC			HarrisonJ	InPrep	12/1/2006 11:48:22 AM	RICH-RC-5005 Revision 5
SC			LongA	Sep1C	12/4/2006 1:20:51 PM	RICH-RC-5005 REVISION 5
SC			DAWKINSO	InCnt1	12/4/2006 5:22:34 PM	RICH-RD-0007 REVISION 5
SC			DAWKINSO	Cnt1C	12/4/2006 9:12:21 PM	RICH-RD-0007 REVISION 5
SC			PetersonJ	InSep2	12/7/2006 2:51:03 PM	RICH-RC-5005 REVISION 5
SC			PetersonJ	CalcC	12/12/2006 4:02:17 PM	RICH-RC-5005 REVISION 5
AC			**HarrisonJ**	12/1/2006 11:48:22		
AC			**LongA**	12/4/2006 1:20:51 PM		
AC			**DAWKINSO**	12/4/2006 5:22:34 PM		
AC			**DAWKINSO**	12/4/2006 9:12:21 PM		
AC			**PetersonJ**	12/7/2006 2:51:03 PM		
AC			**PetersonJ**	12/12/2006 4:02:17		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 7

ICOCFractions v4.8.26

12/14/2006 2:33:31 PM

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	Mda	Sample Date / Units	Expected	Yield	Volumes	
33127	**9JKAG110**			**J6K2203852**	P-0783	FILTER	11/21/2006		10/24/2006 12:10:00 PM				
RA-226	BXTE	0		12/12/2006 1:02:00 PM	**1.081E-01**	1.587E-01	1.591E-01	5.915E-01	PCI/SA		1.033	1.0E+0	2.456E-1
RA-228	BXTF	0		12/13/2006 5:56:58	**-9.3275E-02**	3.353E-01	3.353E-01	1.728E+00	PCI/SA		0.949	1.0E+0	2.456E-1
33127	**9JKAG410**			**J6K2203853**	P-0784	FILTER	11/21/2006		10/24/2006 12:30:00 PM				
RA-226	BXTE	0		12/12/2006 1:06:00 PM	**2.1612E-01**	1.589E-01	1.606E-01	5.518E-01	PCI/SA		1.036	1.0E+0	2.494E-1
RA-228	BXTF	0		12/13/2006 5:56:58	**1.4597E+00**	3.839E-01	4.165E-01	1.568E+00	PCI/SA		0.933	1.0E+0	2.494E-1
33127	**9JKAG710**			**J6K2203854**	000547	FILTER	11/21/2006		10/24/2006 12:35:00 PM				
RA-226	BXTE	0		12/12/2006 1:12:00 PM	**1.1649E-01**	1.078E-01	1.085E-01	3.898E-01	PCI/SA		1.048	1.0E+0	2.486E-1
RA-228	BXTF	0		12/13/2006 5:56:58	**-2.4878E-01**	3.255E-01	3.255E-01	1.726E+00	PCI/SA		0.948	1.0E+0	2.486E-1
33127	**9JKAGW10**			**J6K2203851**	P-0782	FILTER	11/21/2006		10/24/2006 11:55:00 AM				
RA-226	BXTE	0		12/12/2006 1:11:00 PM	**6.2171E-01**	2.7E-01	2.774E-01	8.795E-01	PCI/SA		0.839	1.0E+0	2.481E-1
RA-228	BXTF	0		12/13/2006 5:56:58	**4.8303E-01**	3.742E-01	4.146E-01	1.94E+00	PCI/SA		0.773	1.0E+0	2.481E-1
33128	**9JKAHM10**			**J6K2203861**	P-0786	FILTER	11/21/2006		10/30/2006 11:05:00 AM				
RA-226	BXTE	0		12/12/2006 1:32:00 PM	**2.6637E-01**	1.132E-01	1.168E-01	3.305E-01	PCI/SA		0.978	1.0E+0	2.504E-1
RA-228	BXTF	0		12/13/2006 5:57:08	**6.6355E-01**	3.296E-01	3.49E-01	1.516E+00	PCI/SA		0.896	1.0E+0	2.504E-1
33128	**9JKAHR10**			**J6K2203862**	P-0787	FILTER	11/21/2006		10/30/2006 11:25:00 AM				
RA-226	BXTE	0		12/12/2006 1:26:00 PM	**4.8919E-01**	1.674E-01	1.746E-01	4.325E-01	PCI/SA		0.952	1.0E+0	2.494E-1
RA-228	BXTF	0		12/13/2006 5:57:08	**6.3712E-01**	3.283E-01	3.484E-01	1.523E+00	PCI/SA		0.874	1.0E+0	2.494E-1
33128	**9JKAHT10**			**J6K2203863**	P-0788	FILTER	11/21/2006		10/30/2006 11:40:00 AM				
RA-226	BXTE	0		12/12/2006 1:33:00 PM	**8.4953E-01**	2.515E-01	2.648E-01	7.072E-01	PCI/SA		0.945	1.0E+0	2.438E-1
RA-228	BXTF	0		12/13/2006 5:57:08	**6.4491E-01**	3.741E-01	3.749E-01	1.649E+00	PCI/SA		0.865	1.0E+0	2.438E-1
33128	**9JKAHV10**			**J6K2203864**	P-0789	FILTER	11/21/2006		10/30/2006 11:10:00 AM				
RA-226	BXTE	0		12/12/2006 1:35:00 PM	**7.035E-02**	1.738E-01	1.739E-01	6.81E-01	PCI/SA		0.939	1.0E+0	2.479E-1
RA-228	BXTF	0		12/13/2006 5:57:08	**1.188E+00**	3.952E-01	4.147E-01	1.645E+00	PCI/SA		0.835	1.0E+0	2.479E-1
33128	**9JKAHW10**			**J6K2203865**	000550	FILTER	11/21/2006		10/30/2006 11:45:00 AM				
RA-226	BXTE	0		12/12/2006 1:53:00 PM	**2.0095E-01**	1.255E-01	1.274E-01	4.229E-01	PCI/SA		1.055	1.0E+0	2.496E-1
RA-228	BXTF	0		12/13/2006 6:48:07	**5.0342E-01**	3.105E-01	3.151E-01	1.412E+00	PCI/SA		0.944	1.0E+0	2.496E-1
33127	**JKENM1AB**			**J6K280000252**	INTRA-LAB BLANK	FILTER	11/21/2006		10/24/2006 11:55:00 AM				
RA-226	BXTE	0	B	12/12/2006 1:53:01 PM	**3.0085E-02**	2.879E-02	2.895E-02	1.04E-01	PCI/SA		1.053	1.0E+0	1.0E+0
33127	**JKENM1CS**			**J6K280000252**	INTRA-LAB CHECK	FILTER	11/21/2006		10/24/2006 11:55:00 AM				
RA-226	BXTE	0	S	12/12/2006 1:53:01 PM	**1.3992E+00**	9.498E-02	1.799E-01	6.356E-02	PCI/SA	1.3726E+00	1.047	1.0E+0	1.0E+0

6332252, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 9,
**Results Inserted | ReTestInserted | Updated | NotInserted => 11 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 6332252

Alpha Beta, Ra-226 by ASC-7 , Results

12/12/2006 3:41:02 PM

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	**JKAGW1AC**	RA-226	**6.22E-01**	**(2.77E-01)**		PCI/SA	R	3.98E-01	8.80E-01		84%	
Calc	TE	FILTER	**JKAG11AC**	RA-226	**1.08E-01**	**(1.59E-01)**	**U4**	PCI/SA	R	2.54E-01	5.91E-01		103%	
Calc	TE	FILTER	**JKAG41AC**	RA-226	**2.16E-01**	**(1.61E-01)**	**U4**	PCI/SA	R	2.37E-01	5.52E-01		104%	
Calc	TE	FILTER	**JKAG71AC**	RA-226	**1.16E-01**	**(1.08E-01)**	**U4**	PCI/SA	R	1.57E-01	3.90E-01		105%	
Calc	TE	FILTER	**JKAHM1AC**	RA-226	**2.66E-01**	**(1.17E-01)**		PCI/SA	R	1.29E-01	3.31E-01		98%	
Calc	TE	FILTER	**JKAHR1AC**	RA-226	**4.89E-01**	**(1.75E-01)**		PCI/SA	R	1.64E-01	4.33E-01		95%	
Calc	TE	FILTER	**JKAHT1AC**	RA-226	**8.50E-01**	**(2.65E-01)**		PCI/SA	R	3.02E-01	7.07E-01		94%	
Calc	TE	FILTER	**JKAHV1AC**	RA-226	**7.04E-02**	**(1.74E-01)**	**U4**	PCI/SA	R	2.83E-01	6.81E-01		94%	
Calc	TE	FILTER	**JKAHW1AC**	RA-226	**2.01E-01**	**(1.27E-01)**	**U4**	PCI/SA	R	1.76E-01	4.23E-01		105%	
Calc	TE	FILTER	**JKENM1AA**	RA-226	**3.01E-02**	**(2.90E-02)**	**U4**	PCI/SA	R	4.33E-02	1.04E-01	**B**	102%	
Calc	TE	FILTER	**JKENM1AC**	RA-226	**1.40E+00**	**(1.80E-01)**		PCI/SA	R	2.32E-02	6.36E-02	**S**	105%	102%

P Anderson
12-13-06

() - (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:11
RADCALC v4.8.26
STL Richland

Batch Nbr: 6332252

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

Detailed Report

12/12/2006 3:41:03 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
1	Calc	TE	FILTER	*STLE	Ra226WoBS	JKAGW1AC	PCI/SA		10/24/06 11:55	12/12/06 13:11	12/07/06 14:37	RATA24851	1	1.00 Sa	
CID:P-0782LOT:J6K2203851 v4.8.26							FILTER				12/12/06 10:11	RATA24851 Alq	84%	0.248084 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	12/12/06 13:11	RA-226	51	37	ASC1RH	ASC		N	2.4697E+00	1.0000E+00	N	84%	N		1.7595E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(9.113E-02)	(0.000E+00)		7%			(0.000E+00)	4.030898		

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
	12/12/06	RA-226	R	**0.621696**		4.03333E-01	0.342379	0.342379	1.00 Sa	84%		0.879533		
				(0.277364)		(1.7515E-01)	(0.15171)	(0.15171)	(0.014142)			0.398231		

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	JKAG11AC	PCI/SA		10/24/06 12:10	12/12/06 13:02	12/07/06 14:37	RATA24852	1	1.00 Sa	
CID:P-0783LOT:J6K2203852 v4.8.26							FILTER				12/12/06 10:02	RATA24852 Alq	103%	0.24562 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	12/12/06 13:02	RA-226	16	15	ASC2RC	ASC		N	2.0913E+00	1.0000E+00	N	103%	N		1.7609E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(6.818E-02)	(0.000E+00)		8%			(0.000E+00)	4.071329		

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
	12/12/06	RA-226	R	**0.108101**	**U4**	7.00000E-02	0.058942	0.058942	1.00 Sa	103%		0.591474		
				(0.159119)		(1.0279E-01)	(0.086705)	(0.086705)	(0.014142)			0.254037		

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	JKAG41AC	PCI/SA		10/24/06 12:30	12/12/06 13:06	12/07/06 14:37	RATA24853	1	1.00 Sa	
CID:P-0784LOT:J6K2203853 v4.8.26							FILTER				12/12/06 10:06	RATA24853 Alq	104%	0.249433 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	12/12/06 13:06	RA-226	20	15	ASC7UA	ASC		N	2.2064E+00	1.0000E+00	N	104%	N		1.7603E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(1.072E-01)	(0.000E+00)		8%			(0.000E+00)	4.009095		

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
	12/12/06	RA-226	R	**0.216124**	**U4**	1.50000E-01	0.119671	0.119671	1.00 Sa	104%		0.551843		
				(0.160602)		(1.1030E-01)	(0.08871)	(0.08871)	(0.014142)			0.237016		

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	JKAG71AC	PCI/SA		10/24/06 12:35	12/12/06 13:12	12/07/06 14:37	RATA24854	1	1.00 Sa	
CID:000547LOT:J6K2203854 v4.8.26							FILTER				12/12/06 10:12	RATA24854 Alq	105%	0.248644 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	12/12/06 13:12	RA-226	10	7	ASCASA	ASC		N	2.2802E+00	1.0000E+00	N	105%	N		1.7593E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(1.047E-01)	(0.000E+00)		8%			(0.000E+00)	4.021816		

() - (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: 6332252

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

12/12/2006 3:41:03 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
	12/12/06	RA-226	R	**0.116491**	**U4**	8.33333E-02	0.064298	0.064298	1.00 Sa	105%		0.389754		
				(0.108481)		(7.7100E-02)	(0.059784)	(0.059784)	(0.014142)			0.157087		

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	**JKAHM1AC**	**PCI/SA**		10/30/06 11:05	12/12/06 13:32	12/07/06 14:37	RATA24855	1	1.00 Sa	
CID:P-0786LOT:J6K2203861 v4.8.26							FILTER				12/12/06 10:32	RATA24855 Alq	98%	0.250378 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	12/12/06 13:32	RA-226	14	5	ASCBMC	ASC		N	2.3847E+00	1.0000E+00	N	98%	N		1.7562E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.207E-01)	(0.000E+00)		8%			(0.000E+00)	3.993962		

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
	12/12/06	RA-226	R	**0.266362**		1.96667E-01	0.148048	0.148048	1.00 Sa	98%		0.330517		
				(0.116822)		(8.3600E-02)	(0.064474)	(0.064474)	(0.014142)			0.128631		

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	**JKAHR1AC**	**PCI/SA**		10/30/06 11:25	12/12/06 13:26	12/07/06 14:37	RATA24856	1	1.00 Sa	
CID:P-0787LOT:J6K2203862 v4.8.26							FILTER				12/12/06 10:26	RATA24856 Alq	95%	0.249433 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	12/12/06 13:26	RA-226	16	4	ASCCSD	ASC		N	1.7270E+00	1.0000E+00	N	95%	N		1.7571E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(5.958E-02)	(0.000E+00)		8%			(0.000E+00)	4.009087		

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
	12/12/06	RA-226	R	**0.489198**		2.53333E-01	0.270878	0.270878	1.00 Sa	95%		0.432542		
				(0.17456)		(8.6667E-02)	(0.095626)	(0.095626)	(0.014142)			0.164037		

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	**JKAHT1AC**	**PCI/SA**		10/30/06 11:40	12/12/06 13:33	12/07/06 14:37	RATA24857	1	1.00 Sa	
CID:P-0788LOT:J6K2203863 v4.8.26							FILTER				12/12/06 10:33	RATA24857 Alq	94%	0.243822 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	12/12/06 13:33	RA-226	34	14	ASCDSA	ASC		N	1.8059E+00	1.0000E+00	N	94%	N		1.7560E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(3.449E-02)	(0.000E+00)		8%			(0.000E+00)	4.101348		

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
	12/12/06	RA-226	R	**0.849527**		4.46667E-01	0.459816	0.459816	1.00 Sa	94%		0.707241		
				(0.264752)		(1.3225E-01)	(0.141294)	(0.141294)	(0.014142)			0.302258		

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	**JKAHV1AC**	**PCI/SA**		10/30/06 11:10	12/12/06 13:35	12/07/06 14:37	RATA24858	1	1.00 Sa	
CID:P-0789LOT:J6K2203864 v4.8.26							FILTER				12/12/06 10:35	RATA24858 Alq	94%	0.247854 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: 6332252

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

12/12/2006 3:41:03 PM

1	12/12/06 13:35	RA-226	10	10	ASCFSA	ASC		N	1.6102E+00	1.0000E+00	N	94%	N		1.7557E+00	4.5045E-01	1.0000E+00
			50	60			Y		(2.979E-02)	(0.000E+00)		8%			(0.000E+00)	4.034634	

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
	12/12/06	RA-226	R	**0.070356**	**U4**	3.33333E-02	0.038711	0.038711	1.00 Sa	94%		0.681053		
				(0.173902)		(8.2327E-02)	(0.095662)	(0.095662)	(0.014142)			0.283495		

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	**JKAHW1AC**	**PCI/SA**		10/30/06 11:45	12/12/06 13:53	12/07/06 14:50	RATA24859	1	1.00 Sa	
CID:000550LOT:J6K2203865 v4.8.26							FILTER				12/12/06 10:53	RATA24859 Alq	105%	0.249552 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	12/12/06 13:53	RA-226	16	10	ASCNMA	ASC		N	2.4172E+00	1.0000E+00	N	105%	N		1.7549E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.136E-01)	(0.000E+00)		8%			(0.000E+00)	4.007175		

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
	12/12/06	RA-226	R	**0.200948**	**U4**	1.53333E-01	0.111321	0.111321	1.00 Sa	105%		0.422866		
				(0.127355)		(9.5801E-02)	(0.070315)	(0.070315)	(0.014142)			0.176022		

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	**JKENM1AA**	**PCI/SA**	**B**	10/24/06 11:55	12/12/06 13:53	12/07/06 14:50	RATA24860	1	1.00 Sa	
CID:INTRA-LAB BLANKLOT:J6K280000252 v4.8.26							FILTER				12/12/06 10:53	RATA24860 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
1	12/12/06 13:53	RA-226	13	10	ASCPMA	ASC		N	2.4525E+00	1.0000E+00	N	102%	N		1.7549E+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
	12/12/06	RA-226	R	**0.030085**	**U4**	9.33333E-02	0.066785	0.066785	1.00 Sa	102%		0.104008		
				(0.028952)		(8.9318E-02)	(0.064174)	(0.064174)	(0.017321)			0.043294		

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	**JKENM1AC**	**PCI/SA**	**S**	10/24/06 11:55	12/12/06 13:53	12/07/06 14:50	RASC4275	1	1.00 Sa	
CID:INTRA-LAB CHECKLOT:J6K280000252 v4.8.26							FILTER				12/12/06 10:53	RASC4275 Alq	105%	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	12/12/06 13:53	RA-226	224	3	ASCQMC	ASC		N	2.5030E+00	1.0000E+00	N	105%	N		1.7549E+00	4.5045E-01	1.0001E+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
	12/12/06	RA-226	R	**1.399164**		4.43000E+00	3.105984	3.105984	1.00 Sa	105%	102%	0.063561		
				(0.179905)		(3.0072E-01)	(0.363983)	(0.363983)	(0.017321)			0.023235		

() - (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

12/1/2006 12:08:32 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:11,11,11,11,11,11,11,11,11,112

Pipet #: _____

AnalyDueDate: 12/18/2006

Sep1 DT/Tm Tech:

Batch: 6332252 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:

```
JKENM1AA-BLK:
  Ba-133      RDL:            pCi/sam   LCL:20      UCL:115     RPD:20      Ra-226      RDL:1.00E+00    pCi/sam   LCL:        UCL:        RPD:

JKENM1AC-LCS:
  Ba-133      RDL:            pCi/sam   LCL:20      UCL:115     RPD:20      Ra-226      RDL:1           pCi/sam   LCL:70      UCL:130     RPD:20

JKAGW1AC-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
JKENM1AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
JKENM1AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

Approved By _____ Date: _____

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAGW1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 1.1915
Technician: JP

Analysis Size: 0.2481 Analysis Unit: G

Report Date: 12-DEC-2006 14:01:00.57
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:11:00.00

Detector ID: 1 Cell ID: 1RH

Bkg Date: 12-DEC-2006 08:30:39.73
Bkg Counts: 000037 Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:11:00.26
Counts: 000051 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAG11AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 0.9680
Technician: JP

Analysis Size: .2456 Analysis Unit: G

Report Date: 12-DEC-2006 13:52:00.61
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:02:00.00

Detector ID: 2 Cell ID: 2RC

Bkg Date: 12-DEC-2006 08:37:55.75
Bkg Counts: 000015 Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:02:00.29
Counts: 000016 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAG41AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 0.9654
Technician: JP

Analysis Size: 0.2494 Analysis Unit: G

Report Date: 12-DEC-2006 13:56:00.59
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:06:00.00

Detector ID: 7 Cell ID: 7UA

Bkg Date: 12-DEC-2006 08:31:16.31
Bkg Counts: 000015 Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:06:00.27
Counts: 000020 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAG71AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 0.9540
Technician: JP

Analysis Size: 0.2486 Analysis Unit: G

Report Date: 12-DEC-2006 14:02:00.59
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:12:00.00

Detector ID: 10 Cell ID: ASA

Bkg Date: 12-DEC-2006 08:31:40.79
Bkg Counts: 000007 Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:12:00.27
Counts: 000010 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAHM1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 1.0222
Technician: JP

Analysis Size: 0.2504 Analysis Unit: G

Report Date: 12-DEC-2006 14:22:00.59
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:32:00.00

Detector ID: 11 Cell ID: BMC

Bkg Date: 12-DEC-2006 08:31:50.50
Bkg Counts: 000005 Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:32:00.27
Counts: 000014 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAHR1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 1.0509
Technician: JP

Analysis Size: 0.2494 Analysis Unit: G

Report Date: 12-DEC-2006 14:16:00.63
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:26:00.00

Detector ID: 12 Cell ID: CSD

Bkg Date: 12-DEC-2006 08:43:53.32
Bkg Counts: 000004 Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:26:00.25
Counts: 000016 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAHT1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 1.0587
Technician: JP

Analysis Size: 0.2438 Analysis Unit: G

Report Date: 12-DEC-2006 14:23:00.62
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:33:00.00

Detector ID: 13 Cell ID: DSA

Bkg Date: 12-DEC-2006 08:32:00.97
Bkg Counts: 000014 Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:33:00.27
Counts: 000034 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAHV1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 1.0651
Technician: JP

Analysis Size: 0.2479 Analysis Unit: G

Report Date: 12-DEC-2006 14:25:00.58
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:35:00.00

Detector ID: 15 Cell ID: FSA

Bkg Date: 12-DEC-2006 08:32:12.48
Bkg Counts: 000010 Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:35:00.26
Counts: 000010 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAHW1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 0.9482
Technician: JP

Analysis Size: 0.2496 Analysis Unit: G

Report Date: 12-DEC-2006 14:43:01.03
First Separation Date: 7-DEC-2006 14:50:00.00
Second Separation Date: 12-DEC-2006 10:53:00.00

Detector ID: 22 Cell ID: NMA

Bkg Date: 12-DEC-2006 08:44:28.91
Bkg Counts: 000010 Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:53:00.50
Counts: 000016 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKENM1AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 0.9764
Technician: JP

Analysis Size: 1.0 Analysis Unit: G

Report Date: 12-DEC-2006 14:43:01.27
First Separation Date: 7-DEC-2006 14:50:00.00
Second Separation Date: 12-DEC-2006 10:53:00.00

Detector ID: 23 Cell ID: PMA

Bkg Date: 12-DEC-2006 08:32:41.25
Bkg Counts: 000010 Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:53:00.55
Counts: 000013 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKENM1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 0.9548
Technician: JP

Analysis Size: 1.0 Analysis Unit: G

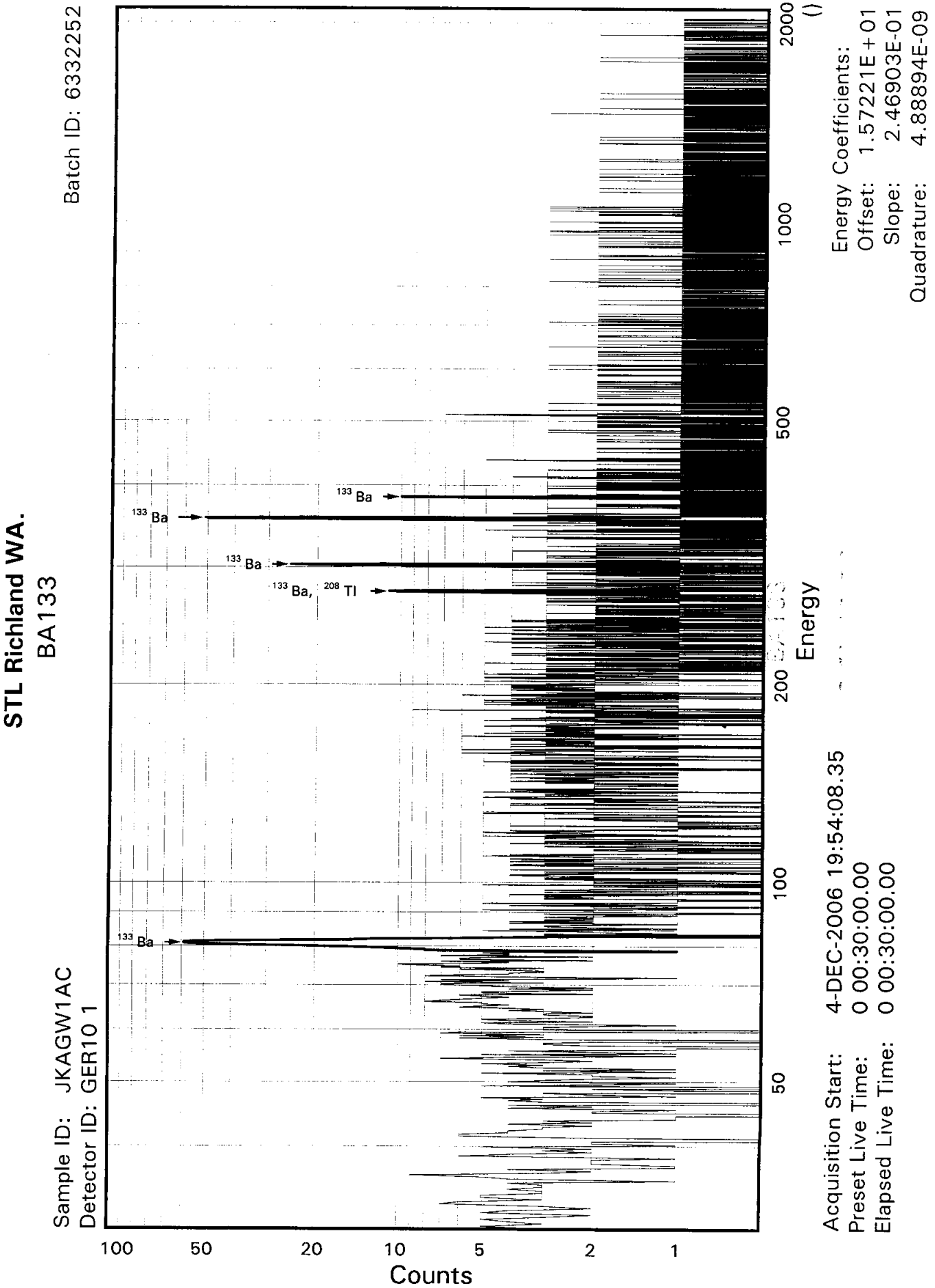
Report Date: 12-DEC-2006 14:43:01.32
First Separation Date: 7-DEC-2006 14:50:00.00
Second Separation Date: 12-DEC-2006 10:53:00.00

Detector ID: 24 Cell ID: QMC

Bkg Date: 12-DEC-2006 08:32:52.19
Bkg Counts: 000003 Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:53:00.61
Counts: 000224 Count Duration: 000050.0

End of Report


STL Richland WA.
BA133
Batch ID: 633225 2
Sample ID: JKAGW1AC
Detector ID: GER10 1
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: 4-DEC-2006 19:54:08.35
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00
Energy Coefficients:
Offset: 1.57221E+01
Slope: 2.46903E-01
Quadrature: 4.88894E-09

SAMPLE IDENTIFICATION: JKAGW1AC

CONFIGURATION ID: GER10:JKAGW1AC_041261954
TITLE : BA133
SAMPLE ID : JKAGW1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 19:54:08
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:31:59.14
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: 1.5722E+01 keV
ENERGY SLOPE: 2.4690E-01 keV/C
ENERGY Q COEFF: 4.8889E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.2658E-01 keV
FWHM SLOPE: 2.7738E-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 4-DEC-2006 20:24:25

Configuration : $DISK1:[GER10.SAMPLE]JKAGW1AC_041261954.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:08
Sample ID : JKAGW1AC 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 : 18.19 End energy : 2038.68
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.96	362	54	1.36	264.22	254	20	2.01E-01	7.3	
2	0	276.07	95	0	1.78	1054.42	1042	21	5.28E-02	10.3	
3	0	302.90	124	25	1.11	1163.10	1155	17	6.90E-02	12.9	
4	0	356.01	302	44	1.51	1378.17	1365	25	1.68E-01	8.2	
5	0	383.94	42	9	0.81	1491.29	1481	18	2.33E-02	22.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 4-DEC-2006 20:24:25

Configuration	: $DISK1:[GER10.SAMPLE]JKAGW1AC_041261954.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: BA133		
Sample date	: 22-NOV-2006 12:00:00	Acquisition date	: 4-DEC-2006 19:54:08
Sample ID	: JKAGW1AC	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	362	33.00	2.399E+00	1.522E+03	1.526E+03	9.08
	276.40	95	6.90	2.578E+00	1.780E+03	1.784E+03	11.59
	302.84	124	17.80	2.582E+00	9.014E+02	9.034E+02	13.99
	356.00	302	62.05*	2.584E+00	6.288E+02	6.302E+02	9.83
	383.85	42	8.70	2.584E+00	6.229E+02	6.243E+02	23.40

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAGW1AC

Acquisition date : 4-DEC-2006 19:54:08

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	1.806E+03	11.59	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 4-DEC-2006 20:24:27

Configuration	: $DISK1:[GER10.SAMPLE]JKAGW1AC_041261954.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	: 22-NOV-2006 12:00:00	Acquisition date	: 4-DEC-2006 19:54:08
Sample ID	: JKAGW1AC	Sample quantity	: 1.0000 SAMPL
Sample type	:	Sample geometry	: BA133T15
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.23 0.0%
Peak Width (FWHM)	: 3.00	Confidence level	: 5.00 %
Energy tolerance	: 1.50	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 5.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 80.00	WTM error limit	: 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.302E+02	6.197E+01	5.059E+01	1.012E+00	12.457

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-5.078E+01		7.433E+01	2.641E+02	5.298E+00	-0.192
NA-22	2.875E+00		3.853E+00	1.803E+01	3.811E-01	0.159
K-40	-8.281E+01		4.441E+01	1.823E+02	3.901E+00	-0.454
SC-46	1.384E+00		3.995E+00	1.793E+01	3.749E-01	0.077
CR-51	8.116E+01		1.025E+02	4.102E+02	8.206E+00	0.198
MN-54	3.806E+00		4.595E+00	2.039E+01	4.180E-01	0.187
CO-57	1.593E+02		1.071E+02	4.198E+02	8.662E+00	0.379
CO-58	-7.290E+00		5.681E+00	1.886E+01	3.860E-01	-0.386
FE-59	-6.058E+00		8.274E+00	3.106E+01	6.485E-01	-0.195
CO-60	2.799E+00		3.350E+00	1.650E+01	3.501E-01	0.170
ZN-65	3.974E+00		7.616E+00	3.462E+01	7.237E-01	0.115
SE-75	-9.501E+00		1.407E+01	4.922E+01	9.873E-01	-0.193
SR-85	-4.125E+00		1.171E+01	4.115E+01	8.268E-01	-0.100
Y-88	-3.011E+00		3.749E+00	1.430E+01	3.133E-01	-0.211
NB-94	2.393E-01		4.117E+00	1.736E+01	3.569E-01	0.014
NB-95	5.761E+00		5.247E+00	2.451E+01	5.001E-01	0.235
TC-95M	9.041E+00		1.929E+01	7.119E+01	1.439E+00	0.127
ZR-95	-1.710E+01		1.111E+01	3.561E+01	7.260E-01	-0.480
ZRNB-95	1.068E+01		9.450E+00	4.420E+01	9.018E-01	0.242
MO-99	-3.800E+02		2.649E+02	8.890E+02	1.831E+01	-0.427
RH-101	3.908E+01		1.581E+01	6.330E+01	1.281E+00	0.617
RH-102M	5.598E+00		5.958E+00	2.518E+01	5.050E-01	0.222
RU-103	-5.648E+00		8.572E+00	3.065E+01	6.154E-01	-0.184
RU-106DA	2.277E+01		4.980E+01	2.110E+02	4.265E+00	0.108
AG-108M	-1.503E+01		8.488E+00	2.692E+01	5.391E-01	-0.558
AG-110M	-1.587E+01		6.229E+00	1.508E+01	3.101E-01	-1.052
SN-113DA	-2.736E+01		1.038E+01	2.839E+01	5.680E-01	-0.964

Sample ID : JKAGW1AC Acquisition date : 4-DEC-2006 19:54:08

---- Non-Identified Nuclides ----

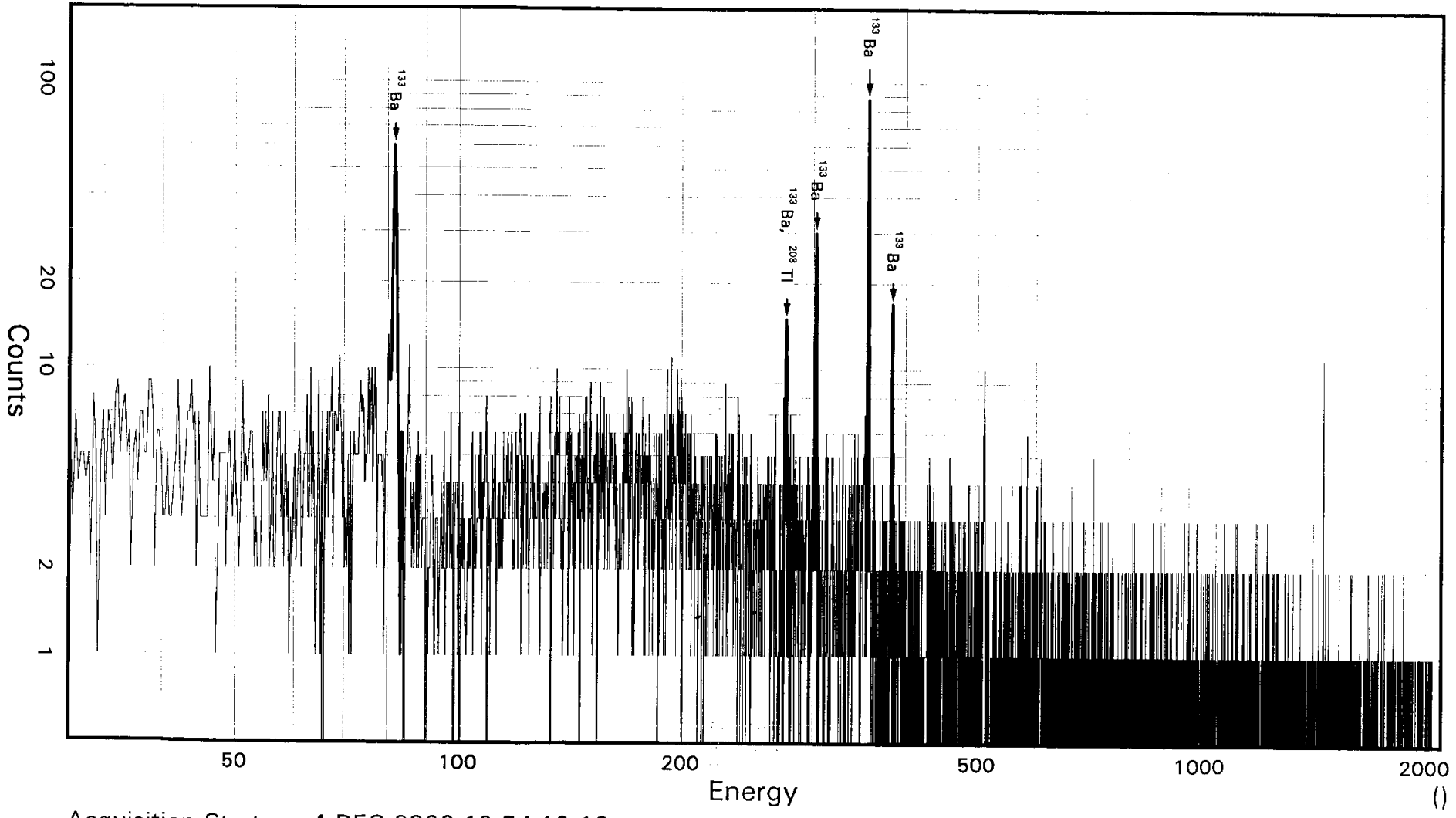
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-7.154E+00		8.147E+00	2.879E+01	5.811E-01	-0.249
SB-125	-1.839E+01		1.901E+01	6.663E+01	1.334E+00	-0.276
SN-126DA	-9.724E+00		4.655E+00	1.324E+01	2.683E-01	-0.735
I-131	2.717E+01		2.411E+01	9.995E+01	1.999E+00	0.272
CS-134	-3.303E+00		3.218E+00	1.148E+01	2.348E-01	-0.288
CS-137DA	9.238E+00		5.343E+00	2.559E+01	5.186E-01	0.361
LA-138	-7.436E+00		5.250E+00	1.698E+01	3.627E-01	-0.438
CE-139	2.049E+00		1.522E+01	5.545E+01	1.131E+00	0.037
BA-140	3.294E+00		3.703E+01	1.520E+02	3.057E+00	0.022
BALA-140	1.690E+01		1.284E+01	6.832E+01	1.475E+00	0.247
LA-140	7.130E+02		5.415E+02	2.882E+03	6.221E+01	0.247
CE-141	-4.567E+00		2.980E+01	1.078E+02	2.216E+00	-0.042
