Event #111

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Analytical Data Package Prepared For

Brown and Caldwell

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.: 34206

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
33221	EVENT 111	000578	J6L110190-5	JK8HD1AA	9JK8HD10	6347434
		000578	J6L110190-5	JK8HD1AE	9JK8HD10	6347436
		000578	J6L110190-5	JK8HD1AC	9JK8HD10	6347439
		000578	J6L110190-5	JK8HD1AD	9JK8HD10	6347440
		GW-MCF-05	F6H110173-4	JA59T3AF	9JA59T30	6241477
	EVENT 111	P-0804	J6L110190-1	JK8G81AA	9JK8G810	6347434
		P-0804	J6L110190-1	JK8G81AE	9JK8G810	6347436
		P-0804	J6L110190-1	JK8G81AC	9JK8G810	6347439
		P-0804	J6L110190-1	JK8G81AD	9JK8G810	6347440
		P-0805	J6L110190-2	JK8G91AA	9JK8G910	6347434
		P-0805	J6L110190-2	JK8G91AE	9JK8G910	6347436
		P-0805	J6L110190-2	JK8G91AC	9JK8G910	6347439
		P-0805	J6L110190-2	JK8G91AD	9JK8G910	6347440
		P-0806	J6L110190-3	JK8HA1AA	9JK8HA10	6347434
		P-0806	J6L110190-3	JK8HA1AE	9JK8HA10	6347436
		P-0806	J6L110190-3	JK8HA1AC	9JK8HA10	6347439
		P-0806	J6L110190-3	JK8HA1AD	9JK8HA10	6347440
		P-0807	J6L110190-4	JK8HC1AA	9JK8HC10	6347434
		P-0807	J6L110190-4	JK8HC1AE	9JK8HC10	6347436
		P-0807	J6L110190-4	JK8HC1AC	9JK8HC10	6347439
		P-0807	J6L110190-4	JK8HC1AD	9JK8HC10	6347440

Certificate of Analysis

January 15, 2007

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

Attention: Guy Graening

Date Received at Lab	:	December 7, 2006
Project Name	:	Air Quality Monitoring Yerington Mine
Project Number	:	121243
Event Number	:	111
PO Number	:	129682.001
Sample Type	:	Five (5) Filters
SDG Number	:	33221

CASE NARRATIVE

I. Introduction

On December 7, 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 J6L110190.

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: 16-Jan-07

Report No. : 34206

SDG No: 33221

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC|MDA	RER2
000578	JK8HD1AA	TH-228	0.0389 +- 0.123	ND	pCi/sample	105%	0.286	
		TH-230	0.150 +- 0.178	ND	pCi/sample	105%	0.276	
		TH-232	0.113 +- 0.137	ND	pCi/sample	105%	0.225	
000578	JK8HD1AE	ALPHA	5.38 +- 3.87	ND	pCi/sample	100%	5.98	
000578	JK8HD1AC	RA-226	0.114 +- 0.209	ND	pCi/sample	97%	0.367	
000578	JK8HD1AD	RA-228	0.566 +- 1.04	ND	pCi/sample	83%	2.38	
GW-MCF-05	JA59T3AF	TH-228	-0.00787 +- 0.0158	ND	pCi/L	43%	0.396	
		TH-230	-0.00782 +- 0.0157	ND	pCi/L	43%	0.393	
		TH-232	0.00000 +- 0.239	ND	pCi/L	43%	0.265	
GW-MCF-05 DUP	JA59T2AH	TH-228	-0.1360 +- 0.123	ND	pCi/L	40%	1.0	
		TH-230	0.00000 +- 0.331	ND	pCi/L	40%	0.366	
		TH-232	0.00000 +- 0.331	ND	pCi/L	40%	0.366	
P-0804	JK8G81AA	TH-228	0.111 +- 0.162	ND	pCi/sample	91%	0.267	
		TH-230	0.365 +- 0.269	=	pCi/sample	91%	0.257	
		TH-232	0.00000 +- 0.0960	ND	pCi/sample	91%	0.257	
P-0804	JK8G81AE	ALPHA	4.51 +- 3.34	ND	pCi/sample	100%	4.89	
P-0804	JK8G81AC	RA-226	0.0761 +- 0.122	ND	pCi/sample	108%	0.214	
P-0804	JK8G81AD	RA-228	0.916 +- 1.09	ND	pCi/sample	98%	2.4	
P-0805	JK8G91AA	TH-228	0.134 +- 0.159	ND	pCi/sample	101%	0.229	
		TH-230	0.572 +- 0.327	=	pCi/sample	101%	0.31	
		TH-232	0.111 +- 0.134	ND	pCi/sample	101%	0.221	
P-0805	JK8G91AE	ALPHA	6.62 +- 3.74	=	pCi/sample	100%	4.12	
P-0805	JK8G91AC	RA-226	1.10 +- 0.339	=	pCi/sample	112%	0.198	
P-0805	JK8G91AD	RA-228	3.13 +- 1.21	=	pCi/sample	100%	2.12	
P-0806	JK8HA1AA	TH-228	0.269 +- 0.274	ND	pCi/sample	99%	0.417	
		TH-230	0.195 +- 0.201	ND	pCi/sample	99%	0.26	
		TH-232	-0.0216 +- 0.0968	ND	pCi/sample	99%	0.26	
P-0806	JK8HA1AE	ALPHA	7.30 +- 4.06	=	pCi/sample	100%	4.93	
P-0806	JK8HA1AC	RA-226	-0.0346 +- 0.137	ND	pCi/sample	100%	0.281	
P-0806	JK8HA1AD	RA-228	-0.7810 +- 1.12	ND	pCi/sample	88%	2.82	

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V5.1 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: 16-Jan-07

Report No. : 34206

SDG No: 33221

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC|MDA	RER2
P-0807	JK8HC1AA	TH-228	0.0240 +- 0.107	ND	pCi/sample	94%	0.288	
		TH-230	0.185 +- 0.194	ND	pCi/sample	94%	0.277	
		TH-232	0.0925 +- 0.140	ND	pCi/sample	94%	0.277	
P-0807	JK8HC1AE	ALPHA	4.74 +- 3.41	ND	pCi/sample	100%	5.05	
P-0807	JK8HC1AC	RA-226	0.0872 +- 0.168	ND	pCi/sample	99%	0.302	
P-0807	JK8HC1AD	RA-228	1.42 +- 1.18	ND	pCi/sample	83%	2.51	

Number of Results: 36

STL Richland

rptSTLRchSaSum
V5.1 A2002

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

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.

QC Results Summary
STL Richland STLR

Ordered by QC Type, Batch No.

Date: 16-Jan-07

Report No. : 34206

SDG No.: 33221

QC Type	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
BLANK QC	JDELA1AA	TH-228	0.0850 +- 0.209	N	pCi/L	82%			0.487
		TH-230	0.0684 +- 0.137	N	pCi/L	82%			0.185
		TH-232	-0.0137 +- 0.0274	N	pCi/L	82%			0.328
BLANK QC	JLDX51AA	TH-228	0.00456 +- 0.00825	N	pCi/sample	100%			0.0161
		TH-230	0.00491 +- 0.00784	N	pCi/sample	100%			0.0131
		TH-232	-0.00109 +- 0.00567	N	pCi/sample	100%			0.0154
BLANK QC	JLD0H1AA	ALPHA	0.000545 +- 0.00324	N	pCi/sample	100%			0.00769
BLANK QC	JLD0Q1AA	RA-226	0.0000345 +- 0.000247	N	pCi/sample	106%			0.000482
BLANK QC	JLD011AA	RA-228	0.0563 +- 0.237	N	pCi/sample	94%			0.552
LCS	JDELA1AC	TH-228	-0.0319 +- 0.0454	N	pCi/L	74%			0.451
		TH-230	9.62 +- 2.21	=	pCi/L	74%	106%	0.1	0.209
		TH-232	0.00000 +- 0.189	N	pCi/L	74%			0.209
LCS	JLDX51AC	TH-230	1.75 +- 0.326	=	pCi/sample	96%	96%	0.0	0.0151
LCS	JLD0H1AC	ALPHA	0.153 +- 0.0394	=	pCi/sample	100%	85%	-0.2	0.00616
LCS	JLD0Q1AC	RA-226	0.00845 +- 0.00199	=	pCi/sample	92%	93%	-0.1	0.000415
LCS	JLD011AC	RA-228	5.60 +- 0.872	=	pCi/sample	76%	110%	0.1	0.619

Number of Results: 16

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Bias - (Result/Expected)-1 as defined by ANSI N13.30.
= ERPIMS - Equal To, Analyte Detected
ND Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 16-Jan-07

Lab Name:	STL Richland	**SDG:**	33221	**Collection Date:**	11/21/2006 12:10:00 PM
Lot-Sample No.:	J6L110190-5	**Report No. :**	34206	**Received Date:**	12/7/2006 10:00:00 AM
Client Sample ID:	000578	**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: 6347434	**Work Order:** JK8HD1AA			**Report DB ID:** 9JK8HD10								
TH-228	0.0389	ND	0.12	0.12	0.286	pCi/sample	105%	*0.14*	12/27/06 08:02 p	1.0	0.08182	ISOTH
						0.0905	1.0	*0.63*		Sample	Sample	ALP175
TH-230	0.150	ND	0.18	0.18	0.276	pCi/sample	105%	*0.54*	12/27/06 08:02 p	1.0	0.08182	ISOTH
						0.0873	1.0	*(1.7)*		Sample	Sample	ALP175
TH-232	0.113	ND	0.14	0.14	0.225	pCi/sample	105%	*0.5*	12/27/06 08:02 p	1.0	0.08182	ISOTH
						0.0618	1.0	*(1.6)*		Sample	Sample	ALP175
Batch: 6347436	**Work Order:** JK8HD1AE			**Report DB ID:** 9JK8HD10								
ALPHA	5.38	ND	3.7	3.9	5.98	pCi/sample	100%	*0.9*	1/3/07 07:25 p	1.0	0.02054	E900.0
						2.54	20.0	*(2.8)*		Sample	Sample	GPC10F
Batch: 6347439	**Work Order:** JK8HD1AC			**Report DB ID:** 9JK8HD10								
RA-226	0.114	ND	0.21	0.21	0.367	pCi/sample	97%	*0.31*	1/11/07 01:31 p	0.833	0.24354	E903.1
						0.165	1.0	*(1.1)*		Sample	Sample	ASC3HA
Batch: 6347440	**Work Order:** JK8HD1AD			**Report DB ID:** 9JK8HD10								
RA-228	0.566	ND	0.99	1.0	2.38	pCi/sample	83%	*0.24*	1/13/07 07:01 a	1.0	0.24354	E904.0
						1.07	3.1	*(1.1)*		Sample	Sample	GPC1C

Number of Results: 6

Comments:

STL Richland
rptSTLRchSample
V5.1 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: 16-Jan-07

Lab Name:	**STL Richland**	**SDG:**	33221	**Collection Date:**	9/8/2006
Lot-Sample No.:	**F6H110173-4**	**Report No. :**	34206	**Received Date:**	8/11/2006 10:00:00 AM
Client Sample ID:	**GW-MCF-05**	**COC No. :**		**Matrix:**	WATER AQ

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: 6241477	**Work Order:** JA59T3AF			**Report DB ID:** 9JA59T30								
TH-228	-0.00787	ND	0.016	0.016	0.396	pCi/L	43%	*-0.02*	9/8/06 02:05 p		0.2043	ISOTH
						0.0647	1.0	*-1.*			L	ALP117
TH-230	-0.00782	ND	0.016	0.016	0.393	pCi/L	43%	*-0.02*	9/8/06 02:05 p		0.2043	ISOTH
						0.0643	1.0	*-1.*			L	ALP117
TH-232	0.00000	ND	0.0000	0.24	0.265	pCi/L	43%	*0.*	9/8/06 02:05 p		0.2043	ISOTH
							1.0	*0.*			L	ALP117

Number of Results: 3

Comments:

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V5.1 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: 16-Jan-07

Lab Name: STL Richland
Lot-Sample No.: J6L110190-1
Client Sample ID: P-0804

SDG: 33221
Report No. : 34206
COC No. :

Collection Date: 11/21/2006 11:30:00 AM
Received Date: 12/7/2006 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: 6347434	Work Order: JK8G81AA			Report DB ID: 9JK8G810								
TH-228	0.111	ND	0.16	0.16	0.267	pCi/sample	91%	0.42	12/27/06 08:02 p	1.0	0.0797	ISOTH
						0.0732	1.0	(1.4)		Sample	Sample	ALP171
TH-230	0.365	=	0.26	0.27	0.257	pCi/sample	91%	(1.4)	12/27/06 08:02 p	1.0	0.0797	ISOTH
						0.0706	1.0	(2.7)		Sample	Sample	ALP171
TH-232	0.00000	ND	0.0000	0.096	0.257	pCi/sample	91%	0.	12/27/06 08:02 p	1.0	0.0797	ISOTH
						0.0706	1.0	0.		Sample	Sample	ALP171
Batch: 6347436	Work Order: JK8G81AE			Report DB ID: 9JK8G810								
ALPHA	4.51	ND	3.2	3.3	4.89	pCi/sample	100%	0.92	1/3/07 07:25 p	1.0	0.02001	E900.0
						1.98	20.0	(2.7)		Sample	Sample	GPC10A
Batch: 6347439	Work Order: JK8G81AC			Report DB ID: 9JK8G810								
RA-226	0.0761	ND	0.12	0.12	0.214	pCi/sample	108%	0.36	1/11/07 01:01 p	0.833	0.23878	E903.1
						0.0881	1.0	(1.2)		Sample	Sample	ASC2MA
Batch: 6347440	Work Order: JK8G81AD			Report DB ID: 9JK8G810								
RA-228	0.916	ND	1.1	1.1	2.4	pCi/sample	98%	0.38	1/13/07 07:06 a	1.0	0.23878	E904.0
						1.1	3.1	(1.7)		Sample	Sample	GPC7A

Number of Results: 6

Comments:

STL Richland
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V5.1 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: 16-Jan-07

Lab Name: STL Richland
Lot-Sample No.: J6L110190-2
Client Sample ID: P-0805

SDG: 33221
Report No. : 34206
COC No. :

Collection Date: 11/21/2006 11:50:00 AM
Received Date: 12/7/2006 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: 6347434	**Work Order:** JK8G91AA			**Report DB ID:** 9JK8G910								
TH-228	**0.134**	ND	0.16	0.16	0.229	pCi/sample	101%	*0.58*	12/27/06 08:02 p	1.0	0.08164	ISOTH
						0.0629	1.0	*(1.7)*		Sample	Sample	ALP172
TH-230	**0.572**	=	0.31	0.33	0.31	pCi/sample	101%	*(1.8)*	12/27/06 08:02 p	1.0	0.08164	ISOTH
						0.105	1.0	*(3.5)*		Sample	Sample	ALP172
TH-232	**0.111**	ND	0.13	0.13	0.221	pCi/sample	101%	*0.5*	12/27/06 08:02 p	1.0	0.08164	ISOTH
						0.0607	1.0	*(1.6)*		Sample	Sample	ALP172
Batch: 6347436	**Work Order:** JK8G91AE			**Report DB ID:** 9JK8G910								
ALPHA	**6.62**	=	3.4	3.7	4.12	pCi/sample	100%	*(1.6)*	1/3/07 07:25 p	1.0	0.02037	E900.0
						1.59	20.0	*(3.5)*		Sample	Sample	GPC10B
Batch: 6347439	**Work Order:** JK8G91AC			**Report DB ID:** 9JK8G910								
RA-226	**1.10**	=	0.26	0.34	0.198	pCi/sample	112%	*(5.5)*	1/11/07 12:53 p	0.833	0.24414	E903.1
						0.0817	1.0	*(6.5)*		Sample	Sample	ASC8HC
Batch: 6347440	**Work Order:** JK8G91AD			**Report DB ID:** 9JK8G910								
RA-228	**3.13**	=	1.1	1.2	2.12	pCi/sample	100%	*(1.5)*	1/13/07 07:06 a	1.0	0.24414	E904.0
						0.964	3.1	*(5.2)*		Sample	Sample	GPC7B

Number of Results: 6

Comments:

STL Richland
rptSTLRchSample
V5.1 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: 16-Jan-07

Lab Name: STL Richland
Lot-Sample No.: J6L110190-3
Client Sample ID: P-0806

SDG: 33221
Report No. : 34206
COC No. :

Collection Date: 11/21/2006 12:05:00 PM
Received Date: 12/7/2006 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: 6347434	**Work Order:** JK8HA1AA			**Report DB ID:** 9JK8HA10								
TH-228	0.269	ND	0.27	0.27	0.417	pCi/sample	99%	*0.65*	12/27/06 08:02 p	1.0	0.08269	ISOTH
						0.148	1.0	*(2.)*		Sample	Sample	ALP173
TH-230	0.195	ND	0.20	0.20	0.26	pCi/sample	99%	*0.75*	12/27/06 08:02 p	1.0	0.08269	ISOTH
						0.0712	1.0	*(1.9)*		Sample	Sample	ALP173
TH-232	-0.0216	ND	0.097	0.097	0.26	pCi/sample	99%	*-0.08*	12/27/06 08:02 p	1.0	0.08269	ISOTH
						0.0712	1.0	*-0.45*		Sample	Sample	ALP173
Batch: 6347436	**Work Order:** JK8HA1AE			**Report DB ID:** 9JK8HA10								
ALPHA	7.30	=	3.7	4.1	4.93	pCi/sample	100%	*(1.5)*	1/3/07 07:25 p	1.0	0.02058	E900.0
						2.02	20.0	*(3.6)*		Sample	Sample	GPC10C
Batch: 6347439	**Work Order:** JK8HA1AC			**Report DB ID:** 9JK8HA10								
RA-226	-0.0346	ND	0.14	0.14	0.281	pCi/sample	100%	*-0.12*	1/11/07 12:59 p	0.833	0.24683	E903.1
						0.123	1.0	*-0.5*		Sample	Sample	ASCBMB
Batch: 6347440	**Work Order:** JK8HA1AD			**Report DB ID:** 9JK8HA10								
RA-228	-0.7810	ND	1.1	1.1	2.82	pCi/sample	88%	*-0.28*	1/13/07 07:06 a	1.0	0.24683	E904.0
						1.3	3.1	*-(1.4)*		Sample	Sample	GPC7C

Number of Results: 6

Comments:

STL Richland
rptSTLRchSample
V5.1 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: 16-Jan-07

Lab Name: STL Richland
Lot-Sample No.: J6L110190-4
Client Sample ID: P-0807

SDG: 33221
Report No. : 34206
COC No. :

Collection Date: 11/21/2006 11:35:00 AM
Received Date: 12/7/2006 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: 6347434	Work Order: JK8HC1AA			Report DB ID: 9JK8HC10								
TH-228	0.0240	ND	0.11	0.11	0.288	pCi/sample	94%	*0.08*	12/27/06 08:02 p	1.0	0.08349	ISOTH
						0.0789	1.0	*0.45*		Sample	Sample	ALP174
TH-230	0.185	ND	0.19	0.19	0.277	pCi/sample	94%	*0.67*	12/27/06 08:02 p	1.0	0.08349	ISOTH
						0.0761	1.0	*(1.9)*		Sample	Sample	ALP174
TH-232	0.0925	ND	0.14	0.14	0.277	pCi/sample	94%	*0.33*	12/27/06 08:02 p	1.0	0.08349	ISOTH
						0.0761	1.0	*(1.3)*		Sample	Sample	ALP174
Batch: 6347436	Work Order: JK8HC1AE			Report DB ID: 9JK8HC10								
ALPHA	4.74	ND	3.2	3.4	5.05	pCi/sample	100%	*0.94*	1/3/07 07:25 p	1.0	0.02084	E900.0
						2.08	20.0	*(2.8)*		Sample	Sample	GPC10D
Batch: 6347439	Work Order: JK8HC1AC			Report DB ID: 9JK8HC10								
RA-226	0.0872	ND	0.17	0.17	0.302	pCi/sample	99%	*0.29*	1/11/07 01:00 p	0.833	0.25022	E903.1
						0.126	1.0	*(1.)*		Sample	Sample	ASCASC
Batch: 6347440	Work Order: JK8HC1AD			Report DB ID: 9JK8HC10								
RA-228	1.42	ND	1.1	1.2	2.51	pCi/sample	83%	*0.56*	1/13/07 07:06 a	1.0	0.25022	E904.0
						1.14	3.1	*(2.4)*		Sample	Sample	GPC1B

Number of Results: 6

Comments:

STL Richland
rptSTLRchSample
V5.1 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

Date: 16-Jan-07

DUPLICATE RESULTS

Lab Name:	STL Richland	SDG:	33221	Collection Date:	9/8/2006
Lot-Sample No.:	F6H110173-4	Report No. :	34206	Received Date:	8/11/2006 10:00:00 AM
Client Sample ID:	GW-MCF-05 DUP	COC No. :		Matrix:	WATER AQ

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6241477	Work Order: JA59T2AH			Report DB ID: JA59T2HR		Orig Sa DB ID: 9JA59T20						
TH-228	-0.1360	ND	0.12	0.12	1.0	pCi/L	40%	-0.14	9/8/06 02:05 p		0.2048	ISOTH
	-0.00787	N RER2	2.1					-(2.2)			L	ALP116
TH-230	0.00000	ND	0.0000	0.33	0.366	pCi/L	40%	0.	9/8/06 02:05 p		0.2048	ISOTH
	-0.00782	N RER2	0.0					0.			L	ALP116
TH-232	0.00000	ND	0.0000	0.33	0.366	pCi/L	40%	0.	9/8/06 02:05 p		0.2048	ISOTH
	0.0	N RER2	0.0					0.			L	ALP116

Number of Results: 3

Comments:

STL Richland
rptSTLRchDupV5.1
A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
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: 16-Jan-07

Lab Name: STL Richland

SDG: 33221

Lot-Sample No.: J6H290000-477

Report No. : 34206

Matrix: WATER

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: 6241477	Work Order: JDELA1AA			Report DB ID: JDELA1AB								
TH-228	0.0850	ND	0.21	0.21	0.487	pCi/L	82%	0.17	9/8/06 02:06 p		0.2006	ISOTH
					0.147	1.0		0.81			L	ALP119
TH-230	0.0684	ND	0.14	0.14	0.185	pCi/L	82%	0.37	9/8/06 02:06 p		0.2006	ISOTH
						1.0		1.			L	ALP119
TH-232	-0.0137	ND	0.027	0.027	0.328	pCi/L	82%	-0.04	9/8/06 02:06 p		0.2006	ISOTH
					0.0712	1.0		-1.			L	ALP119

Number of Results: 3

Comments:

STL Richland
rptSTLRchBlank
V5.1 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: 16-Jan-07

Lab Name: STL Richland

SDG: 33221

Lot-Sample No.: J6L130000-434

Report No. : 34206

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: 6347434	Work Order: JLDX51AA			Report DB ID: JLDX51AB								
TH-228	0.00456	ND	0.0082	0.0082	0.0161	pCi/sample	100%	0.28	12/27/06 08:04 p	1.0	1.0	ISOTH
					0.00419	1.0		(1.1)		Sample	Sample	ALP117
TH-230	0.00491	ND	0.0078	0.0078	0.0131	pCi/sample	100%	0.38	12/27/06 08:04 p	1.0	1.0	ISOTH
					0.00284	1.0		(1.3)		Sample	Sample	ALP117
TH-232	-0.00109	ND	0.0057	0.0057	0.0154	pCi/sample	100%	-0.07	12/27/06 08:04 p	1.0	1.0	ISOTH
					0.00401	1.0		-0.38		Sample	Sample	ALP117

Number of Results: 3

Comments:

STL Richland
rptSTLRchBlank
V5.1 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: 16-Jan-07

Lab Name: STL Richland

SDG: 33221

Lot-Sample No.: J6L130000-436

Report No. : 34206

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: 6347436	Work Order: JLD0H1AA			Report DB ID: JLD0H1AB								
ALPHA	0.000545	ND	0.0032	0.0032	0.00769	pCi/sample	100%	0.07	1/5/07 02:25 p	1.0	12.66	E900.0
					0.00311	20.0		0.34		Sample	Sample	GPC10A

Number of Results: 1

Comments:

STL Richland

rptSTLRchBlank
V5.1 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: 16-Jan-07

Lab Name: STL Richland

SDG: 33221

Lot-Sample No.: J6L130000-439

Report No. : 34206

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: 6347439	Work Order: JLD0Q1AA			Report DB ID: JLD0Q1AB								
RA-226	0.0000345	ND	0.00025	0.00025	0.000482	pCi/sample	106%	0.07	1/11/07 02:57 p	1.0	151.56	E903.1
					0.000206	1.0		0.28		Sample	Sample	ASCNMA

Number of Results: 1

Comments:

STL Richland

rptSTLRchBlank
V5.1 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: 16-Jan-07

Lab Name: STL Richland **SDG:** 33221

Lot-Sample No.: J6L130000-440 **Report No. :** 34206 **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: 6347440	Work Order: JLD011AA			Report DB ID: JLD011AB								
RA-228	0.0563	ND	0.18	0.24	0.552	pCi/sample	94%	0.1	1/13/07 07:01 a	1.0	1.0	E904.0
					0.253	3.1		0.48		Sample	Sample	GPC5C

Number of Results: 1

Comments:

STL Richland
rptSTLRchBlank
V5.1 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: 16-Jan-07

Lab Name: STL Richland

SDG: 33221

Lot-Sample No.: J6H290000-477

Report No. : 34206

Matrix: WATER

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: 6241477	Work Order: JDELA1AC			Report DB ID: JDELA1CS									
TH-228	-0.0319	ND	0.045	0.045	0.451	pCi/L	74.04%				9/8/06 02:06 p	0.2033	ISOTH
							Rec Limits:					L	ALP120
TH-230	9.62	=	1.7	2.2	0.209	pCi/L	74.04%	9.05	0.27	106%	9/8/06 02:06 p	0.2033	ISOTH
							Rec Limits:	70.	130.	0.1		L	ALP120
TH-232	0.00000	ND	0.0000	0.19	0.209	pCi/L	74.04%				9/8/06 02:06 p	0.2033	ISOTH
							Rec Limits:					L	ALP120

Number of Results: 3

Comments:

STL Richland
rptSTLRchLcs
V5.1 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 II

LCS RESULTS

Date: 16-Jan-07

Lab Name: STL Richland

SDG: 33221

Lot-Sample No.: J6L130000-434

Report No. : 34206

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: 6347434	Work Order: JLDX51AC			Report DB ID: JLDX51CS									
TH-230	1.75	=	0.14	0.33	0.0151	pCi/sample	96.22%	1.83	0.06	96%	12/27/06 08:04 p	1.0	ISOTH
							Rec Limits:	70.	130.	0.0		Sample	ALP118

Number of Results: 1

Comments:

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

FORM II

LCS RESULTS

Date: 16-Jan-07

Lab Name: STL Richland

SDG: 33221

Lot-Sample No.: J6L130000-436

Report No. : 34206

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: 6347436	Work Order: JLD0H1AC			Report DB ID: JLD0H1CS									
ALPHA	0.153	=	0.019	0.039	0.00616	pCi/sample	100.00%	0.181	0.0057	85%	1/5/07 02:25 p	12.79	E900.0
							Rec Limits:			-0.2		Sample	GPC10B

Number of Results: 1

Comments:

STL Richland
rptSTLRchLcs
V5.1 A2002

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

FORM II

LCS RESULTS

Date: 16-Jan-07

Lab Name: STL Richland

SDG: 33221

Lot-Sample No.: J6L130000-439

Report No. : 34206

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: 6347439	Work Order: JLD0Q1AC			Report DB ID: JLD0Q1CS									
RA-226	0.00845	=	0.00097	0.0020	0.000415	pCi/sample	92.22%	0.00905	0.00014	93%	1/11/07 02:57 p	151.72	E903.1
						Rec Limits:		70.	130.	-0.1		Sample	ASCPMB

Number of Results: 1

Comments:

STL Richland
rptSTLRchLcs
V5.1 A2002

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

FORM II

LCS RESULTS

Date: 16-Jan-07

Lab Name: STL Richland

SDG: 33221

Lot-Sample No.: J6L130000-440

Report No. : 34206

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: 6347440	Work Order: JLD011AC			Report DB ID: JLD011CS									
RA-228	5.60	=	0.59	0.87	0.619	pCi/sample	75.86%	5.08	0.16	110%	1/13/07 08:00 a	1.0	E904.0
							Rec Limits:	70.	130.	0.1		Sample	GPC5D

Number of Results: 1

Comments:

STL Richland
rptSTLRchLcs
V5.1 A2002

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

CHAIN OF CUSTODY

BROWN AND CALDWELL VGL 110190 33221 Due 01.04.07

CHAIN OF CUSTODY RECORD

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

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

PROJECT NAME: [illegible]
PROJECT NUMBER: [illegible]

LABORATORY NAME & ADDRESS: [illegible] WEST SACRAMENTO

SACRAMENTO LOT # GLK220186

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	SAMPLING METHOD	DEPTH (FT.) BEGIN ---- END	PID READING (ppm)
01	[illegible]	[illegible]	[illegible]	[illegible]	1	8x10 Filter	NONE	A	PM-10, Gross Alpha, Th(228,230), Ra(226,228), Metals (Al,As,Cd,Cr,Co,Cu,Mn,Ni), Sulfate JK8G8			[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,Mn,Ni), Sulfate JK8G9			[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,Mn,Ni), Sulfate JK8HA			[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,Mn,Ni), Sulfate JK8HC			[illegible]		----	
05	[illegible]		[illegible]		1	8x10 Filter	NONE	A	TSP, Gross Alpha, Th(228,230), Ra(226,228), Metals (Al,As,Cd,Cr,Co,Cu,Mn,Ni), Sulfate JK8HD			[illegible]		----	
06														----	
07														----	
08														----	
09														----	
10														----	

COLLECTED & RELEASED BY: [illegible]	DATE [illegible]	TIME [illegible]	COOLER I.D.:			COMMENTS (see note on back):
RECEIVED BY: [illegible]	DATE [illegible]	TIME [illegible]	RELINQUISHED BY:	DATE / /	TIME :	[illegible]
			Steven Valmores	12/5/06	1600	[illegible]
A. Smith	12.7.06	1000				[illegible]
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: 12-07-06 1000

Client: BRC SDG #: 33221 NA [ ] SAF #: _____ NA [X]

Work Order Number: U6L110190 Chain of Custody # Event 111

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>6 [ ] 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: S. Smith Date: 12-07-06 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

12/28/2006 3:12:34 PM

Lot No., Due Date: J6L110190,J6L110193; 01/04/2007

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6347434; RTHISO Thlso by ALP

SDG, Matrix: 33221,33222; FILTER

1.0 COC

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

2.0 QC Batch

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

3.0 QC & Samples

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

4.0 Raw Data

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

5.0 Other

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

6.0 Comments on any No response:

First Level Review Pam Anderson **Date** 12-28-06

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 647434

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 R Adam Date: 12-18-06

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

12/18/2006 7:35:08 AM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

AnalyDueDate: 01/03/2007

9N Thlso PrpRc5016, SepRC~~5084~~(5003) 5287
S1 Thorium-228,230,232 by Alpha Spec
01 STANDARD TEST SET

V.C 12/20/06

Balance Id:1120373922

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: WoodT

Batch: 6347434 **FILTER** **pCi/sampl** **PM, Quote: SA , 63174**

SEQ Batch, Test: None All Tests: 6347434 9NS1, 6347436 BAS7, 6347439 BXTE, 6347440 BXTF,

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 JK8G8-1-AA J6L110190-1-SAMP 11/21/2006 11:30	0.833sa	523.73sa	50.11g,in	0.0797g	THTF0928 12/14/06,pd 10/04/04,r	550				
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
2 JK8G9-1-AA J6L110190-2-SAMP 11/21/2006 11:50	0.833sa	513.20sa	50.30g,in	0.0816g	THTF0929 12/18/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
3 JK8HA-1-AA J6L110190-3-SAMP 11/21/2006 12:05	0.833sa	507.13sa	50.34g,in	0.0827g	THTF0930 12/18/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
4 JK8HC-1-AA J6L110190-4-SAMP 11/21/2006 11:35	0.833sa	502.36sa	50.35g,in	0.0835g	THTF0923 12/14/06,pd 10/04/04,r	12/18/06 1800				
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
5 JK8HD-1-AA J6L110190-5-SAMP 11/21/2006 12:10	0.833sa	514.33sa	50.52g,in	0.0818g	THTF0924 12/14/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
6 JK8HL-1-AA J6L110193-1-SAMP 11/14/2006 11:25	0.833sa	512.52sa	50.01g,in	0.0813g	THTF0927 12/14/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
7 JK8HP-1-AA J6L110193-2-SAMP 11/14/2006 11:45	0.833g	526.16g	50.17g,in	0.0794g	THTF0918 12/05/06,pd 10/04/04,r					
			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:

STL Richland Richland Wa.

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

Page 1

ISV - Insufficient Volume for Analysis

WO Cnt: 7

Prep_SamplePrep v4.8.26

STL RICHLAND

32

STL RICHLAND

12/18/2006 7:35:09 AM

536403, Brown and Caldwell
Caldwell

, Brown &

Sample Preparation/Analysis

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

Balance Id:1120373922

Pipet #: _____

AnalyDueDate: 01/03/2007

Batch: 6347434 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: None

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:
8 JK8HQ-1-AA J6L110193-3-SAMP 11/14/2006 12:05	0.833sa	503.67sa	50.15g,in	0.0829g	THTF0925 12/14/06,pd 10/04/04,r	500				
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
9 JK8HR-1-AA J6L110193-4-SAMP 11/14/2006 11:50	0.833sa	509.11sa	50.01g,in	0.0818g	THTF0926 12/14/06,pd 10/04/04,r					
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
10 JK8HT-1-AA J6L110193-5-SAMP 11/14/2006 12:10	0.833sa	500.44sa	50.05g,in	0.0833g	THTF0917 12/05/06,pd 10/04/04,r					
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
11 JLDX5-1-AA-B J6L130000-434-BLK 11/14/2006 11:25	500.00g		50.80g,in	50.80g	THTF0931 12/18/06,pd 10/04/04,r					
		AmtRec:		#Containers: 1				Scr:	Alpha:	Beta:
12 JLDX5-1-AC-C J6L130000-434-LCS 11/14/2006 11:25	500.00g		50.22g,in	50.22g	THSO0100 10/16/06,pd 10/04/04,r					
		AmtRec:		#Containers: 1				Scr:	Alpha:	Beta:

Comments:

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

JK8G81AA-SAMP Constituent List:
Th-228 RDL:1 pCi/sam LCL: UCL: RPD: Th-230 RDL:1 pCi/sam LCL: UCL: RPD:

12/28/2006 2:56:24 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/28/2005, 1/2/2007, Batch: '6347434', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6347434						
AC		CalcC	WoodT	12/14/2006 1:26:11		
SC			wagarr	IsBatched	12/13/2006 2:04:14 PM	ICOC_RADCALC v4.8.26
SC			WoodT	InPrep	12/14/2006 1:26:11 PM	RICH-RC-5090 Revision 0
SC			WoodT	InPrep	12/14/2006 1:26:31 PM	RICH-RC-5016 REVISION 5
SC			WoodT	Prep1C	12/18/2006 9:07:17 AM	RICH-RC-5016 REVISION 5
SC			HarveyK	InSep1	12/20/2006 9:12:48 AM	RICH-RC-5087 REV0
SC			HarveyK	Sep1C	12/27/2006 8:31:50 AM	RICH-RC-5087 REV0
SC			FABREM	Sep2C	12/27/2006 3:05:50 PM	RICH-RC-5039 REVISION 5
SC			DAWKINSO	InCnt1	12/27/2006 3:48:31 PM	RICH-RD-0008 REVISION 4
SC			DAWKINSO	CalcC	12/28/2006 12:41:49 PM	RICH-RD-0008 REVISION 4
AC			WoodT	12/14/2006 1:26:31		
AC			WoodT	12/18/2006 9:07:17		
AC			HarveyK	12/20/2006 9:12:48		
AC			HarveyK	12/27/2006 8:31:50		
AC			FABREM	12/27/2006 3:05:50		
AC			DAWKINSO	12/27/2006 3:48:31		
AC			DAWKINSO	12/28/2006 12:41:49		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 8

ICOCFractions v4.8.26

12/28/2006 2:56:23 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	
33221	**9JK8G810**			**J6L1101901**	P-0804	FILTER	12/7/2006 10:00:00		11/21/2006 11:30:00 AM				
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**1.1124E-01**	8.021E-02	8.083E-02	2.669E-01	PCI/SA		0.906	1.0E+0	7.97E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**3.648E-01**	1.305E-01	1.346E-01	2.574E-01	PCI/SA		0.906	1.0E+0	7.97E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**0.0E+00**	0.0E+00	4.798E-02	2.574E-01	PCI/SA		0.906	1.0E+0	7.97E-2
33221	**9JK8G910**			**J6L1101902**	P-0805	FILTER	12/7/2006 10:00:00		11/21/2006 11:50:00 AM				
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**1.3383E-01**	7.883E-02	7.97E-02	2.293E-01	PCI/SA		1.014	1.0E+0	3.164E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**5.7169E-01**	1.554E-01	1.633E-01	3.1E-01	PCI/SA		1.014	1.0E+0	3.164E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**1.1065E-01**	6.649E-02	6.72E-02	2.212E-01	PCI/SA		1.014	1.0E+0	3.164E-2
33221	**9JK8HA10**			**J6L1101903**	P-0806	FILTER	12/7/2006 10:00:00		11/21/2006 12:05:00 PM				
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**2.692E-01**	1.346E-01	1.368E-01	4.166E-01	PCI/SA		0.993	1.0E+0	3.269E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.9475E-01**	9.916E-02	1.007E-01	2.596E-01	PCI/SA		0.993	1.0E+0	3.269E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**-2.1639E-02**	4.839E-02	4.842E-02	2.596E-01	PCI/SA		0.993	1.0E+0	3.269E-2
33221	**9JK8HC10**			**J6L1101904**	P-0807	FILTER	12/7/2006 10:00:00		11/21/2006 11:35:00 AM				
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**2.3981E-02**	5.362E-02	5.366E-02	2.877E-01	PCI/SA		0.941	1.0E+0	3.349E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.8505E-01**	9.537E-02	9.675E-02	2.775E-01	PCI/SA		0.941	1.0E+0	3.349E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**9.2527E-02**	6.94E-02	6.987E-02	2.775E-01	PCI/SA		0.941	1.0E+0	3.349E-2
33221	**9JK8HD10**			**J6L1101905**	000578	FILTER	12/7/2006 10:00:00		11/21/2006 12:10:00 PM				
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**3.892E-02**	6.154E-02	6.163E-02	2.864E-01	PCI/SA		1.048	1.0E+0	3.182E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.5017E-01**	8.804E-02	8.903E-02	2.763E-01	PCI/SA		1.048	1.0E+0	3.182E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**1.1263E-01**	6.768E-02	6.84E-02	2.252E-01	PCI/SA		1.048	1.0E+0	3.182E-2
33222	**9JK8HL10**			**J6L1101931**	P-0800	FILTER	12/7/2006 10:00:00		11/14/2006 11:25:00 AM				
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**2.285E-01**	1.039E-01	1.058E-01	2.492E-01	PCI/SA		0.957	1.0E+0	3.128E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**7.9593E-02**	7.445E-02	7.479E-02	2.929E-01	PCI/SA		0.957	1.0E+0	3.128E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**3.9796E-02**	4.449E-02	4.463E-02	2.387E-01	PCI/SA		0.957	1.0E+0	3.128E-2
33222	**9JK8HP10**			**J6L1101932**	P-0801	FILTER	12/7/2006 10:00:00		11/14/2006 11:45:00 AM				
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**9.0726E-02**	6.804E-02	6.852E-02	2.721E-01	PCI/SA		1.052	1.0E+0	7.943E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**2.1727E-01**	9.957E-02	1.014E-01	2.606E-01	PCI/SA		1.052	1.0E+0	7.943E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**1.3036E-01**	7.834E-02	7.919E-02	2.606E-01	PCI/SA		1.052	1.0E+0	7.943E-2
33222	**9JK8HQ10**			**J6L1101933**	P-0802	FILTER	12/7/2006 10:00:00		11/14/2006 12:05:00 PM				
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**7.4615E-02**	5.596E-02	5.635E-02	2.238E-01	PCI/SA		0.971	1.0E+0	3.294E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.4295E-01**	7.368E-02	7.474E-02	2.144E-01	PCI/SA		0.971	1.0E+0	3.294E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**-1.7869E-02**	3.996E-02	3.999E-02	2.144E-01	PCI/SA		0.971	1.0E+0	3.294E-2
33222	**9JK8HR10**			**J6L1101934**	P-0803	FILTER	12/7/2006 10:00:00		11/14/2006 11:50:00 AM				
TH-228	9NS1	0		12/27/2006 8:03:20 PM	**3.6228E-02**	8.495E-02	8.501E-02	3.899E-01	PCI/SA		1.046	1.0E+0	3.183E-2
TH-230	9NS1	0		12/27/2006 8:03:20 PM	**1.735E-01**	7.951E-02	8.094E-02	2.081E-01	PCI/SA		1.046	1.0E+0	3.183E-2
TH-232	9NS1	0		12/27/2006 8:03:20 PM	**-3.4699E-02**	4.25E-02	4.261E-02	2.554E-01	PCI/SA		1.046	1.0E+0	3.183E-2
33222	**9JK8HT10**			**J6L1101935**	000576	FILTER	12/7/2006 10:00:00		11/14/2006 12:10:00 PM				
TH-228	9NS1	0		12/27/2006 8:03:32 PM	**1.4139E-01**	1.03E-01	1.038E-01	3.805E-01	PCI/SA		0.963	1.0E+0	3.331E-2
TH-230	9NS1	0		12/27/2006 8:03:32 PM	**4.063E-01**	1.185E-01	1.237E-01	2.031E-01	PCI/SA		0.963	1.0E+0	3.331E-2
TH-232	9NS1	0		12/27/2006 8:03:32 PM	**3.3859E-02**	3.785E-02	3.797E-02	2.031E-01	PCI/SA		0.963	1.0E+0	3.331E-2
33221	**JLDX51AB**			**J6L130000434**	INTRA-LAB BLANK	FILTER	12/7/2006 10:00:00		11/14/2006 11:25:00 AM				
TH-228	9NS1	0	B	12/27/2006 8:04:03 PM	**4.5561E-03**	4.107E-03	4.125E-03	1.609E-02	PCI/SA		1.002	1.0E+0	1.0E+0
TH-230	9NS1	0	B	12/27/2006 8:04:03 PM	**4.9099E-03**	3.896E-03	3.918E-03	1.306E-02	PCI/SA		1.002	1.0E+0	1.0E+0
TH-232	9NS1	0	B	12/27/2006 8:04:03 PM	**-1.0911E-03**	2.835E-03	2.836E-03	1.541E-02	PCI/SA		1.002	1.0E+0	1.0E+0
33221	**JLDX51CS**			**J6L130000434**	INTRA-LAB CHECK	FILTER	12/7/2006 10:00:00		11/14/2006 11:25:00 AM				
TH-230	9NS1	0	S	12/27/2006 8:04:18 PM	**1.7496E+00**	6.836E-02	1.628E-01	1.508E-02	PCI/SA	1.8277E+00	0.962	1.0E+0	1.0E+0

6347434, **Samples Inserted | Updated | NotUpdated => 12 | 0 | 0,
**Results Inserted | ReTestInserted | Updated | NotInserted => 34 | 0 | 0 | 0.
**Diff RptDb | Qtims => *wo:JLDX51AA=> , mat:FILTER | Air *wo:JLDX51AA=> , mat:FILTER | Air *wo:JLDX51AA=> , mat:FILTER | Air.

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
ThIso by ALP				Richland Standard AlpIso Wo Blk Subt.										
Calc	S1	FILTER	JK8G81AA	TH-228	1.11E-01	(8.08E-02)	U4	PCI/SA	R	7.32E-02	2.67E-01		91%	
Calc	S1	FILTER	JK8G81AA	TH-230	3.65E-01	(1.35E-01)		PCI/SA	R	7.06E-02	2.57E-01		91%	
Calc	S1	FILTER	JK8G81AA	TH-232	0.00E+00	(4.80E-02)	U4	PCI/SA	R	7.06E-02	2.57E-01		91%	
Calc	S1	FILTER	JK8G91AA	TH-228	1.34E-01	(7.97E-02)		PCI/SA	R	6.29E-02	2.29E-01		101%	
Calc	S1	FILTER	JK8G91AA	TH-230	5.72E-01	(1.63E-01)		PCI/SA	R	1.05E-01	3.10E-01		101%	
Calc	S1	FILTER	JK8G91AA	TH-232	1.11E-01	(6.72E-02)		PCI/SA	R	6.07E-02	2.21E-01		101%	
Calc	S1	FILTER	JK8HA1AA	TH-228	2.69E-01	(1.37E-01)		PCI/SA	R	1.48E-01	4.17E-01		99%	
Calc	S1	FILTER	JK8HA1AA	TH-230	1.95E-01	(1.01E-01)		PCI/SA	R	7.12E-02	2.60E-01		99%	
Calc	S1	FILTER	JK8HA1AA	TH-232	-2.16E-02	(4.84E-02)	U4	PCI/SA	R	7.12E-02	2.60E-01		99%	
Calc	S1	FILTER	JK8HC1AA	TH-228	2.40E-02	(5.37E-02)	U4	PCI/SA	R	7.89E-02	2.88E-01		94%	
Calc	S1	FILTER	JK8HC1AA	TH-230	1.85E-01	(9.68E-02)		PCI/SA	R	7.61E-02	2.77E-01		94%	
Calc	S1	FILTER	JK8HC1AA	TH-232	9.25E-02	(6.99E-02)	U4	PCI/SA	R	7.61E-02	2.77E-01		94%	
Calc	S1	FILTER	JK8HD1AA	TH-228	3.89E-02	(6.16E-02)	U4	PCI/SA	R	9.05E-02	2.86E-01		105%	
Calc	S1	FILTER	JK8HD1AA	TH-230	1.50E-01	(8.90E-02)		PCI/SA	R	8.73E-02	2.76E-01		105%	
Calc	S1	FILTER	JK8HD1AA	TH-232	1.13E-01	(6.84E-02)		PCI/SA	R	6.18E-02	2.25E-01		105%	
Calc	S1	FILTER	JK8HL1AA	TH-228	2.28E-01	(1.06E-01)		PCI/SA	R	6.83E-02	2.49E-01		96%	
Calc	S1	FILTER	JK8HL1AA	TH-230	7.96E-02	(7.48E-02)	U4	PCI/SA	R	9.26E-02	2.93E-01		96%	
Calc	S1	FILTER	JK8HL1AA	TH-232	3.98E-02	(4.46E-02)	U4	PCI/SA	R	6.55E-02	2.39E-01		96%	
Calc	S1	FILTER	JK8HP1AA	TH-228	9.07E-02	(6.85E-02)	U4	PCI/SA	R	7.46E-02	2.72E-01		105%	
Calc	S1	FILTER	JK8HP1AA	TH-230	2.17E-01	(1.01E-01)		PCI/SA	R	7.15E-02	2.61E-01		105%	
Calc	S1	FILTER	JK8HP1AA	TH-232	1.30E-01	(7.92E-02)		PCI/SA	R	7.15E-02	2.61E-01		105%	
Calc	S1	FILTER	JK8HQ1AA	TH-228	7.46E-02	(5.63E-02)	U4	PCI/SA	R	6.14E-02	2.24E-01		97%	
Calc	S1	FILTER	JK8HQ1AA	TH-230	1.43E-01	(7.47E-02)		PCI/SA	R	5.88E-02	2.14E-01		97%	
Calc	S1	FILTER	JK8HQ1AA	TH-232	-1.79E-02	(4.00E-02)	U4	PCI/SA	R	5.88E-02	2.14E-01		97%	
Calc	S1	FILTER	JK8HR1AA	TH-228	3.62E-02	(8.50E-02)	U4	PCI/SA	R	1.46E-01	3.90E-01		105%	
Calc	S1	FILTER	JK8HR1AA	TH-230	1.74E-01	(8.09E-02)		PCI/SA	R	5.71E-02	2.08E-01		105%	
Calc	S1	FILTER	JK8HR1AA	TH-232	-3.47E-02	(4.26E-02)	U4	PCI/SA	R	8.07E-02	2.55E-01		105%	
Calc	S1	FILTER	JK8HT1AA	TH-228	1.41E-01	(1.04E-01)	U4	PCI/SA	R	1.42E-01	3.80E-01		96%	
Calc	S1	FILTER	JK8HT1AA	TH-230	4.06E-01	(1.24E-01)		PCI/SA	R	5.57E-02	2.03E-01		96%	
Calc	S1	FILTER	JK8HT1AA	TH-232	3.39E-02	(3.80E-02)	U4	PCI/SA	R	5.57E-02	2.03E-01		96%	
Calc	S1	FILTER	JLDX51AA	TH-228	4.56E-03	(4.12E-03)	U4	PCI/SA	R	4.19E-03	1.61E-02	B	100%	
Calc	S1	FILTER	JLDX51AA	TH-230	4.91E-03	(3.92E-03)	U4	PCI/SA	R	2.84E-03	1.31E-02	B	100%	
Calc	S1	FILTER	JLDX51AA	TH-232	-1.09E-03	(2.84E-03)	U4	PCI/SA	R	4.01E-03	1.54E-02	B	100%	
Calc	S1	FILTER	JLDX51AC	TH-230	1.75E+00	(1.63E-01)		PCI/SA	R	3.93E-03	1.51E-02	S	96%	96%

SRDL not

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() - (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:46
RADCALC v4.8.26
STL Richland

Batch Nbr: 6347434

Alpha Spec, Thlso by ALP , Calculated Results

Detailed Report

12/28/2006 2:49:22 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	S1	FILTER	*STLE	AlpIsoWoBS	JK8G81AA	PCI/SA		11/21/06 11:30	12/27/06 20:02			1	1.00 Sa	
536403,P-0804					,J6L110190-1 v4.8.26		FILTER					THTF0928 Alq		0.079701 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	12/27/06 15:52	TH-228	3	1	ALP171	ED	N	N	2.9087E-01		N	91%	N		1.0000E+00	4.5045E-01	1.0367E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	12.546947		
1	12/27/06 15:52	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)	12.546947		
2	12/27/06 15:52	TH-230	9	1	ALP171	ED	N	N	2.9087E-01		N	91%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	12.546947		
3	12/27/06 15:52	TH-232	0	0	ALP171	ED	N	N	2.9087E-01		N	91%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	12.546947		

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
	12/28/06	TH-228	R	**0.111236**	U4	5.00536E-03	0.018984	0.018984	1.00 Sa	91%		0.266876		
				(0.080828)		(3.6094E-03)	(0.013753)	(0.013753)	(0.027064)			0.073192		
	12/28/06	TH-229	R	**20.657537**		1.06313E+00	3.655055	3.655055	1.00 Sa	91%				
				(1.602927)		(4.6201E-02)	(0.193012)	(0.193012)	(0.027064)					
	12/28/06	TH-230	R	**0.364804**		1.70182E-02	0.064547	0.064547	1.00 Sa	91%		0.257424		
				(0.134552)		(6.0893E-03)	(0.023522)	(0.023522)	(0.027064)			0.0706		
	12/28/06	TH-232	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 Sa	91%		0.257424		
				(0.047984)		(2.2384E-03)	(0.00849)	(0.00849)	(0.027064)			0.0706		

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	JK8G91AA	PCI/SA		11/21/06 11:50	12/27/06 20:02			1	1.00 Sa	
536403,P-0805					,J6L110190-2 v4.8.26		FILTER					THTF0929 Alq		0.081644 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	12/27/06 15:52	TH-228	4	1	ALP172	ED	N	N	2.9949E-01		N	101%	N		1.0000E+00	4.5045E-01	1.0367E+00	
			499.4666666	998.95			Y		(8.985E-03)			6%			(0.000E+00)	12.248239		
1	12/27/06 15:52	TH-229	622	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)	12.248239		
2	12/27/06 15:52	TH-230	17	3	ALP172	ED	N	N	2.9949E-01		N	101%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)			6%			(0.000E+00)	12.248239		
3	12/27/06 15:52	TH-232	3	0	ALP172	ED	N	N	2.9949E-01		N	101%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)			6%			(0.000E+00)	12.248239		

() - (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: 6347434

Alpha Spec, ThIso by ALP , Calculated Results

12/28/2006 2:49:22 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
	12/28/06	TH-228	R	**0.13383**		7.00749E-03	0.023398	0.023398	1.00 Sa	101%		0.229347		
				(0.079703)		(4.1275E-03)	(0.013871)	(0.013871)	(0.027064)			0.0629		
	12/28/06	TH-229	R	**22.867668**		1.24132E+00	4.144781	4.144781	1.00 Sa	101%				
				(1.734505)		(4.9973E-02)	(0.208096)	(0.208096)	(0.027064)					
	12/28/06	TH-230	R	**0.571693**		3.10332E-02	0.10362	0.10362	1.00 Sa	101%		0.310005		
				(0.163331)		(8.4351E-03)	(0.029012)	(0.029012)	(0.027064)			0.105088		
	12/28/06	TH-232	R	**0.11065**		6.00641E-03	0.020055	0.020055	1.00 Sa	101%		0.221227		
				(0.067201)		(3.6094E-03)	(0.012127)	(0.012127)	(0.027064)			0.060673		

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	**JK8HA1AA**	**PCI/SA**		11/21/06 12:05	12/27/06 20:02			1	1.00 Sa	
536403,P-0806					,J6L110190-3 v4.8.26		FILTER					THTF0930 Alq		0.082687 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	12/27/06 15:52	TH-228	8	4	ALP173	ED	N	N	2.5374E-01		N	99%	N		1.0000E+00	4.5045E-01	1.0367E+00	
			499.4666666	998.95			Y		(7.612E-03)			6%			(0.000E+00)	12.093753		
1	12/27/06 15:52	TH-229	515	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)	12.093753		
2	12/27/06 15:52	TH-230	5	1	ALP173	ED	N	N	2.5374E-01		N	99%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)			6%			(0.000E+00)	12.093753		
3	12/27/06 15:52	TH-232	0	1	ALP173	ED	N	N	2.5374E-01		N	99%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)			6%			(0.000E+00)	12.093753		

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
	12/28/06	TH-228	R	**0.269197**		1.20129E-02	0.047666	0.047666	1.00 Sa	99%		0.416626		
				(0.136754)		(6.0064E-03)	(0.024063)	(0.024063)	(0.027064)			0.147607		
	12/28/06	TH-229	R	**22.072325**		1.02810E+00	4.051729	4.051729	1.00 Sa	99%				
				(1.722266)		(4.5469E-02)	(0.216529)	(0.216529)	(0.027064)					
	12/28/06	TH-230	R	**0.19475**		9.00963E-03	0.03575	0.03575	1.00 Sa	99%		0.259581		
				(0.100695)		(4.5875E-03)	(0.018372)	(0.018372)	(0.027064)			0.071191		
	12/28/06	TH-232	R	**-0.021639**	**U4**	-1.00105E-03	-0.003972	-0.003972	1.00 Sa	99%		0.259581		
				(0.048425)		(2.2384E-03)	(0.008886)	(0.008886)	(0.027064)			0.071191		

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	**JK8HC1AA**	**PCI/SA**		11/21/06 11:35	12/27/06 20:02			1	1.00 Sa	
536403,P-0807					,J6L110190-4 v4.8.26		FILTER					THTF0923 Alq		0.083489 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	12/27/06 15:52	TH-228	1	1	ALP174	ED	N	N	2.4814E-01		N	94%	N		1.0000E+00	4.5045E-01	1.0367E+00	
			499.4666666	998.95			Y		(7.444E-03)			6%			(0.000E+00)	11.977621		

() - (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: 6347434 Alpha Spec, ThIso by ALP , Calculated Results 12/28/2006 2:49:23 PM