CE-144	1.062E+02		1.002E+02	3.883E+02	8.023E+00	0.273
CEPR-144	2.103E+02		2.002E+02	7.757E+02	1.603E+01	0.271
PM-144	2.864E+00		5.346E+00	2.242E+01	4.531E-01	0.128
PM-146	-6.262E+00		8.850E+00	3.182E+01	6.377E-01	-0.197
EU-152	-4.083E+01		3.222E+01	1.091E+02	2.182E+00	-0.374
EU-154	8.042E+00		1.078E+01	5.044E+01	1.066E+00	0.159
EU-155	-7.798E+01		5.357E+01	1.739E+02	3.658E+00	-0.448
HF-181	-4.663E+00		9.153E+00	3.329E+01	6.678E-01	-0.140
BI-207	1.308E+00		5.655E+00	2.284E+01	4.603E-01	0.057
TL-208	-1.172E+00		5.888E+00	2.318E+01	4.674E-01	-0.051
BI-210M	1.400E-01		1.695E+01	6.213E+01	1.246E+00	0.002
BI-212	1.891E+01		5.318E+01	2.394E+02	7.316E+00	0.079
PB-212	-7.215E+00		2.176E+01	7.725E+01	1.553E+00	-0.093
BI-214	1.528E+01		1.390E+01	6.198E+01	1.252E+00	0.246
PB-214	-1.877E+01		2.737E+01	8.768E+01	1.754E+00	-0.214
RA-223	2.751E+01		6.125E+01	2.221E+02	4.454E+00	0.124
RA-224DA	-7.304E+00		2.203E+01	7.820E+01	1.573E+00	-0.093
RA-226DA	1.516E+01		1.389E+01	6.191E+01	1.250E+00	0.245
AC-227DA	1.248E+01		8.184E+01	3.012E+02	6.058E+00	0.041
AC-228	6.204E-01		1.498E+01	6.286E+01	1.295E+00	0.010
RA-228DA	6.229E-01		1.504E+01	6.312E+01	1.301E+00	0.010
TH-228DA	-3.303E+00		1.659E+01	6.532E+01	1.317E+00	-0.051
TH-232DA	-1.401E+02		6.625E+01	2.071E+02	4.142E+00	-0.677
TH-234DA	1.031E+03		6.841E+02	3.263E+03	6.766E+01	0.316
U-234DA	6.671E+01		4.139E+01	1.718E+02	3.440E+00	0.388
U-235HP	1.168E+02		9.937E+01	3.867E+02	7.953E+00	0.302
NP-237DA	3.601E+01		2.428E+01	9.824E+01	1.966E+00	0.367
U-238DA	-1.877E+01		2.737E+01	8.768E+01	1.754E+00	-0.214
U-238DHP	-5.483E+02		3.890E+02	1.288E+03	2.850E+01	-0.426
AM-241HP	6.335E+01		3.661E+01	1.418E+02	3.161E+00	0.447

STL Richland WA.

BA133

Sample ID: JKAG11AC
Detector ID: GER13 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 19:54:19.12
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -5.27320E-01
Slope: 2.50826E-01
Quadrature: -1.00155E-07

SAMPLE IDENTIFICATION: JKAG11AC

CONFIGURATION ID: GER13:JKAG11AC_041261954
TITLE : BA133
SAMPLE ID : JKAG11AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 19:54:19
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:46:21.53
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.5273E+00 keV
ENERGY SLOPE: 2.5083E-01 keV/C
ENERGY Q COEFF: -.1002E-06 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.9599E-01 keV
FWHM SLOPE: 4.4844E-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 4-DEC-2006 20:24:41

Configuration : $DISK1:[GER13.SAMPLE]JKAG11AC_041261954.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:19
Sample ID : JKAG11AC 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 : 19.54 End energy : 2047.52
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.97	180	86	0.77	328.95	323	15	9.98E-02	14.3	
2	0	276.28	70	30	1.02	1104.08	1095	18	3.91E-02	22.1	
3	0	302.82	134	45	1.18	1209.96	1202	19	7.46E-02	15.4	
4	0	355.78	419	36	1.07	1421.35	1414	16	2.33E-01	5.8	
5	0	383.76	71	17	0.82	1533.04	1524	17	3.95E-02	17.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 4-DEC-2006 20:24:42

Configuration : $DISK1:[GER13.SAMPLE]JKAG11AC_041261954.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:19
Sample ID : JKAG11AC 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	180	33.00	2.705E+00	6.712E+02	6.727E+02	15.29
	276.40	70	6.90	2.897E+00	1.172E+03	1.175E+03	22.76
	302.84	134	17.80	2.900E+00	8.674E+02	8.693E+02	16.30
	356.00	419	62.05*	2.903E+00	7.760E+02	7.777E+02	7.94
	383.85	71	8.70	2.902E+00	9.391E+02	9.412E+02	18.59

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAG11AC

Acquisition date : 4-DEC-2006 19:54:19

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	1.190E+03	22.76	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 4-DEC-2006 20:24:44

Configuration : $DISK1:[GER13.SAMPLE]JKAG11AC_041261954.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 : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:19
Sample ID : JKAG11AC 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	7.777E+02	6.176E+01	4.899E+01	9.797E-01	15.877

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.219E+02		7.405E+01	3.095E+02	6.208E+00	0.394
NA-22	3.704E+00		4.732E+00	2.037E+01	4.296E-01	0.182
K-40	1.013E+01		9.394E+01	4.497E+02	9.601E+00	0.023
SC-46	6.245E+00		6.422E+00	2.829E+01	5.907E-01	0.221
CR-51	-7.548E-01		1.254E+02	4.528E+02	9.059E+00	-0.002
MN-54	4.416E+00		5.402E+00	2.253E+01	4.615E-01	0.196
CO-57	2.597E+02		1.066E+02	4.272E+02	8.805E+00	0.608
CO-58	2.460E+00		6.233E+00	2.494E+01	5.100E-01	0.099
FE-59	-1.606E+01		1.047E+01	3.362E+01	7.011E-01	-0.478
CO-60	8.678E-01		5.039E+00	2.016E+01	4.270E-01	0.043
ZN-65	-1.813E+01		1.147E+01	3.670E+01	7.661E-01	-0.494
SE-75	-1.437E+01		1.737E+01	6.040E+01	1.211E+00	-0.238
SR-85	-4.097E+01		1.173E+01	3.172E+01	6.373E-01	-1.292
Y-88	5.484E+00		3.358E+00	1.792E+01	3.914E-01	0.306
NB-94	3.138E+00		5.460E+00	2.211E+01	4.540E-01	0.142
NB-95	3.469E-01		6.947E+00	2.713E+01	5.532E-01	0.013
TC-95M	-2.057E+01		1.988E+01	6.656E+01	1.345E+00	-0.309
ZR-95	2.819E+00		1.092E+01	4.367E+01	8.899E-01	0.065
ZRNB-95	6.201E-01		1.243E+01	4.855E+01	9.900E-01	0.013
MO-99	5.652E+02		2.626E+02	1.046E+03	2.152E+01	0.540
RH-101	1.311E+01		1.772E+01	6.415E+01	1.298E+00	0.204
RH-102M	-1.126E+01		7.619E+00	2.486E+01	4.986E-01	-0.453
RU-103	1.428E+01		9.478E+00	3.896E+01	7.821E-01	0.367
RU-106DA	-1.323E+01		6.546E+01	2.435E+02	4.921E+00	-0.054
AG-108M	-4.676E+00		8.672E+00	3.085E+01	6.177E-01	-0.152
AG-110M	1.218E+00		7.048E+00	2.801E+01	5.756E-01	0.044
SN-113DA	7.857E+00		1.204E+01	4.706E+01	9.415E-01	0.167

Sample ID : JKAG11AC
Acquisition date : 4-DEC-2006 19:54:19

---- Non-Identified Nuclides ----

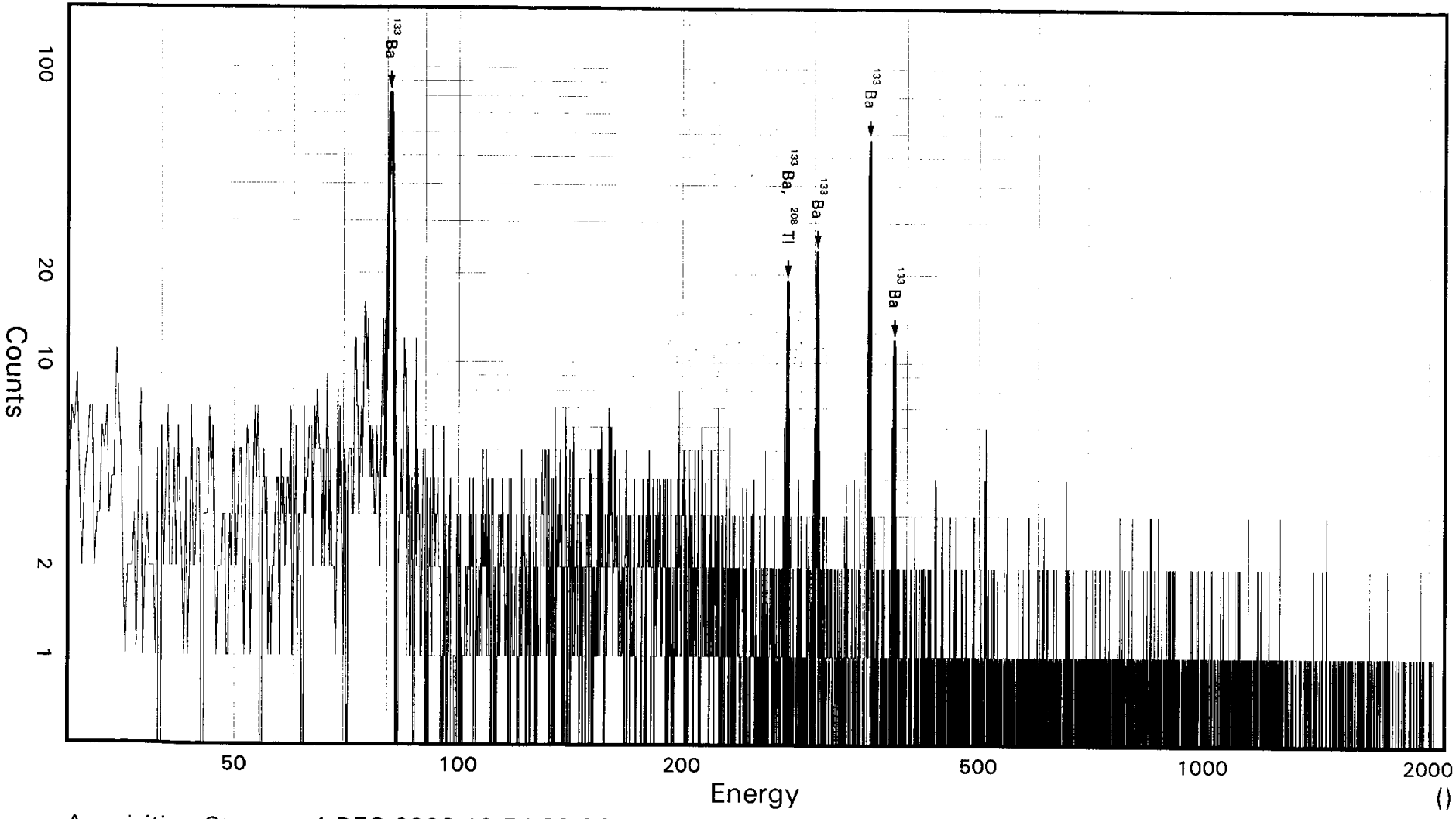
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	6.933E+00		8.064E+00	3.207E+01	6.472E-01	0.216
SB-125	-3.744E+00		2.512E+01	9.253E+01	1.853E+00	-0.040
SN-126DA	-2.543E+00		6.069E+00	2.210E+01	4.477E-01	-0.115
I-131	3.003E+00		2.681E+01	9.851E+01	1.970E+00	0.030
CS-134	2.880E+00		6.786E+00	2.704E+01	5.525E-01	0.106
CS-137DA	-4.702E+00		6.953E+00	2.476E+01	5.015E-01	-0.190
LA-138	3.016E+00		4.279E+00	2.108E+01	4.495E-01	0.143
CE-139	-2.203E+01		1.420E+01	4.701E+01	9.584E-01	-0.469
BA-140	6.019E+01		4.711E+01	1.981E+02	3.983E+00	0.304
BALA-140	-1.925E-01		1.756E+01	7.123E+01	1.534E+00	-0.003
LA-140	3.968E+02		7.375E+02	3.179E+03	6.846E+01	0.125
CE-141	3.628E+00		2.970E+01	1.085E+02	2.227E+00	0.033
CE-144	3.878E+00		1.137E+02	3.966E+02	8.186E+00	0.010
CEPR-144	6.860E+00		2.273E+02	7.929E+02	1.637E+01	0.009
PM-144	6.014E+00		6.698E+00	2.692E+01	5.439E-01	0.223
PM-146	-7.106E+00		9.480E+00	3.357E+01	6.728E-01	-0.212
EU-152	5.255E+01		3.647E+01	1.401E+02	2.802E+00	0.375
EU-154	1.036E+01		1.324E+01	5.697E+01	1.202E+00	0.182
EU-155	9.929E+00		4.752E+01	1.732E+02	3.636E+00	0.057
HF-181	-1.987E+01		9.741E+00	2.963E+01	5.943E-01	-0.671
BI-207	-2.402E-01		7.141E+00	2.677E+01	5.393E-01	-0.009
TL-208	7.608E+00		8.830E+00	3.674E+01	7.407E-01	0.207
BI-210M	2.850E+01		1.699E+01	6.827E+01	1.369E+00	0.417
BI-212	-3.833E+01		9.384E+01	3.478E+02	1.062E+01	-0.110
PB-212	-1.848E+00		2.342E+01	8.877E+01	1.785E+00	-0.021
BI-214	-1.603E+00		1.743E+01	7.177E+01	1.449E+00	-0.022
PB-214	4.242E+00		3.440E+01	1.091E+02	2.182E+00	0.039
RA-223	-1.105E+02		6.229E+01	2.027E+02	4.063E+00	-0.545
RA-224DA	-1.871E+00		2.371E+01	8.986E+01	1.807E+00	-0.021
RA-226DA	-1.503E+00		1.744E+01	7.181E+01	1.450E+00	-0.021
AC-227DA	-2.128E+02		9.943E+01	3.050E+02	6.133E+00	-0.698
AC-228	-3.278E+01		1.953E+01	7.428E+01	1.529E+00	-0.441
RA-228DA	-3.292E+01		1.961E+01	7.458E+01	1.536E+00	-0.441
TH-228DA	2.144E+01		2.488E+01	1.035E+02	2.087E+00	0.207
TH-232DA	-8.408E+01		7.674E+01	2.577E+02	5.155E+00	-0.326
TH-234DA	5.562E+02		5.473E+02	2.578E+03	5.341E+01	0.216
U-234DA	6.693E+01		5.196E+01	2.042E+02	4.089E+00	0.328
U-235HP	-9.956E+01		1.024E+02	3.549E+02	7.293E+00	-0.281
NP-237DA	2.783E+01		2.597E+01	9.906E+01	1.982E+00	0.281
U-238DA	4.242E+00		3.440E+01	1.091E+02	2.182E+00	0.039
U-238DHP	9.843E+01		2.883E+02	1.080E+03	2.381E+01	0.091
AM-241HP	-2.771E+01		2.964E+01	9.827E+01	2.183E+00	-0.282

STL Richland WA.

BA133

Sample ID: JKAG41AC
Detector ID: GER6 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 19:54:30.25
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.69196E-01
Slope: 2.49381E-01
Quadrature: 1.77235E-08

SAMPLE IDENTIFICATION: JKAG41AC

CONFIGURATION ID: GER6:JKAG41AC_041261954
TITLE : BA133
SAMPLE ID : JKAG41AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 19:54:30
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:31:25.19
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: 1.6920E-01 keV
ENERGY SLOPE: 2.4938E-01 keV/C
ENERGY Q COEFF: 1.7724E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.1281E-01 keV
FWHM SLOPE: 6.8184E-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 4-DEC-2006 20:24:57

Configuration : $DISK1:[GER6.SAMPLE]JKAG41AC_041261954.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:30
Sample ID : JKAG41AC 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 : 20.12 End energy : 2044.28
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.96	374	31	0.93	323.96	318	13	2.08E-01	6.1	
2	0	276.40	53	3	0.38	1107.60	1101	12	2.96E-02	15.1	
3	0	302.90	118	9	1.08	1213.81	1205	18	6.53E-02	11.0	
4	0	355.93	337	10	1.39	1426.44	1417	20	1.87E-01	5.9	
5	1	382.76	34	0	1.45	1534.00	1527	18	1.89E-02	21.5	3.00E+00
6	1	384.26	54	0	1.45	1540.00	1527	18	2.98E-02	14.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 4-DEC-2006 20:24:57

Configuration : $DISK1:[GER6.SAMPLE]JKAG41AC_041261954.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:30
Sample ID : JKAG41AC 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	374	33.00	2.167E+00	1.742E+03	1.746E+03	8.19
	276.40	53	6.90	2.334E+00	1.103E+03	1.106E+03	16.06
	302.84	118	17.80	2.337E+00	9.417E+02	9.438E+02	12.23
	356.00	337	62.05*	2.339E+00	7.741E+02	7.758E+02	8.00
	383.85	54	8.70	2.338E+00	8.794E+02	8.813E+02	15.85

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAG41AC

Acquisition date : 4-DEC-2006 19:54:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	382.76	34	0	1.45	1534.00	1527	18	1.89E-02	21.5	2.34E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAG41AC

Acquisition date : 4-DEC-2006 19:54:30

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	1.120E+03	16.06	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 4-DEC-2006 20:24:59

Configuration : $DISK1:[GER6.SAMPLE]JKAG41AC_041261954.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 : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:30
Sample ID : JKAG41AC 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%
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	7.758E+02	6.204E+01	5.149E+01	1.030E+00	15.066

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	5.747E+01		6.973E+01	2.950E+02	5.918E+00	0.195
NA-22	-1.653E+00		4.080E+00	1.638E+01	3.467E-01	-0.101
K-40	5.125E+01		6.540E+01	3.364E+02	7.213E+00	0.152
SC-46	-3.641E+00		5.825E+00	2.165E+01	4.532E-01	-0.168
CR-51	-5.981E+01		9.892E+01	3.580E+02	7.163E+00	-0.167
MN-54	-8.416E+00		5.879E+00	1.969E+01	4.038E-01	-0.428
CO-57	2.290E+02		1.001E+02	4.115E+02	8.498E+00	0.557
CO-58	-5.265E+00		5.077E+00	1.782E+01	3.649E-01	-0.295
FE-59	1.572E+01		1.162E+01	5.319E+01	1.112E+00	0.296
CO-60	3.042E+00		2.158E+00	1.411E+01	3.000E-01	0.216
ZN-65	1.471E+01		1.107E+01	5.054E+01	1.058E+00	0.291
SE-75	8.420E+00		1.578E+01	6.044E+01	1.213E+00	0.139
SR-85	-3.124E+01		1.039E+01	2.859E+01	5.746E-01	-1.093
Y-88	-3.461E+00		2.455E+00	4.613E+00	1.013E-01	-0.750
NB-94	9.672E+00		4.778E+00	2.391E+01	4.917E-01	0.405
NB-95	5.559E+00		6.720E+00	2.949E+01	6.020E-01	0.188
TC-95M	-6.080E+00		1.864E+01	6.778E+01	1.370E+00	-0.090
ZR-95	1.207E+01		1.125E+01	5.004E+01	1.021E+00	0.241
ZRNB-95	9.948E+00		1.203E+01	5.278E+01	1.077E+00	0.188
MO-99	1.340E+02		2.697E+02	1.029E+03	2.122E+01	0.130
RH-101	-4.970E+00		1.652E+01	5.764E+01	1.167E+00	-0.086
RH-102M	3.397E+00		6.318E+00	2.633E+01	5.281E-01	0.129
RU-103	-6.363E+00		8.538E+00	3.105E+01	6.233E-01	-0.205
RU-106DA	-1.751E+00		5.570E+01	2.234E+02	4.518E+00	-0.008
AG-108M	-2.902E+01		1.039E+01	2.926E+01	5.860E-01	-0.992
AG-110M	-1.992E+00		6.241E+00	2.510E+01	5.167E-01	-0.079
SN-113DA	-3.076E+01		1.117E+01	2.997E+01	5.996E-01	-1.026

Sample ID : JKAG41AC Acquisition date : 4-DEC-2006 19:54:30

---- Non-Identified Nuclides ----

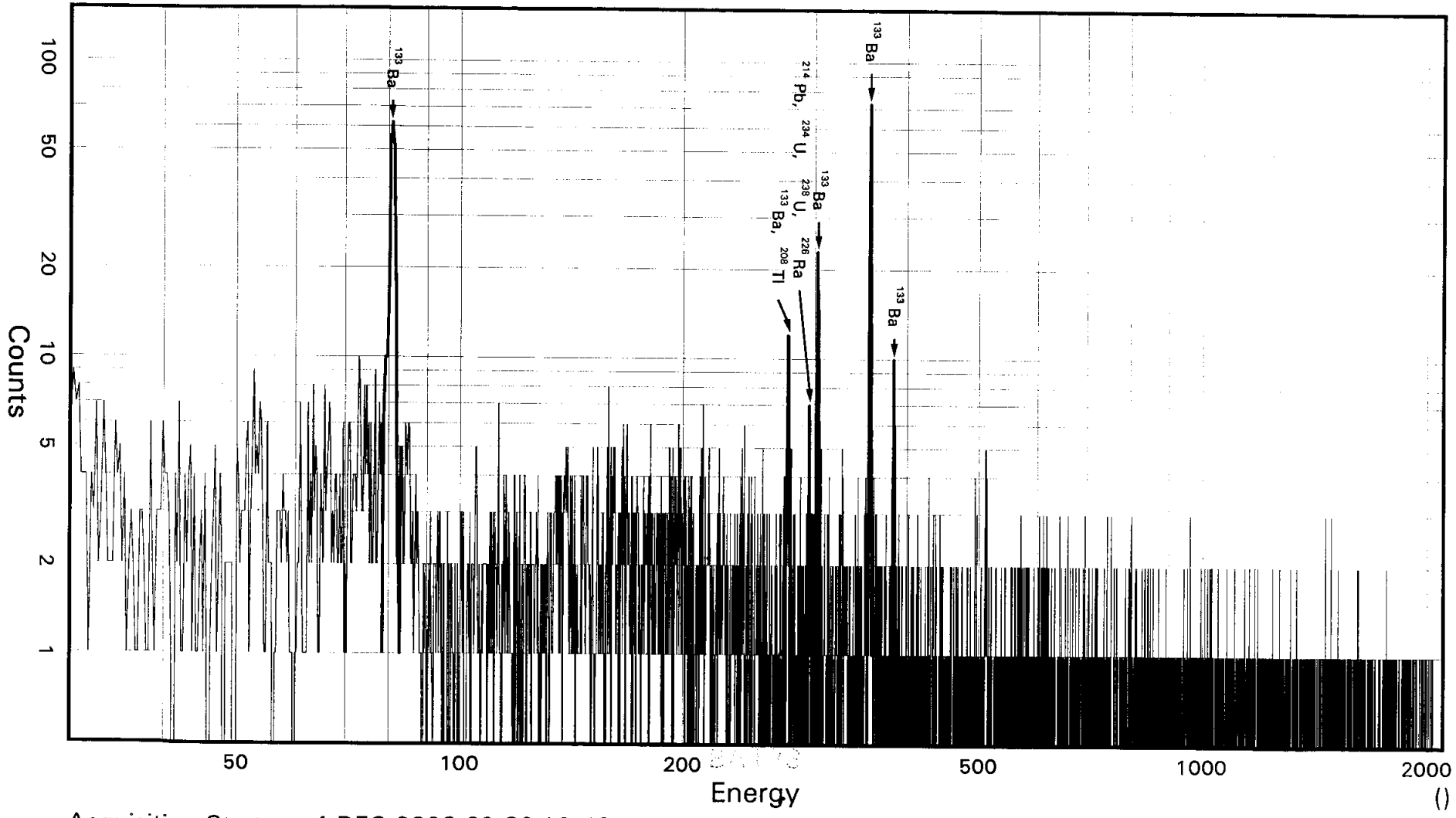
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-5.513E+00		7.196E+00	2.616E+01	5.282E-01	-0.211
SB-125	1.238E+01		2.559E+01	1.008E+02	2.019E+00	0.123
SN-126DA	-1.668E+00		5.679E+00	2.174E+01	4.408E-01	-0.077
I-131	2.006E-01		2.290E+01	9.016E+01	1.803E+00	0.002
CS-134	6.763E+00		6.033E+00	2.737E+01	5.600E-01	0.247
CS-137DA	7.777E+00		7.419E+00	3.164E+01	6.412E-01	0.246
LA-138	-7.016E+00		6.121E+00	2.122E+01	4.541E-01	-0.331
CE-139	-1.557E+01		1.383E+01	4.696E+01	9.585E-01	-0.332
BA-140	-2.258E+01		3.220E+01	1.215E+02	2.445E+00	-0.186
BALA-140	2.521E+01		1.268E+01	7.564E+01	1.636E+00	0.333
LA-140	1.063E+03		5.348E+02	3.191E+03	6.902E+01	0.333
CE-141	-9.350E+00		2.530E+01	9.283E+01	1.909E+00	-0.101
CE-144	-1.685E+02		1.116E+02	3.569E+02	7.381E+00	-0.472
CEPR-144	-3.301E+02		2.235E+02	7.170E+02	1.483E+01	-0.460
PM-144	1.188E-01		5.537E+00	2.233E+01	4.514E-01	0.005
PM-146	-5.489E+00		7.793E+00	2.847E+01	5.707E-01	-0.193
EU-152	-3.027E+01		3.262E+01	1.119E+02	2.239E+00	-0.270
EU-154	-4.623E+00		1.141E+01	4.583E+01	9.699E-01	-0.101
EU-155	-5.034E+01		4.585E+01	1.575E+02	3.317E+00	-0.320
HF-181	2.649E+00		8.584E+00	3.519E+01	7.060E-01	0.075
BI-207	-5.168E+00		6.592E+00	2.332E+01	4.700E-01	-0.222
TL-208	-7.131E-01		7.700E+00	2.992E+01	6.035E-01	-0.024
BI-210M	6.515E+00		1.736E+01	6.586E+01	1.321E+00	0.099
BI-212	1.352E+02		9.321E+01	4.148E+02	1.268E+01	0.326
PB-212	-5.165E+01		2.156E+01	6.732E+01	1.354E+00	-0.767
BI-214	8.668E+00		1.422E+01	6.054E+01	1.223E+00	0.143
PB-214	3.724E+01		2.634E+01	9.532E+01	1.906E+00	0.391
RA-223	-9.557E+01		6.392E+01	2.058E+02	4.127E+00	-0.464
RA-224DA	-5.229E+01		2.182E+01	6.815E+01	1.371E+00	-0.767
RA-226DA	8.669E+00		1.422E+01	6.054E+01	1.223E+00	0.143
AC-227DA	1.007E+02		7.595E+01	3.097E+02	6.230E+00	0.325
AC-228	2.104E+01		2.380E+01	9.981E+01	2.059E+00	0.211
RA-228DA	2.112E+01		2.390E+01	1.002E+02	2.067E+00	0.211
TH-228DA	-2.009E+00		2.170E+01	8.432E+01	1.701E+00	-0.024
TH-232DA	7.884E+01		5.833E+01	2.456E+02	4.912E+00	0.321
TH-234DA	1.405E+03		1.012E+03	4.431E+03	9.198E+01	0.317
U-234DA	5.125E+01		4.429E+01	1.799E+02	3.602E+00	0.285
U-235HP	2.605E+01		9.570E+01	3.637E+02	7.485E+00	0.072
NP-237DA	-7.242E-01		2.287E+01	8.588E+01	1.719E+00	-0.008
U-238DA	3.724E+01		2.634E+01	9.532E+01	1.906E+00	0.391
U-238DHP	-1.051E+02		3.591E+02	1.316E+03	2.920E+01	-0.080
AM-241HP	3.038E+01		3.028E+01	1.193E+02	2.667E+00	0.255

STL Richland WA.

BA133

Sample ID: JKAG71AC
Detector ID: GER10 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 20:30:10.43
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.57221E+01
Slope: 2.46903E-01
Quadrature: 4.88894E-09

SAMPLE IDENTIFICATION: JKAG71AC

CONFIGURATION ID: GER10:JKAG71AC_041262030
TITLE : BA133
SAMPLE ID : JKAG71AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:30:10
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:31:59.14
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: 1.5722E+01 keV
ENERGY SLOPE: 2.4690E-01 keV/C
ENERGY Q COEFF: 4.8889E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.2658E-01 keV
FWHM SLOPE: 2.7738E-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 4-DEC-2006 21:00:27

Configuration : $DISK1:[GER10.SAMPLE]JKAG71AC_041262030.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:10
Sample ID : JKAG71AC 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 : 18.19 End energy : 2038.68
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.83	348	58	1.33	263.70	254	19	1.93E-01	7.6	
2	0	276.79	43	45	1.07	1057.35	1045	20	2.40E-02	41.0	
3	0	295.47	30	12	0.50	1133.00	1121	23	1.64E-02	35.1	
4	0	303.09	98	36	1.31	1163.88	1153	17	5.44E-02	17.0	
5	0	355.99	375	16	0.98	1378.09	1367	22	2.08E-01	5.9	
6	0	383.56	50	5	1.11	1489.76	1479	19	2.77E-02	17.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 4-DEC-2006 21:00:27

Configuration : $DISK1:[GER10.SAMPLE]JKAG71AC_041262030.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:10
Sample ID : JKAG71AC 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	348	33.00	2.398E+00	1.464E+03	1.467E+03	9.36
	276.40	43	6.90	2.578E+00	8.086E+02	8.104E+02	41.34
	302.84	98	17.80	2.582E+00	7.107E+02	7.123E+02	17.86
	356.00	375	62.05*	2.584E+00	7.793E+02	7.810E+02	7.96
	383.85	50	8.70	2.584E+00	7.403E+02	7.420E+02	18.45

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAG71AC

Acquisition date : 4-DEC-2006 20:30:10

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	295.47	30	12	0.50	1133.00	1121	23	1.64E-02	35.1	2.58E+00	T

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAG71AC

Acquisition date : 4-DEC-2006 20:30:10

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	8.205E+02	41.34	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			
PB-214	4.47E+09Y	0.00	241.98	7.49	--- Not Found ---		Abun.
			295.21	19.20	1.984E+02	35.50	
			351.92*	37.20	--- Not Found ---		
			785.91	1.10	--- Not Found ---		
		% Abundances Found =		29.54			
RA-226DA	1600.00Y	0.00	186.21	3.50	--- Not Found ---		Abun.
			241.98	7.49	--- Not Found ---		
			295.22	19.20	1.984E+02	35.50	
			351.92	37.20	--- Not Found ---		
			609.32*	46.30	--- Not Found ---		
			1120.28	15.10	--- Not Found ---		
			1238.11	5.94	--- Not Found ---		
			1764.49	15.80	--- Not Found ---		
		% Abundances Found =		12.75			
U-234DA	4.47E+09Y	0.00	241.98	7.49	--- Not Found ---		Abun.
			295.22*	19.20	1.984E+02	35.50	
			351.92	37.20	--- Not Found ---		
			609.31	46.30	--- Not Found ---		
		% Abundances Found =		17.42			
U-238DA	4.47E+09Y	0.00	241.98	7.49	--- Not Found ---		Abun.
			295.22	19.20	1.984E+02	35.50	
			351.92*	37.20	--- Not Found ---		
			609.31	46.30	--- Not Found ---		
		% Abundances Found =		17.42			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 4-DEC-2006 21:00:30

Configuration : $DISK1:[GER10.SAMPLE]JKAG71AC_041262030.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 : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:10
Sample ID : JKAG71AC 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	7.810E+02	6.213E+01	6.152E+01	1.230E+00	12.695

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.202E+02		6.746E+01	2.087E+02	4.186E+00	-0.576
NA-22	-3.926E+00		3.571E+00	1.277E+01	2.699E-01	-0.307
K-40	2.082E+01		5.117E+01	2.433E+02	5.207E+00	0.086
SC-46	7.434E+00		3.987E+00	2.106E+01	4.403E-01	0.353
CR-51	5.398E+00		1.017E+02	3.876E+02	7.754E+00	0.014
MN-54	4.570E+00		5.114E+00	2.222E+01	4.555E-01	0.206
CO-57	1.207E+01		1.163E+02	4.245E+02	8.758E+00	0.028
CO-58	8.865E+00		4.805E+00	2.376E+01	4.863E-01	0.373
FE-59	-3.172E+00		8.762E+00	3.467E+01	7.239E-01	-0.092
CO-60	1.475E+00		4.091E+00	1.801E+01	3.821E-01	0.082
ZN-65	-1.414E+01		7.466E+00	2.023E+01	4.229E-01	-0.699
SE-75	1.167E+01		1.244E+01	5.022E+01	1.007E+00	0.232
SR-85	-2.376E+01		1.196E+01	3.718E+01	7.470E-01	-0.639
Y-88	3.100E+00		3.078E+00	1.658E+01	3.632E-01	0.187
NB-94	1.405E+00		3.895E+00	1.725E+01	3.545E-01	0.081
NB-95	6.488E+00		6.375E+00	2.804E+01	5.720E-01	0.231
TC-95M	1.137E+01		1.777E+01	6.680E+01	1.350E+00	0.170
ZR-95	-2.233E+01		7.985E+00	7.348E+00	1.498E-01	-3.038
ZRNB-95	1.161E+01		1.141E+01	5.016E+01	1.023E+00	0.231
MO-99	3.835E+02		2.866E+02	1.108E+03	2.282E+01	0.346
RH-101	2.108E+01		1.671E+01	6.330E+01	1.281E+00	0.333
RH-102M	8.836E+00		5.671E+00	2.546E+01	5.106E-01	0.347
RU-103	1.110E+00		8.047E+00	3.149E+01	6.322E-01	0.035
RU-106DA	-7.848E+01		6.332E+01	2.159E+02	4.363E+00	-0.364
AG-108M	-4.011E+00		6.709E+00	2.437E+01	4.880E-01	-0.165
AG-110M	5.799E+00		4.968E+00	2.478E+01	5.097E-01	0.234
SN-113DA	1.051E+01		1.150E+01	4.668E+01	9.340E-01	0.225

---- Non-Identified Nuclides ----

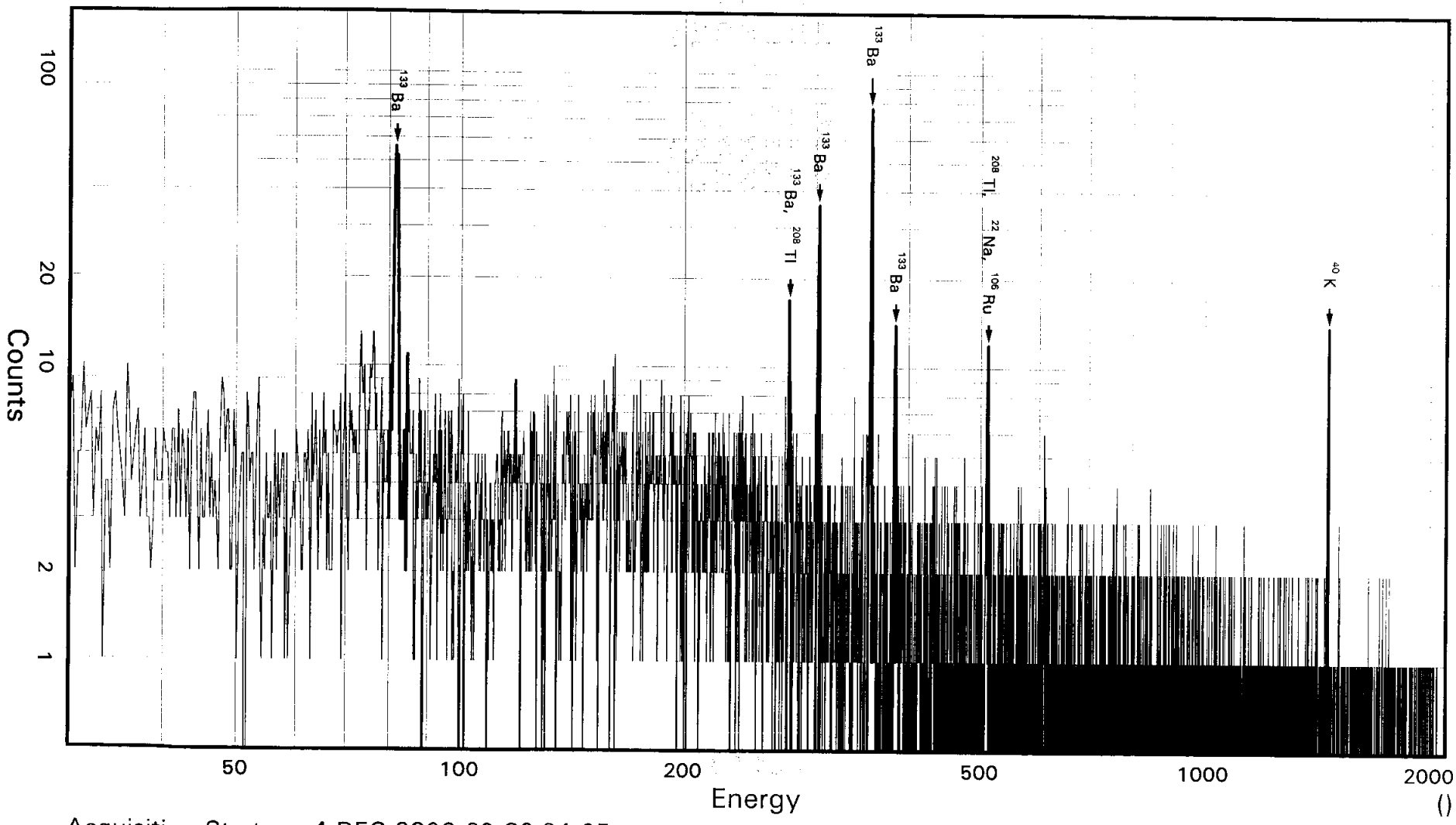
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-1.163E+00		7.568E+00	2.879E+01	5.813E-01	-0.040
SB-125	4.366E+01		2.099E+01	9.436E+01	1.889E+00	0.463
SN-126DA	1.629E-02		4.526E+00	1.843E+01	3.736E-01	0.001
I-131	-4.141E+00		3.125E+01	1.147E+02	2.293E+00	-0.036
CS-134	1.782E+00		4.841E+00	2.093E+01	4.279E-01	0.085
CS-137DA	-2.353E+00		4.959E+00	1.923E+01	3.895E-01	-0.122
LA-138	-4.139E+00		4.142E+00	1.519E+01	3.245E-01	-0.273
CE-139	-2.213E+00		1.555E+01	5.577E+01	1.138E+00	-0.040
BA-140	-3.166E+01		3.485E+01	1.275E+02	2.565E+00	-0.248
BALA-140	-6.043E+00		1.008E+01	4.191E+01	9.046E-01	-0.144
LA-140	9.644E+01		3.828E+02	2.003E+03	4.325E+01	0.048
CE-141	-1.396E+01		2.759E+01	9.836E+01	2.021E+00	-0.142
CE-144	1.857E+01		1.004E+02	3.726E+02	7.699E+00	0.050
CEPR-144	3.611E+01		2.007E+02	7.448E+02	1.539E+01	0.048
PM-144	-3.673E+00		6.930E+00	2.533E+01	5.119E-01	-0.145
PM-146	1.654E+00		7.811E+00	3.161E+01	6.336E-01	0.052
EU-152	1.762E+01		2.694E+01	1.073E+02	2.146E+00	0.164
EU-154	-1.098E+01		9.990E+00	3.572E+01	7.550E-01	-0.307
EU-155	4.383E+01		4.751E+01	1.819E+02	3.826E+00	0.241
HF-181	9.145E+00		8.006E+00	3.467E+01	6.956E-01	0.264
BI-207	1.795E+00		6.000E+00	2.412E+01	4.861E-01	0.074
TL-208	5.147E+00		7.627E+00	3.105E+01	6.262E-01	0.166
BI-210M	-2.586E+01		1.538E+01	4.867E+01	9.762E-01	-0.531
BI-212	-9.928E+00		7.959E+01	3.103E+02	9.482E+00	-0.032
PB-212	1.774E+00		2.195E+01	7.992E+01	1.607E+00	0.022
BI-214	1.647E+01		1.606E+01	6.842E+01	1.382E+00	0.241
PB-214	4.471E+01		2.379E+01	9.707E+01	1.941E+00	0.461
RA-223	-2.751E+01		5.700E+01	2.028E+02	4.067E+00	-0.136
RA-224DA	1.796E+00		2.222E+01	8.090E+01	1.627E+00	0.022
RA-226DA	1.670E+01		1.608E+01	6.854E+01	1.384E+00	0.244