1	12/27/06 15:52	TH-229	472	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)	11.977621	
2	12/27/06 15:52	TH-230	4	0	ALP174	ED	N	N	2.4814E-01	N	94%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(7.444E-03)		6%		(0.000E+00)	11.977621	
3	12/27/06 15:52	TH-232	2	0	ALP174	ED	N	N	2.4814E-01	N	94%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(7.444E-03)		6%		(0.000E+00)	11.977621	

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
	12/28/06	TH-228	R	**0.023981**	U4	1.00108E-03	0.004287	0.004287	1.00 Sa	94%		0.287678		
				(0.053665)		(2.2384E-03)	(0.009592)	(0.009592)	(0.014142)			0.078897		
	12/28/06	TH-229	R	**20.482141**		9.42005E-01	3.79628	3.79628	1.00 Sa	94%				
				(1.551184)		(4.3532E-02)	(0.20916)	(0.20916)	(0.014142)					
	12/28/06	TH-230	R	**0.185054**		8.00854E-03	0.034299	0.034299	1.00 Sa	94%		0.27749		
				(0.096751)		(4.1275E-03)	(0.017844)	(0.017844)	(0.014142)			0.076103		
	12/28/06	TH-232	R	**0.092527**	U4	4.00427E-03	0.017149	0.017149	1.00 Sa	94%		0.277489		
				(0.06987)		(3.0032E-03)	(0.012919)	(0.012919)	(0.014142)			0.076103		

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	**JK8HD1AA**	**PCI/SA**		11/21/06 12:10	12/27/06 20:02			1	1.00 Sa	
536403,000578					,J6L110190-5 v4.8.26		FILTER					THTF0924 Alq		0.081821 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	12/27/06 15:52	TH-228	2	2	ALP175	ED	N	N	2.9360E-01		N	105%	N		1.0000E+00	4.5045E-01	1.0367E+00	
			499.4666666	998.95			Y		(8.808E-03)			6%			(0.000E+00)	12.221753		
1	12/27/06 15:52	TH-229	623	4	ALP175	ED	Y	N	2.9360E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.808E-03)						(0.000E+00)	12.221753		
2	12/27/06 15:52	TH-230	5	2	ALP175	ED	N	N	2.9360E-01		N	105%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.808E-03)			6%			(0.000E+00)	12.221753		
3	12/27/06 15:52	TH-232	3	0	ALP175	ED	N	N	2.9360E-01		N	105%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.808E-03)			6%			(0.000E+00)	12.221753		

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
	12/28/06	TH-228	R	**0.03892**	U4	2.00217E-03	0.006819	0.006819	1.00 Sa	105%		0.286446		
				(0.061632)		(3.1656E-03)	(0.010792)	(0.010792)	(0.027064)			0.090541		
	12/28/06	TH-229	R	**23.313628**		1.24333E+00	4.234769	4.234769	1.00 Sa	105%				
				(1.767928)		(5.0013E-02)	(0.212503)	(0.212503)	(0.027064)					
	12/28/06	TH-230	R	**0.150169**		8.00858E-03	0.027277	0.027277	1.00 Sa	105%		0.276308		
				(0.08903)		(4.6954E-03)	(0.016097)	(0.016097)	(0.027064)			0.087337		
	12/28/06	TH-232	R	**0.112626**		6.00641E-03	0.020458	0.020458	1.00 Sa	105%		0.225178		
				(0.068401)		(3.6094E-03)	(0.01237)	(0.01237)	(0.027064)			0.061756		

() - (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: 6347434

Alpha Spec, Thlso by ALP , Calculated Results

12/28/2006 2:49:23 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
6	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JK8HL1AA**	**PCI/SA**		11/14/06 11:25	12/27/06 20:02			1	1.00 Sa	
536403,P-0800					,J6L110193-1 v4.8.26		FILTER					THTF0927 Alq		0.081281 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	12/27/06 15:52	TH-228	6	1	ALP176	ED	N	N	2.9146E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0439E+00	
			499.4666666	998.95			Y		(8.744E-03)			6%			(0.000E+00)	12.302942		
1	12/27/06 15:52	TH-229	565	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)	12.302942		
2	12/27/06 15:52	TH-230	3	2	ALP176	ED	N	N	2.9146E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.744E-03)			6%			(0.000E+00)	12.302942		
3	12/27/06 15:52	TH-232	1	0	ALP176	ED	N	N	2.9146E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.744E-03)			6%			(0.000E+00)	12.302942		

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
	12/28/06	TH-228	R	**0.2285**		1.10118E-02	0.039496	0.039496	1.00 Sa	96%		0.24919		
				(0.105829)		(5.0053E-03)	(0.018154)	(0.018154)	(0.027064)			0.068341		
	12/28/06	TH-229	R	**21.489866**		1.13021E+00	3.877735	3.877735	1.00 Sa	96%				
				(1.651549)		(4.7601E-02)	(0.200514)	(0.200514)	(0.027064)					
	12/28/06	TH-230	R	**0.079593**	**U4**	4.00430E-03	0.014362	0.014362	1.00 Sa	96%		0.2929		
				(0.074787)		(3.7456E-03)	(0.01347)	(0.01347)	(0.027064)			0.092581		
	12/28/06	TH-232	R	**0.039796**	**U4**	2.00214E-03	0.007181	0.007181	1.00 Sa	96%		0.238699		
				(0.044634)		(2.2384E-03)	(0.008044)	(0.008044)	(0.027064)			0.065464		

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	**JK8HP1AA**	**PCI/SA**		11/14/06 11:45	12/27/06 20:02			1	1.00 Sa	
536403,P-0801					,J6L110193-2 v4.8.26		FILTER					THTF0918 Alq		0.079428 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	12/27/06 15:52	TH-228	2	0	ALP177	ED	N	N	2.6130E-01		N	105%	N		1.0000E+00	4.5045E-01	1.0439E+00	
			499.4666666	998.95			Y		(7.839E-03)			6%			(0.000E+00)	12.590087		
1	12/27/06 15:52	TH-229	559	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)	12.590087		
2	12/27/06 15:52	TH-230	5	0	ALP177	ED	N	N	2.6130E-01		N	105%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.839E-03)			6%			(0.000E+00)	12.590087		
3	12/27/06 15:52	TH-232	3	0	ALP177	ED	N	N	2.6130E-01		N	105%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.839E-03)			6%			(0.000E+00)	12.590087		

() - (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: 6347434

Alpha Spec, Thlso by ALP , Calculated Results

12/28/2006 2:49:23 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
	12/28/06	TH-228	R	**0.090726**	U4	4.00427E-03	0.015324	0.015324	1.00 Sa	105%		0.272087		
				(0.068521)		(3.0032E-03)	(0.011541)	(0.011541)	(0.027064)			0.074621		
	12/28/06	TH-229	R	**24.26892**		1.11819E+00	4.279324	4.279324	1.00 Sa	105%				
				(1.868136)		(4.7347E-02)	(0.222068)	(0.222068)	(0.027064)					
	12/28/06	TH-230	R	**0.217269**		1.00107E-02	0.038311	0.038311	1.00 Sa	105%		0.260637		
				(0.101424)		(4.5875E-03)	(0.017751)	(0.017751)	(0.027064)			0.071481		
	12/28/06	TH-232	R	**0.130361**		6.00641E-03	0.022987	0.022987	1.00 Sa	105%		0.260636		
				(0.079191)		(3.6094E-03)	(0.013902)	(0.013902)	(0.027064)			0.071481		

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	**JK8HQ1AA**	**PCI/SA**		11/14/06 12:05	12/27/06 20:02			1	1.00 Sa	
536403,P-0802					,J6L110193-3 v4.8.26		FILTER					THTF0925 Alq		0.082941 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	12/27/06 15:52	TH-228	2	0	ALP178	ED	N	N	3.1338E-01		N	97%	N		1.0000E+00	4.5045E-01	1.0439E+00	
			499.4666666	998.95			Y		(9.401E-03)			6%			(0.000E+00)	12.056747		
1	12/27/06 15:52	TH-229	618	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)	12.056747		
2	12/27/06 15:52	TH-230	4	0	ALP178	ED	N	N	3.1338E-01		N	97%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(9.401E-03)			6%			(0.000E+00)	12.056747		
3	12/27/06 15:52	TH-232	0	1	ALP178	ED	N	N	3.1338E-01		N	97%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(9.401E-03)			6%			(0.000E+00)	12.056747		

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
	12/28/06	TH-228	R	**0.074615**	U4	4.00427E-03	0.013161	0.013161	1.00 Sa	97%		0.223772		
				(0.056345)		(3.0032E-03)	(0.00991)	(0.00991)	(0.027064)			0.061371		
	12/28/06	TH-229	R	**21.408301**		1.23532E+00	3.941899	3.941899	1.00 Sa	97%				
				(1.624374)		(4.9792E-02)	(0.198066)	(0.198066)	(0.027064)					
	12/28/06	TH-230	R	**0.142953**		8.00854E-03	0.026322	0.026322	1.00 Sa	97%		0.214358		
				(0.074743)		(4.1275E-03)	(0.013681)	(0.013681)	(0.027064)			0.058789		
	12/28/06	TH-232	R	**-0.017869**	U4	-1.00105E-03	-0.00329	-0.00329	1.00 Sa	97%		0.214358		
				(0.039987)		(2.2384E-03)	(0.00736)	(0.00736)	(0.027064)			0.058789		

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	**JK8HR1AA**	**PCI/SA**		11/14/06 11:50	12/27/06 20:03			1	1.00 Sa	
536403,P-0803					,J6L110193-4 v4.8.26		FILTER					THTF0926 Alq		0.081826 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	12/27/06 15:53	TH-228	4	6	ALP113	ED	N	N	3.1726E-01		N	105%	N		1.0000E+00	4.5045E-01	1.0439E+00	
			500.05	1000.1333			Y		(9.518E-03)			6%			(0.000E+00)	12.221085		

() - (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: 6347434

Alpha Spec, Thlso by ALP , Calculated Results

12/28/2006 2:49:23 PM

1	12/27/06 15:53	TH-229	673	3	ALP113	ED	Y	N	3.1726E-01	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00
			500.05	1000.1333			Y		(9.518E-03)				(0.000E+00)	12.221085	
2	12/27/06 15:53	TH-230	5	0	ALP113	ED	N	N	3.1726E-01	N	105%	N	1.0000E+00	4.5045E-01	1.0000E+00
			500.05	1000.1333			Y		(9.518E-03)		6%		(0.000E+00)	12.221085	
3	12/27/06 15:53	TH-232	0	2	ALP113	ED	N	N	3.1726E-01	N	105%	N	1.0000E+00	4.5045E-01	1.0000E+00
			500.05	1000.1333			Y		(9.518E-03)		6%		(0.000E+00)	12.221085	

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
	12/28/06	TH-228	R	**0.036228**	U4	2.00000E-03	0.006304	0.006304	1.00 Sa	105%		0.389915		
				(0.085012)		(4.6899E-03)	(0.014788)	(0.014788)	(0.027064)			0.14596		
	12/28/06	TH-229	R	**23.301034**		1.34287E+00	4.232713	4.232713	1.00 Sa	105%				
				(1.747835)		(5.1908E-02)	(0.207109)	(0.207109)	(0.027064)					
	12/28/06	TH-230	R	**0.1735**		9.99900E-03	0.031517	0.031517	1.00 Sa	105%		0.20813		
				(0.080936)		(4.5821E-03)	(0.014593)	(0.014593)	(0.027064)			0.057081		
	12/28/06	TH-232	R	**-0.034699**	U4	-1.99973E-03	-0.006303	-0.006303	1.00 Sa	105%		0.255389		
				(0.042606)		(2.4492E-03)	(0.007731)	(0.007731)	(0.027064)			0.080724		

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	**JK8HT1AA**	**PCI/SA**		11/14/06 12:10	12/27/06 20:03			1	1.00 Sa	
536403,000576					,J6L110193-5 v4.8.26		FILTER					THTF0917 Alq		0.08331 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	12/27/06 15:53	TH-228	7	6	ALP114	ED	N	N	3.3167E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0439E+00	
			500.0166666	1000.0666			Y		(9.950E-03)			6%			(0.000E+00)	12.003363		
1	12/27/06 15:53	TH-229	654	1	ALP114	ED	Y	N	3.3167E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0166666	1000.0666			Y		(9.950E-03)						(0.000E+00)	12.003363		
2	12/27/06 15:53	TH-230	12	0	ALP114	ED	N	N	3.3167E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0166666	1000.0666			Y		(9.950E-03)			6%			(0.000E+00)	12.003363		
3	12/27/06 15:53	TH-232	1	0	ALP114	ED	N	N	3.3167E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0166666	1000.0666			Y		(9.950E-03)			6%			(0.000E+00)	12.003363		

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
	12/28/06	TH-228	R	**0.141385**	U4	7.99993E-03	0.025049	0.025049	1.00 Sa	96%		0.380455		
				(0.103788)		(5.8307E-03)	(0.018333)	(0.018333)	(0.027064)			0.142419		
	12/28/06	TH-229	R	**21.305806**		1.30696E+00	3.940474	3.940474	1.00 Sa	96%				
				(1.603528)		(5.1155E-02)	(0.194325)	(0.194325)	(0.027064)					
	12/28/06	TH-230	R	**0.406303**		2.39992E-02	0.075145	0.075145	1.00 Sa	96%		0.203083		
				(0.123721)		(6.9998E-03)	(0.02248)	(0.02248)	(0.027064)			0.055696		
	12/28/06	TH-232	R	**0.033859**	U4	1.99993E-03	0.006262	0.006262	1.00 Sa	96%		0.203083		
				(0.03797)		(2.2360E-03)	(0.007014)	(0.007014)	(0.027064)			0.055696		

() - (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: 6347434

Alpha Spec, Thlso by ALP , Calculated Results

12/28/2006 2:49:23 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
11	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JLDX51AA**	**PCI/SA**	**B**	11/14/06 11:25	12/27/06 20:04			1	1.00 Sa	
0,INTRA-LAB BLANK					,J6L130000-434 v4.8.26		FILTER					THTF0931 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	12/27/06 15:54	TH-228	2	2	ALP117	ED	N	N	3.3025E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0439E+00	
			500.0333333	2500.05			Y		(9.908E-03)			6%			(0.000E+00)	1.00		
1	12/27/06 15:54	TH-229	677	2	ALP117	ED	Y	N	3.3025E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	2500.05			Y		(9.908E-03)						(0.000E+00)	1.00		
2	12/27/06 15:54	TH-230	2	1	ALP117	ED	N	N	3.3025E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	2500.05			Y		(9.908E-03)			6%			(0.000E+00)	1.00		
3	12/27/06 15:54	TH-232	0	2	ALP117	ED	N	N	3.3025E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	2500.05			Y		(9.908E-03)			6%			(0.000E+00)	1.00		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	12/28/06	TH-228	R	**0.004556**	**U4**	3.19975E-03	0.009689	0.009689	1.00 Sa	100%		0.016092		
				(0.004125)		(2.8843E-03)	(0.008757)	(0.008757)	(0.017321)			0.00419		
	12/28/06	TH-229	R	**1.845591**		1.35311E+00	4.097216	4.097216	1.00 Sa	100%				
				(0.132819)		(5.2038E-02)	(0.199843)	(0.199843)	(0.017321)					
	12/28/06	TH-230	R	**0.00491**	**U4**	3.59974E-03	0.0109	0.0109	1.00 Sa	100%		0.013065		
				(0.003918)		(2.8564E-03)	(0.008679)	(0.008679)	(0.017321)			0.002838		
	12/28/06	TH-232	R	**-0.001091**	**U4**	-7.99984E-04	-0.002422	-0.002422	1.00 Sa	100%		0.015414		
				(0.002836)		(2.0783E-03)	(0.006295)	(0.006295)	(0.017321)			0.004014		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
12	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JLDX51AC**	**PCI/SA**	**S**	11/14/06 11:25	12/27/06 20:04		THSO0100	1	1.00 Sa	
0,INTRA-LAB CHECK					,J6L130000-434		FILTER					THSO0100 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	12/27/06 15:54	TH-229	696	10	ALP118	ED	Y	N	3.5075E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.1166666	2500.0166			Y		(1.052E-02)						(0.000E+00)	1.00		
2	12/27/06 15:54	TH-230	656	2	ALP118	ED	N	N	3.5075E-01		N	96%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.1166666	2500.0166			Y		(1.052E-02)			6%			(0.000E+00)	1.00		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	12/28/06	TH-229	R	**1.782098**		1.38768E+00	3.956262	3.956262	1.00 Sa	96%				
				(0.127839)		(5.2766E-02)	(0.19162)	(0.19162)	(0.017321)					
	12/28/06	TH-230	R	**1.749574**		1.31089E+00	3.884055	3.884055	1.00 Sa	96%	96%	0.015081		
				(0.162826)		(5.1216E-02)	(0.29736)	(0.29736)	(0.017321)			0.003927		

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

IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration

Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:12

RADCALC v4.8.26

STL Richland

SEVERN TRENT **STL**

THORIUM ISOTOPIC COUNTING REQUEST

12/28
0014

C.R. Technician: OD
Date Counted: 12/27/06
C.R. Analyst: OD
Date Analyzed: 12/28/06

Counting Time
Sample: 500 Minutes
Background: See Alpha Analysis Report
BRC 11/21/06

SOP's
Operating: RICHRD008
Review: RICHRD0016
6347434

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)		
JK8G81AA		10		0	See Alpha Analysis Report for ROI Information			171	
JK8G91AA		10		0	See Alpha Analysis Report for ROI Information			172	
JK8HA1AA		10		0	See Alpha Analysis Report for ROI Information			173	
JK8HC1AA		10		0	See Alpha Analysis Report for ROI Information			174	
JK8HD1AA		10		0	See Alpha Analysis Report for ROI Information			175	
JK8HL1AA		10		0	See Alpha Analysis Report for ROI Information			176	
JK8HP1AA		10		0	See Alpha Analysis Report for ROI Information			177	
JK8HQ1AA		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: 12/28/06

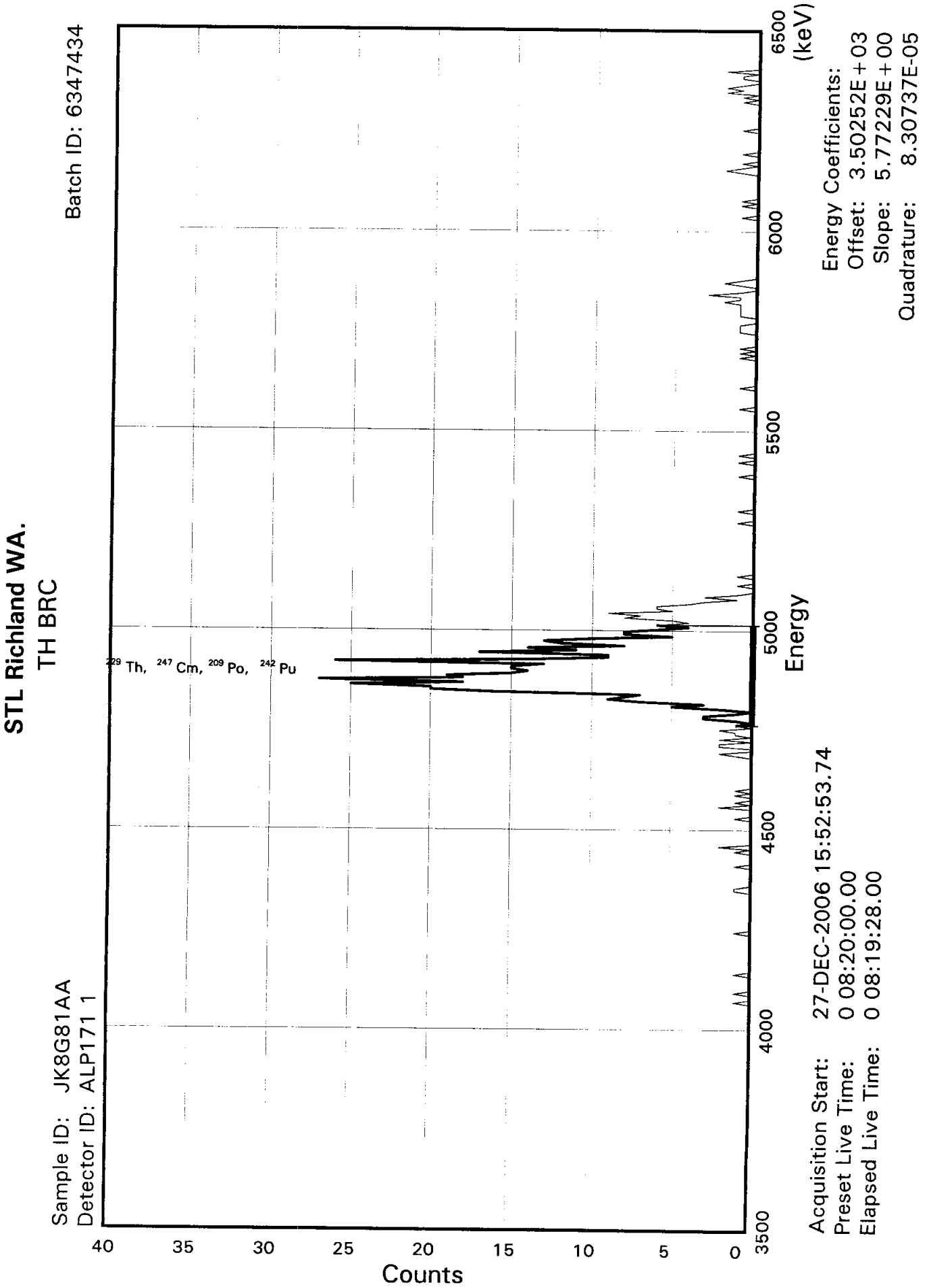
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JK8G81AA

Detector: ALP171 1
Report Date: 28-Dec-06 11:51 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	116.5	316	336
TH-229	532	2	1.063	4845.3	383.7	214	280
TH-230	9	1	0.017	4687.7	139.3	187	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: 6347434
Sample ID: JK8G81AA
Detector ID: ALP171 1
229 Th, 247 Cm, 209 Po, 242 Pu
Counts
40
35
30
25
20
15
10
5
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 27-DEC-2006 15:52:53.74
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 IDENTITY: JK8G81AA

TITLE : TH BRC

DETECTOR : ALP171 1
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JK8G81AA_271261552A.CNF;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 28-Dec-06 SAMPLE DATE: 21-NOV-2006 12:00:00
ACQUIRE DATE: 27-DEC-2006 15:52:53 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: JK8G81AA

Detector: ALP171 1
Report Date: 28-Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	5168.2	250.2	264	307	0.00	0.00	M
PO-209	466	2	0	0.931	4936.5	249.9	218	261	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5357.7	250.5	297	340	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6091.3	245.5	423	465	0.00	0.00	M
TH-227	-9999	-9999	0	-10.010	6091.3	245.5	423	465	0.00	0.00	M
TH-228	-9999	-9999	0	-10.010	5476.5	250.6	317	360	0.00	0.00	M
TH-229	466	2	0	0.931	4898.6	249.9	218	261	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4741.0	249.7	191	234	0.00	0.00	M I
TH-232	3	1	1	0.004	4066.3	254.7	74	118	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5373.5	250.5	300	343	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4827.9	249.8	206	249	0.00	0.00	M I
U-235	8	0	2	0.016	4451.1	249.4	141	184	0.00	0.00	S
PU-236	14	15	22	0.013	5821.0	251.0	376	419	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4841.3	249.8	208	251	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5552.3	250.7	330	373	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4251.3	254.9	106	150	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5209.9	244.5	272	314	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5538.9	250.7	328	371	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5260.1	250.4	280	323	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6166.0	245.6	436	478	0.00	0.00	M
PU-242	466	2	0	0.931	4953.8	249.9	218	261	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5328.6	250.4	292	335	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5858.1	251.1	383	426	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5439.8	250.6	311	354	0.00	0.00	M
CM-247	466	2	0	0.931	4923.7	249.9	218	261	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5131.9	250.2	258	301	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: JK8G81AA
Detector: ALP171 1
Report Date: 28-Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:52:53.74

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

VMS Peak Search Report V1.9 Generated 28-DEC-2006 00:13:26

```
Configuration     : $DISK1:[ALP171.SAMPLE]JK8G81AA_271261552A.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:52:53
Sample ID         : JK8G81AA             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	4898.62	466	0121.22		241.03	218	43	1.55E-02	4.6	

VMS Nuclide Identification Report V3.0 Generated 28-DEC-2006 00:13:29

Configuration	: $DISK1:[ALP171.SAMPLE]JK8G81AA_271261552A.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 21-NOV-2006 12:00:00	Acquisition date	: 27-DEC-2006 15:52:53
Sample ID	: JK8G81AA	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	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
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]JK8G81AA_271261552A.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4898.61	218	261	466	465	0.05		

End of Report

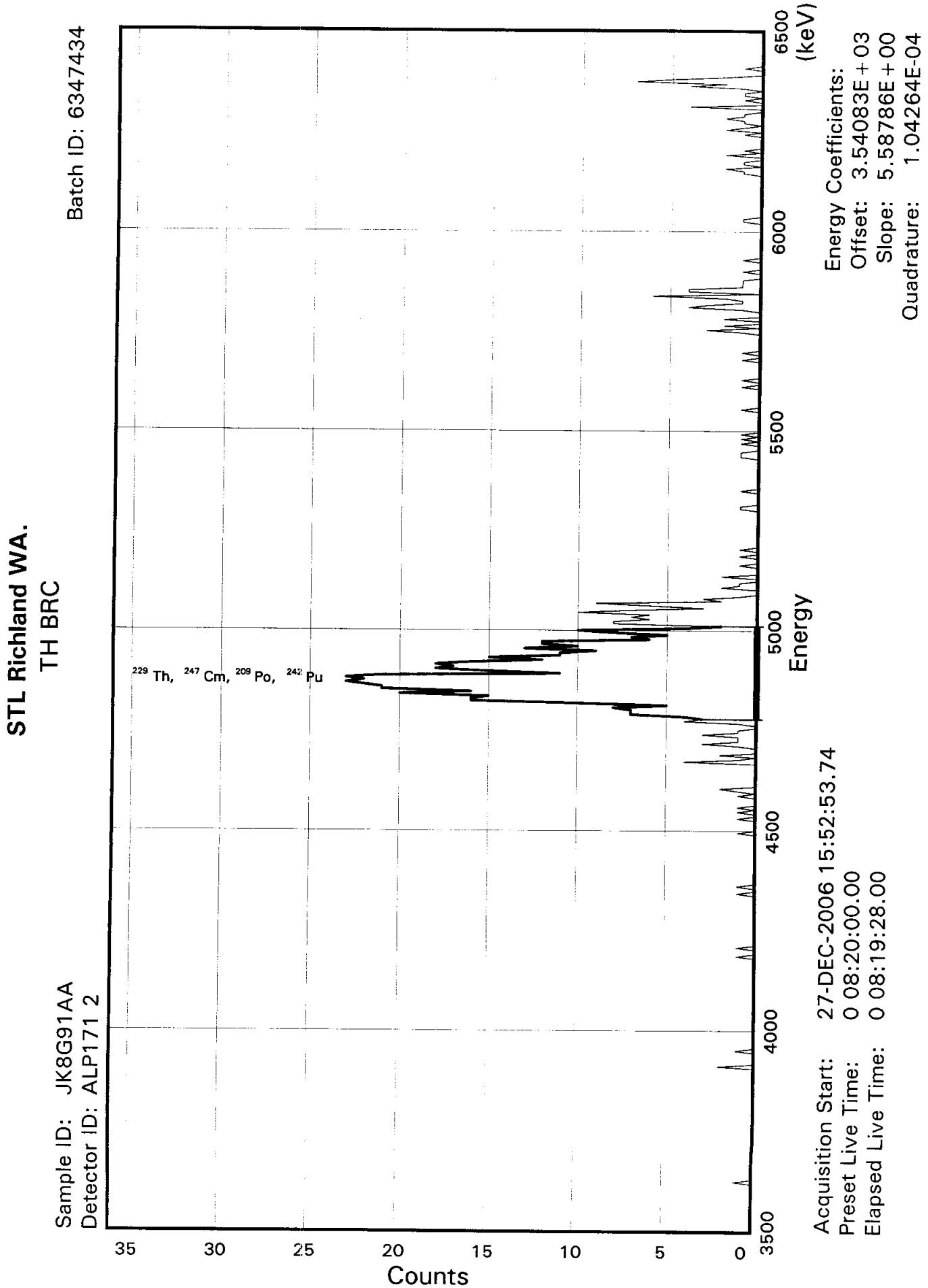
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JK8G91AA

Detector: ALP171 2
Report Date: 28-Dec-06 11:52 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	124.5	320	342
TH-229	622	4	1.241	4845.3	411.7	213	286
TH-230	17	3	0.031	4687.7	146.4	186	212
TH-232	3	0	0.006	4013.0	140.1	64	89

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6347434
Sample ID: JK8G91AA
Detector ID: ALP171 2
229 Th, 247 Cm, 209 Po, 242 Pu
Counts
35
30
25
20
15
10
5
0
3500
4000
4500
5000
5500
6000
6500
Energy
(keV)
Acquisition Start: 27-DEC-2006 15:52:53.74
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.54083E+03
Slope: 5.58786E+00
Quadrature: 1.04264E-04

SAMPLE IDENTIITY: JK8G91AA

TITLE : TH BRC

DETECTOR : ALP171 2
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JK8G91AA_271261552B.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 28-Dec-06 SAMPLE DATE: 21-NOV-2006 12:00:00
ACQUIRE DATE: 27-DEC-2006 15:52:53 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: JK8G91AA

Detector: ALP171 2
Report Date: 28-Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	231.6	269	310	0.00	0.00	M
PO-209	531	3	0	1.060	4917.8	231.2	221	262	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5339.0	231.9	302	343	0.00	0.00	M
AC-227	7	4	9	0.009	6072.6	233.0	432	473	0.00	0.00	S
TH-227	7	4	9	0.009	6072.6	233.0	432	473	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5457.8	232.0	323	364	0.00	0.00	M
TH-229	531	3	0	1.060	4879.9	231.2	221	262	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4722.3	230.9	193	234	0.00	0.00	M I
TH-232	1	1	0	0.001	4047.6	229.9	73	114	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5354.8	231.9	305	346	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4809.2	231.1	208	249	0.00	0.00	M I
U-235	5	0	2	0.010	4432.4	236.1	141	183	0.00	0.00	S
PU-236	20	18	40	0.023	5802.3	232.6	384	425	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4822.6	231.1	211	252	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5533.6	232.2	337	378	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4232.6	230.2	106	147	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5191.2	231.6	276	317	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5520.2	232.1	334	375	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5241.4	231.7	285	326	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6147.3	233.1	445	486	0.00	0.00	M
PU-242	531	3	0	1.060	4935.1	231.2	221	262	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5309.9	231.8	297	338	0.00	0.00	M
CM-244	20	13	40	0.028	5839.4	232.6	391	432	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5421.1	232.0	317	358	0.00	0.00	M
CM-247	531	3	0	1.060	4905.0	231.2	221	262	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5113.2	231.5	262	303	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JK8G91AA
Detector: ALP171 2
Report Date: 28-Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:52:53.74

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

VMS Peak Search Report V1.9 Generated 28-DEC-2006 00:13:34

Configuration	: $DISK1:[ALP171.SAMPLE]JK8G91AA_271261552B.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 21-NOV-2006 12:00:00	Acquisition date	: 27-DEC-2006 15:52:53
Sample ID	: JK8G91AA	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	4879.91	531	0117.35	238.58		221	41	1.77E-02	4.3	

VMS Nuclide Identification Report V3.0 Generated 28-DEC-2006 00:13:37

Configuration	: $DISK1:[ALP171.SAMPLE]JK8G91AA_271261552B.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 21-NOV-2006 12:00:00	Acquisition date	: 27-DEC-2006 15:52:53
Sample ID	: JK8G91AA	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	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
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]JK8G91AA_271261552B.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4879.91	221	262	531	529	0.09		

End of Report

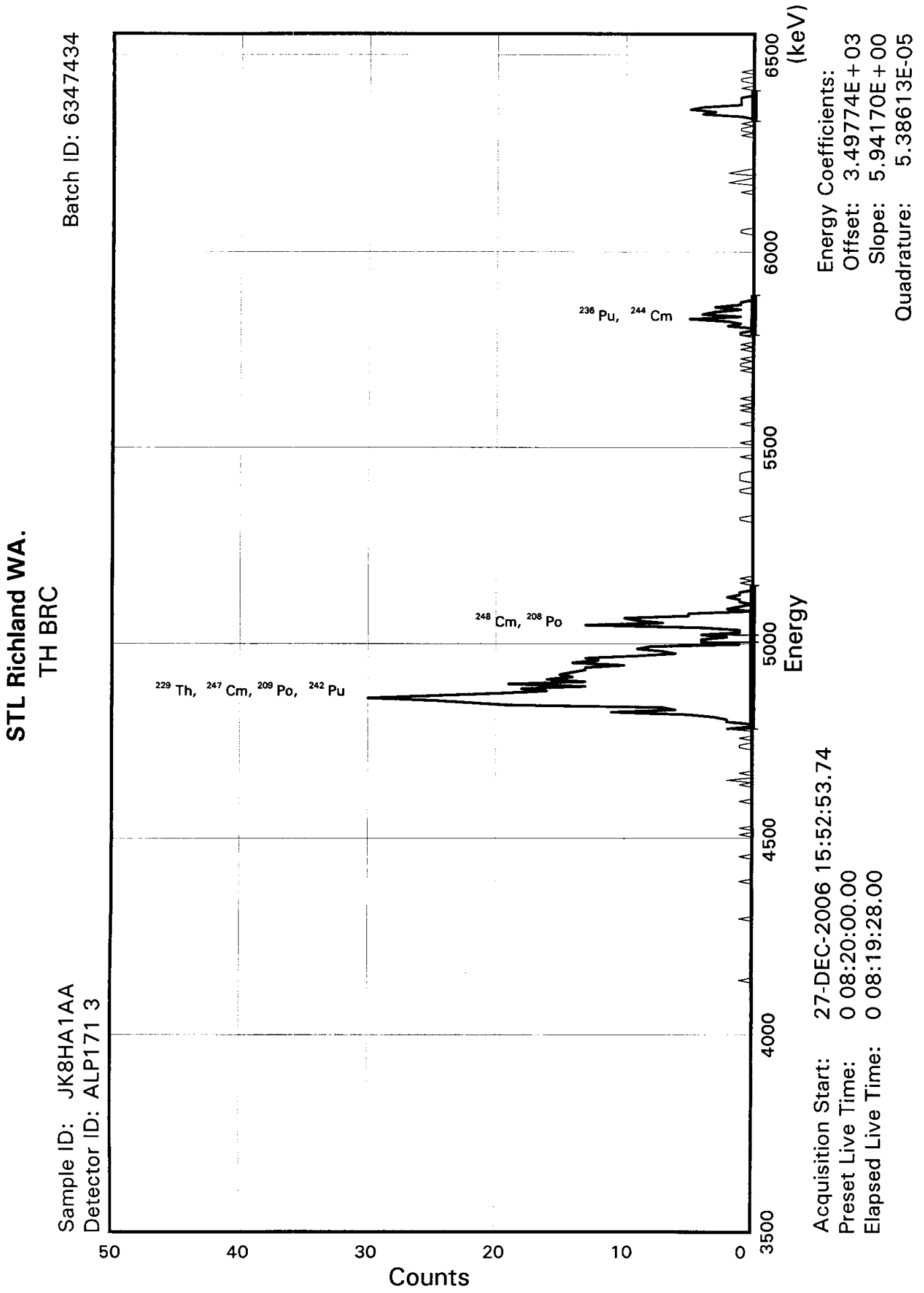
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JK8HA1AA

Detector: ALP171 3
Report Date: 28-Dec-06 11:56 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	4	0.012	5423.2	143.4	304	328
TH-229	515	3	1.028	4845.3	441.6	207	281
TH-230	5	1	0.009	4687.7	125.2	184	205
TH-232	0	1	-0.001	4013.0	119.0	72	92

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6347434
Sample ID: JK8HA1AA
Detector ID: ALP171 3
229 Th, 247 Cm, 209 Po, 242 Pu
248 Cm, 208 Po
236 Pu, 244 Cm
Counts
50
40
30
20
10
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 27-DEC-2006 15:52:53.74
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: JK8HA1AA

TITLE : TH BRC

DETECTOR : ALP171 3
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JK8HA1AA_271261552C.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 28-Dec-06 SAMPLE DATE: 21-NOV-2006 12:00:00
ACQUIRE DATE: 27-DEC-2006 15:52:53 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 Regions Report
(Version: 8-Oct-91)

Sample Identity: JK8HA1AA

Detector: ALP171 3
Report Date: 28-Dec-06 07:49 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	60	1	0	0.119	5150.2	143.3	253	277	0.00	0.00	P
PO-209	451	1	0	0.902	4918.5	238.7	216	256	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5339.7	239.0	293	333	0.00	0.00	M
AC-227	5	2	9	0.007	6073.3	233.6	416	455	0.00	0.00	S
TH-227	5	2	9	0.007	6073.3	233.6	416	455	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5458.5	239.1	313	353	0.00	0.00	M
TH-229	451	1	0	0.902	4880.6	238.7	216	256	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4723.0	238.6	190	230	0.00	0.00	M I
TH-232	1	1	1	0.000	4048.3	238.1	76	116	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5355.5	233.1	296	335	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4809.9	238.6	204	244	0.00	0.00	M I
U-235	4	1	0	0.007	4433.1	238.4	141	181	0.00	0.00	S
PU-236	26	8	0	0.044	5802.9	101.7	384	401	0.00	0.00	P
NP-237	-9999	-9999	0	-10.010	4823.3	238.6	206	246	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5534.3	239.2	325	365	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4233.3	238.2	107	147	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5191.9	238.9	268	308	0.00	0.00	M I
AM-241	-9999	-9999	0	-10.010	5520.9	239.1	323	363	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5242.1	238.9	277	317	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6148.0	239.6	428	468	0.00	0.00	M
PU-242	451	1	0	0.902	4935.8	238.7	216	256	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5310.6	239.0	288	328	0.00	0.00	M
CM-244	26	8	0	0.044	5840.1	101.7	384	401	0.00	0.00	P
CM-246	-9999	-9999	0	-10.010	5421.8	239.1	307	347	0.00	0.00	M
CM-247	451	1	0	0.902	4905.7	238.7	216	256	0.00	0.00	P
CM-248	60	1	0	0.119	5113.9	143.3	253	277	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JK8HA1AA
Detector: ALP171 3
Report Date: 28-Dec-06 07:49 AM
Acquire Date: 27-DEC-2006 15:52:53.74

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 28-DEC-2006 07:49:47

Configuration : $DISK1:[ALP171.SAMPLE]JK8HA1AA_271261552C.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:52:53
Sample ID : JK8HA1AA 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	4880.58	451	0	89.13	232.25	216	40	1.50E-02	4.7	
2	0	5055.77	60	0	35.65	261.60	253	24	2.00E-03	12.9	
3	0	5838.15	26	0	47.53	392.50	384	17	8.68E-04	19.6	
4	0	6357.29	22	0	29.71	479.19	475	13	7.34E-04	21.3	

VMS Nuclide Identification Report V3.0 Generated 28-DEC-2006 07:49:50

Configuration	: $DISK1:[ALP171.SAMPLE]JK8HA1AA_271261552C.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 21-NOV-2006 12:00:00	Acquisition date	: 27-DEC-2006 15:52:53
Sample ID	: JK8HA1AA	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	1	
Number of lines tentatively identified by NID	3	75.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.02	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-236	2.86Y	1.02	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-244	18.10Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-248	3.39E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

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

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

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

Configuration: $DISK1:[ALP171.SAMPLE]JK8HA1AA_271261552C.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4880.58	216	256	451	446	0.24		
5055.76	253	277	60	78	-2.32	14	0.04
5838.14	384	401	26	26	0.00		
6357.28	475	488	22	21	0.21		

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

End of Report

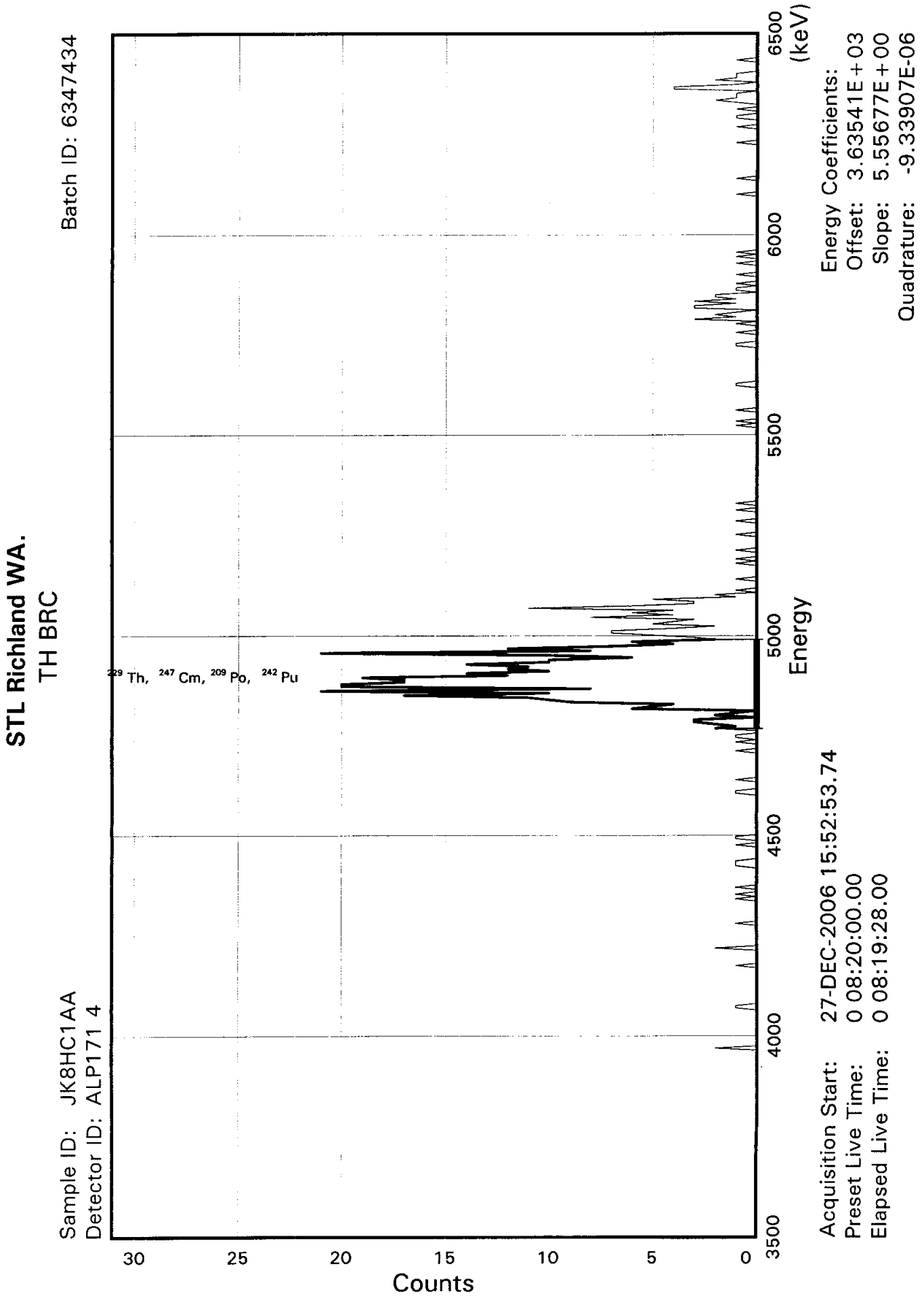
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JK8HC1AA

Detector: ALP171 4
Report Date: 28-Dec-06 11:55 AM
Acquire Date: 27-DEC-2006 15:52:53.74
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	1	1	0.001	5423.2	127.7	304	327
TH-229	472	3	0.942	4845.3	366.5	201	267
TH-230	4	0	0.008	4687.7	122.2	174	196
TH-232	2	0	0.004	4013.0	111.1	53	73

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6347434
Sample ID: JK8HC1AA
Detector ID: ALP171 4
229 Th, 247 Cm, 209 Po, 242 Pu
Counts
30
25
20
15
10
5
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 27-DEC-2006 15:52:53.74
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: JK8HC1AA

TITLE : TH BRC

DETECTOR : ALP171 4
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JK8HC1AA_271261552D.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 28-Dec-06 SAMPLE DATE: 21-NOV-2006 12:00:00
ACQUIRE DATE: 27-DEC-2006 15:52:53 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: JK8HC1AA

Detector: ALP171 4
Report Date: 28-Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	5168.9	222.1	253	293	0.00	0.00	M
PO-209	375	3	0	0.748	4937.2	222.1	204	244	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5358.3	222.0	287	327	0.00	0.00	M
AC-227	1	0	2	0.002	6092.0	221.9	419	459	0.00	0.00	S
TH-227	1	0	2	0.002	6092.0	221.9	419	459	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5477.2	222.0	308	348	0.00	0.00	M
TH-229	375	3	0	0.748	4899.3	222.1	204	244	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4741.7	222.1	176	216	0.00	0.00	M I
TH-232	4	0	0	0.008	4067.0	222.2	54	94	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5374.1	222.0	290	330	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4828.6	222.1	191	231	0.00	0.00	M I
U-235	9	0	1	0.017	4451.8	222.2	123	163	0.00	0.00	S
PU-236	16	8	29	0.023	5821.6	222.0	370	410	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4842.0	222.1	194	234	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5553.0	222.0	322	362	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4252.0	222.2	87	127	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5210.5	222.1	260	300	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5539.6	222.0	319	359	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5260.8	222.1	269	309	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6166.7	221.9	432	472	0.00	0.00	M
PU-242	375	3	0	0.748	4954.5	222.1	204	244	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5329.3	222.0	281	321	0.00	0.00	M
CM-244	17	8	29	0.025	5858.8	222.0	377	417	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5440.5	222.0	301	341	0.00	0.00	M
CM-247	375	3	0	0.748	4924.4	222.1	204	244	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5132.6	222.1	246	286	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JK8HC1AA
Detector: ALP171 4
Report Date: 28 Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:52:53.74

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

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
		451	0		501
		452	0		502
		453	0		503
		454	1		504
		455	0		505
		456	0		506
		457	0		507
		458	0		508
		459	0		509
		460	0		510
		461	0		511
		462	0		512
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		500			

VMS Peak Search Report V1.9 Generated 28-DEC-2006 00:13:42

Configuration	: $DISK1:[ALP171.SAMPLE]JK8HC1AA_271261552D.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 21-NOV-2006 12:00:00	Acquisition date	: 27-DEC-2006 15:52:53
Sample ID	: JK8HC1AA	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	: 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	4899.26	375	0138.92		227.53	204	40	1.25E-02	5.2	

VMS Nuclide Identification Report V3.0 Generated 28-DEC-2006 00:13:44

```
Configuration     : $DISK1:[ALP171.SAMPLE]JK8HC1AA_271261552D.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:52:53
Sample ID         : JK8HC1AA             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                  1
Number of unidentified lines                       0
Number of lines tentatively identified by NID      1      100.00%
```

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
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]JK8HC1AA_271261552D.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4899.25	204	244	375	377	-0.10		

End of Report

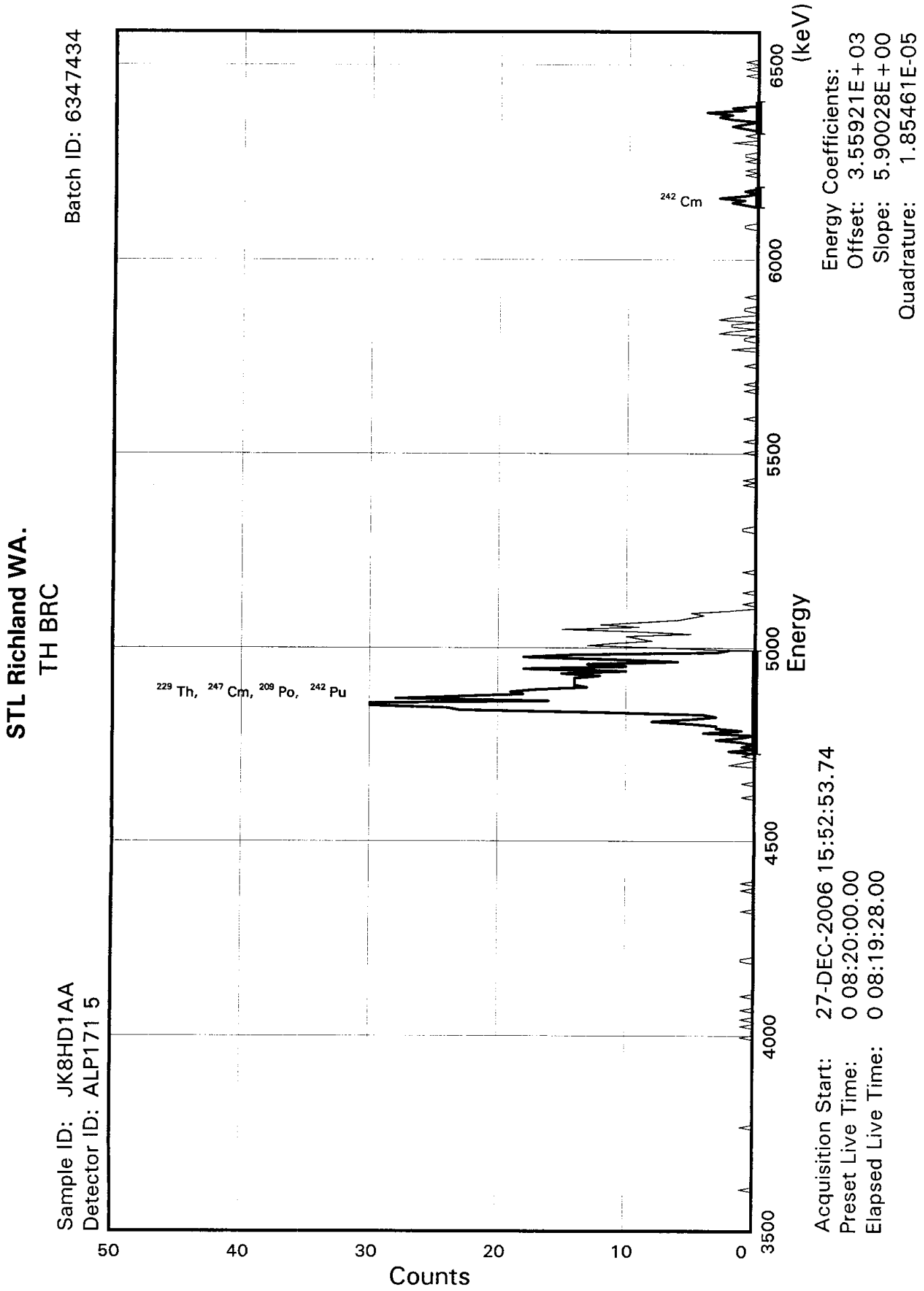
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JK8HD1AA

Detector: ALP171 5
Report Date: 28-Dec-06 11:57 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	2	0.002	5423.2	118.2	301	321
TH-229	623	4	1.243	4845.3	390.0	200	266
TH-230	5	2	0.008	4687.7	118.1	176	196
TH-232	3	0	0.006	4013.0	129.9	62	84

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6347434
Sample ID: JK8HD1AA
Detector ID: ALP171 5
229 Th, 247 Cm, 209 Po, 242 Pu
242 Cm
Counts
50
40
30
20
10
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 27-DEC-2006 15:52:53.74
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: JK8HD1AA

TITLE : TH BRC

DETECTOR : ALP171 5
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JK8HD1AA_271261552E.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 28-Dec-06 SAMPLE DATE: 21-NOV-2006 12:00:00
ACQUIRE DATE: 27-DEC-2006 15:52:53 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: JK8HD1AA

Detector: ALP171 5
Report Date: 28-Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	5155.3	266.0	244	289	0.00	0.00	M
PO-209	500	2	0	0.999	4923.6	265.9	198	243	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5344.8	266.0	276	321	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6078.5	266.2	400	445	0.00	0.00	S I
TH-227	-9999	-9999	0	-10.010	6078.5	266.2	400	445	0.00	0.00	S I
TH-228	-9999	-9999	0	-10.010	5463.6	266.0	296	341	0.00	0.00	M
TH-229	500	2	0	0.999	4885.7	265.9	198	243	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4728.1	265.8	171	216	0.00	0.00	M I
TH-232	5	0	1	0.009	4053.4	265.6	57	102	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5360.6	266.0	278	323	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4815.0	265.9	186	231	0.00	0.00	M I
U-235	3	0	1	0.005	4438.2	265.8	122	167	0.00	0.00	S
PU-236	13	10	22	0.016	5808.1	266.1	354	399	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4828.4	265.9	188	233	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5539.5	266.1	309	354	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4238.4	265.7	88	133	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5197.0	266.0	251	296	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5526.0	266.1	306	351	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5247.2	266.0	259	304	0.00	0.00	M
CM-242	9	1	0	0.017	6153.2	53.2	436	445	0.00	0.00	P
PU-242	500	2	0	0.999	4940.9	265.9	198	243	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5315.7	266.0	271	316	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5845.3	266.2	360	405	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5426.9	266.0	290	335	0.00	0.00	M
CM-247	500	2	0	0.999	4910.8	265.9	198	243	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5119.0	265.9	237	282	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: JK8HD1AA
Detector: ALP171 5
Report Date: 28-Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:52:53.74

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

VMS Peak Search Report V1.9 Generated 28-DEC-2006 00:13:47

Configuration	: $DISK1:[ALP171.SAMPLE]JK8HD1AA_271261552E.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 21-NOV-2006 12:00:00	Acquisition date	: 27-DEC-2006 15:52:53
Sample ID	: JK8HD1AA	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	: 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	4885.75	500	0	112.11	224.67	198	45	1.67E-02	4.5	
2	0	6151.32	9	0	23.60	438.71	436	9	3.00E-04	33.3	
3	0	6374.10	18	0	23.60	476.36	468	14	6.01E-04	23.6	

VMS Nuclide Identification Report V3.0 Generated 28-DEC-2006 00:13:49