AC-227DA	-8.643E+00		7.863E+01	2.856E+02	5.746E+00	-0.030
AC-228	3.722E-01		1.160E+01	5.162E+01	1.064E+00	0.007
RA-228DA	3.737E-01		1.165E+01	5.183E+01	1.068E+00	0.007
TH-228DA	1.450E+01		2.149E+01	8.750E+01	1.765E+00	0.166
TH-232DA	-1.319E+02		5.496E+01	1.622E+02	3.245E+00	-0.813
TH-234DA	1.462E+00		4.108E+02	1.909E+03	3.960E+01	0.001
U-234DA	1.984E+02	+	7.044E+01	1.981E+02	3.966E+00	1.002
U-235HP	-2.042E+02		9.890E+01	3.161E+02	6.501E+00	-0.646
NP-237DA	1.887E+01		2.072E+01	8.351E+01	1.671E+00	0.226
U-238DA	4.471E+01		2.379E+01	9.707E+01	1.941E+00	0.461
U-238DHP	-2.504E+02		3.657E+02	1.262E+03	2.792E+01	-0.198
AM-241HP	-1.634E+01		3.178E+01	1.121E+02	2.499E+00	-0.146

STL Richland WA.

BA133

Sample ID: JKAHM1AC
Detector ID: GER13 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 20:30:24.05
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -5.27320E-01
Slope: 2.50826E-01
Quadrature: -1.00155E-07

SAMPLE IDENTIFICATION: JKAHM1AC

CONFIGURATION ID: GER13:JKAHM1AC_041262030
TITLE : BA133
SAMPLE ID : JKAHM1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:30:24
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:46:21.53
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.5273E+00 keV
ENERGY SLOPE: 2.5083E-01 keV/C
ENERGY Q COEFF: -.1002E-06 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.9599E-01 keV
FWHM SLOPE: 4.4844E-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 4-DEC-2006 21:00:43

Configuration : $DISK1:[GER13.SAMPLE]JKAHM1AC_041262030.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:24
Sample ID : JKAHM1AC 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 : 19.54 End energy : 2047.52
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.92	196	108	1.07	328.77	321	19	1.09E-01	14.5	
2	0	276.54	69	34	0.66	1105.09	1098	18	3.84E-02	22.7	
3	0	302.57	168	32	1.20	1209.00	1201	16	9.33E-02	10.8	
4	0	355.76	399	38	1.17	1421.28	1410	22	2.21E-01	6.4	
5	0	383.58	72	23	1.95	1532.31	1524	15	3.97E-02	18.7	
6	0	511.12*	6	23	1.48	2041.52	2033	22	3.37E-03	260.2	
7	5	1458.96	16	2	2.07	5832.30	5828	22	8.78E-03	25.5	5.46E-01
8	5	1461.16*	5	2	1.84	5841.13	5828	22	2.93E-03	171.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 4-DEC-2006 21:00:43

Configuration : $DISK1:[GER13.SAMPLE]JKAHM1AC_041262030.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:24
Sample ID : JKAHM1AC 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	6.052E+01	6.052E+01	171.66

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	196	33.00	2.704E+00	7.307E+02	7.324E+02	15.45
	276.40	69	6.90	2.897E+00	1.152E+03	1.154E+03	23.28
	302.84	168	17.80	2.900E+00	1.085E+03	1.087E+03	12.05
	356.00	399	62.05*	2.903E+00	7.376E+02	7.393E+02	8.36
	383.85	72	8.70	2.902E+00	9.439E+02	9.460E+02	19.44

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAHM1AC

Acquisition date : 4-DEC-2006 20:30:24

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	511.12	6	23	1.48	2041.52	2033	22	3.37E-03	****	2.89E+00	T
5	1458.96	16	2	2.07	5832.30	5828	22	8.78E-03	25.5	2.72E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAHM1AC

Acquisition date : 4-DEC-2006 20:30:24

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	3.932E+00	260.21	Abun.
			1274.54*	99.94	--- Not Found ---		
		% Abundances Found =		64.26			
RU-106DA	368.20D	0.03	511.85	20.60	3.479E+01	260.21	Abun.
			621.84*	9.80	--- Not Found ---		
		% Abundances Found =		67.76			
TL-208	1.41E+10Y	0.00	277.35	6.80	1.169E+03	23.28	Abun.
			510.84	21.60	3.242E+01	260.21	
			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 4-DEC-2006 21:00:45

Configuration : $DISK1:[GER13.SAMPLE]JKAHM1AC_041262030.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 : 22-NOV-2006 12:00:00
Sample ID : JKAHM1AC
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 : 4-DEC-2006 20:30:24
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 ----

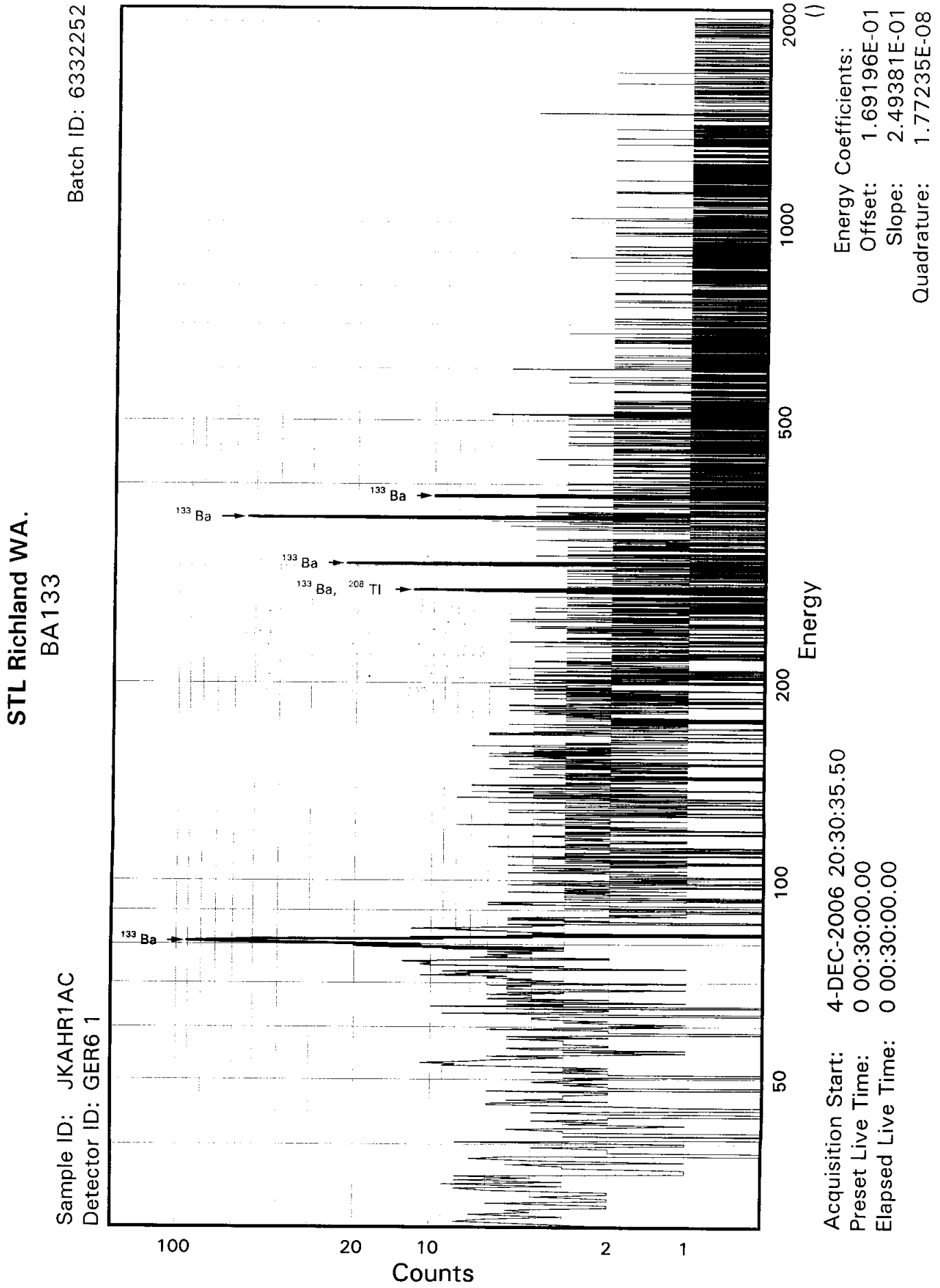
Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
K-40	6.052E+01	1.039E+02	1.222E+02	2.610E+00	0.495
BA-133	7.393E+02	6.178E+01	6.190E+01	1.238E+00	11.943

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-9.847E+01		6.610E+01	2.147E+02	4.306E+00	-0.459
NA-22	5.611E+00		4.669E+00	2.089E+01	4.408E-01	0.269
SC-46	2.989E+00		5.076E+00	2.356E+01	4.919E-01	0.127
CR-51	9.086E+01		1.186E+02	4.504E+02	9.012E+00	0.202
MN-54	-3.782E+00		5.309E+00	1.917E+01	3.926E-01	-0.197
CO-57	-3.431E+02		1.042E+02	3.099E+02	6.389E+00	-1.107
CO-58	-1.621E+01		6.295E+00	1.726E+01	3.529E-01	-0.939
FE-59	-8.385E+00		1.073E+01	3.846E+01	8.019E-01	-0.218
CO-60	3.613E+00		3.685E+00	1.721E+01	3.644E-01	0.210
ZN-65	-3.452E-02		1.060E+01	4.120E+01	8.601E-01	-0.001
SE-75	-1.567E+01		1.730E+01	5.987E+01	1.201E+00	-0.262
SR-85	1.536E+01		9.851E+00	3.539E+01	7.109E-01	0.434
Y-88	2.757E-02		2.722E+00	1.269E+01	2.773E-01	0.002
NB-94	-6.641E+00		4.614E+00	1.501E+01	3.081E-01	-0.443
NB-95	9.399E-01		7.318E+00	2.854E+01	5.820E-01	0.033
TC-95M	2.105E+01		2.069E+01	7.620E+01	1.540E+00	0.276
ZR-95	-5.052E+00		1.459E+01	5.345E+01	1.089E+00	-0.095
ZRNB-95	1.360E+00		1.306E+01	5.086E+01	1.037E+00	0.027
MO-99	1.851E+02		2.814E+02	1.052E+03	2.164E+01	0.176
RH-101	1.104E+01		1.484E+01	5.474E+01	1.107E+00	0.202
RH-102M	8.168E+00		7.326E+00	2.938E+01	5.891E-01	0.278
RU-103	-7.698E+00		9.341E+00	3.236E+01	6.496E-01	-0.238
RU-106DA	-2.166E+01		5.992E+01	2.221E+02	4.487E+00	-0.098
AG-108M	4.406E-01		9.038E+00	3.332E+01	6.672E-01	0.013
AG-110M	1.103E+00		7.835E+00	3.049E+01	6.265E-01	0.036
SN-113DA	-2.216E+00		1.368E+01	5.010E+01	1.002E+00	-0.044

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	4.190E+00		7.337E+00	2.908E+01	5.869E-01	0.144
SB-125	-3.461E+01		2.396E+01	7.945E+01	1.591E+00	-0.436
SN-126DA	-9.929E-01		5.739E+00	2.152E+01	4.361E-01	-0.046
I-131	-1.380E+00		2.581E+01	9.415E+01	1.883E+00	-0.015
CS-134	1.107E-01		6.783E+00	2.613E+01	5.339E-01	0.004
CS-137DA	-1.894E+00		6.944E+00	2.572E+01	5.210E-01	-0.074
LA-138	-2.376E+00		5.822E+00	2.304E+01	4.911E-01	-0.103
CE-139	3.126E+01		1.503E+01	5.864E+01	1.196E+00	0.533
BA-140	1.803E+00		5.526E+01	2.087E+02	4.197E+00	0.009
BALA-140	-6.425E-02		1.015E+01	4.696E+01	1.011E+00	-0.001
LA-140	-1.592E+02		3.914E+02	1.713E+03	3.689E+01	-0.093
CE-141	-3.426E+00		2.807E+01	1.018E+02	2.091E+00	-0.034
CE-144	1.233E+02		1.067E+02	3.952E+02	8.157E+00	0.312
CEPR-144	2.429E+02		2.133E+02	7.892E+02	1.629E+01	0.308
PM-144	-7.044E+00		5.409E+00	1.816E+01	3.669E-01	-0.388
PM-146	-3.875E+00		1.041E+01	3.781E+01	7.576E-01	-0.102
EU-152	-3.823E+01		3.118E+01	1.033E+02	2.065E+00	-0.370
EU-154	1.009E+01		1.320E+01	5.676E+01	1.197E+00	0.178
EU-155	4.786E+01		4.694E+01	1.787E+02	3.752E+00	0.268
HF-181	6.400E+00		8.825E+00	3.538E+01	7.097E-01	0.181
BI-207	-5.192E+00		7.661E+00	2.721E+01	5.481E-01	-0.191
TL-208	-3.461E+00		7.181E+00	2.903E+01	5.853E-01	-0.119
BI-210M	1.091E+01		1.779E+01	6.744E+01	1.352E+00	0.162
BI-212	6.032E+01		8.372E+01	3.455E+02	1.055E+01	0.175
PB-212	-2.660E+00		2.673E+01	9.934E+01	1.997E+00	-0.027
BI-214	2.988E+00		1.911E+01	7.758E+01	1.566E+00	0.039
PB-214	6.134E+01		2.946E+01	1.091E+02	2.182E+00	0.562
RA-223	-5.882E+01		6.858E+01	2.380E+02	4.773E+00	-0.247
RA-224DA	-2.693E+00		2.706E+01	1.006E+02	2.022E+00	-0.027
RA-226DA	2.988E+00		1.911E+01	7.758E+01	1.566E+00	0.039
AC-227DA	-1.512E+02		1.056E+02	3.403E+02	6.844E+00	-0.444
AC-228	-3.377E+01		2.393E+01	8.838E+01	1.820E+00	-0.382
RA-228DA	-3.391E+01		2.402E+01	8.875E+01	1.827E+00	-0.382
TH-228DA	-9.753E+00		2.024E+01	8.181E+01	1.649E+00	-0.119
TH-232DA	1.160E+02		7.213E+01	2.841E+02	5.683E+00	0.408
TH-234DA	-1.795E+02		6.531E+02	2.565E+03	5.314E+01	-0.070
U-234DA	-6.960E+01		4.881E+01	1.681E+02	3.366E+00	-0.414
U-235HP	1.677E+02		9.485E+01	3.760E+02	7.726E+00	0.446
NP-237DA	2.226E+01		2.436E+01	9.303E+01	1.862E+00	0.239
U-238DA	6.134E+01		2.946E+01	1.091E+02	2.182E+00	0.562
U-238DHP	8.553E+01		2.941E+02	1.097E+03	2.419E+01	0.078
AM-241HP	-4.490E-01		2.873E+01	1.015E+02	2.254E+00	-0.004


STL Richland WA.
BA133
Batch ID: 6332252
Sample ID: JKAHR1AC
Detector ID: GER6 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
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Acquisition Start: 4-DEC-2006 20:30:35.50
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00
Energy Coefficients:
Offset: 1.69196E-01
Slope: 2.49381E-01
Quadrature: 1.77235E-08

SAMPLE IDENTIFICATION: JKAHR1AC

CONFIGURATION ID: GER6:JKAHR1AC_041262030
TITLE : BA133
SAMPLE ID : JKAHR1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:30:35
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:31:25.19
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: 1.6920E-01 keV
ENERGY SLOPE: 2.4938E-01 keV/C
ENERGY Q COEFF: 1.7724E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.1281E-01 keV
FWHM SLOPE: 6.8184E-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 4-DEC-2006 21:00:58

Configuration : $DISK1:[GER6.SAMPLE]JKAHR1AC_041262030.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:35
Sample ID : JKAHR1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Start energy : 20.12 End energy : 2044.28
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.94	347	62	0.91	323.86	316	16	1.93E-01	7.4	
2	0	276.47	57	10	1.24	1107.85	1097	19	3.17E-02	18.5	
3	0	302.90	103	15	1.19	1213.83	1206	15	5.73E-02	12.8	
4	0	356.01	310	9	1.22	1426.75	1418	22	1.72E-01	6.3	
5	0	383.89	52	8	1.39	1538.53	1530	15	2.86E-02	18.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 4-DEC-2006 21:00:58

Configuration : $DISK1:[GER6.SAMPLE]JKAHR1AC_041262030.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:35
Sample ID : JKAHR1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	347	33.00	2.167E+00	1.619E+03	1.622E+03	9.21
	276.40	57	6.90	2.334E+00	1.182E+03	1.185E+03	19.31
	302.84	103	17.80	2.337E+00	8.261E+02	8.279E+02	13.89
	356.00	310	62.05*	2.339E+00	7.129E+02	7.145E+02	8.27
	383.85	52	8.70	2.338E+00	8.439E+02	8.457E+02	18.91

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAHR1AC

Acquisition date : 4-DEC-2006 20:30:35

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	1.199E+03	19.31	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 4-DEC-2006 21:01:00

Configuration : $DISK1:[GER6.SAMPLE]JKAHR1AC_041262030.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 : 22-NOV-2006 12:00:00
Sample ID : JKAHR1AC
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 : 4-DEC-2006 20:30:35
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.22 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	7.145E+02	5.909E+01	5.149E+01	1.030E+00	13.876

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.039E+02		7.885E+01	2.679E+02	5.374E+00	-0.388
NA-22	7.758E-01		2.444E+00	1.288E+01	2.726E-01	0.060
K-40	7.799E+01		8.493E+01	3.910E+02	8.382E+00	0.199
SC-46	-7.043E+00		6.312E+00	2.165E+01	4.533E-01	-0.325
CR-51	-7.549E+01		1.192E+02	4.236E+02	8.475E+00	-0.178