```
Configuration     : $DISK1:[ALP171.SAMPLE]JK8HD1AA_271261552E.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:52:53
Sample ID         : JK8HD1AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP171 1             Detector geometry:
Elapsed live time: 0 08:19:28.00         Elapsed real time: 0 08:19:28.00   0.0%
Energy tolerance :    80.00 keV          Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :    70.00
```

Summary of Nuclide Activity

Total number of lines in spectrum	3	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	2	66.67%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
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	
CM-242	162.80D	1.17	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]JK8HD1AA_271261552E.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4885.74	198	243	500	485	0.67		
6151.31	436	445	9	9	0.00		
6374.09	468	482	18	18	0.00		

End of Report

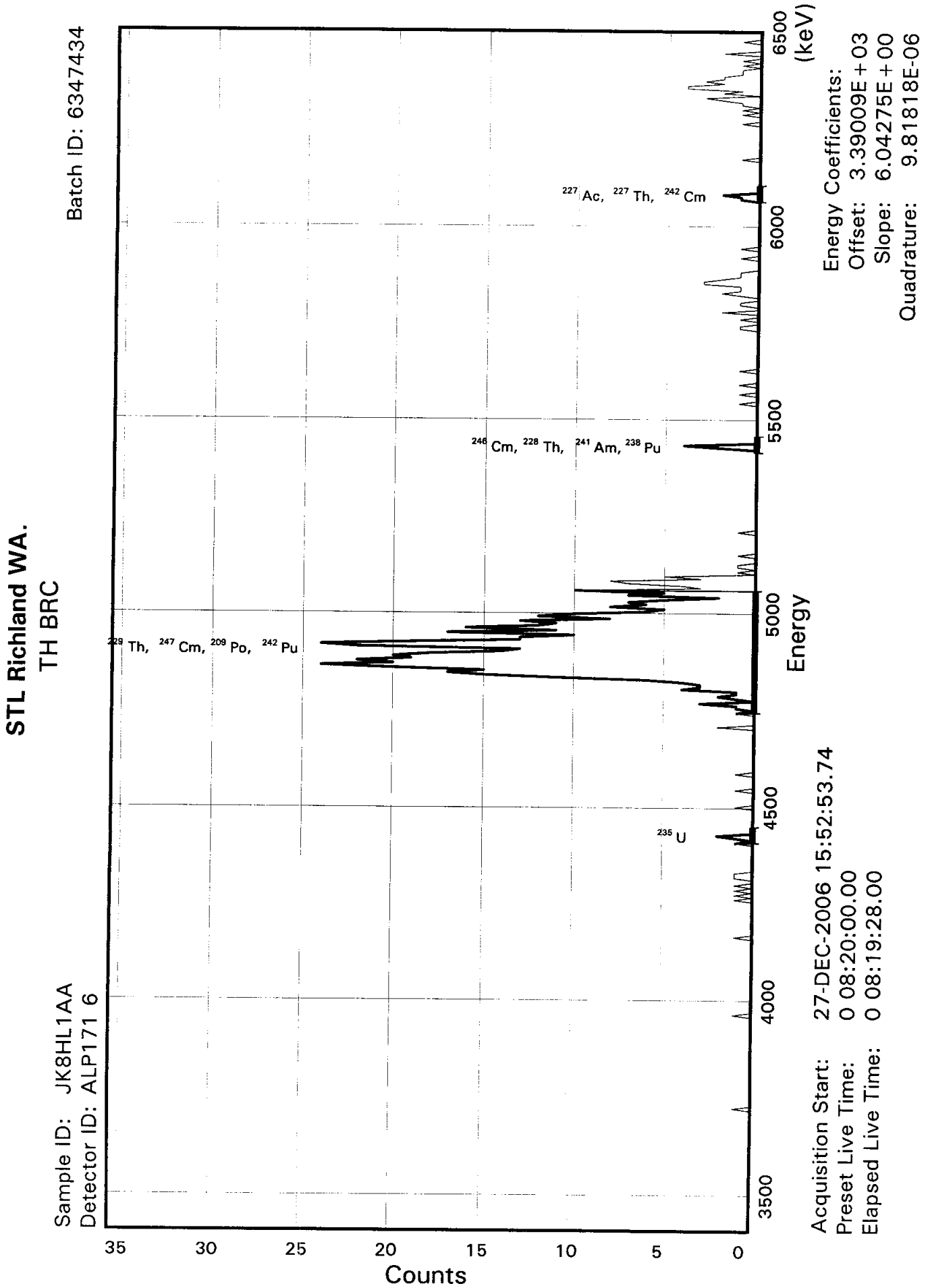
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JK8HL1AA

Detector: ALP171 6
Report Date: 28-Dec-06 11:58 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	121.0	321	341
TH-229	565	1	1.130	4845.3	423.3	223	293
TH-230	3	2	0.004	4687.7	139.1	197	220
TH-232	1	0	0.002	4013.0	120.9	88	108

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6347434
Sample ID: JK8HL1AA
Detector ID: ALP171 6
229 Th, 247 Cm, 209 Po, 242 Pu
235 U
246 Cm, 228 Th, 241 Am, 238 Pu
227 Ac, 227 Th, 242 Cm
Counts
35
30
25
20
15
10
5
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 27-DEC-2006 15:52:53.74
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 IDENTIITY: JK8HL1AA

TITLE : TH BRC

DETECTOR : ALP171 6
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JK8HL1AA_271261552F.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 28-Dec-06 SAMPLE DATE: 21-NOV-2006 12:00:00
ACQUIRE DATE: 27-DEC-2006 15:52:53 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 Regions Report
(Version: 8-Oct-91)

Sample Identity: JK8HL1AA

Detector: ALP171 6
Report Date: 28-Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	5174.9	314.5	269	321	0.00	0.00	M I
PO-209	514	0	0	1.029	4943.2	314.5	224	276	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5364.3	314.6	300	352	0.00	0.00	M I
AC-227	-9999	-9999	0	-10.010	6098.0	314.7	421	473	0.00	0.00	M I
TH-227	-9999	-9999	0	-10.010	6098.0	314.7	421	473	0.00	0.00	M I
TH-228	6	0	0	0.012	5483.2	42.3	335	342	0.00	0.00	P
TH-229	514	0	0	1.029	4905.3	314.5	224	276	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4747.7	314.5	198	250	0.00	0.00	M I
TH-232	2	0	1	0.003	4073.0	314.3	86	138	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5380.1	314.6	303	355	0.00	0.00	M I
U-234	-9999	-9999	0	-10.010	4834.6	314.5	212	264	0.00	0.00	M I
U-235	4	0	0	0.008	4457.8	42.3	168	175	0.00	0.00	P
PU-236	-9999	-9999	0	-10.010	5827.6	314.6	376	428	0.00	0.00	M
NP-237	-9999	-9999	0	-10.010	4848.0	314.5	215	267	0.00	0.00	M I
PU-238	6	0	0	0.012	5559.0	42.3	335	342	0.00	0.00	P
U-238	-9999	-9999	0	-10.010	4258.0	314.4	117	169	0.00	0.00	S I
PU-239	-9999	-9999	0	-10.010	5216.5	314.5	275	327	0.00	0.00	M
AM-241	6	0	0	0.012	5545.6	42.3	335	342	0.00	0.00	P
AM-242M	-9999	-9999	0	-10.010	5266.8	314.5	284	336	0.00	0.00	M I
CM-242	4	0	0	0.008	6172.7	42.4	442	449	0.00	0.00	P
PU-242	514	0	0	1.029	4960.5	314.5	224	276	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5335.3	314.6	295	347	0.00	0.00	M I
CM-244	-9999	-9999	0	-10.010	5864.8	314.6	383	435	0.00	0.00	M
CM-246	6	0	0	0.012	5446.5	42.3	335	342	0.00	0.00	P
CM-247	514	0	0	1.029	4930.4	314.5	224	276	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5138.6	314.5	263	315	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: JK8HL1AA
Detector: ALP171 6
Report Date: 28-Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:52:53.74

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

VMS Peak Search Report V1.9 Generated 28-DEC-2006 00:13:52

```
Configuration     : $DISK1:[ALP171.SAMPLE]JK8HL1AA_271261552F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:52:53
Sample ID         : JK8HL1AA             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      :  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	4420.66	4	0	24.17	170.50	168	7	1.33E-04	50.0	
2	0	4905.26	514	0	157.11	250.64	224	52	1.72E-02	4.4	
3	0	5428.82	6	0	18.13	337.20	335	7	2.00E-04	40.8	
4	0	6078.03	4	0	24.17	444.50	442	7	1.33E-04	50.0	

VMS Nuclide Identification Report V3.0 Generated 28-DEC-2006 00:13:54

```
Configuration     : $DISK1:[ALP171.SAMPLE]JK8HL1AA_271261552F.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:52:53
Sample ID         : JK8HL1AA             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-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
TH-228	1.91Y	1.04	0.000E+00	0.000E+00	0.000E+00	0.00	
U-235	7.08E+08Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
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-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	
CM-242	162.80D	1.17	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]JK8HL1AA_271261552F.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4420.66	168	175	4	4	0.00		
4905.25	224	276	514	531	-0.75		
5428.82	335	342	6	6	0.00		
6078.03	442	449	4	4	0.00		

End of Report

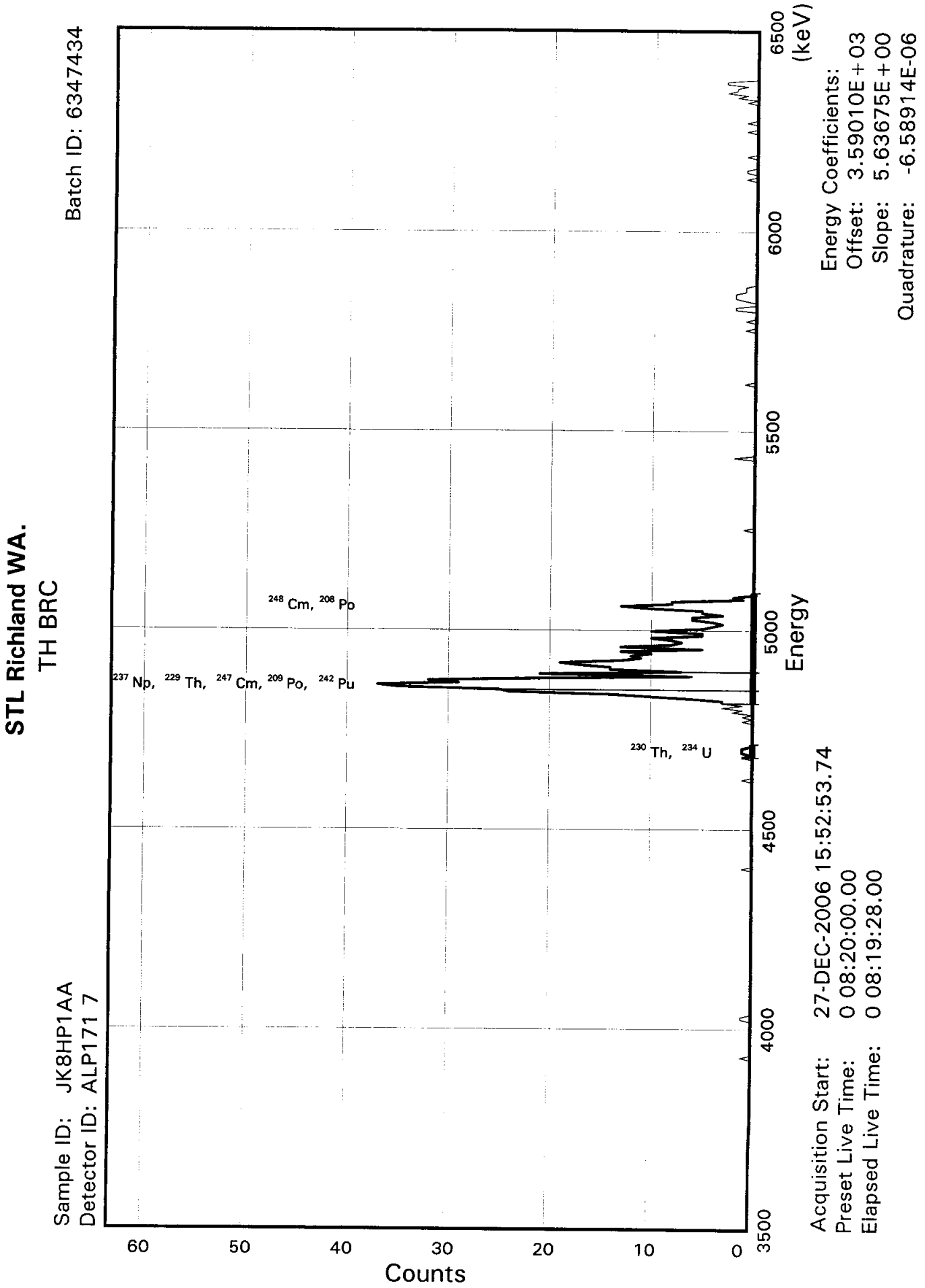
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JK8HP1AA

Detector: ALP171 7
Report Date: 28-Dec-06 11:59 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	0	0.004	5423.2	112.7	310	330
TH-229	559	1	1.118	4845.3	326.7	208	266
TH-230	5	0	0.010	4687.7	112.7	180	200
TH-232	3	0	0.006	4013.0	118.4	59	80

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6347434
Sample ID: JK8HP1AA
Detector ID: ALP171 7
248 Cm, 208 Po
237 Np, 229 Th, 247 Cm, 209 Po, 242 Pu
230 Th, 234 U
Counts
60
50
40
30
20
10
0
3500
4000
4500
5000
5500
6000
6500
Energy
(keV)
Acquisition Start: 27-DEC-2006 15:52:53.74
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: JK8HP1AA

TITLE : TH BRC

DETECTOR : ALP171 7
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JK8HP1AA_271261552G.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 28-Dec-06 SAMPLE DATE: 21-NOV-2006 12:00:00
ACQUIRE DATE: 27-DEC-2006 15:52:53 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: JK8HP1AA

Detector: ALP171 7
Report Date: 28-Dec-06 12:14 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	151	0	0	0.302	5132.7	242.2	224	267	0.00	0.00	P
PO-209	396	0	0	0.793	4901.0	78.9	218	232	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5322.2	78.9	299	313	0.00	0.00	M
AC-227	0	1	0	-0.001	6055.8	78.8	430	444	0.00	0.00	S
TH-227	0	1	0	-0.001	6055.8	78.8	430	444	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5441.0	78.9	321	335	0.00	0.00	M
TH-229	396	0	0	0.793	4863.1	78.9	218	232	0.00	0.00	P
TH-230	4	0	0	0.008	4705.5	33.8	194	200	0.00	0.00	P
TH-232	2	0	0	0.004	4030.8	78.9	70	84	0.00	0.00	
U-232	-9999	-9999	0	-10.010	5338.0	78.9	302	316	0.00	0.00	M
U-234	4	0	0	0.008	4792.4	33.8	194	200	0.00	0.00	P
U-235	1	0	0	0.002	4415.6	78.9	139	153	0.00	0.00	
PU-236	4	3	5	0.004	5785.4	78.8	382	396	0.00	0.00	S
NP-237	396	0	0	0.793	4805.8	78.9	218	232	0.00	0.00	P
PU-238	-9999	-9999	0	-10.010	5516.8	78.9	334	348	0.00	0.00	M
U-238	0	0	0	0.000	4215.8	78.9	103	117	0.00	0.00	
PU-239	0	0	0	0.000	5174.4	78.9	273	287	0.00	0.00	S
AM-241	-9999	-9999	0	-10.010	5503.4	78.9	332	346	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5224.6	78.9	282	296	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6130.5	78.8	443	457	0.00	0.00	M
PU-242	396	0	0	0.793	4918.3	78.9	218	232	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5293.1	78.9	294	308	0.00	0.00	M
CM-244	12	15	5	0.008	5822.6	78.8	388	402	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5404.3	78.9	314	328	0.00	0.00	M
CM-247	396	0	0	0.793	4888.2	78.9	218	232	0.00	0.00	P
CM-248	151	0	0	0.302	5096.4	242.2	224	267	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JK8HP1AA
Detector: ALP171 7
Report Date: 28-Dec-06 12:14 AM
Acquire Date: 27-DEC-2006 15:52:53.74

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 28-DEC-2006 00:13:57

Configuration	: $DISK1:[ALP171.SAMPLE]JK8HP1AA_271261552G.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 21-NOV-2006 12:00:00	Acquisition date	: 27-DEC-2006 15:52:53
Sample ID	: JK8HP1AA	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	: 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	4697.46	4	0	22.55	196.50	194	6	1.33E-04	50.0	
2	0	4863.09	396	0	39.46	225.90	218	14	1.32E-02	5.0	
3	0	5060.71	151	0	28.18	260.98	224	43	5.04E-03	8.1	

VMS Nuclide Identification Report V3.0 Generated 28-DEC-2006 00:13:59

```
Configuration     : $DISK1:[ALP171.SAMPLE]JK8HP1AA_271261552G.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:52:53
Sample ID         : JK8HP1AA             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
PO-208	2.90Y	1.02	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-234	2.45E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
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]JK8HP1AA_271261552G.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4697.46	194	200	4	4	0.00		
4863.08	218	232	396	273	6.18		
5060.70	224	267	151	490	-27.59	213	-0.13

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

End of Report

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

Sample Identity: JK8HQ1AA

Detector: ALP171 8
Report Date: 28-Dec-06 12:00 PM
Acquire Date: 27-DEC-2006 15:52:53.74
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	0	0.004	5423.2	117.7	306	326
TH-229	618	2	1.235	4845.3	359.0	208	269
TH-230	4	0	0.008	4687.7	117.7	181	201
TH-232	0	1	-0.001	4013.0	117.7	66	86

End of Alpha Region Report
(Produced by ANAL Report)

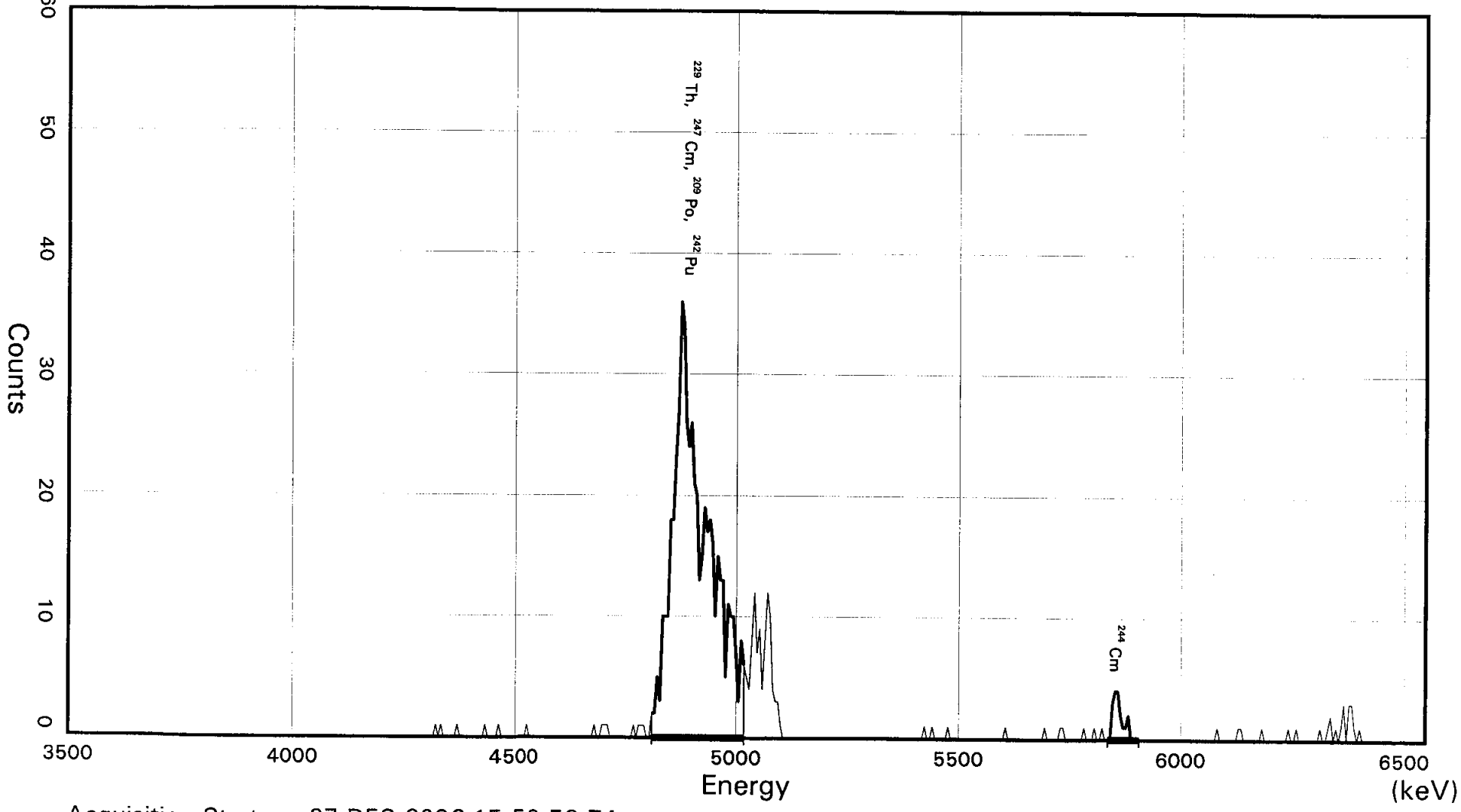
STL Richland WA.

TH BRC

Sample ID: JK8HQ1AA

Detector ID: ALP171 8

Batch ID: 6347434



Acquisition Start: 27-DEC-2006 15:52:53.74

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: JK8HQ1AA

TITLE : TH BRC

DETECTOR : ALP171 8
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JK8HQ1AA_271261552H.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 28-Dec-06 SAMPLE DATE: 21-NOV-2006 12:00:00
ACQUIRE DATE: 27-DEC-2006 15:52:53 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 Regions Report
(Version: 8-Oct-91)

Sample Identity: JK8HQ1AA

Detector: ALP171 8
Report Date: 28-Dec-06 12:14 AM
Acquire Date: 27-DEC-2006 15:52:53.74
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	5164.3	206.0	263	298	0.00	0.00	M
PO-209	543	1	0	1.086	4932.6	206.0	217	252	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5353.8	206.0	295	330	0.00	0.00	M
AC-227	2	2	4	0.002	6087.4	205.9	420	455	0.00	0.00	S
TH-227	2	2	4	0.002	6087.4	205.9	420	455	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5472.6	206.0	315	350	0.00	0.00	M
TH-229	543	1	0	1.086	4894.7	206.0	217	252	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4737.1	206.0	190	225	0.00	0.00	M I
TH-232	0	1	0	-0.001	4062.4	206.0	76	111	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5369.6	206.0	298	333	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4824.0	206.0	205	240	0.00	0.00	M I
U-235	4	0	1	0.007	4447.2	206.0	141	176	0.00	0.00	S
PU-236	-9999	-9999	0	-10.010	5817.1	206.0	374	409	0.00	0.00	I
NP-237	-9999	-9999	0	-10.010	4837.4	206.0	207	242	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5548.4	206.0	328	363	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4247.4	206.0	107	142	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5206.0	206.0	270	305	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5535.0	206.0	326	361	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5256.2	206.0	278	313	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6162.1	205.9	432	467	0.00	0.00	M
PU-242	543	1	0	1.086	4949.9	206.0	217	252	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5324.7	206.0	290	325	0.00	0.00	M
CM-244	19	5	0	0.033	5854.2	70.6	391	403	0.00	0.00	P
CM-246	-9999	-9999	0	-10.010	5435.9	206.0	309	344	0.00	0.00	M
CM-247	543	1	0	1.086	4919.8	206.0	217	252	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5128.0	206.0	257	292	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JK8HQ1AA
Detector: ALP171 8
Report Date: 28-Dec-06 12:14 AM
Acquire Date: 27-DEC-2006 15:52:53.74

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 28-DEC-2006 00:14:02

```
Configuration     : $DISK1:[ALP171.SAMPLE]JK8HQ1AA_271261552H.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:52:53
Sample ID         : JK8HQ1AA             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      :  3551.31 keV         End energy       :  6546.78 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4894.69	543	0	88.29	231.25	217	35	1.81E-02	4.3	
2	0	5852.98	19	0	17.66	394.09	391	12	6.34E-04	22.9	

VMS Nuclide Identification Report V3.0 Generated 28-DEC-2006 00:14:04

Configuration	: $DISK1:[ALP171.SAMPLE]JK8HQ1AA_271261552H.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 21-NOV-2006 12:00:00	Acquisition date	: 27-DEC-2006 15:52:53
Sample ID	: JK8HQ1AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP171 1	Detector geometry	:
Elapsed live time	: 0 08:19:28.00	Elapsed real time	: 0 08:19:28.00 0.0%
Energy tolerance	: 80.00 keV	Half life ratio	: 1.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Spline	Efficiencies at	: Peak Energy
Abundance limit	: 70.00		

Summary of Nuclide Activity

Total number of lines in spectrum	2	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	2	100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-244	18.10Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
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]JK8HQ1AA_271261552H.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4894.69	217	252	543	524	0.82		
5852.98	391	403	19	17	0.46		

End of Report

SEVERN TRENT STL

THORIUM ISOTOPIC COUNTING REQUEST

C.R. Technician: OD
Date Counted: 12/27/06
C.R. Analyst: OD
Date Analyzed: 12/29/06

Counting Time
Sample: 500 Minutes
Background: See Alpha Analysis Report
BRC 12/21/06

SOP's
Operating: RICHRD008
Review: RICHRD0016
6347434

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)		
JK8HR1AA		10		0	See Alpha Analysis Report for ROI Information			113	
JK8HT1AA		10		0	See Alpha Analysis Report for ROI Information			114	
JLDX51AA		10		0	See Alpha Analysis Report for ROI Information			117	
JLDX51AC		10		0	See Alpha Analysis Report for ROI Information			118	
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		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: 12/27/06

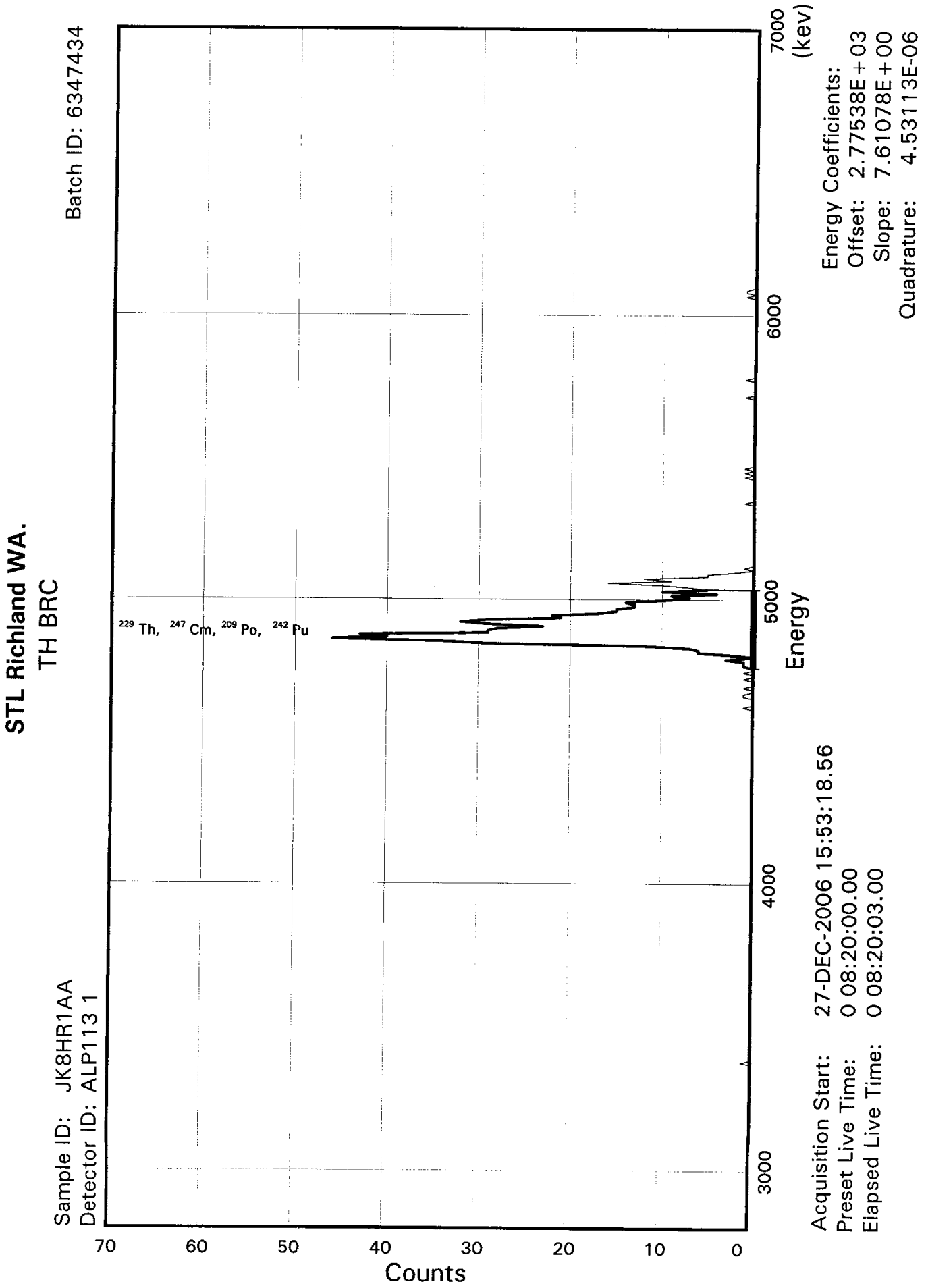
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JK8HR1AA

Detector: ALP113 1
Report Date: 28-Dec-06 12:01 PM
Acquire Date: 27-DEC-2006 15:53:18.56
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	4	6	0.002	5423.2	159.9	333	354
TH-229	673	3	1.343	4845.3	388.3	257	308
TH-230	5	0	0.010	4687.7	152.3	236	256
TH-232	0	2	-0.002	4013.0	152.2	148	168

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6347434
Sample ID: JK8HR1AA
Detector ID: ALP113 1
229 Th, 247 Cm, 209 Po, 242 Pu
Energy
(kev)
3000
4000
5000
6000
7000
Counts
70
60
50
40
30
20
10
0
Acquisition Start: 27-DEC-2006 15:53:18.56
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:03.00
Energy Coefficients:
Offset: 2.77538E+03
Slope: 7.61078E+00
Quadrature: 4.53113E-06

SAMPLE IDENTITY: JK8HR1AA

TITLE : TH BRC

DETECTOR : ALP113 1
CONFIGURATION NAME : RDND06$DKA100:[ALP113.SAMPLE]JK8HR1AA_271261
553.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:11

REPORT DATE : 28-Dec-06 SAMPLE DATE: 21-NOV-2006 12:00:00
ACQUIRE DATE: 27-DEC-2006 15:53:18 CALIB DATE : 15-DEC-2006 00:28:22

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

OFFSET : 2775.38 keV CONSTANT FWHM : 5.83333 Channels
SLOPE : 7.61078 keV/C SENSITIVITY : 6.00000 Std Dev's
QUAD COEFF : 4.531130E-06 keV/C^2 SUM SENSITIVITY: 0.10000 %

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

Sample Identity: JK8HR1AA

Detector: ALP113 1
Report Date: 28-Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:53:18.56
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-9.998	5157.7	274.1	296	332	0.00	0.00	M
PO-209	604	1	0	1.207	4926.0	274.1	261	297	0.00	0.00	P
PO-210	-9999	-9999	0	-9.998	5347.2	274.1	321	357	0.00	0.00	M
AC-227	-9999	-9999	0	-9.998	6080.8	274.1	418	454	0.00	0.00	M
TH-227	-9999	-9999	0	-9.998	6080.8	274.1	418	454	0.00	0.00	M
TH-228	-9999	-9999	0	-9.998	5466.0	274.1	337	373	0.00	0.00	M
TH-229	604	1	0	1.207	4888.1	274.1	261	297	0.00	0.00	P
TH-230	-9999	-9999	0	-9.998	4730.5	274.1	240	276	0.00	0.00	M I
TH-232	0	2	0	-0.002	4055.8	274.0	152	188	0.00	0.00	S
U-232	-9999	-9999	0	-9.998	5363.0	274.1	323	359	0.00	0.00	M
U-234	-9999	-9999	0	-9.998	4817.4	274.1	252	288	0.00	0.00	M I
U-235	0	0	0	0.000	4440.6	274.1	202	238	0.00	0.00	S
PU-236	-9999	-9999	0	-9.998	5810.4	274.1	382	418	0.00	0.00	M
NP-237	-9999	-9999	0	-9.998	4830.8	274.1	253	289	0.00	0.00	M I
PU-238	-9999	-9999	0	-9.998	5541.8	274.1	347	383	0.00	0.00	M
U-238	-9999	-9999	0	-9.998	4240.8	274.1	176	212	0.00	0.00	M
PU-239	-9999	-9999	0	-9.998	5199.4	274.1	302	338	0.00	0.00	M
AM-241	-9999	-9999	0	-9.998	5528.4	274.1	345	381	0.00	0.00	M
AM-242M	-9999	-9999	0	-9.998	5249.6	274.1	308	344	0.00	0.00	M
CM-242	-9999	-9999	0	-9.998	6155.5	274.1	427	463	0.00	0.00	M
PU-242	604	1	0	1.207	4943.3	274.1	261	297	0.00	0.00	P
AM-243	-9999	-9999	0	-9.998	5318.1	274.1	317	353	0.00	0.00	M
CM-244	-9999	-9999	0	-9.998	5847.6	274.1	387	423	0.00	0.00	M
CM-246	-9999	-9999	0	-9.998	5429.3	274.1	332	368	0.00	0.00	M
CM-247	604	1	0	1.207	4913.2	274.1	261	297	0.00	0.00	P
CM-248	-9999	-9999	0	-9.998	5121.4	274.1	292	328	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: JK8HR1AA
Detector: ALP113 1
Report Date: 28-Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:53:18.56

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 28-DEC-2006 00:13:23

```
Configuration     : RDND06$DKA100:[ALP113.SAMPLE]JK8HR1AA_271261553.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:53:18
Sample ID         : JK8HR1AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP113               Detector geometry:
Elapsed live time: 0 08:20:03.00         Elapsed real time: 0 08:20:03.00   0.0%
Start energy      :  2798.21 kev         End energy       :  6673.29 kev
Sensitivity       :     6.00             Sum Sensitivity  :     0.10
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4888.08	604	0	98.94	277.55	261	36	2.01E-02	4.1	

VMS Nuclide Identification Report V3.1 Generated 28-DEC-2006 00:13:24

Configuration	: RDND06$DKA100:[ALP113.SAMPLE]JK8HR1AA_271261553.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.4		
Sample title	: TH BRC		
Sample date	: 21-NOV-2006 12:00:00	Acquisition date	: 27-DEC-2006 15:53:18
Sample ID	: JK8HR1AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP113	Detector geometry	:
Elapsed live time	: 0 08:20:03.00	Elapsed real time	: 0 08:20:03.00 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	: 0.00		

Summary of Nuclide Activity

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

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

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

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

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

Configuration: RDND06$DKA100:[ALP113.SAMPLE]JK8HR1AA_271261553.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4888.08	261	297	604	605	-0.04		

End of Report

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

Sample Identity: JK8HT1AA

Detector: ALP114 1
Report Date: 28-Dec-06 12:02 PM
Acquire Date: 27-DEC-2006 15:53:31.30
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	7	6	0.008	5423.2	164.3	328	350
TH-229	654	1	1.307	4845.3	379.6	250	301
TH-230	12	0	0.024	4687.7	148.6	229	249
TH-232	1	0	0.002	4013.0	147.9	138	158

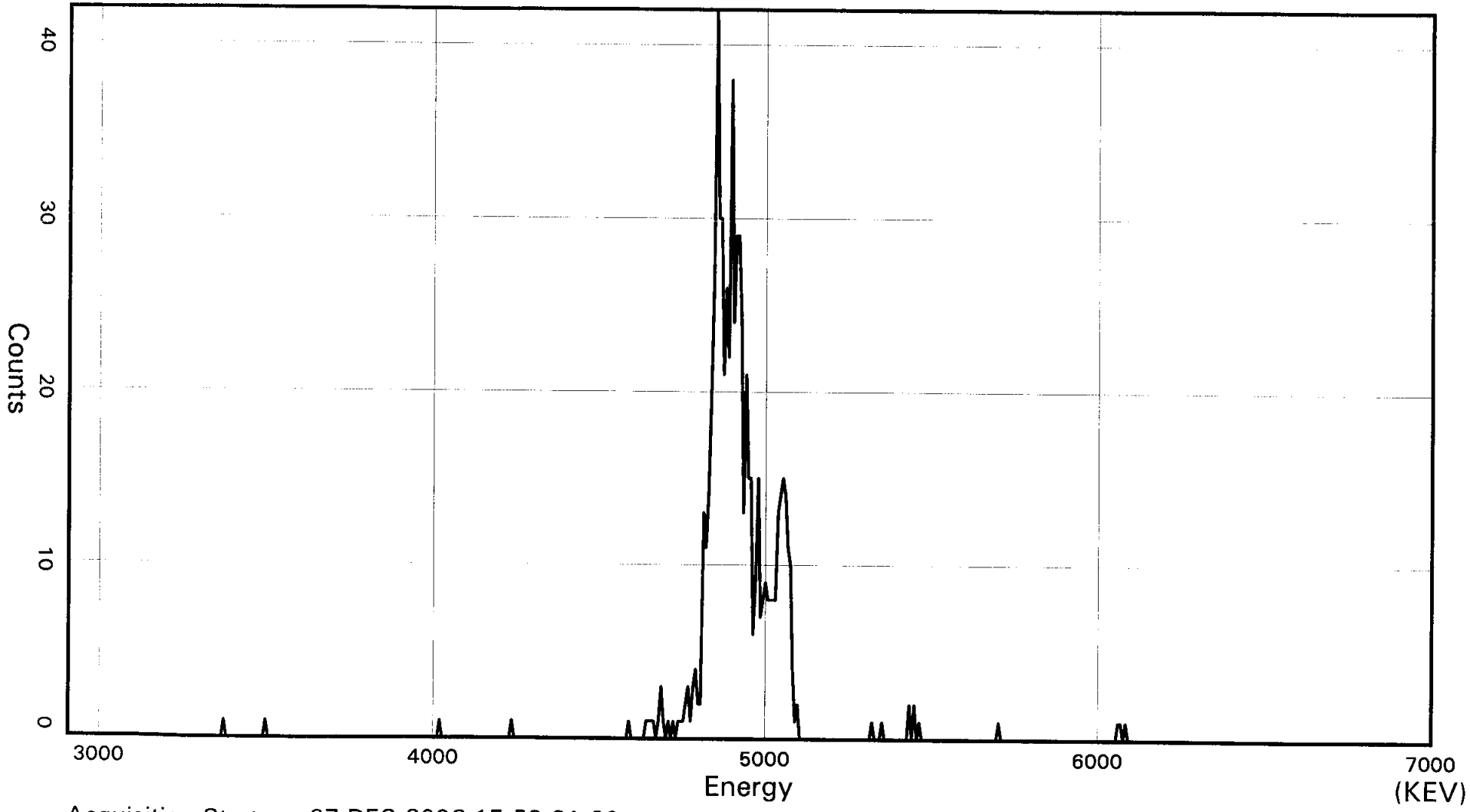
End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.

TH BRC

Sample ID: JK8HT1AA
Detector ID: ALP114 1

Batch ID: 6347434



Acquisition Start: 27-DEC-2006 15:53:31.30
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:01.00

Energy Coefficients:
Offset: 2.88553E+03
Slope: 7.33637E+00
Quadrature: 1.93378E-04

SAMPLE IDENTIITY: JK8HT1AA

TITLE : TH BRC

DETECTOR : ALP114 1
CONFIGURATION NAME : RDND06$DKA100:[ALP114.SAMPLE]JK8HT1AA_271261
553.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:16

REPORT DATE : 28-Dec-06 SAMPLE DATE: 21-NOV-2006 12:00:00
ACQUIRE DATE: 27-DEC-2006 15:53:31 CALIB DATE : 15-DEC-2006 00:28:13

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

OFFSET : 2885.53 keV CONSTANT FWHM : 6.83333 Channels
SLOPE : 7.33637 keV/C SENSITIVITY : 6.00000 Std Dev's
QUAD COEFF : 1.933780E-04 keV/C^2 SUM SENSITIVITY: 0.10000 %

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

Sample Identity: JK8HT1AA
Detector: ALP114 1
Report Date: 28-Dec-06 12:13 AM
Acquire Date: 27-DEC-2006 15:53:31.30

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

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

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

VMS Peak Search Report V1.9 Generated 28-DEC-2006 00:13:36

```
Configuration     : RDND06$DKA100:[ALP114.SAMPLE]JK8HT1AA_271261553.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:53:31
Sample ID         : JK8HT1AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP114               Detector geometry:
Elapsed live time: 0 08:20:01.00         Elapsed real time: 0 08:20:01.00   0.0%
Start energy      :  2907.54 KEV         End energy       :  6692.44 KEV
Sensitivity       :     6.00             Sum Sensitivity  :     0.10
No peaks were found
```

VMS Nuclide Identification Report V3.1 Generated 28-DEC-2006 00:13:37

```
Configuration     : RDND06$DKA100:[ALP114.SAMPLE]JK8HT1AA_271261553.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:53:31
Sample ID         : JK8HT1AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP114               Detector geometry:
Elapsed live time: 0 08:20:01.00         Elapsed real time: 0 08:20:01.00   0.0%
Energy tolerance :    80.00 KEV          Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :     0.00
```

Summary of Nuclide Activity

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

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

```
  Error Report  (Date: 28-Dec-06  12:13 AM)

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

System Status Message:

%NONAME-W-NOMSG, Message number 00000000
```

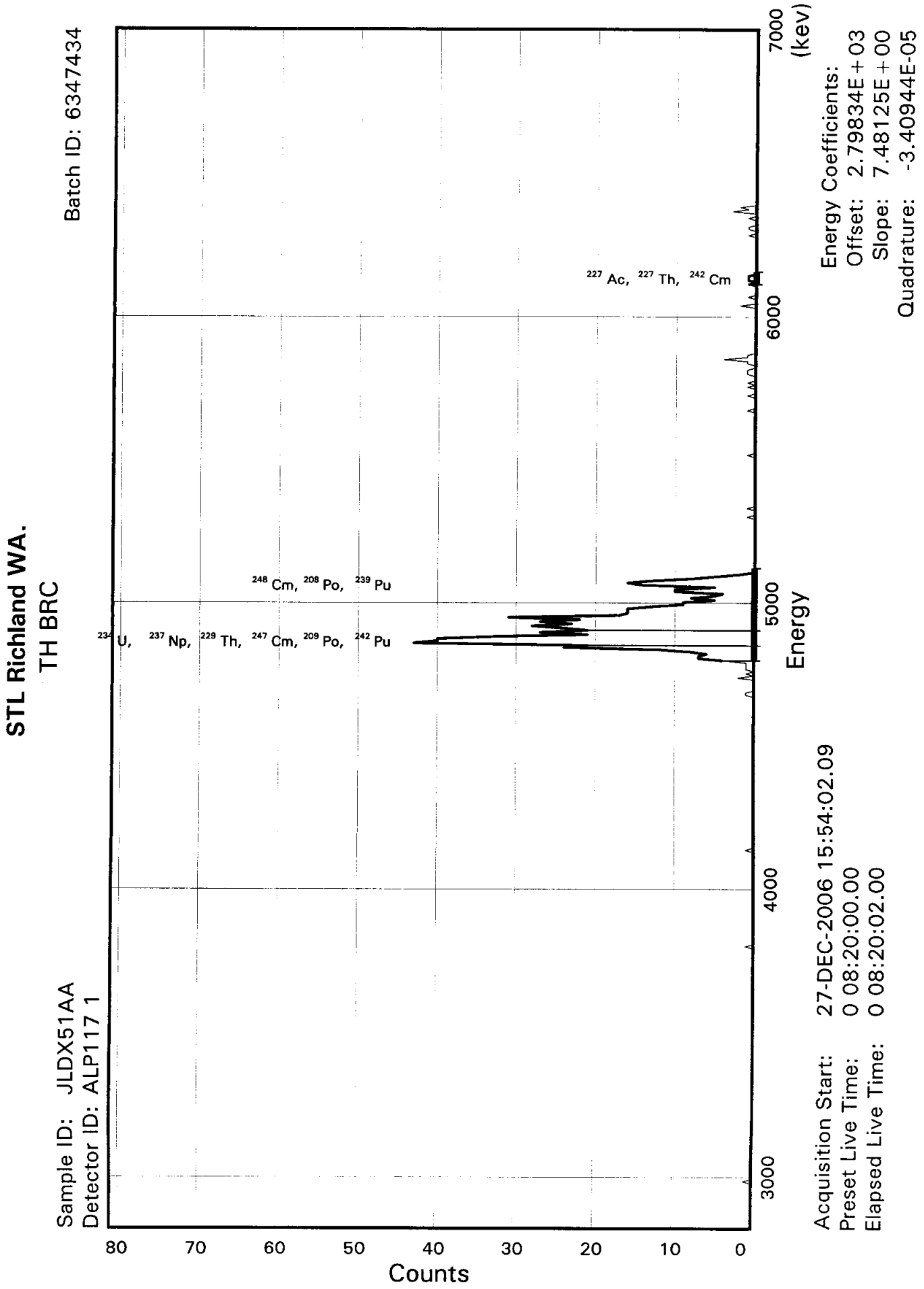
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JLDX51AA

Detector: ALP117 1
Report Date: 28-Dec-06 12:02 PM
Acquire Date: 27-DEC-2006 15:54:02.09
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 2500 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	2	2	0.003	5423.2	164.1	334	356
TH-229	677	2	1.353	4845.3	373.1	259	309
TH-230	2	1	0.004	4687.7	149.3	238	258
TH-232	0	2	-0.001	4013.0	149.4	147	167

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6347434
Sample ID: JLDX51AA
Detector ID: ALP117 1
^{227}Ac, ^{227}Th, ^{242}Cm
^{248}Cm, ^{208}Po, ^{239}Pu
^{234}U, ^{237}Np, ^{229}Th, ^{247}Cm, ^{209}Po, ^{242}Pu
Counts
80 70 60 50 40 30 20 10 0
Energy
3000 4000 5000 6000 7000
(kev)
Acquisition Start: 27-DEC-2006 15:54:02.09
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:02.00
Energy Coefficients:
Offset: 2.79834E+03
Slope: 7.48125E+00
Quadrature: -3.40944E-05

SAMPLE IDENTIITY: JLDX51AA

TITLE : TH BRC

DETECTOR : ALP117 1
CONFIGURATION NAME : RDND06$DKA100:[ALP117.SAMPLE]JLDX51AA_271261
554.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:19

REPORT DATE : 28-Dec-06 SAMPLE DATE: 21-NOV-2006 12:00:00
ACQUIRE DATE: 27-DEC-2006 15:54:02 CALIB DATE : 15-DEC-2006 00:28:03

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

OFFSET : 2798.34 keV CONSTANT FWHM : 6.83333 Channels
SLOPE : 7.48125 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.340944E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JLDX51AA

Detector: ALP117 1
Report Date: 28-Dec-06 12:14 AM
Acquire Date: 27-DEC-2006 15:54:02.09
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 2500 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	217	2	0	0.433	5134.9	268.6	275	311	0.00	0.00	P
PO-209	453	1	0	0.906	4903.2	104.5	268	282	0.00	0.00	P
PO-210	-9999	-9999	0	-15.997	5324.4	104.4	330	344	0.00	0.00	M
AC-227	3	2	0	0.005	6058.0	104.3	428	442	0.00	0.00	
TH-227	3	2	0	0.005	6058.0	104.3	428	442	0.00	0.00	
TH-228	-9999	-9999	0	-15.997	5443.2	104.4	345	359	0.00	0.00	M
TH-229	453	1	0	0.906	4865.3	104.5	268	282	0.00	0.00	P
TH-230	4	1	0	0.008	4707.7	104.5	247	261	0.00	0.00	
TH-232	0	1	0	0.000	4033.0	104.6	157	171	0.00	0.00	
U-232	-9999	-9999	0	-15.997	5340.2	104.4	332	346	0.00	0.00	M
U-234	453	1	0	0.906	4794.6	104.5	268	282	0.00	0.00	P
U-235	0	0	0	0.000	4417.8	104.5	208	222	0.00	0.00	
PU-236	4	17	4	0.001	5787.7	104.4	392	406	0.00	0.00	S
NP-237	453	1	0	0.906	4808.0	104.5	268	282	0.00	0.00	P
PU-238	-9999	-9999	0	-15.997	5519.0	104.4	356	370	0.00	0.00	M
U-238	0	0	0	0.000	4218.0	104.6	181	195	0.00	0.00	
PU-239	217	2	0	0.433	5176.6	268.6	275	311	0.00	0.00	P
AM-241	-9999	-9999	0	-15.997	5505.6	104.4	354	368	0.00	0.00	M
AM-242M	0	0	0	0.000	5226.8	104.4	316	330	0.00	0.00	S
CM-242	4	5	0	0.006	6132.7	44.7	444	450	0.00	0.00	P
PU-242	453	1	0	0.906	4920.5	104.5	268	282	0.00	0.00	P
AM-243	-9999	-9999	0	-15.997	5295.3	104.4	326	340	0.00	0.00	M
CM-244	10	40	4	0.004	5824.8	104.4	397	411	0.00	0.00	S
CM-246	-9999	-9999	0	-15.997	5406.5	104.4	341	355	0.00	0.00	M
CM-247	453	1	0	0.906	4890.4	104.5	268	282	0.00	0.00	P
CM-248	217	2	0	0.433	5098.6	268.6	275	311	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun 92)

Sample Identity: JLDX51AA
Detector: ALP117 1
Report Date: 28-Dec-06 12:14 AM
Acquire Date: 27-DEC-2006 15:54:02.09

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 28-DEC-2006 00:14:08

```
Configuration     : RDND06$DKA100:[ALP117.SAMPLE]JLDX51AA_271261554.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:54:02
Sample ID         : JLDX51AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP117               Detector geometry:
Elapsed live time: 0 08:20:02.00         Elapsed real time: 0 08:20:02.00   0.0%
Start energy      :  2820.78 kev         End energy       :  6619.80 kev
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4865.30	453	0	44.89	276.63	268	14	1.51E-02	4.7	
2	0	5061.09	217	0	59.85	302.88	275	36	7.23E-03	6.8	
3	0	6131.92	4	0	29.92	446.50	444	6	1.33E-04	50.0	

VMS Nuclide Identification Report V3.1 Generated 28-DEC-2006 00:14:10

```
Configuration     : RDND06$DKA100:[ALP117.SAMPLE]JLDX51AA_271261554.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:54:02
Sample ID         : JLDX51AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP117               Detector geometry:
Elapsed live time: 0 08:20:02.00         Elapsed real time: 0 08:20:02.00   0.0%
Energy tolerance :   100.00 kev          Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :     0.00
```

Summary of Nuclide Activity

```
 Total number of lines in spectrum                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
PO-208	2.90Y	1.02	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-234	2.45E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-239	24110.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-242	162.80D	1.17	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-248	3.39E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

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

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

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

Configuration: RDND06$DKA100:[ALP117.SAMPLE]JLDX51AA_271261554.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4865.29	268	282	453	314	6.53		
5061.09	275	311	217	602	-26.14	246	0.00
6131.91	444	450	4	4	0.00		

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

End of Report

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

Sample Identity: JLDX51AC

Detector: ALP118 1
Report Date: 28-Dec-06 12:04 PM
Acquire Date: 27-DEC-2006 15:54:14.69
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 2500 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	1	4	0.000	5423.2	152.9	321	341
TH-229	696	10	1.388	4845.3	375.3	246	295
TH-230	656	2	1.311	4687.7	153.4	225	245
TH-232	2	1	0.004	4013.0	153.9	137	157

End of Alpha Region Report
(Produced by ANAL Report)

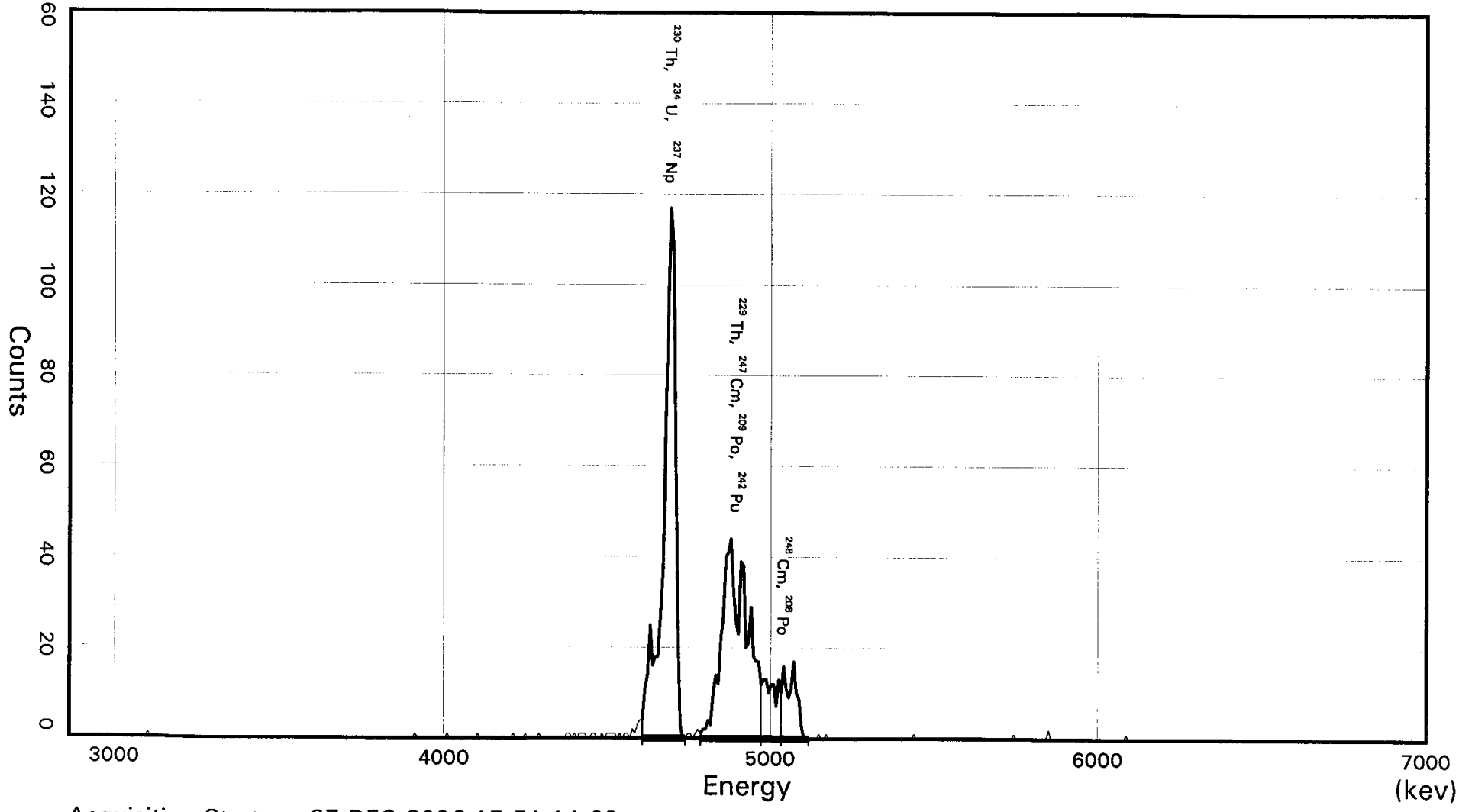
STL Richland WA.