MN-54	-1.267E+01		5.332E+00	1.435E+01	2.944E-01	-0.883
CO-57	-8.386E-01		1.167E+02	4.137E+02	8.543E+00	-0.002
CO-58	-6.157E+00		5.985E+00	2.086E+01	4.272E-01	-0.295
FE-59	-1.259E-01		6.453E+00	2.965E+01	6.198E-01	-0.004
CO-60	-5.818E+00		5.202E+00	1.826E+01	3.880E-01	-0.319
ZN-65	2.088E+01		1.108E+01	5.285E+01	1.106E+00	0.395
SE-75	-1.323E+01		1.442E+01	4.950E+01	9.930E-01	-0.267
SR-85	-3.051E+01		1.143E+01	3.349E+01	6.730E-01	-0.911
Y-88	5.121E+00		2.970E+00	1.836E+01	4.033E-01	0.279
NB-94	1.612E+00		5.244E+00	2.199E+01	4.523E-01	0.073
NB-95	-1.727E-02		5.270E+00	2.234E+01	4.560E-01	-0.001
TC-95M	-3.356E+00		1.624E+01	6.024E+01	1.218E+00	-0.056
ZR-95	5.980E-02		1.039E+01	4.236E+01	8.641E-01	0.001
ZRNB-95	-3.089E-02		9.429E+00	3.997E+01	8.159E-01	-0.001
MO-99	2.920E+02		2.648E+02	1.045E+03	2.155E+01	0.279
RH-101	5.801E+00		1.690E+01	6.108E+01	1.236E+00	0.095
RH-102M	7.947E-01		6.997E+00	2.760E+01	5.537E-01	0.029
RU-103	-6.281E+00		8.995E+00	3.273E+01	6.572E-01	-0.192
RU-106DA	-4.411E+01		5.402E+01	1.971E+02	3.986E+00	-0.224
AG-108M	-1.695E+01		7.590E+00	2.195E+01	4.396E-01	-0.772
AG-110M	4.301E+00		7.796E+00	3.316E+01	6.825E-01	0.130
SN-113DA	6.669E+00		1.114E+01	4.545E+01	9.092E-01	0.147

Sample ID : JKAHR1AC
Acquisition date : 4-DEC-2006 20:30:35

---- Non-Identified Nuclides ----

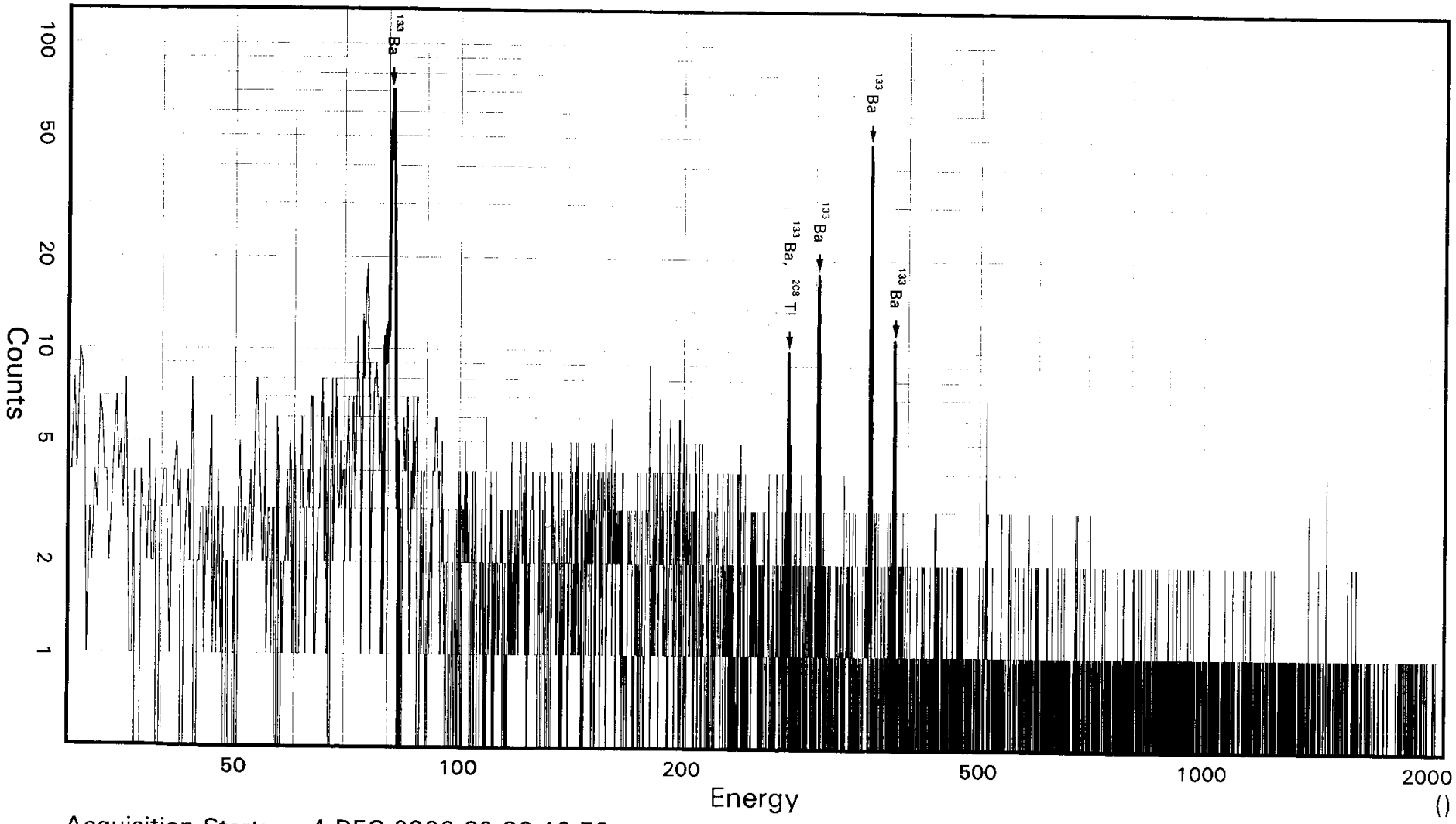
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-8.825E+00		7.937E+00	2.753E+01	5.559E-01	-0.321
SB-125	4.235E+01		2.258E+01	1.009E+02	2.019E+00	0.420
SN-126DA	-1.202E+01		6.274E+00	1.894E+01	3.840E-01	-0.635
I-131	-1.442E+01		2.630E+01	9.689E+01	1.938E+00	-0.149
CS-134	-7.145E-02		3.489E+00	1.602E+01	3.277E-01	-0.004
CS-137DA	-3.714E+00		6.877E+00	2.549E+01	5.167E-01	-0.146
LA-138	-9.007E+00		6.609E+00	2.175E+01	4.654E-01	-0.414
CE-139	2.284E+00		1.317E+01	4.913E+01	1.003E+00	0.046
BA-140	-2.387E+01		3.927E+01	1.468E+02	2.954E+00	-0.163
BALA-140	-3.800E+01		1.565E+01	1.706E+01	3.689E-01	-2.228
LA-140	-1.348E+03		6.074E+02	7.260E+02	1.571E+01	-1.857
CE-141	-3.975E+00		2.680E+01	9.925E+01	2.041E+00	-0.040
CE-144	2.434E+01		9.860E+01	3.616E+02	7.479E+00	0.067
CEPR-144	5.430E+01		1.976E+02	7.259E+02	1.501E+01	0.075
PM-144	-2.886E-01		4.620E+00	1.910E+01	3.861E-01	-0.015
PM-146	-1.815E+00		9.462E+00	3.599E+01	7.212E-01	-0.050
EU-152	-1.485E+01		3.473E+01	1.238E+02	2.475E+00	-0.120
EU-154	3.706E+00		7.300E+00	3.876E+01	8.203E-01	0.096
EU-155	-1.479E+00		4.630E+01	1.724E+02	3.631E+00	-0.009
HF-181	2.717E+00		9.078E+00	3.680E+01	7.383E-01	0.074
BI-207	1.040E+01		5.844E+00	2.692E+01	5.426E-01	0.386
TL-208	1.370E+01		7.545E+00	3.410E+01	6.878E-01	0.402
BI-210M	-1.975E+01		1.674E+01	5.583E+01	1.120E+00	-0.354
BI-212	-1.074E+02		5.760E+01	1.621E+02	4.955E+00	-0.662
PB-212	-8.889E+00		2.169E+01	7.986E+01	1.606E+00	-0.111
BI-214	1.015E+01		1.372E+01	5.951E+01	1.202E+00	0.170
PB-214	-1.495E+01		3.339E+01	9.764E+01	1.953E+00	-0.153
RA-223	1.033E+02		5.521E+01	2.377E+02	4.766E+00	0.435
RA-224DA	-8.998E+00		2.196E+01	8.085E+01	1.626E+00	-0.111
RA-226DA	1.027E+01		1.373E+01	5.959E+01	1.204E+00	0.172
AC-227DA	-5.245E+01		7.772E+01	2.753E+02	5.539E+00	-0.191
AC-228	2.641E+01		2.063E+01	9.237E+01	1.905E+00	0.286
RA-228DA	2.652E+01		2.071E+01	9.274E+01	1.913E+00	0.286
TH-228DA	3.860E+01		2.126E+01	9.609E+01	1.938E+00	0.402
TH-232DA	-8.527E+01		5.632E+01	1.822E+02	3.645E+00	-0.468
TH-234DA	2.613E+02		8.114E+02	3.415E+03	7.089E+01	0.077
U-234DA	-3.859E+01		4.006E+01	1.408E+02	2.819E+00	-0.274
U-235HP	2.700E+01		9.202E+01	3.518E+02	7.241E+00	0.077
NP-237DA	1.459E+01		1.997E+01	8.104E+01	1.622E+00	0.180
U-238DA	-1.495E+01		3.339E+01	9.764E+01	1.953E+00	-0.153
U-238DHP	-5.869E+02		3.159E+02	1.063E+03	2.359E+01	-0.552
AM-241HP	-2.506E+01		2.795E+01	9.811E+01	2.193E+00	-0.255

STL Richland WA.

BA133

Sample ID: JKAHT1AC
Detector ID: GER7 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 20:30:46.78
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 6.48302E-01
Slope: 2.49222E-01
Quadrature: 1.30662E-07

SAMPLE IDENTIFICATION: JKAHT1AC

CONFIGURATION ID: GER7:JKAHT1AC_041262030
TITLE : BA133
SAMPLE ID : JKAHT1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:30:46
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:31:41.96
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: 6.4830E-01 keV
ENERGY SLOPE: 2.4922E-01 keV/C
ENERGY Q COEFF: 1.3066E-07 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 5.5865E-01 keV
FWHM SLOPE: 3.4877E-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 4-DEC-2006 21:01:14

Configuration : $DISK1:[GER7.SAMPLE]JKAHT1AC_041262030.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:46
Sample ID : JKAHT1AC 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 : 20.59 End energy : 2051.04
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.08*	15	38	0.71	298.60	293	10	8.47E-03	92.3	
2	0	80.94	346	27	1.09	322.11	313	18	1.92E-01	6.4	
3	0	276.49	47	8	1.86	1106.17	1097	16	2.59E-02	20.0	
4	0	302.97	96	10	1.40	1212.27	1205	18	5.31E-02	12.7	
5	0	355.91	273	0	1.12	1424.43	1417	16	1.52E-01	6.1	
6	0	384.04	37	15	1.18	1537.13	1525	17	2.07E-02	27.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 4-DEC-2006 21:01:14

Configuration : $DISK1:[GER7.SAMPLE]JKAHT1AC_041262030.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:46
Sample ID : JKAHT1AC 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	346	33.00	1.923E+00	1.819E+03	1.823E+03	8.42
	276.40	47	6.90	2.076E+00	1.085E+03	1.087E+03	20.72
	302.84	96	17.80	2.078E+00	8.610E+02	8.630E+02	13.76
	356.00	273	62.05*	2.080E+00	7.049E+02	7.065E+02	8.10
	383.85	37	8.70	2.080E+00	6.858E+02	6.873E+02	28.20

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAHT1AC

Acquisition date : 4-DEC-2006 20:30:46

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.08	15	38	0.71	298.60	293	10	8.47E-03	92.3	1.91E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAHT1AC

Acquisition date : 4-DEC-2006 20:30:46

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	1.101E+03	20.72	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 4-DEC-2006 21:01:16

Configuration : $DISK1:[GER7.SAMPLE]JKAHT1AC_041262030.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 : 22-NOV-2006 12:00:00
Sample ID : JKAHT1AC
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 : 4-DEC-2006 20:30:46
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.20 0.0%
Confidence level : 5.00 %
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy
WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.065E+02	5.724E+01	4.592E+01	9.184E-01	15.386

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.257E+02		6.013E+01	1.680E+02	3.371E+00	-0.748
NA-22	-1.670E+00		2.946E+00	1.261E+01	2.674E-01	-0.132
K-40	1.132E+02		6.780E+01	3.529E+02	7.581E+00	0.321
SC-46	1.861E+00		1.863E+00	1.368E+01	2.869E-01	0.136
CR-51	6.441E+01		8.671E+01	3.700E+02	7.403E+00	0.174
MN-54	4.911E+00		4.543E+00	2.215E+01	4.547E-01	0.222
CO-57	-3.714E+01		1.109E+02	4.024E+02	8.317E+00	-0.092
CO-58	-1.361E+01		5.827E+00	1.371E+01	2.809E-01	-0.993
FE-59	-7.773E+00		1.039E+01	3.869E+01	8.099E-01	-0.201
CO-60	-7.758E-03		3.431E+00	1.590E+01	3.385E-01	0.000
ZN-65	3.299E+00		6.013E+00	3.180E+01	6.664E-01	0.104
SE-75	-1.578E+01		1.501E+01	5.232E+01	1.050E+00	-0.302
SR-85	-3.573E+01		1.157E+01	3.100E+01	6.231E-01	-1.152
Y-88	7.726E+00		3.879E+00	2.313E+01	5.096E-01	0.334
NB-94	-6.086E+00		5.065E+00	1.774E+01	3.651E-01	-0.343
NB-95	1.248E+01		6.680E+00	3.319E+01	6.780E-01	0.376
TC-95M	1.696E+01		1.988E+01	7.595E+01	1.536E+00	0.223
ZR-95	5.166E+00		8.019E+00	3.879E+01	7.919E-01	0.133
ZRNB-95	2.233E+01		1.195E+01	5.939E+01	1.213E+00	0.376
MO-99	1.892E+02		2.760E+02	1.068E+03	2.203E+01	0.177
RH-101	-4.468E+00		1.774E+01	6.265E+01	1.269E+00	-0.071
RH-102M	7.947E-02		5.885E+00	2.403E+01	4.821E-01	0.003
RU-103	-3.015E+00		7.372E+00	2.871E+01	5.764E-01	-0.105
RU-106DA	-1.015E+02		7.616E+01	2.594E+02	5.247E+00	-0.391
AG-108M	9.894E+00		8.150E+00	3.507E+01	7.024E-01	0.282
AG-110M	-1.982E+00		6.087E+00	2.531E+01	5.215E-01	-0.078
SN-113DA	-5.024E+00		1.076E+01	4.109E+01	8.220E-01	-0.122

Sample ID : JKAHT1AC Acquisition date : 4-DEC-2006 20:30:46

---- Non-Identified Nuclides ----

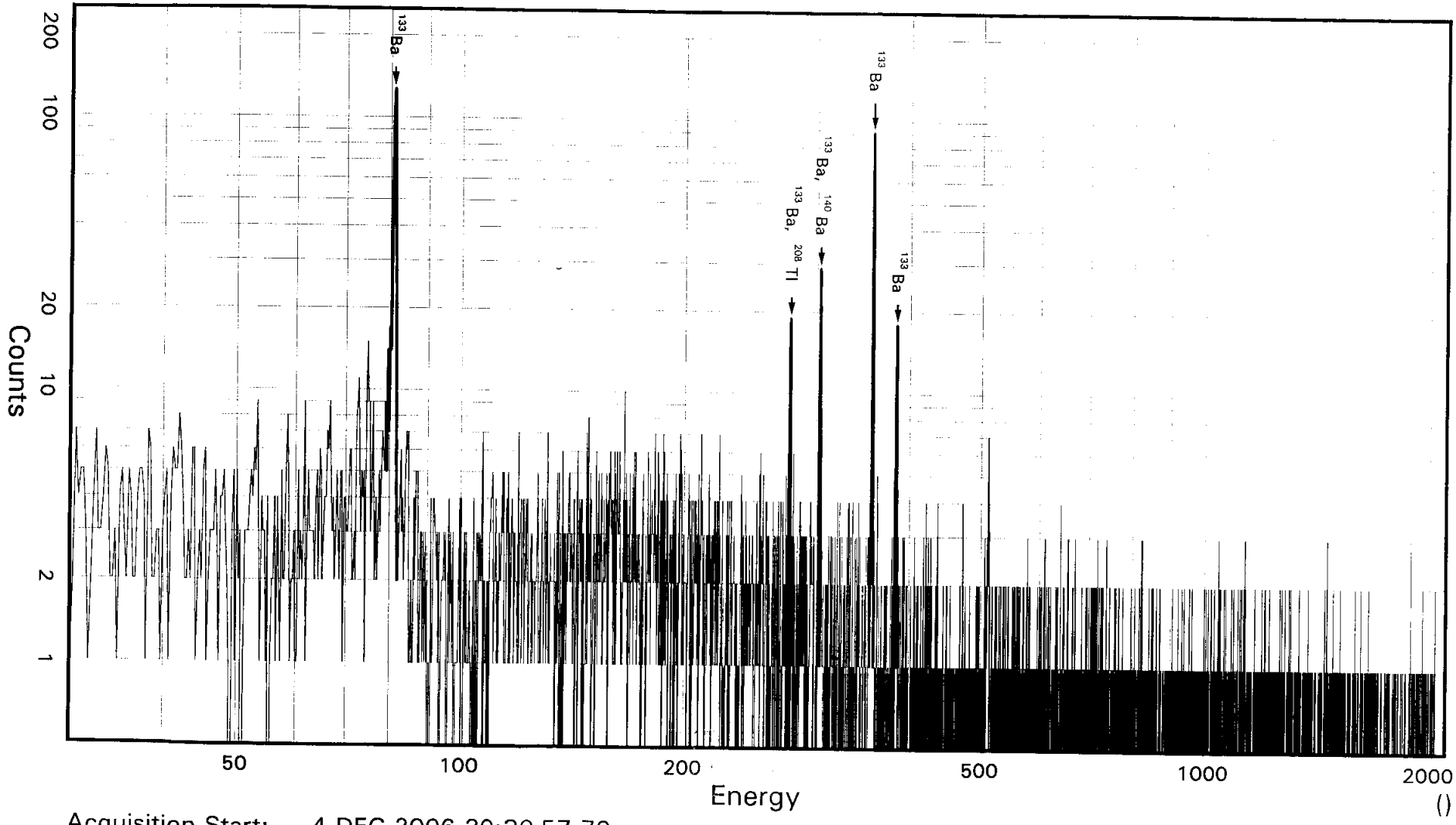
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-8.216E+00		6.171E+00	2.116E+01	4.274E-01	-0.388
SB-125	1.757E+01		1.963E+01	8.746E+01	1.751E+00	0.201
SN-126DA	-7.931E+00		3.573E+00	4.394E+00	8.914E-02	-1.805
I-131	2.214E+00		2.817E+01	1.077E+02	2.153E+00	0.021
CS-134	1.758E+00		5.210E+00	2.331E+01	4.772E-01	0.075
CS-137DA	7.692E+00		4.678E+00	2.503E+01	5.075E-01	0.307
LA-138	1.803E+01		6.886E+00	3.865E+01	8.290E-01	0.466
CE-139	-4.896E+00		1.413E+01	5.091E+01	1.040E+00	-0.096
BA-140	-1.898E+01		4.562E+01	1.739E+02	3.499E+00	-0.109
BALA-140	-6.516E+00		1.859E+01	7.650E+01	1.659E+00	-0.085
LA-140	-2.775E+02		7.916E+02	3.256E+03	7.061E+01	-0.085
CE-141	-1.298E+01		3.126E+01	1.122E+02	2.309E+00	-0.116
CE-144	1.583E+01		1.079E+02	4.045E+02	8.374E+00	0.039
CEPR-144	3.165E+01		2.158E+02	8.089E+02	1.675E+01	0.039
PM-144	2.259E+00		7.124E+00	2.905E+01	5.874E-01	0.078
PM-146	5.108E+00		6.957E+00	3.245E+01	6.504E-01	0.157
EU-152	1.084E+01		2.129E+01	9.075E+01	1.815E+00	0.119
EU-154	-4.672E+00		8.242E+00	3.528E+01	7.480E-01	-0.132
EU-155	-3.126E+01		4.733E+01	1.723E+02	3.635E+00	-0.181
HF-181	1.838E-01		7.524E+00	3.128E+01	6.277E-01	0.006
BI-207	-3.101E+00		5.482E+00	2.061E+01	4.155E-01	-0.150
TL-208	1.564E+00		7.753E+00	3.197E+01	6.450E-01	0.049
BI-210M	3.363E+00		1.752E+01	6.770E+01	1.358E+00	0.050
BI-212	-9.953E+01		6.116E+01	1.824E+02	5.575E+00	-0.546
PB-212	-9.400E-01		2.256E+01	9.034E+01	1.817E+00	-0.010
BI-214	-8.216E+00		1.465E+01	6.132E+01	1.239E+00	-0.134
PB-214	2.840E+01		2.572E+01	1.020E+02	2.041E+00	0.278
RA-223	-7.238E+01		6.924E+01	2.400E+02	4.813E+00	-0.302
RA-224DA	-9.516E-01		2.284E+01	9.146E+01	1.840E+00	-0.010
RA-226DA	-8.076E+00		1.467E+01	6.142E+01	1.241E+00	-0.131
AC-227DA	-1.470E+02		8.920E+01	2.954E+02	5.943E+00	-0.498
AC-228	1.881E+01		2.130E+01	9.467E+01	1.954E+00	0.199
RA-228DA	1.889E+01		2.139E+01	9.505E+01	1.962E+00	0.199
TH-228DA	4.407E+00		2.185E+01	9.008E+01	1.817E+00	0.049
TH-232DA	8.434E+01		6.254E+01	2.660E+02	5.320E+00	0.317
TH-234DA	2.283E+02		6.727E+02	3.042E+03	6.323E+01	0.075
U-234DA	-2.721E+01		4.461E+01	1.716E+02	3.436E+00	-0.159
U-235HP	4.744E+00		1.141E+02	4.205E+02	8.663E+00	0.011
NP-237DA	-1.776E+01		2.379E+01	8.428E+01	1.687E+00	-0.211
U-238DA	2.840E+01		2.572E+01	1.020E+02	2.041E+00	0.278
U-238DHP	-6.110E+02		4.049E+02	1.369E+03	3.047E+01	-0.446
AM-241HP	-3.603E+00		3.844E+01	1.393E+02	3.125E+00	-0.026

STL Richland WA.

BA133

Sample ID: JKAHV1AC
Detector ID: GER12 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 20:30:57.70
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.14570E+01
Slope: 2.47717E-01
Quadrature: -1.10557E-09