TH BRC

Sample ID: JLDX51AC

Detector ID: ALP118 1

Batch ID: 6347434



Acquisition Start: 27-DEC-2006 15:54:14.69

Preset Live Time: 0 08:20:00.00

Elapsed Live Time: 0 08:20:07.00

Energy Coefficients:

Offset: 2.83967E+03

Slope: 7.73438E+00

Quadrature: -1.38003E-04

SAMPLE IDENTIITY: JLDX51AC

TITLE : TH BRC

DETECTOR : ALP118 1
CONFIGURATION NAME : RDND06$DKA100:[ALP118.SAMPLE]JLDX51AC_271261
554.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:22

REPORT DATE : 28-Dec-06 SAMPLE DATE: 21-NOV-2006 12:00:00
ACQUIRE DATE: 27-DEC-2006 15:54:14 CALIB DATE : 15-DEC-2006 00:28:26

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:07

OFFSET : 2839.67 keV CONSTANT FWHM : 7.00000 Channels
SLOPE : 7.73438 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.138003E-03 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JLDX51AC

Detector: ALP118 1
Report Date: 28-Dec-06 12:14 AM
Acquire Date: 27-DEC-2006 15:54:14.69
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 2500 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	120	2	0	0.239	5165.3	145.5	277	296	0.00	0.00	P
PO-209	574	8	0	1.145	4933.6	245.1	253	285	0.00	0.00	P
PO-210	-9999	-9999	0	-15.994	5354.7	244.6	313	345	0.00	0.00	M
AC-227	-9999	-9999	0	-15.994	6088.4	243.7	409	441	0.00	0.00	M
TH-227	-9999	-9999	0	-15.994	6088.4	243.7	409	441	0.00	0.00	M
TH-228	-9999	-9999	0	-15.994	5473.6	244.5	329	361	0.00	0.00	M
TH-229	574	8	0	1.145	4895.7	245.1	253	285	0.00	0.00	P
TH-230	651	2	0	1.301	4738.1	130.4	230	247	0.00	0.00	P
TH-232	2	3	0	0.003	4063.4	238.4	145	176	0.00	0.00	S
U-232	-9999	-9999	0	-15.994	5370.5	244.6	315	347	0.00	0.00	M
U-234	651	2	0	1.301	4825.0	130.4	230	247	0.00	0.00	P
U-235	18	0	2	0.036	4448.2	245.6	195	227	0.00	0.00	S
PU-236	2	1	3	0.003	5818.0	244.1	374	406	0.00	0.00	S
NP-237	651	2	0	1.301	4838.4	130.4	230	247	0.00	0.00	P
PU-238	-9999	-9999	0	-15.994	5549.4	252.0	338	371	0.00	0.00	M
U-238	-9999	-9999	0	-15.994	4248.4	245.9	169	201	0.00	0.00	M
PU-239	-9999	-9999	0	-15.994	5206.9	244.8	294	326	0.00	0.00	M I
AM-241	-9999	-9999	0	-15.994	5536.0	244.4	337	369	0.00	0.00	M
AM-242M	-9999	-9999	0	-15.994	5257.2	244.7	300	332	0.00	0.00	M
CM-242	-9999	-9999	0	-15.994	6163.1	243.7	419	451	0.00	0.00	M
PU-242	574	8	0	1.145	4950.9	245.1	253	285	0.00	0.00	P
AM-243	-9999	-9999	0	-15.994	5325.7	244.6	309	341	0.00	0.00	M
CM-244	-9999	-9999	0	-15.994	5855.2	251.6	378	411	0.00	0.00	M
CM-246	-9999	-9999	0	-15.994	5436.9	244.5	324	356	0.00	0.00	M
CM-247	574	8	0	1.145	4920.8	245.1	253	285	0.00	0.00	P
CM-248	120	2	0	0.239	5129.0	145.5	277	296	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JLDX51AC
Detector: ALP118 1
Report Date: 28-Dec-06 12:14 AM
Acquire Date: 27-DEC-2006 15:54:14.69

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

VMS Peak Search Report V1.9 Generated 28-DEC-2006 00:14:27

```
Configuration     : RDND06$DKA100:[ALP118.SAMPLE]JLDX51AC_271261554.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:54:14
Sample ID         : JLDX51AC             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP118               Detector geometry:
Elapsed live time: 0 08:20:07.00         Elapsed real time: 0 08:20:07.00   0.0%
Start energy      :  2862.87 kev         End energy       :  6763.50 kev
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4695.45	651	0	38.67	240.98	230	17	2.17E-02	3.9	
2	0	4895.66	574	0	108.28	267.10	253	32	1.91E-02	4.2	
3	0	5038.57	120	0	77.34	285.76	277	19	4.00E-03	9.1	

VMS Nuclide Identification Report V3.1 Generated 28-DEC-2006 00:14:28

```
Configuration     : RDND06$DKA100:[ALP118.SAMPLE]JLDX51AC_271261554.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title      : TH BRC
Sample date       : 21-NOV-2006 12:00:00 Acquisition date : 27-DEC-2006 15:54:14
Sample ID         : JLDX51AC             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP118               Detector geometry:
Elapsed live time: 0 08:20:07.00         Elapsed real time: 0 08:20:07.00   0.0%
Energy tolerance :   100.00 kev          Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :     0.00
```

Summary of Nuclide Activity

```
 Total number of lines in spectrum                3
 Number of unidentified lines                     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
PO-208	2.90Y	1.02	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-234	2.45E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-248	3.39E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

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

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

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

Configuration: RDND06$DKA100:[ALP118.SAMPLE]JLDX51AC_271261554.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4695.45	230	247	651	646	0.20		
4895.65	253	285	574	605	-1.29		
5038.57	277	296	120	188	-6.21	102	0.11

End of Report

ALPHA

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

1/9/2007 4:50:10 PM

Lot No., Due Date: J6L110190,J6L110193; 01/04/2007

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6347436; RALPHA-A Alpha by GPC-Am

SDG, Matrix: 33221,33222; FILTER

1.0 COC

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

2.0 QC Batch

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

3.0 QC & Samples

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

4.0 Raw Data

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

5.0 Other

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

6.0 Comments on any No response:

First Level Review Pam Anderson **Date** 1-10-07

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 63474.36

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. Wilson Date: 1-10-07

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

12/14/2006 2:55:56 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:

Pipet #:

AnalyDueDate: 01/03/2007

Sep1 DT/Tm Tech:

Batch: 6347436 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: WoodT / APA

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 JK8G8-1-AE J6L110190-1-SAMP 11/21/2006 11:30	0.833sa	12.58g,in	AmtRec: FILTER #Containers: 1	1.5	0.7	150	10A	2041	1/3/07 ono	Scr: Alpha: Beta:
2 JK8G9-1-AE J6L110190-2-SAMP 11/21/2006 11:50	0.833sa	12.55g,in	AmtRec: FILTER #Containers: 1		0.5		10B			Scr: Alpha: Beta:
3 JK8HA-1-AE J6L110190-3-SAMP 11/21/2006 12:05	0.833sa	12.53g,in	AmtRec: FILTER #Containers: 1		0.9		10C			Scr: Alpha: Beta:
4 JK8HC-1-AE J6L110190-4-SAMP 11/21/2006 11:35	0.833sa	12.57g,in	AmtRec: FILTER #Containers: 1		0.2	12/14/06	10D			Scr: Alpha: Beta:
5 JK8HD-1-AE J6L110190-5-SAMP 11/21/2006 12:10	0.833sa	12.68g,in	AmtRec: FILTER #Containers: 1		1.0		10F			Scr: Alpha: Beta:
6 JK8HL-1-AE J6L110193-1-SAMP 11/14/2006 11:25	0.833sa	12.53g,in	AmtRec: FILTER #Containers: 1		0.7		10A	1257	1/5/07	Scr: Alpha: Beta:
7 JK8HP-1-AE J6L110193-2-SAMP 11/14/2006 11:45	0.833g	12.52g,in	AmtRec: FILTER #Containers: 1		1.0		10B			Scr: Alpha: Beta:

STL Richland Richland Wa.

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

Page 1

ISV - Insufficient Volume for Analysis

WO Cnt: 7

Prep_SamplePrep v4.8.26

STL RICHLAND

149

12/14/2006 2:55:57 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:
Pipet #:

AnalyDueDate: 01/03/2007

Sep1 DT/Tm Tech:

Batch: 6347436 FILTER pCi/sampl PM, Quote: SA , 63174

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:
8 JK8HQ-1-AE J6L110193-3-SAMP 11/14/2006 12:05	0.833sa	12.58g,in AmtRec: FILTER	#Containers: 1	1.5	0.9	150	10C	1257	1/5/07	Scr: Alpha: Beta:
9 JK8HR-1-AE J6L110193-4-SAMP 11/14/2006 11:50	0.833sa	12.57g,in AmtRec: FILTER	#Containers: 1		0.7		10D			Scr: Alpha: Beta:
10 JK8HT-1-AE J6L110193-5-SAMP 11/14/2006 12:10	0.833sa	12.55g,in AmtRec: FILTER	#Containers: 1		0.8	12/14/06	10F			Scr: Alpha: Beta:
11 JLD0H-1-AA-B J6L130000-436-BLK 11/14/2006 11:25		12.66g,in AmtRec:	#Containers: 1		0.3		10A	1541	1/5/07	Scr: Alpha: Beta:
12 JLD0H-1-AC-C J6L130000-436-LCS 11/14/2006 11:25		12.79g,in AmtRec:	ASC0363 04/18/06,pd 02/09/06,r #Containers: 1	✓	0.5		10B			Scr: Alpha: Beta:

Comments:

1% collodion added to ea. samp. 1/2/07 APA

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

JK8G81AE-SAMP Constituent List:
ALPHA RDL:20 pCi/sam LCL: UCL: RPD:

STL RICHLAND 150

1/9/2007 4:14:10 PM

ICOC Fraction Transfer/Status Report

ByDate: 1/9/2006, 1/14/2007, Batch: '6347436', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6347436						
AC		**CalcC**	**WoodT**	12/14/2006 1:26:49		
SC			wagarr	IsBatched	12/13/2006 2:04:14 PM	ICOC_RADCALC v4.8.26
SC			WoodT	InPrep	12/14/2006 1:26:49 PM	RICH-RC-5016 REVISION 5
SC			WoodT	Prep1C	12/14/2006 2:56:02 PM	RICH-RC-5016 REVISION 5
SC			AshworthA	InPrep2	12/29/2006 3:51:09 PM	RICH-RC-5014 REVISION 6
SC			AshworthA	Prep2C	1/2/2007 7:29:56 PM	RICH-RC-5014 REVISION 6
SC			DAWKINSO	InCnt1	1/2/2007 7:50:58 PM	RICH-RD-0003 REVISION 4
SC			DAWKINSO	CalcC	1/5/2007 4:03:58 PM	RICH-RD-0003 REVISION 4
AC			**WoodT**	12/14/2006 2:56:02		
AC			**AshworthA**	12/29/2006 3:51:09		
AC			**AshworthA**	1/2/2007 7:29:56 PM		
AC			**DAWKINSO**	1/2/2007 7:50:58 PM		
AC			**DAWKINSO**	1/5/2007 4:03:58 PM		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt:6

ICOCFractions v4.8.26

1/9/2007 4:14:09 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	Sample Date / Mda	Units	Expected	Yield	Volumes	
33221	**9JK8G810**			**J6L1101901**	P-0804	FILTER	12/7/2006 10:00:00	11/21/2006 11:30:00 AM					
ALPHA	BAS7	0		1/3/2007 7:25:46 PM	**4.51E+00**	1.582E+00	1.672E+00	4.892E+00	PCI/SA		1.0	1.0E+0	2.001E-2
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**1.1124E-01**	8.021E-02	8.083E-02	2.669E-01	PCI/SA		0.906	1.0E+0	7.97E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**3.648E-01**	1.305E-01	1.346E-01	2.574E-01	PCI/SA		0.906	1.0E+0	7.97E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**0.0E+00**	0.0E+00	4.798E-02	2.574E-01	PCI/SA		0.906	1.0E+0	7.97E-2
33221	**9JK8G910**			**J6L1101902**	P-0805	FILTER	12/7/2006 10:00:00	11/21/2006 11:50:00 AM					
ALPHA	BAS7	0		1/3/2007 7:25:46 PM	**6.6195E+00**	1.704E+00	1.868E+00	4.122E+00	PCI/SA		1.0	1.0E+0	2.037E-2
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**1.3383E-01**	7.883E-02	7.97E-02	2.293E-01	PCI/SA		1.014	1.0E+0	3.164E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**5.7169E-01**	1.554E-01	1.633E-01	3.1E-01	PCI/SA		1.014	1.0E+0	3.164E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**1.1065E-01**	6.649E-02	6.72E-02	2.212E-01	PCI/SA		1.014	1.0E+0	3.164E-2
33221	**9JK8HA10**			**J6L1101903**	P-0806	FILTER	12/7/2006 10:00:00	11/21/2006 12:05:00 PM					
ALPHA	BAS7	0		1/3/2007 7:25:46 PM	**7.2979E+00**	1.841E+00	2.031E+00	4.928E+00	PCI/SA		1.0	1.0E+0	2.058E-2
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**2.692E-01**	1.346E-01	1.368E-01	4.166E-01	PCI/SA		0.993	1.0E+0	3.269E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.9475E-01**	9.916E-02	1.007E-01	2.596E-01	PCI/SA		0.993	1.0E+0	3.269E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**-2.1639E-02**	4.839E-02	4.842E-02	2.596E-01	PCI/SA		0.993	1.0E+0	3.269E-2
33221	**9JK8HC10**			**J6L1101904**	P-0807	FILTER	12/7/2006 10:00:00	11/21/2006 11:35:00 AM					
ALPHA	BAS7	0		1/3/2007 7:25:46 PM	**4.7441E+00**	1.611E+00	1.704E+00	5.053E+00	PCI/SA		1.0	1.0E+0	2.084E-2
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**2.3981E-02**	5.362E-02	5.366E-02	2.877E-01	PCI/SA		0.941	1.0E+0	3.349E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.8505E-01**	9.537E-02	9.675E-02	2.775E-01	PCI/SA		0.941	1.0E+0	3.349E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**9.2527E-02**	6.94E-02	6.987E-02	2.775E-01	PCI/SA		0.941	1.0E+0	3.349E-2
33221	**9JK8HD10**			**J6L1101905**	000578	FILTER	12/7/2006 10:00:00	11/21/2006 12:10:00 PM					
ALPHA	BAS7	0		1/3/2007 7:25:46 PM	**5.3825E+00**	1.827E+00	1.935E+00	5.978E+00	PCI/SA		1.0	1.0E+0	2.054E-2
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**3.892E-02**	6.154E-02	6.163E-02	2.864E-01	PCI/SA		1.048	1.0E+0	3.182E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.5017E-01**	8.804E-02	8.903E-02	2.763E-01	PCI/SA		1.048	1.0E+0	3.182E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**1.1263E-01**	6.768E-02	6.84E-02	2.252E-01	PCI/SA		1.048	1.0E+0	3.182E-2
33222	**9JK8HL10**			**J6L1101931**	P-0800	FILTER	12/7/2006 10:00:00	11/14/2006 11:25:00 AM					
ALPHA	BAS7	0		1/5/2007 11:42:09 AM	**2.7268E+00**	1.355E+00	1.394E+00	4.806E+00	PCI/SA		1.0	1.0E+0	2.037E-2
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**2.285E-01**	1.039E-01	1.058E-01	2.492E-01	PCI/SA		0.957	1.0E+0	3.128E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**7.9593E-02**	7.445E-02	7.479E-02	2.929E-01	PCI/SA		0.957	1.0E+0	3.128E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**3.9796E-02**	4.449E-02	4.463E-02	2.387E-01	PCI/SA		0.957	1.0E+0	3.128E-2
33222	**9JK8HP10**			**J6L1101932**	P-0801	FILTER	12/7/2006 10:00:00	11/14/2006 11:45:00 AM					
ALPHA	BAS7	0		1/5/2007 11:42:09 AM	**2.404E+00**	1.189E+00	1.222E+00	4.003E+00	PCI/SA		1.0	1.0E+0	1.982E-2
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**9.0726E-02**	6.804E-02	6.852E-02	2.721E-01	PCI/SA		1.052	1.0E+0	7.943E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**2.1727E-01**	9.957E-02	1.014E-01	2.606E-01	PCI/SA		1.052	1.0E+0	7.943E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**1.3036E-01**	7.834E-02	7.919E-02	2.606E-01	PCI/SA		1.052	1.0E+0	7.943E-2
33222	**9JK8HQ10**			**J6L1101933**	P-0802	FILTER	12/7/2006 10:00:00	11/14/2006 12:05:00 PM					
ALPHA	BAS7	0		1/5/2007 11:42:09 AM	**2.94E+00**	1.339E+00	1.383E+00	4.606E+00	PCI/SA		1.0	1.0E+0	2.081E-2
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**7.4615E-02**	5.596E-02	5.635E-02	2.238E-01	PCI/SA		0.971	1.0E+0	3.294E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.4295E-01**	7.368E-02	7.474E-02	2.144E-01	PCI/SA		0.971	1.0E+0	3.294E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**-1.7869E-02**	3.996E-02	3.999E-02	2.144E-01	PCI/SA		0.971	1.0E+0	3.294E-2
33222	**9JK8HR10**			**J6L1101934**	P-0803	FILTER	12/7/2006 10:00:00	11/14/2006 11:50:00 AM					
ALPHA	BAS7	0		1/5/2007 11:42:09 AM	**-5.3459E-01**	8.827E-01	8.85E-01	4.897E+00	PCI/SA		1.0	1.0E+0	2.057E-2
TH-228	9NS1	0		12/27/2006 8:03:20 PM	**3.6228E-02**	8.495E-02	8.501E-02	3.899E-01	PCI/SA		1.046	1.0E+0	3.183E-2
TH-230	9NS1	0		12/27/2006 8:03:20 PM	**1.735E-01**	7.951E-02	8.094E-02	2.081E-01	PCI/SA		1.046	1.0E+0	3.183E-2
TH-232	9NS1	0		12/27/2006 8:03:20 PM	**-3.4699E-02**	4.25E-02	4.261E-02	2.554E-01	PCI/SA		1.046	1.0E+0	3.183E-2
33222	**9JK8HT10**			**J6L1101935**	000576	FILTER	12/7/2006 10:00:00	11/14/2006 12:10:00 PM					
ALPHA	BAS7	0		1/5/2007 11:42:09 AM	**3.5491E+00**	1.363E+00	1.427E+00	4.302E+00	PCI/SA		1.0	1.0E+0	2.089E-2
TH-228	9NS1	0		12/27/2006 8:03:32 PM	**1.4139E-01**	1.03E-01	1.038E-01	3.805E-01	PCI/SA		0.963	1.0E+0	3.331E-2
TH-230	9NS1	0		12/27/2006 8:03:32 PM	**4.063E-01**	1.185E-01	1.237E-01	2.031E-01	PCI/SA		0.963	1.0E+0	3.331E-2
TH-232	9NS1	0		12/27/2006 8:03:32 PM	**3.3859E-02**	3.785E-02	3.797E-02	2.031E-01	PCI/SA		0.963	1.0E+0	3.331E-2
33221	**JLD0H1AB**			**J6L130000436**	INTRA-LAB BLANK	FILTER	12/7/2006 10:00:00	11/14/2006 11:25:00 AM					
ALPHA	BAS7	0	B	1/5/2007 2:25:58 PM	**5.4508E-04**	1.617E-03	1.618E-03	7.686E-03	PCI/SA		1.0	1.0E+0	1.266E+1

6347436, **Samples Inserted | Updated | NotUpdated => 2 | 10 | 0,
**Results Inserted | ReTestInserted | Updated | NotInserted => 12 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Matrix / Cnt Uncert	Received Date / Tot Uncert	Sample Date / MDA	Units	Expected	Yield	Volumes	
33221	**JLD0H1CS**			**J6L130000436**	INTRA-LAB CHECK	FILTER	12/7/2006 10:00:00	11/14/2006 11:25:00 AM					
ALPHA	BAS7	0	S	1/5/2007 2:25:58 PM	**1.5328E-01**	9.269E-03	1.97E-02	6.159E-03	PCI/SA	1.807E-01	1.0	1.0E+0	1.279E+1

6347436, **Samples Inserted | Updated | NotUpdated => 2 | 10 | 0,
**Results Inserted | ReTestInserted | Updated NotInserted => 12 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 6347436

Alpha Beta, Alpha by GPC-Am , Results Summary Report

1/5/2007 4:02:56 PM

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	**JK8G81AE**	ALPHA	**4.51E+00**	**(1.67E+00)**		PCI/SA	R	1.98E+00	4.89E+00		100%	
Calc	S7	FILTER	**JK8G91AE**	ALPHA	**6.62E+00**	**(1.87E+00)**		PCI/SA	R	1.59E+00	4.12E+00		100%	
Calc	S7	FILTER	**JK8HA1AE**	ALPHA	**7.30E+00**	**(2.03E+00)**		PCI/SA	R	2.02E+00	4.93E+00		100%	
Calc	S7	FILTER	**JK8HC1AE**	ALPHA	**4.74E+00**	**(1.70E+00)**		PCI/SA	R	2.08E+00	5.05E+00		100%	
Calc	S7	FILTER	**JK8HD1AE**	ALPHA	**5.38E+00**	**(1.94E+00)**		PCI/SA	R	2.54E+00	5.98E+00		100%	
Calc	S7	FILTER	**JK8HL1AE**	ALPHA	**2.73E+00**	**(1.39E+00)**		PCI/SA	R	1.94E+00	4.81E+00		100%	
Calc	S7	FILTER	**JK8HP1AE**	ALPHA	**2.40E+00**	**(1.22E+00)**		PCI/SA	R	1.52E+00	4.00E+00		100%	
Calc	S7	FILTER	**JK8HQ1AE**	ALPHA	**2.94E+00**	**(1.38E+00)**		PCI/SA	R	1.86E+00	4.61E+00		100%	
Calc	S7	FILTER	**JK8HR1AE**	ALPHA	**-5.35E-01**	**(8.85E-01)**	**U4**	PCI/SA	R	2.00E+00	4.90E+00		100%	
Calc	S7	FILTER	**JK8HT1AE**	ALPHA	**3.55E+00**	**(1.43E+00)**		PCI/SA	R	1.71E+00	4.30E+00		100%	
Calc	S7	FILTER	**JLD0H1AA**	ALPHA	**5.45E-04**	**(1.62E-03)**	**U4**	PCI/SA	R	3.11E-03	7.69E-03	**B**	100%	
Calc	S7	FILTER	**JLD0H1AC**	ALPHA	**1.53E-01**	**(1.97E-02)**		PCI/SA	R	2.33E-03	6.16E-03	**S**	100%	85%

eRDL met -

P Anderson
1-9-07

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

Page 1

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:12
RADCALC v4.8.26
STL Richland

Batch Nbr: 6347436

Alpha Beta, Alpha by GPC-Am , Calculated Results

Detailed Report

1/5/2007 4:02:57 PM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
1	Calc	S7	FILTER	*STLE	GabWoBS	**JK8G81AE**	**PCI/SA**		11/21/06 11:30	01/03/07 19:25			1	1.00 Sa	
536403,P-0804					,J6L110190-1 v4.8.26		FILTER			00.7				0.020009 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	01/03/07 20:40	ALPHA	19	20	GPC10A	1.5	N	N	4.3262E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.964E-02)	(0.000E+00)		8%			(0.000E+00)	49.978338		

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
	01/05/07	ALPHA	R	**4.509966**		8.66667E-02	0.200329	0.200329	1.00 Sa	100%		4.891623		
				(1.671761)		(3.0405E-02)	(0.073379)	(0.073379)	(0.027097)			1.976908		

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	**JK8G91AE**	**PCI/SA**		11/21/06 11:50	01/03/07 19:25			1	1.00 Sa	
536403,P-0805					,J6L110190-2 v4.8.26		FILTER			00.5				0.020371 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	01/03/07 20:40	ALPHA	23	13	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)	49.090553		

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
	01/05/07	ALPHA	R	**6.619487**		1.27333E-01	0.29935	0.29935	1.00 Sa	100%		4.121762		
				(1.868151)		(3.2775E-02)	(0.08275)	(0.08275)	(0.027097)			1.592224		

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	**JK8HA1AE**	**PCI/SA**		11/21/06 12:05	01/03/07 19:25			1	1.00 Sa	
536403,P-0806					,J6L110190-3 v4.8.26		FILTER			00.9				0.020581 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	01/03/07 20:40	ALPHA	29	23	GPC10C	1.5	N	N	4.4185E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.852E-02)	(0.000E+00)		8%			(0.000E+00)	48.587352		

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
	01/05/07	ALPHA	R	**7.297941**		1.47333E-01	0.33345	0.33345	1.00 Sa	100%		4.928439		
				(2.030537)		(3.7160E-02)	(0.090818)	(0.090818)	(0.027097)			2.017965		

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	**JK8HC1AE**	**PCI/SA**		11/21/06 11:35	01/03/07 19:25			1	1.00 Sa	
536403,P-0807					,J6L110190-4 v4.8.26		FILTER			00.2				0.020843 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	01/03/07 20:40	ALPHA	22	25	GPC10D	1.5	N	N	4.4036E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.955E-02)	(0.000E+00)		8%			(0.000E+00)	47.977186		

() - (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: 6347436

Alpha Beta, Alpha by GPC-Am , Calculated Results

1/5/2007 4:02:57 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
	01/05/07	ALPHA	R	**4.744109**		9.66667E-02	0.21952	0.21952	1.00 Sa	100%		5.053146		
				(1.703533)		(3.2830E-02)	(0.077996)	(0.077996)	(0.014142)			2.084482		

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	**JK8HD1AE**	**PCI/SA**		11/21/06 12:10	01/03/07 19:25			1	1.00 Sa	
536403,000578					,J6L110190-5 v4.8.26		FILTER			01.0				0.020536 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	01/03/07 20:40	ALPHA	27	36	GPC10F	1.5	N	N	4.4011E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.929E-02)	(0.000E+00)		8%			(0.000E+00)	48.694241		

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
	01/05/07	ALPHA	R	**5.3825**		1.08000E-01	0.245392	0.245392	1.00 Sa	100%		5.977717		
				(1.935367)		(3.6661E-02)	(0.087124)	(0.087124)	(0.027096)			2.540164		

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	**JK8HL1AE**	**PCI/SA**		11/14/06 11:25	01/05/07 11:42			1	1.00 Sa	
536403,P-0800					,J6L110193-1 v4.8.26		FILTER			00.7				0.020365 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	01/05/07 12:57	ALPHA	14	20	GPC10A	1.5	N	N	4.3262E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.964E-02)	(0.000E+00)		8%			(0.000E+00)	49.10376		

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
	01/05/07	ALPHA	R	**2.726797**		5.33333E-02	0.12328	0.12328	1.00 Sa	100%		4.806023		
				(1.393612)		(2.6499E-02)	(0.062615)	(0.062615)	(0.027097)			1.942314		

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	**JK8HP1AE**	**PCI/SA**		11/14/06 11:45	01/05/07 11:42			1	1.00 Sa	
536403,P-0801					,J6L110193-2 v4.8.26		FILTER			01.0				0.019821 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	01/05/07 12:57	ALPHA	10	11	GPC10B	1.5	N	N	4.2225E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.589E-02)	(0.000E+00)		8%			(0.000E+00)	50.450851		

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
	01/05/07	ALPHA	R	**2.403981**		4.46667E-02	0.105783	0.105783	1.00 Sa	100%		4.003218		
				(1.22158)		(2.2101E-02)	(0.053416)	(0.053416)	(0.027097)			1.516331		

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	**JK8HQ1AE**	**PCI/SA**		11/14/06 12:05	01/05/07 11:42			1	1.00 Sa	
536403,P-0802					,J6L110193-3 v4.8.26		FILTER			00.9				0.020806 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: 6347436

Alpha Beta, Alpha by GPC-Am , Calculated Results

1/5/2007 4:02:57 PM

0	01/05/07 12:57	ALPHA	15	20	GPC10C	1.5	N	N	4.4185E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00
			150	500				Y	(2.852E-02)	(0.000E+00)		8%			(0.000E+00)	48.064059	

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
	01/05/07	ALPHA	R	**2.940003**		6.00000E-02	0.135794	0.135794	1.00 Sa	100%		4.606047		
				(1.382762)		(2.7325E-02)	(0.063399)	(0.063399)	(0.027097)			1.861495		

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	**JK8HR1AE**	**PCI/SA**		11/14/06 11:50	01/05/07 11:42			1	1.00 Sa	
536403,P-0803					,J6L110193-4 v4.8.26		FILTER			00.7				0.020567 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	01/05/07 12:57	ALPHA	5	22	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)	48.621835		

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
	01/05/07	ALPHA	R	**-0.534586**	**U4**	-1.06667E-02	-0.024408	-0.024408	1.00 Sa	100%		4.896827		
				(0.88501)		(1.7613E-02)	(0.040384)	(0.040384)	(0.027097)			1.996872		

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	**JK8HT1AE**	**PCI/SA**		11/14/06 12:10	01/05/07 11:42			1	1.00 Sa	
536403,000576					,J6L110193-5 v4.8.26		FILTER			00.8				0.02089 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	01/05/07 12:57	ALPHA	16	17	GPC10F	1.5	N	N	4.4150E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.938E-02)	(0.000E+00)		8%			(0.000E+00)	47.869985		

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
	01/05/07	ALPHA	R	**3.549052**		7.26667E-02	0.16459	0.16459	1.00 Sa	100%		4.301574		
				(1.426738)		(2.7913E-02)	(0.0655)	(0.0655)	(0.027097)			1.710613		

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	**JLD0H1AA**	**PCI/SA**	**B**	11/14/06 11:25	01/05/07 14:25			1	1.00 Sa	
0,INTRA-LAB BLANK					,J6L130000-436 v4.8.26		FILTER			00.3				12.66 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	01/05/07 15:40	ALPHA	7	20	GPC10A	1.5	N	N	4.3518E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.981E-02)	(0.000E+00)		8%			(0.000E+00)	0.078989		

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
	01/05/07	ALPHA	R	**0.000545**	**U4**	6.66667E-03	0.015319	0.015319	1.00 Sa	100%		0.007686		
				(0.001618)		(1.9777E-02)	(0.045474)	(0.045474)	(0.014142)			0.003106		