SAMPLE IDENTIFICATION: JKAHV1AC

CONFIGURATION ID: GER12:JKAHV1AC_041262030
TITLE : BA133
SAMPLE ID : JKAHV1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:30:57
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:32:45.59
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: 1.1457E+01 keV
ENERGY SLOPE: 2.4772E-01 keV/C
ENERGY Q COEFF: -.1106E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.3398E-01 keV
FWHM SLOPE: 4.0219E-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 4-DEC-2006 21:01:28

Configuration : $DISK1:[GER12.SAMPLE]JKAHV1AC_041262030.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:57
Sample ID : JKAHV1AC 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 : 11.70 End energy : 2040.68
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.40*	7	44	1.51	258.15	252	12	4.11E-03	196.6	
2	0	80.94	377	61	0.63	280.49	273	13	2.09E-01	6.7	
3	0	276.75	45	25	0.68	1070.96	1063	12	2.53E-02	26.2	
4	0	302.94	98	28	0.71	1176.67	1169	13	5.45E-02	14.4	
5	0	356.11	407	48	1.05	1391.33	1381	22	2.26E-01	6.6	
6	0	383.94	63	27	0.75	1503.69	1497	16	3.48E-02	22.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 4-DEC-2006 21:01:29

Configuration : $DISK1:[GER12.SAMPLE]JKAHV1AC_041262030.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:57
Sample ID : JKAHV1AC 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	377	33.00	2.899E+00	1.312E+03	1.315E+03	8.59
	276.40	45	6.90	3.105E+00	7.075E+02	7.091E+02	26.75
	302.84	98	17.80	3.109E+00	5.913E+02	5.927E+02	15.38
	356.00	407	62.05*	3.111E+00	7.026E+02	7.041E+02	8.54
	383.85	63	8.70	3.111E+00	7.725E+02	7.742E+02	23.29

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAHV1AC

Acquisition date : 4-DEC-2006 20:30:57

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.40	7	44	1.51	258.15	252	12	4.11E-03	****	2.88E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAHV1AC

Acquisition date : 4-DEC-2006 20:30:57

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
BA-140	12.79D	0.97	162.64	6.70	--- Not Found ---		Abun.
			304.84	4.50	4.572E+03	15.38	
			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	7.179E+02	26.75	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 4-DEC-2006 21:01:30

Configuration : $DISK1:[GER12.SAMPLE]JKAHV1AC_041262030.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 : 22-NOV-2006 12:00:00
Sample ID : JKAHV1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Peak Width (FWHM): 3.00
Energy tolerance : 2.00
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 4-DEC-2006 20:30:57
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.35 0.0%
Confidence level : 5.00 %
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy
WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.041E+02	6.013E+01	4.053E+01	8.106E-01	17.373

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	3.274E+01		4.785E+01	2.016E+02	4.043E+00	0.162
NA-22	-2.162E+00		2.747E+00	1.058E+01	2.229E-01	-0.204
K-40	-2.276E-01		5.139E+01	2.391E+02	5.099E+00	-0.001
SC-46	2.972E+00		4.199E+00	1.963E+01	4.096E-01	0.151
CR-51	4.199E+01		7.717E+01	3.034E+02	6.071E+00	0.138
MN-54	-2.220E-02		2.771E+00	1.213E+01	2.483E-01	-0.002
CO-57	1.314E+01		6.928E+01	2.616E+02	5.390E+00	0.050
CO-58	-6.181E+00		3.293E+00	9.142E+00	1.869E-01	-0.676
FE-59	-1.938E+01		8.424E+00	2.221E+01	4.628E-01	-0.873
CO-60	1.165E+00		3.002E+00	1.366E+01	2.890E-01	0.085
ZN-65	-2.423E+00		6.088E+00	2.453E+01	5.116E-01	-0.099
SE-75	-7.322E+00		1.127E+01	4.015E+01	8.053E-01	-0.182
SR-85	-1.627E+01		9.187E+00	3.017E+01	6.059E-01	-0.539
Y-88	2.548E+00		1.807E+00	1.182E+01	2.578E-01	0.216
NB-94	1.209E+01		4.028E+00	2.070E+01	4.247E-01	0.584
NB-95	1.545E+00		4.142E+00	1.830E+01	3.730E-01	0.084
TC-95M	1.333E+01		1.275E+01	5.076E+01	1.025E+00	0.263
ZR-95	-6.349E+00		6.638E+00	2.427E+01	4.943E-01	-0.262
ZRNB-95	2.764E+00		7.412E+00	3.274E+01	6.673E-01	0.084
MO-99	1.014E+02		1.965E+02	7.690E+02	1.581E+01	0.132
RH-101	3.456E+01		1.190E+01	4.889E+01	9.888E-01	0.707
RH-102M	-5.646E+00		5.466E+00	1.868E+01	3.746E-01	-0.302
RU-103	-8.578E+00		6.471E+00	2.117E+01	4.249E-01	-0.405
RU-106DA	-5.746E+01		3.436E+01	1.049E+02	2.119E+00	-0.548
AG-108M	-4.931E+00		6.148E+00	2.169E+01	4.344E-01	-0.227
AG-110M	-3.580E-01		3.855E+00	1.657E+01	3.404E-01	-0.022
SN-113DA	6.272E+00		8.511E+00	3.498E+01	6.997E-01	0.179

Sample ID : JKAHV1AC
Acquisition date : 4-DEC-2006 20:30:57

---- Non-Identified Nuclides ----

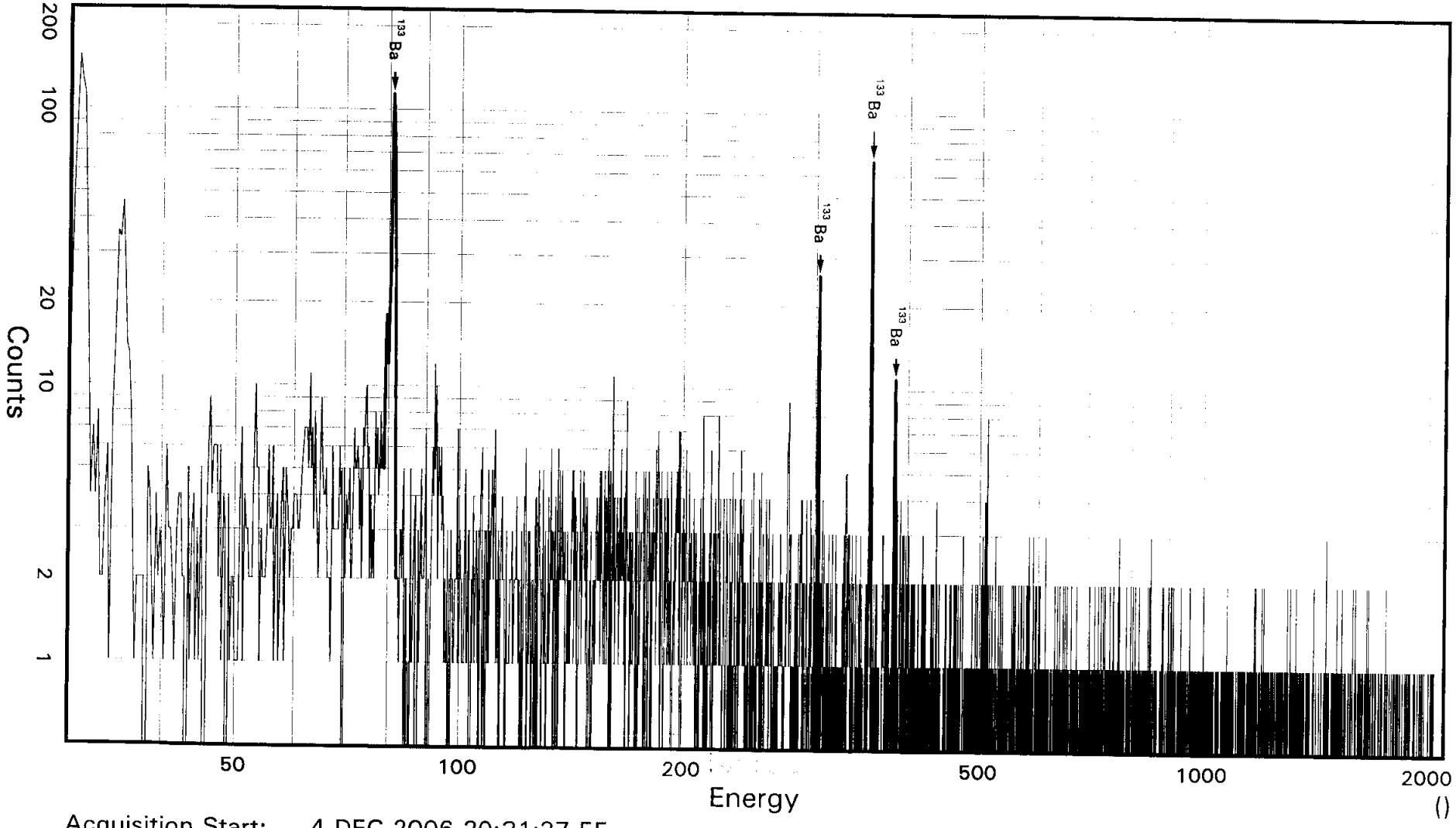
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	7.970E+00		5.459E+00	2.418E+01	4.879E-01	0.330
SB-125	1.796E+01		1.613E+01	6.920E+01	1.386E+00	0.260
SN-126DA	4.451E+00		4.167E+00	1.832E+01	3.711E-01	0.243
I-131	-2.628E+01		1.913E+01	6.481E+01	1.296E+00	-0.405
CS-134	2.390E+00		4.427E+00	1.919E+01	3.920E-01	0.125
CS-137DA	-6.767E+00		4.731E+00	1.534E+01	3.105E-01	-0.441
LA-138	-5.286E+00		3.904E+00	1.257E+01	2.677E-01	-0.420
CE-139	7.455E+00		1.137E+01	4.255E+01	8.671E-01	0.175
BA-140	1.999E+01		3.698E+01	1.526E+02	3.070E+00	0.131
BALA-140	-1.450E+01		1.215E+01	4.233E+01	9.102E-01	-0.343
LA-140	-4.826E+02		4.651E+02	1.691E+03	3.636E+01	-0.285
CE-141	-2.987E+00		2.179E+01	7.912E+01	1.624E+00	-0.038
CE-144	-7.843E+01		7.003E+01	2.404E+02	4.960E+00	-0.326
CEPR-144	-1.552E+02		1.402E+02	4.818E+02	9.939E+00	-0.322
PM-144	8.910E+00		4.219E+00	2.026E+01	4.092E-01	0.440
PM-146	8.130E+00		5.555E+00	2.625E+01	5.261E-01	0.310
EU-152	-1.912E+01		2.068E+01	7.387E+01	1.477E+00	-0.259
EU-154	-6.048E+00		7.684E+00	2.959E+01	6.235E-01	-0.204
EU-155	-2.188E+01		3.257E+01	1.187E+02	2.489E+00	-0.184
HF-181	1.428E+00		5.916E+00	2.414E+01	4.841E-01	0.059
BI-207	4.488E+00		3.481E+00	1.658E+01	3.340E-01	0.271
TL-208	-7.540E+00		4.774E+00	1.539E+01	3.103E-01	-0.490
BI-210M	1.362E+01		1.261E+01	5.086E+01	1.020E+00	0.268
BI-212	8.728E+01		6.736E+01	3.000E+02	9.164E+00	0.291
PB-212	2.120E+01		1.439E+01	5.952E+01	1.197E+00	0.356
BI-214	-5.655E+00		1.179E+01	4.975E+01	1.004E+00	-0.114
PB-214	-3.854E+01		2.316E+01	7.060E+01	1.412E+00	-0.546
RA-223	-2.283E+01		4.699E+01	1.692E+02	3.393E+00	-0.135
RA-224DA	2.146E+01		1.457E+01	6.025E+01	1.211E+00	0.356
RA-226DA	-5.655E+00		1.180E+01	4.975E+01	1.004E+00	-0.114
AC-227DA	-1.392E+02		5.622E+01	1.679E+02	3.376E+00	-0.829
AC-228	-3.670E+00		9.297E+00	3.821E+01	7.863E-01	-0.096
RA-228DA	-3.685E+00		9.335E+00	3.837E+01	7.895E-01	-0.096
TH-228DA	-2.125E+01		1.345E+01	4.337E+01	8.743E-01	-0.490
TH-232DA	-2.152E+01		4.109E+01	1.536E+02	3.073E+00	-0.140
TH-234DA	-2.378E+02		6.375E+02	2.466E+03	5.105E+01	-0.096
U-234DA	1.111E+01		3.865E+01	1.512E+02	3.027E+00	0.073
U-235HP	-9.631E+00		7.566E+01	2.756E+02	5.660E+00	-0.035
NP-237DA	-1.360E+01		1.635E+01	5.660E+01	1.133E+00	-0.240
U-238DA	-3.854E+01		2.316E+01	7.060E+01	1.412E+00	-0.546
U-238DHP	-8.117E+01		2.333E+02	8.349E+02	1.838E+01	-0.097
AM-241HP	-1.490E+01		2.139E+01	7.583E+01	1.681E+00	-0.196

STL Richland WA.

BA133

Sample ID: JKAHW1AC
Detector ID: GER5 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 20:31:37.55
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -3.24095E-01
Slope: 2.49450E-01
Quadrature: -4.10729E-09

SAMPLE IDENTIFICATION: JKAHW1AC

CONFIGURATION ID: GER5:JKAHW1AC_041262031
TITLE : BA133
SAMPLE ID : JKAHW1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:31:37
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:31:13.73
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: -.3241E+00 keV
ENERGY SLOPE: 2.4945E-01 keV/C
ENERGY Q COEFF: -.4107E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 7.3464E-01 keV
FWHM SLOPE: 2.7667E-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 4-DEC-2006 21:01:52

Configuration : RDND06$DKA100:[GER5.SAMPLE]JKAHW1AC_041262031.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:31:37
Sample ID : JKAHW1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Start energy : 19.63 End energy : 2042.90
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	31.01	536	130	0.91	125.62	118	15	2.98E-01	6.3	
2	0	35.28	181	39	0.94	142.73	136	16	1.01E-01	10.7	
3	2	79.50	49	49	0.98	320.00	316	17	2.72E-02	26.2	3.83E+00
4	2	81.03	413	42	0.93	326.13	316	17	2.29E-01	5.8	
5	0	302.75	105	4	0.94	1214.97	1206	18	5.81E-02	10.9	
6	0	355.98	306	9	1.10	1428.37	1419	19	1.70E-01	6.2	
7	0	383.71	54	0	1.14	1539.57	1532	15	3.00E-02	13.6	
8	0	387.06	11	0	0.60	1553.00	1549	8	6.11E-03	30.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 4-DEC-2006 21:01:52

Configuration : RDND06$DKA100:[GER5.SAMPLE]JKAHW1AC_041262031.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:31:37
Sample ID : JKAHW1AC 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	413	33.00	1.924E+00	2.166E+03	2.171E+03	7.96
	276.40	------	6.90	2.077E+00	------	Line Not Found	------
	302.84	105	17.80	2.080E+00	9.412E+02	9.433E+02	12.14
	356.00	306	62.05*	2.082E+00	7.891E+02	7.909E+02	8.22
	383.85	54	8.70	2.081E+00	9.941E+02	9.963E+02	14.64

Flag: "*" = Keyline

Unidentified Energy Lines

Sample ID : JKAHW1AC

Acquisition date : 4-DEC-2006 20:31:37

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	31.01	536	130	0.91	125.62	118	15	2.98E-01	6.3	1.68E+00	
0	35.28	181	39	0.94	142.73	136	16	1.01E-01	10.7	1.72E+00	
2	79.50	49	49	0.98	320.00	316	17	2.72E-02	26.2	1.92E+00	
0	387.06	11	0	0.60	1553.00	1549	8	6.11E-03	30.2	2.08E+00	

Flags: "T" = Tentatively associated

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 4-DEC-2006 21:01:54

Configuration : RDND06$DKA100:[GER5.SAMPLE]JKAHW1AC_041262031.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 : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:31:37
Sample ID : JKAHW1AC 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	7.909E+02	6.498E+01	5.073E+01	1.015E+00	15.591

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-5.501E+01		5.461E+01	1.947E+02	3.905E+00	-0.283
NA-22	-2.220E-01		4.266E+00	1.839E+01	3.898E-01	-0.012
NA-24	2.705E-02		9.647E-01	Half-Life too short		
K-40	5.122E+01		7.169E+01	3.549E+02	7.626E+00	0.144
SC-46	3.729E+00		5.881E+00	2.621E+01	5.495E-01	0.142
CR-51	-1.500E+01		1.119E+02	4.177E+02	8.358E+00	-0.036
MN-54	-4.326E+00		4.730E+00	1.715E+01	3.520E-01	-0.252
CO-57	1.612E+02		1.276E+02	4.897E+02	1.012E+01	0.329
CO-58	5.525E+00		4.963E+00	2.441E+01	5.002E-01	0.226
FE-59	9.632E-01		8.957E+00	3.984E+01	8.340E-01	0.024
CO-60	1.460E+00		4.628E+00	2.055E+01	4.376E-01	0.071
ZN-65	3.460E+00		1.026E+01	4.486E+01	9.403E-01	0.077
SE-75	4.016E+00		1.529E+01	5.911E+01	1.186E+00	0.068
SR-85	-3.721E+01		1.156E+01	3.015E+01	6.059E-01	-1.234
Y-88	3.847E+00		2.728E+00	1.785E+01	3.931E-01	0.216
NB-94	-1.708E+00		1.711E+00	4.454E+00	9.168E-02	-0.383
NB-95	3.922E+00		6.588E+00	2.926E+01	5.976E-01	0.134
TC-95M	-6.046E+00		2.198E+01	7.916E+01	1.601E+00	-0.076
ZR-95	1.010E+01		1.309E+01	5.623E+01	1.148E+00	0.180
ZRNB-95	7.451E+00		1.186E+01	5.276E+01	1.078E+00	0.141
MO-99	-6.359E+02		3.296E+02	1.024E+03	2.113E+01	-0.621
RH-101	2.363E+01		1.868E+01	7.223E+01	1.463E+00	0.327
RH-102M	-3.455E+00		4.841E+00	1.833E+01	3.678E-01	-0.188
RU-103	1.105E+01		8.765E+00	3.910E+01	7.851E-01	0.283
RU-106DA	-6.276E+01		4.624E+01	1.569E+02	3.174E+00	-0.400
AG-108M	-2.267E+01		9.251E+00	2.677E+01	5.362E-01	-0.847
AG-110M	6.863E+00		6.306E+00	3.081E+01	6.347E-01	0.223

Sample ID : JKAHW1AC Acquisition date : 4-DEC-2006 20:31:37

---- Non-Identified Nuclides ----

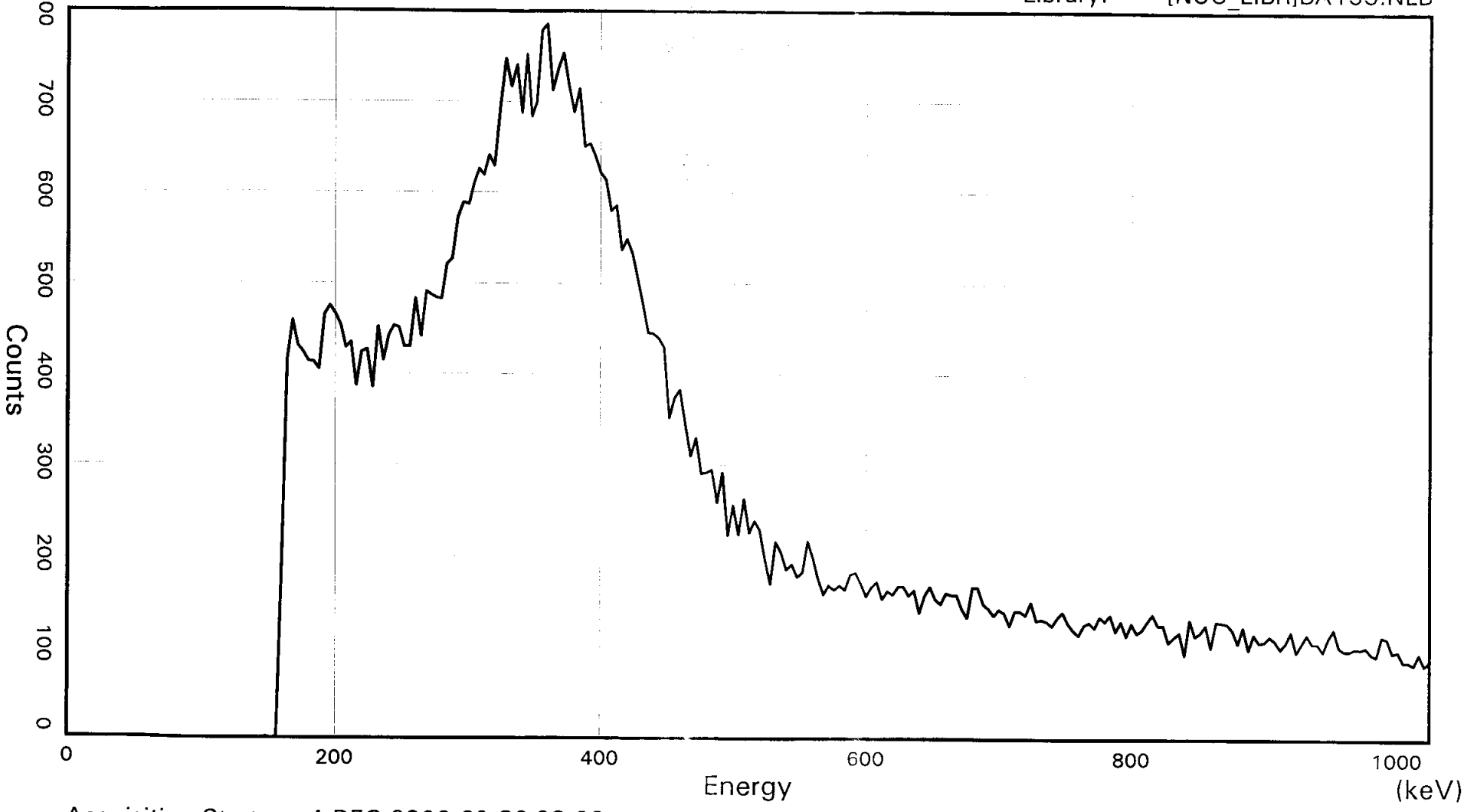
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	1.881E+01		1.500E+01	6.193E+01	1.239E+00	0.304
SB-124	9.164E+00		6.662E+00	3.111E+01	6.285E-01	0.295
SB-125	-2.659E+01		2.115E+01	7.222E+01	1.446E+00	-0.368
SN-126DA	4.739E+00		4.781E+00	2.262E+01	4.588E-01	0.210
I-131	6.211E+00		2.412E+01	9.811E+01	1.962E+00	0.063
CS-134	-5.919E+00		4.395E+00	1.427E+01	2.922E-01	-0.415
CS-137DA	-5.261E+00		5.621E+00	2.065E+01	4.187E-01	-0.255
LA-138	-2.509E+00		2.513E+00	6.958E+00	1.492E-01	-0.361
CE-139	-1.119E+00		1.816E+01	6.632E+01	1.355E+00	-0.017
BA-140	-3.882E+00		5.436E+01	2.098E+02	4.221E+00	-0.019
BALA-140	-7.191E+00		1.236E+01	5.226E+01	1.133E+00	-0.138
LA-140	-3.062E+02		5.265E+02	2.225E+03	4.825E+01	-0.138
CE-141	-3.943E+01		3.620E+01	1.201E+02	2.472E+00	-0.328
CE-144	1.413E+02		1.171E+02	4.531E+02	9.380E+00	0.312
CEPR-144	2.788E+02		2.339E+02	9.046E+02	1.873E+01	0.308
PM-144	1.921E+00		4.334E+00	2.008E+01	4.059E-01	0.096
PM-146	-2.459E+01		1.055E+01	2.971E+01	5.955E-01	-0.828
EU-152	-7.424E+00		2.980E+01	1.135E+02	2.270E+00	-0.065
EU-154	-2.351E+00		1.158E+01	4.903E+01	1.039E+00	-0.048
EU-155	5.963E+01		5.720E+01	2.227E+02	4.699E+00	0.268
HF-181	-1.250E-01		8.264E+00	3.347E+01	6.717E-01	-0.004
BI-207	1.125E+01		6.514E+00	2.996E+01	6.039E-01	0.375
TL-208	1.000E+01		9.875E+00	4.163E+01	8.400E-01	0.240
BI-210M	-3.000E+01		1.698E+01	5.349E+01	1.073E+00	-0.561
BI-212	-1.369E+02		8.691E+01	2.789E+02	8.527E+00	-0.491
PB-212	1.933E+01		2.788E+01	1.106E+02	2.225E+00	0.175
BI-214	-3.028E+01		1.318E+01	4.578E+01	9.252E-01	-0.661
PB-214	-2.787E+00		2.323E+01	8.693E+01	1.739E+00	-0.032
RA-223	8.421E+01		6.691E+01	2.739E+02	5.493E+00	0.307
RA-224DA	1.957E+01		2.823E+01	1.120E+02	2.253E+00	0.175
RA-226DA	-2.705E+01		1.273E+01	4.570E+01	9.235E-01	-0.592
AC-227DA	-1.820E+02		1.038E+02	3.348E+02	6.736E+00	-0.544
AC-228	2.896E+01		2.012E+01	9.461E+01	1.953E+00	0.306
RA-228DA	2.908E+01		2.020E+01	9.500E+01	1.961E+00	0.306
TH-228DA	2.818E+01		2.783E+01	1.173E+02	2.367E+00	0.240
TH-232DA	-5.481E+01		6.862E+01	2.463E+02	4.926E+00	-0.223
TH-234DA	1.296E+03		7.658E+02	3.841E+03	7.983E+01	0.337
U-234DA	-5.512E+01		5.126E+01	1.807E+02	3.618E+00	-0.305
U-235HP	-5.849E+00		1.232E+02	4.395E+02	9.054E+00	-0.013
NP-237DA	1.403E+01		2.308E+01	9.141E+01	1.829E+00	0.153
U-238DA	-2.787E+00		2.323E+01	8.693E+01	1.739E+00	-0.032
U-238DHP	-2.358E+02		5.176E+02	1.939E+03	4.316E+01	-0.122
AM-241HP	-5.414E+01		4.587E+01	1.563E+02	3.506E+00	-0.346

STL Richland WA.

BA133

Sample ID: JKENM1AA
Detector ID: NAI1 1

BatchID: 6332252
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 4-DEC-2006 20:32:03.03
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: JKENM1AA

CONFIGURATION ID: NAI1:JKENM1AA_041262032
TITLE : BA133
SAMPLE ID : JKENM1AA

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:32:03
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 22-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 4-DEC-2006 21:02:08

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JKENM1AA_041262032.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 22-NOV-2006 12:00:00	Acquisition date	: 4-DEC-2006 20:32:03
Sample ID	: JKENM1AA	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.65 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	4.9	5.7	2.5	2.8	0.7	3.9	0.5
88:	0.5	2.4	2.1	-1.6	-0.7	-0.3	2.0	-0.5
96:	0.3	-1.6	-0.8	-1.3	-2.8	-0.5	-2.7	-1.5
104:	-3.5	-2.1	-1.9	-2.5	-3.5	-4.0	-2.8	-1.8
112:	-1.0	-5.4						

List of Suspicious Channels

81 82 83

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	7.19E+00	0.00E+00	1.02E+00
2	3.43E+00	0.00E+00	1.04E+00
3	1.08E+00	0.00E+00	1.05E+00

Brief Report

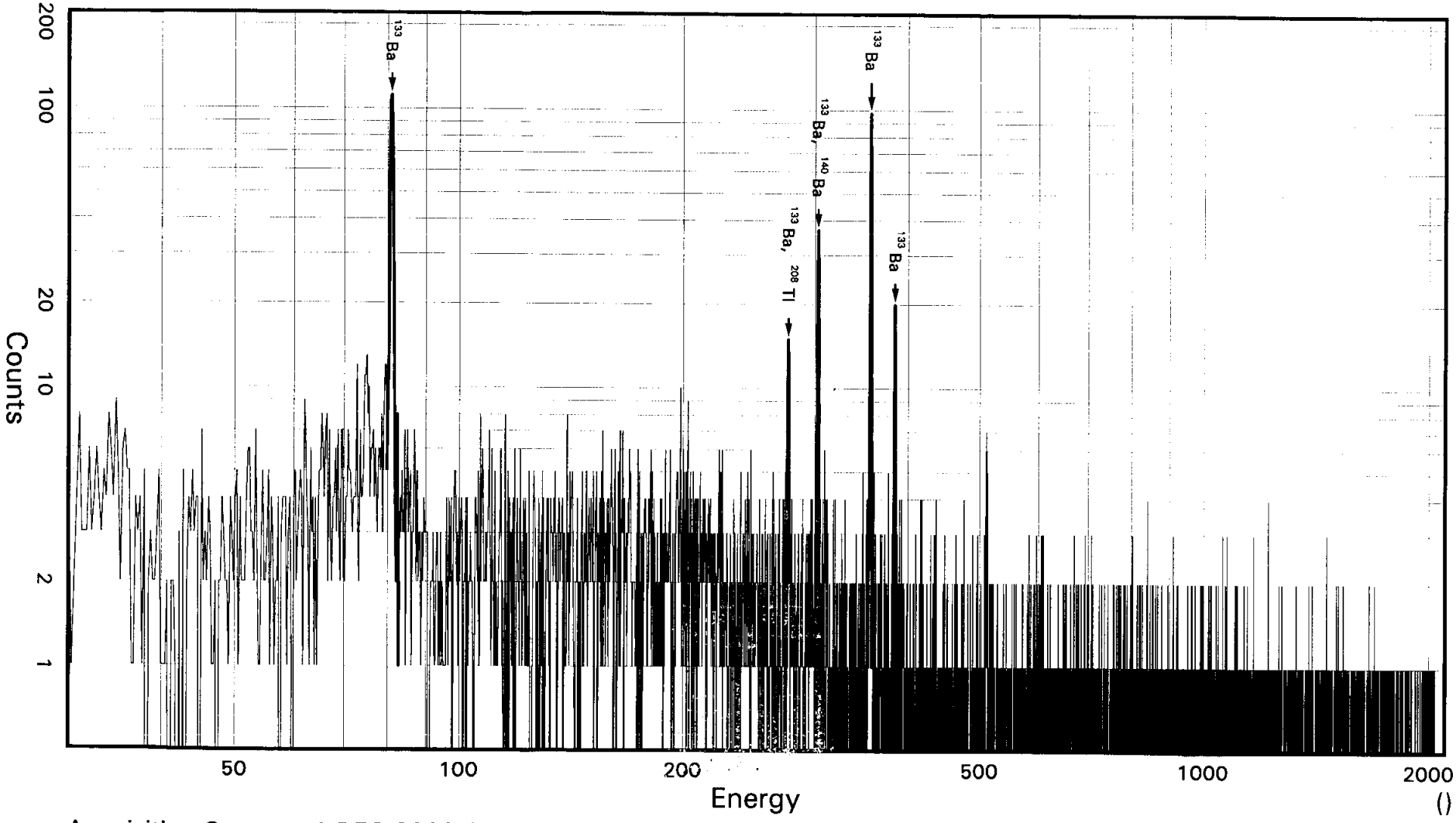
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	769.	9.53
Total Activity :	769.	

STL Richland WA.

BA133

Sample ID: JKENM1AC
Detector ID: GER12 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 21:06:36.34
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.14570E+01
Slope: 2.47717E-01
Quadrature: -1.10557E-09

SAMPLE IDENTIFICATION: JKENM1AC

CONFIGURATION ID: GER12:JKENM1AC_041262106
TITLE : BA133
SAMPLE ID : JKENM1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 21:06:36
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 20-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:32:45.59
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: 1.1457E+01 keV
ENERGY SLOPE: 2.4772E-01 keV/C
ENERGY Q COEFF: -.1106E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.3398E-01 keV
FWHM SLOPE: 4.0219E-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 4-DEC-2006 21:49:20

Configuration : $DISK1:[GER12.SAMPLE]JKENM1AC_041262106.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 20-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 21:06:36
Sample ID : JKENM1AC 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 : 11.70 End energy : 2040.68
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.03	377	52	0.81	280.87	276	13	2.09E-01	6.7	
2	0	276.30	48	25	1.00	1069.15	1062	13	2.68E-02	26.0	
3	0	302.86	155	12	1.01	1176.34	1168	15	8.64E-02	9.3	
4	0	356.06	457	41	1.07	1391.13	1380	23	2.54E-01	5.9	
5	0	383.99	94	4	0.88	1503.86	1495	18	5.20E-02	11.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.0 Generated 4-DEC-2006 21:49:20

Configuration : $DISK1:[GER12.SAMPLE]JKENM1AC_041262106.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 20-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 21:06:36
Sample ID : JKENM1AC 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	377	33.00	2.899E+00	1.312E+03	1.315E+03	8.65
	276.40	48	6.90	3.105E+00	7.498E+02	7.518E+02	26.59
	302.84	155	17.80	3.109E+00	9.363E+02	9.388E+02	10.75
	356.00	457	62.05*	3.111E+00	7.887E+02	7.908E+02	8.00
	383.85	94	8.70	3.111E+00	1.154E+03	1.157E+03	12.80

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKENM1AC

Acquisition date : 4-DEC-2006 21:06:36

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
BA-140	12.79D	1.13	162.64	6.70	--- Not Found ---		Abun.
			304.84	4.50	8.078E+03	10.75	
			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	7.609E+02	26.59	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 4-DEC-2006 21:49:22

Configuration : $DISK1:[GER12.SAMPLE]JKENM1AC_041262106.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 : 20-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 21:06:36
Sample ID : JKENM1AC 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	7.908E+02	6.324E+01	3.695E+01	7.390E-01	21.402

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	2.853E+00		4.857E+01	1.926E+02	3.863E+00	0.015
NA-22	1.176E-01		3.188E+00	1.370E+01	2.888E-01	0.009
K-40	-4.305E+01		4.678E+01	2.140E+02	4.564E+00	-0.201
SC-46	-7.544E-01		3.668E+00	1.649E+01	3.441E-01	-0.046
CR-51	2.852E+00		8.373E+01	3.142E+02	6.286E+00	0.009
MN-54	-4.988E+00		4.787E+00	1.666E+01	3.411E-01	-0.299
CO-57	-1.811E+01		7.653E+01	2.783E+02	5.734E+00	-0.065
CO-58	-6.067E+00		4.238E+00	1.394E+01	2.850E-01	-0.435
FE-59	-2.566E+00		6.573E+00	2.657E+01	5.536E-01	-0.097
CO-60	-5.650E+00		2.545E+00	3.079E+00	6.512E-02	-1.835
ZN-65	1.313E+00		5.943E+00	2.649E+01	5.524E-01	0.050
SE-75	1.990E+01		1.178E+01	4.897E+01	9.822E-01	0.406
SR-85	-2.294E+01		8.992E+00	2.747E+01	5.518E-01	-0.835
Y-88	2.582E+00		1.831E+00	1.198E+01	2.612E-01	0.216
NB-94	-5.676E+00		3.372E+00	1.020E+01	2.093E-01	-0.556
NB-95	-1.839E+00		5.461E+00	2.120E+01	4.320E-01	-0.087
TC-95M	1.635E+01		1.509E+01	5.891E+01	1.190E+00	0.278
ZR-95	8.296E+00		8.370E+00	3.739E+01	7.616E-01	0.222
ZRNB-95	-5.620E+00		9.927E+00	3.733E+01	7.608E-01	-0.151
MO-99	8.288E+01		3.395E+02	1.301E+03	2.676E+01	0.064
RH-101	3.981E+00		1.339E+01	4.789E+01	9.685E-01	0.083
RH-102M	7.775E+00		4.497E+00	2.069E+01	4.149E-01	0.376
RU-103	1.024E+01		6.548E+00	2.918E+01	5.857E-01	0.351
RU-106DA	5.619E+01		4.117E+01	1.889E+02	3.817E+00	0.297
AG-108M	-1.329E+00		6.917E+00	2.551E+01	5.108E-01	-0.052
AG-110M	9.658E-01		3.453E+00	1.625E+01	3.338E-01	0.059
SN-113DA	-1.306E+01		8.789E+00	2.911E+01	5.824E-01	-0.449

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	3.094E+00		6.438E+00	2.569E+01	5.184E-01	0.120
SB-125	-4.010E+00		1.617E+01	6.150E+01	1.231E+00	-0.065
SN-126DA	-8.060E+00		4.346E+00	1.303E+01	2.639E-01	-0.619
I-131	-2.652E+01		2.405E+01	8.378E+01	1.676E+00	-0.317
CS-134	2.353E+00		4.038E+00	1.800E+01	3.676E-01	0.131
CS-137DA	3.855E+00		3.906E+00	1.813E+01	3.672E-01	0.213
LA-138	-7.788E-02		3.459E+00	1.587E+01	3.378E-01	-0.005
CE-139	2.302E+01		1.156E+01	4.608E+01	9.391E-01	0.500
BA-140	-6.273E+00		3.560E+01	1.410E+02	2.836E+00	-0.044
BALA-140	-5.045E+00		8.994E+00	3.869E+01	8.320E-01	-0.130
CE-141	1.179E+01		1.889E+01	7.363E+01	1.511E+00	0.160
CE-144	3.289E+01		7.258E+01	2.768E+02	5.709E+00	0.119
CEPR-144	6.236E+01		1.449E+02	5.519E+02	1.139E+01	0.113
PM-144	-3.010E+00		3.461E+00	1.262E+01	2.549E-01	-0.239
PM-146	7.381E-01		6.436E+00	2.580E+01	5.170E-01	0.029
EU-152	-1.193E+01		1.917E+01	7.093E+01	1.419E+00	-0.168
EU-154	3.291E-01		8.907E+00	3.829E+01	8.069E-01	0.009
EU-155	-6.284E+01		3.894E+01	1.312E+02	2.752E+00	-0.479
HF-181	3.378E+00		4.802E+00	2.188E+01	4.388E-01	0.154
BI-207	1.242E+00		3.947E+00	1.658E+01	3.340E-01	0.075
TL-208	2.986E+00		5.449E+00	2.254E+01	4.544E-01	0.132
BI-210M	-1.646E+01		1.261E+01	4.227E+01	8.478E-01	-0.389
BI-212	2.244E+01		4.917E+01	2.198E+02	6.714E+00	0.102
PB-212	-4.741E+00		1.408E+01	5.193E+01	1.044E+00	-0.091
BI-214	1.491E+00		1.333E+01	5.616E+01	1.134E+00	0.027
PB-214	-1.157E+01		1.791E+01	6.489E+01	1.298E+00	-0.178
RA-223	3.134E+01		4.483E+01	1.774E+02	3.557E+00	0.177
RA-224DA	-4.809E+00		1.429E+01	5.268E+01	1.059E+00	-0.091
RA-226DA	1.491E+00		1.333E+01	5.616E+01	1.134E+00	0.027
AC-227DA	-6.949E+01		5.413E+01	1.843E+02	3.707E+00	-0.377
AC-228	3.499E+01		1.764E+01	7.999E+01	1.646E+00	0.437
RA-228DA	3.515E+01		1.772E+01	8.037E+01	1.654E+00	0.437
TH-228DA	8.431E+00		1.539E+01	6.365E+01	1.283E+00	0.132
TH-232DA	3.275E+01		4.192E+01	1.737E+02	3.475E+00	0.189
TH-234DA	-9.864E+02		5.304E+02	1.583E+03	3.277E+01	-0.623
U-234DA	-5.766E+01		4.055E+01	1.408E+02	2.819E+00	-0.410
U-235HP	-1.248E+02		6.913E+01	2.218E+02	4.555E+00	-0.563
NP-237DA	7.640E+00		1.969E+01	7.386E+01	1.478E+00	0.103
U-238DA	-1.157E+01		1.791E+01	6.489E+01	1.298E+00	-0.178
U-238DHP	-1.930E+02		2.382E+02	8.261E+02	1.819E+01	-0.234
AM-241HP	-1.699E+01		2.267E+01	7.977E+01	1.768E+00	-0.213