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

IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration

Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:12

RADCALC v4.8.26

STL Richland

Batch Nbr: 6347436

Alpha Beta, Alpha by GPC-Am , Calculated Results

1/5/2007 4:02:58 PM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
12	Calc	S7	FILTER	*STLE	GabWoBS	**JLD0H1AC**	**PCI/SA**	**S**	11/14/06 11:25	01/05/07 14:25		ASC0363	1	1.00 Sa	
0,INTRA-LAB CHECK					,J6L130000-436		FILTER			00.5		ASC0363 Alq		12.79 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	01/05/07 15:40	ALPHA	281	11	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)	0.078186		

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
	01/05/07	ALPHA	R	**0.153285**		1.85133E+00	4.352335	4.352335	1.00 Sa	100%	85%	0.006159		
				(0.0197)		(1.1195E-01)	(0.511594)	(0.511594)	(0.014142)			0.002333		

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

IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration

Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:12

RADCALC v4.8.26

STL Richland

```
UST Number: JK8G81AE   Isotope: 112       (QREPORT Rev 11-OCT-98)

  Detector: 10-A          File: [quad10.sample.A]JK8G81AE.112
 Dish Size: 15        Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4437

Cycle  Alpha   Beta     Min   Guard   Volts      Finish Date/Time
   1   00019   00000   0150   00000   1000    3-JAN-2007 20:40:46.40

   Bkg File: [quad10.bkgrnd]2007-01-03_0554.A_15        (QREPORT Rev 11-OCT-98)

Cycle  Count    Min      CPM     Guard   Volts         Date/Time
 Bkg   00020   0500       0.04   00000   1000    3-JAN-2007 05:54:29.75
```

UST Number: JK8G91AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JK8G91AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4432

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00023	00000	0150	00000	1000	3-JAN-2007 20:40:46.40

Bkg File: [quad10.bkgrnd]2007-01-03_0554.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00013	0500	0.03	00000	1000	3-JAN-2007 05:54:29.75

UST Number: JK8HA1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C File: [quad10.sample.C]JK8HA1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.C_15;4443

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00029	00000	0150	00000	1000	3-JAN-2007 20:40:46.40

Bkg File: [quad10.bkgrnd]2007-01-03_0554.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00023	0500	0.05	00000	1000	3-JAN-2007 05:54:29.75

UST Number: JK8HC1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-D File: [quad10.sample.D]JK8HC1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.D_15;4436

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00022	00000	0150	00000	1000	3-JAN-2007 20:40:46.40

Bkg File: [quad10.bkgrnd]2007-01-03_0554.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00025	0500	0.05	00000	1000	3-JAN-2007 05:54:29.75

UST Number: JK8HD1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-F File: [quad10.sample.F]JK8HD1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.F_15;4428

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00027	00000	0150	00000	1000	3-JAN-2007 20:40:46.40

Bkg File: [quad10.bkgrnd]2007-01-03_0554.F_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00036	0500	0.07	00000	1000	3-JAN-2007 05:54:29.75

```
UST Number: JK8HL1AE   Isotope: 112       (QREPORT Rev 11-OCT-98)

  Detector: 10-A          File: [quad10.sample.A]JK8HL1AE.112
 Dish Size: 15        Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4439

Cycle  Alpha   Beta     Min   Guard   Volts      Finish Date/Time
   1   00014   00000   0150   00000   1000    5-JAN-2007 12:57:09.93

   Bkg File: [quad10.bkgrnd]2007-01-05_0510.A_15        (QREPORT Rev 11-OCT-98)

Cycle  Count    Min      CPM     Guard   Volts         Date/Time
 Bkg   00020   0500       0.04   00000   1000    5-JAN-2007 05:10:46.37
```

UST Number: JK8HP1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JK8HP1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4434

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00010	00000	0150	00000	1000	5-JAN-2007 12:57:09.93

Bkg File: [quad10.bkgrnd]2007-01-05_0510.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00011	0500	0.02	00000	1000	5-JAN-2007 05:10:46.37

UST Number: JK8HQ1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C File: [quad10.sample.C]JK8HQ1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.C_15;4445

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00015	00000	0150	00000	1000	5-JAN-2007 12:57:09.93

Bkg File: [quad10.bkgrnd]2007-01-05_0510.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00020	0500	0.04	00000	1000	5-JAN-2007 05:10:46.37

UST Number: JK8HR1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-D File: [quad10.sample.D]JK8HR1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.D_15;4438

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00005	00000	0150	00000	1000	5-JAN-2007 12:57:09.93

Bkg File: [quad10.bkgrnd]2007-01-05_0510.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00022	0500	0.04	00000	1000	5-JAN-2007 05:10:46.37

UST Number: JK8HT1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-F File: [quad10.sample.F]JK8HT1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.F_15;4430

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00016	00000	0150	00000	1000	5-JAN-2007 12:57:09.93

Bkg File: [quad10.bkgrnd]2007-01-05_0510.F_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00017	0500	0.03	00000	1000	5-JAN-2007 05:10:46.37

UST Number: JLD0H1AA Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JLD0H1AA.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4439

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00007	00000	0150	00000	1000	5-JAN-2007 15:40:58.91

Bkg File: [quad10.bkgrnd]2007-01-05_0510.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00020	0500	0.04	00000	1000	5-JAN-2007 05:10:46.37

UST Number: JLD0H1AC Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JLD0H1AC.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4434

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00281	00000	0150	00000	1000	5-JAN-2007 15:40:58.91

Bkg File: [quad10.bkgrnd]2007-01-05_0510.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00011	0500	0.02	00000	1000	5-JAN-2007 05:10:46.37

RADIUM 228

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

1/15/2007 3:51:29 PM

Lot No., Due Date: J6L110190,J6L110193; 01/04/2007

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6347440; RRA228 Ra-228 by GPC

SDG, Matrix: 33221,33222; 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** 1-15-07

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 647440

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: 1-16-07

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

STL RICHLAND

12/16/2006 11:55:46 AM

536403, Brown and Caldwell , Brown & Caldwell

AnalyDueDate: 01/03/2007

Batch: 6347440 FILTER pCi/sampl

SEQ Batch, Test: 6347439, BXTE

Sample Preparation/Analysis

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

PM, Quote: SA , 63174

Balance Id:1120373922,1120373922,1120

Pipet #:

Sep1 DT/Tm Tech: AL 12/19/06 12:55

Sep2 DT/Tm Tech: 01/12/07 0932 [illegible]

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 JK8G8-1-AD J6L110190-1-SAMP	0.833sa	523.73sa	150.13g,in	0.2388g 1.0818	RATA25032 12/04/06	150 lin 31.2	7A 3A	1604 0701	1/12/07 [illegible] 1/13/07	
11/21/2006 11:30		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:	Beta:	
2 JK8G9-1-AD J6L110190-2-SAMP	0.833sa	513.20sa	150.41g,in	0.2441g 1.1221	RATA25033 12/04/06	30.6	7B 3B	1604 0701	1/12/07 [illegible] 1/13/07	
11/21/2006 11:50		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:	Beta:	
3 JK8HA-1-AD J6L110190-3-SAMP	0.833sa	506.69sa	150.27g,in	0.247g .9996	RATA25034 12/04/06	30.3	7C 3C	1604 0701	1/12/07 [illegible] 1/13/07 [illegible]	
11/21/2006 12:05		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:	Beta:	
4 JK8HC-1-AD J6L110190-4-SAMP	0.833sa	502.36sa	150.90g,in	0.2502g .9873	RATA25035 12/04/06	28.9	1B 3D	1551 0701	1/12/07 [illegible] 1/13/07	
11/21/2006 11:35		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:	Beta:	

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 1 ISV - Insufficient Volume for Analysis WO Cnt: 4

Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added Prep_SamplePrep v4.8.26

STL RICHLAND

12/16/2006 11:55:46 AM

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:1120373922,1120373922,1120

Pipet #: _____

AnalyDueDate: 01/03/2007

Sep1 DT/Tm Tech:

Batch: 6347440 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6347439, 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 JK8HD-1-AD J6L110190-5-SAMP	0.833sa	514.33sa	150.37g,in	0.2435g .9676	RATA25036 12/04/06	150 lin 29.6	1C 3A	1550 0707	1/12/07 OD 1/13/07	
11/21/2006 12:10		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
6 JK8HL-1-AD J6L110193-1-SAMP	0.833sa	512.52sa	150.39g,in	0.2444g 1.0599	RATA25037 12/04/06	30.3	1D 3B	1550 0707	1/12/07 OD 1/13/07	
11/14/2006 11:25		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
7 JK8HP-1-AD J6L110193-2-SAMP	0.833g	526.16g	150.55g,in	0.2383g 1.0116	RATA25038 12/04/06	30.0	3A 3C	1550 0707	1/12/07 OD 1/13/07	
11/14/2006 11:45		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
8 JK8HQ-1-AD J6L110193-3-SAMP	0.833sa	503.67sa	150.30g,in	0.2486g 1.0210	RATA25039 12/04/06	29.8	4A 3D	1550 0707	1/12/07 OD 1/13/07	
11/14/2006 12:05		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:

STL RICHLAND

12/16/2006 11:55:46 AM

Sample Preparation/Analysis

Balance Id:1120373922,1120373922,1120

536403, Brown and Caldwell , Brown & Caldwell

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

Pipet #: _____

AnalyDueDate: 01/03/2007

Sep1 DT/Tm Tech:

Batch: 6347440 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6347439, BXTE

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
9 JK8HR-1-AD J6L110193-4-SAMP	0.833sa	509.11sa	150.50g,in	0.2462g .9908	RATA25040 12/04/06 1/2in	150	5A	1551	1/12/07 OR	
						30.0	6B	0707	1/13/07	
11/14/2006 11:50		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
10 JK8HT-1-AD J6L110193-5-SAMP	0.833sa	500.44sa	150.58g,in	0.2506g 1.0455	RATA25041 12/04/06	31.2	5B	1551	1/12/07 OR	
							6C	0707	1/13/07	
11/14/2006 12:10		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
11 JLD01-1-AA-B J6L130000-440-BLK			151.56g,in	151.56g 1.0568	RATA25042 12/13/06	30.5	5C	1551	1/12/07 OR	
							6D	0707	1/13/07	
11/14/2006 11:25		AmtRec:		#Containers: 1			Scr:	Alpha:		Beta:
12 JLD01-1-AC-C J6L130000-440-LCS			151.72g,in	151.72g .9221	RASC4300 11/22/06	283	5D	1551	1/12/07 OR	
							6A	0758	1/13/07	
11/14/2006 11:25		AmtRec:		#Containers: 1			Scr:	Alpha:		Beta:

1/15/2007 3:48:59 PM

ICOC Fraction Transfer/Status Report

ByDate: 1/15/2006, 1/20/2007, Batch: '6347440', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6347440						
AC		**CalcC**	**WoodT**	12/14/2006 1:27:28		
SC			wagarr	IsBatched	12/13/2006 2:04:14 PM	ICOC_RADCALC v4.8.26
SC			WoodT	InPrep	12/14/2006 1:27:28 PM	RICH-RC-5016 REVISION 5
SC			WoodT	Prep1C	12/14/2006 2:56:36 PM	RICH-RC-5016 REVISION 5
SC			LongA	Sep1C	12/19/2006 2:12:56 PM	RICH-RC-5005 REVISION 5
SC			HarrisonJ	Sep2C	1/12/2007 10:59:47 AM	RICH-RC-5005 REVISION 4
SC			DAWKINSO	InCnt1	1/12/2007 1:18:30 PM	RICH-RD-0003 REVISION 4
SC			BlackCL	CalcC	1/13/2007 8:58:36 AM	RICH-RD-0003 REVISION 4
AC			**WoodT**	12/14/2006 2:56:36		
AC			**LongA**	12/19/2006 2:12:56		
AC			**HarrisonJ**	1/12/2007 10:59:47		
AC			**DAWKINSO**	1/12/2007 1:18:30 PM		
AC			**BlackCL**	1/13/2007 8:58:36		

AC: Accepting Entry; SC: Status Change

STL Richland

Rich.and Wa.

Grp Rec Cnt: 6

ICOCFractions v4.8.26

1/15/2007 3:48:58 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	Sample Date / MDA	Units	Expected	Yield	Volumes
33221	**9JK8G810**			**J6L1101901**	P-0804	FILTER	12/7/2006 10:00:00	11/21/2006 11:30:00 AM				
ALPHA	BAS7		0	1/3/2007 7:25:46 PM	**4.51E+00**	1.582E+00	1.672E+00	4.892E+00	PCI/SA	1.0	1.0E+0	2.001E-2
RA-226	BXTE		0	1/11/2007 1:01:00 PM	**7.6079E-02**	6.069E-02	6.121E-02	2.136E-01	PCI/SA	1.082	8.33E-1	2.388E-1
RA-228	BXTF		0	1/13/2007 7:06:12 AM	**9.1569E-01**	5.439E-01	5.451E-01	2.402E+00	PCI/SA	0.981	1.0E+0	2.388E-1
TH-228	9NS1		0	12/27/2006 8:02:38 PM	**1.1124E-01**	8.021E-02	8.083E-02	2.669E-01	PCI/SA	0.906	1.0E+0	7.97E-2
TH-230	9NS1		0	12/27/2006 8:02:38 PM	**3.648E-01**	1.305E-01	1.346E-01	2.574E-01	PCI/SA	0.906	1.0E+0	7.97E-2
TH-232	9NS1		0	12/27/2006 8:02:38 PM	**0.0E+00**	0.0E+00	4.798E-02	2.574E-01	PCI/SA	0.906	1.0E+0	7.97E-2
33221	**9JK8G910**			**J6L1101902**	P-0805	FILTER	12/7/2006 10:00:00	11/21/2006 11:50:00 AM				
ALPHA	BAS7		0	1/3/2007 7:25:46 PM	**6.6195E+00**	1.704E+00	1.868E+00	4.122E+00	PCI/SA	1.0	1.0E+0	2.037E-2
RA-226	BXTE		0	1/11/2007 12:53:00 PM	**1.0966E+00**	1.278E-01	1.697E-01	1.981E-01	PCI/SA	1.122	8.33E-1	2.441E-1
RA-228	BXTF		0	1/13/2007 7:06:12 AM	**3.1329E+00**	5.557E-01	6.032E-01	2.123E+00	PCI/SA	0.998	1.0E+0	2.441E-1
TH-228	9NS1		0	12/27/2006 8:02:38 PM	**1.3383E-01**	7.883E-02	7.97E-02	2.293E-01	PCI/SA	1.014	1.0E+0	3.164E-2
TH-230	9NS1		0	12/27/2006 8:02:38 PM	**5.7169E-01**	1.554E-01	1.633E-01	3.1E-01	PCI/SA	1.014	1.0E+0	3.164E-2
TH-232	9NS1		0	12/27/2006 8:02:38 PM	**1.1065E-01**	6.649E-02	6.72E-02	2.212E-01	PCI/SA	1.014	1.0E+0	3.164E-2
33221	**9JK8HA10**			**J6L1101903**	P-0806	FILTER	12/7/2006 10:00:00	11/21/2006 12:05:00 PM				
ALPHA	BAS7		0	1/3/2007 7:25:46 PM	**7.2979E+00**	1.841E+00	2.031E+00	4.928E+00	PCI/SA	1.0	1.0E+0	2.058E-2
RA-226	BXTE		0	1/11/2007 12:59:00 PM	**-3.4572E-02**	6.847E-02	6.855E-02	2.812E-01	PCI/SA	1.0	8.33E-1	2.468E-1
RA-228	BXTF		0	1/13/2007 7:06:12 AM	**-7.8134E-01**	5.619E-01	5.619E-01	2.824E+00	PCI/SA	0.88	1.0E+0	2.468E-1
TH-228	9NS1		0	12/27/2006 8:02:38 PM	**2.692E-01**	1.346E-01	1.368E-01	4.166E-01	PCI/SA	0.993	1.0E+0	3.269E-2
TH-230	9NS1		0	12/27/2006 8:02:38 PM	**1.9475E-01**	9.916E-02	1.007E-01	2.596E-01	PCI/SA	0.993	1.0E+0	3.269E-2
TH-232	9NS1		0	12/27/2006 8:02:38 PM	**-2.1639E-02**	4.839E-02	4.842E-02	2.596E-01	PCI/SA	0.993	1.0E+0	3.269E-2
33221	**9JK8HC10**			**J6L1101904**	P-0807	FILTER	12/7/2006 10:00:00	11/21/2006 11:35:00 AM				
ALPHA	BAS7		0	1/3/2007 7:25:46 PM	**4.7441E+00**	1.611E+00	1.704E+00	5.053E+00	PCI/SA	1.0	1.0E+0	2.084E-2
RA-226	BXTE		0	1/11/2007 1:00:00 PM	**8.7243E-02**	8.349E-02	8.404E-02	3.016E-01	PCI/SA	0.987	8.33E-1	2.502E-1
RA-228	BXTF		0	1/13/2007 7:06:12 AM	**1.4174E+00**	5.6E-01	5.9E-01	2.511E+00	PCI/SA	0.829	1.0E+0	2.502E-1
TH-228	9NS1		0	12/27/2006 8:02:38 PM	**2.3981E-02**	5.362E-02	5.366E-02	2.877E-01	PCI/SA	0.941	1.0E+0	3.349E-2
TH-230	9NS1		0	12/27/2006 8:02:38 PM	**1.8505E-01**	9.537E-02	9.675E-02	2.775E-01	PCI/SA	0.941	1.0E+0	3.349E-2
TH-232	9NS1		0	12/27/2006 8:02:38 PM	**9.2527E-02**	6.94E-02	6.987E-02	2.775E-01	PCI/SA	0.941	1.0E+0	3.349E-2
33221	**9JK8HD10**			**J6L1101905**	000578	FILTER	12/7/2006 10:00:00	11/21/2006 12:10:00 PM				
ALPHA	BAS7		0	1/3/2007 7:25:46 PM	**5.3825E+00**	1.827E+00	1.935E+00	5.978E+00	PCI/SA	1.0	1.0E+0	2.054E-2
RA-226	BXTE		0	1/11/2007 1:31:00 PM	**1.1362E-01**	1.037E-01	1.043E-01	3.665E-01	PCI/SA	0.968	8.33E-1	2.435E-1
RA-228	BXTF		0	1/13/2007 7:01:24 AM	**5.6557E-01**	4.938E-01	5.184E-01	2.382E+00	PCI/SA	0.833	1.0E+0	2.435E-1
TH-228	9NS1		0	12/27/2006 8:02:38 PM	**3.892E-02**	6.154E-02	6.163E-02	2.864E-01	PCI/SA	1.048	1.0E+0	3.182E-2
TH-230	9NS1		0	12/27/2006 8:02:38 PM	**1.5017E-01**	8.804E-02	8.903E-02	2.763E-01	PCI/SA	1.048	1.0E+0	3.182E-2
TH-232	9NS1		0	12/27/2006 8:02:38 PM	**1.1263E-01**	6.768E-02	6.84E-02	2.252E-01	PCI/SA	1.048	1.0E+0	3.182E-2
33222	**9JK8HL10**			**J6L1101931**	P-0800	FILTER	12/7/2006 10:00:00	11/14/2006 11:25:00 AM				
ALPHA	BAS7		0	1/5/2007 11:42:09 AM	**2.7268E+00**	1.355E+00	1.394E+00	4.806E+00	PCI/SA	1.0	1.0E+0	2.037E-2
RA-226	BXTE		0	1/11/2007 1:25:00 PM	**2.3392E-01**	8.846E-02	9.174E-02	2.731E-01	PCI/SA	1.06	8.33E-1	2.444E-1
RA-228	BXTF		0	1/13/2007 7:01:24 AM	**2.4773E+00**	5.501E-01	5.727E-01	2.112E+00	PCI/SA	0.934	1.0E+0	2.444E-1
TH-228	9NS1		0	12/27/2006 8:02:38 PM	**2.285E-01**	1.039E-01	1.058E-01	2.492E-01	PCI/SA	0.957	1.0E+0	3.128E-2
TH-230	9NS1		0	12/27/2006 8:02:38 PM	**7.9593E-02**	7.445E-02	7.479E-02	2.929E-01	PCI/SA	0.957	1.0E+0	3.128E-2
TH-232	9NS1		0	12/27/2006 8:02:38 PM	**3.9796E-02**	4.449E-02	4.463E-02	2.387E-01	PCI/SA	0.957	1.0E+0	3.128E-2
33222	**9JK8HP10**			**J6L1101932**	P-0801	FILTER	12/7/2006 10:00:00	11/14/2006 11:45:00 AM				
ALPHA	BAS7		0	1/5/2007 11:42:09 AM	**2.404E+00**	1.189E+00	1.222E+00	4.003E+00	PCI/SA	1.0	1.0E+0	1.982E-2
RA-226	BXTE		0	1/11/2007 1:03:00 PM	**-1.8936E-01**	8.102E-02	8.327E-02	3.628E-01	PCI/SA	1.012	8.33E-1	2.383E-1
RA-228	BXTF		0	1/13/2007 7:01:24 AM	**2.6835E-01**	4.063E-01	4.938E-01	2.34E+00	PCI/SA	0.882	1.0E+0	2.383E-1
TH-228	9NS1		0	12/27/2006 8:02:38 PM	**9.0726E-02**	6.804E-02	6.852E-02	2.721E-01	PCI/SA	1.052	1.0E+0	7.943E-2
TH-230	9NS1		0	12/27/2006 8:02:38 PM	**2.1727E-01**	9.957E-02	1.014E-01	2.606E-01	PCI/SA	1.052	1.0E+0	7.943E-2
TH-232	9NS1		0	12/27/2006 8:02:38 PM	**1.3036E-01**	7.834E-02	7.919E-02	2.606E-01	PCI/SA	1.052	1.0E+0	7.943E-2
33222	**9JK8HQ10**			**J6L1101933**	P-0802	FILTER	12/7/2006 10:00:00	11/14/2006 12:05:00 PM				
ALPHA	BAS7		0	1/5/2007 11:42:09 AM	**2.94E+00**	1.339E+00	1.383E+00	4.606E+00	PCI/SA	1.0	1.0E+0	2.081E-2
RA-226	BXTE		0	1/11/2007 1:33:00 PM	**9.2419E-02**	7.755E-02	7.816E-02	2.736E-01	PCI/SA	1.021	8.33E-1	2.486E-1

6347440, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 10,
**Results Inserted | ReTestInserted | Updated | NotInserted => 12 | 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		1/13/2007 7:01:24 AM	**-1.085E+00**	4.119E-01	4.119E-01	2.297E+00	PCI/SA		0.884	1.0E+0	2.486E-1
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**7.4615E-02**	5.596E-02	5.635E-02	2.238E-01	PCI/SA		0.971	1.0E+0	3.294E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.4295E-01**	7.368E-02	7.474E-02	2.144E-01	PCI/SA		0.971	1.0E+0	3.294E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**-1.7869E-02**	3.996E-02	3.999E-02	2.144E-01	PCI/SA		0.971	1.0E+0	3.294E-2
33222	**9JK8HR10**			**J6L1101934**	P-0803	FILTER	12/7/2006 10:00:00		11/14/2006 11:50:00 AM				
ALPHA	BAS7	0		1/5/2007 11:42:09 AM	**-5.3459E-01**	8.827E-01	8.85E-01	4.897E+00	PCI/SA		1.0	1.0E+0	2.057E-2
RA-226	BXTE	0		1/11/2007 2:58:00 PM	**2.5316E-01**	8.141E-02	8.611E-02	2.32E-01	PCI/SA		0.991	8.33E-1	2.462E-1
RA-228	BXTF	0		1/13/2007 7:01:45 AM	**2.0891E+00**	5.309E-01	5.56E-01	2.161E+00	PCI/SA		0.864	1.0E+0	2.462E-1
TH-228	9NS1	0		12/27/2006 8:03:20 PM	**3.6228E-02**	8.495E-02	8.501E-02	3.899E-01	PCI/SA		1.046	1.0E+0	3.183E-2
TH-230	9NS1	0		12/27/2006 8:03:20 PM	**1.735E-01**	7.951E-02	8.094E-02	2.081E-01	PCI/SA		1.046	1.0E+0	3.183E-2
TH-232	9NS1	0		12/27/2006 8:03:20 PM	**-3.4699E-02**	4.25E-02	4.261E-02	2.554E-01	PCI/SA		1.046	1.0E+0	3.183E-2
33222	**9JK8HT10**			**J6L1101935**	000576	FILTER	12/7/2006 10:00:00		11/14/2006 12:10:00 PM				
ALPHA	BAS7	0		1/5/2007 11:42:09 AM	**3.5491E+00**	1.363E+00	1.427E+00	4.302E+00	PCI/SA		1.0	1.0E+0	2.089E-2
RA-226	BXTE	0		1/11/2007 2:51:00 PM	**2.0719E-01**	7.357E-02	7.69E-02	2.134E-01	PCI/SA		1.045	8.33E-1	2.506E-1
RA-228	BXTF	0		1/13/2007 7:01:45 AM	**7.9419E-02**	2.154E-01	5.212E-01	2.434E+00	PCI/SA		0.948	1.0E+0	2.506E-1
TH-228	9NS1	0		12/27/2006 8:03:32 PM	**1.4139E-01**	1.03E-01	1.038E-01	3.805E-01	PCI/SA		0.963	1.0E+0	3.331E-2
TH-230	9NS1	0		12/27/2006 8:03:32 PM	**4.063E-01**	1.185E-01	1.237E-01	2.031E-01	PCI/SA		0.963	1.0E+0	3.331E-2
TH-232	9NS1	0		12/27/2006 8:03:32 PM	**3.3859E-02**	3.785E-02	3.797E-02	2.031E-01	PCI/SA		0.963	1.0E+0	3.331E-2
33221	**JLD011AB**			**J6L130000440**	INTRA-LAB BLANK	FILTER	12/7/2006 10:00:00		11/14/2006 11:25:00 AM				
RA-228	BXTF	0	B	1/13/2007 7:01:45 AM	**5.631E-02**	9.097E-02	1.185E-01	5.522E-01	PCI/SA		0.937	1.0E+0	1.0E+0
33221	**JLD011CS**			**J6L130000440**	INTRA-LAB CHECK	FILTER	12/7/2006 10:00:00		11/14/2006 11:25:00 AM				
RA-228	BXTF	0	S	1/13/2007 8:00:13 AM	**5.6014E+00**	2.951E-01	4.358E-01	6.19E-01	PCI/SA	5.0764E+00	0.759	1.0E+0	1.0E+0

6347440, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 10,
**Results Inserted | ReTestInserted | Updated | NotInserted => 12 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 6347440

Alpha Beta, Ra-228 by GPC , Results

1/13/2007 8:50:27 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.							CRDL			
Calc	TF	FILTER	JK8G81AD	RA-228	4.25E-01	(8.12E-01)	U4	PCI/SA	R	1.71E+00	3.73E+00		98%	
Calc	TF	FILTER	JK8G81AD	RA-228	1.51E+00	(9.84E-01)	U4	PCI/SA	R	1.90E+00	4.14E+00		98%	
Calc	TF	FILTER	JK8G81AD	RA-228	8.11E-01	(1.02E+00)	U4	PCI/SA	R	2.11E+00	4.60E+00		98%	
Calc	TF	FILTER	JK8G81AD	RA-228	9.16E-01	(5.45E-01)		PCI/SA	A	1.10E+00	2.40E+00		98%	
Calc	TF	FILTER	JK8G81AD	RA-228	3.97E+00	(4.04E+00)	U4	PCI/SA	R	7.66E+00	1.80E+01		98%	
Calc	TF	FILTER	JK8G91AD	RA-228	4.96E+00	(1.13E+00)		PCI/SA	R	1.50E+00	3.30E+00		100%	
Calc	TF	FILTER	JK8G91AD	RA-228	1.51E+00	(8.88E-01)		PCI/SA	R	1.66E+00	3.66E+00		100%	
Calc	TF	FILTER	JK8G91AD	RA-228	2.93E+00	(1.10E+00)		PCI/SA	R	1.85E+00	4.07E+00		100%	
Calc	TF	FILTER	JK8G91AD	RA-228	3.13E+00	(6.03E-01)		PCI/SA	A	9.64E-01	2.12E+00		100%	
Calc	TF	FILTER	JK8G91AD	RA-228	-4.01E+00	(2.51E+00)	U4	PCI/SA	R	6.86E+00	1.62E+01		100%	
Calc	TF	FILTER	JK8HA1AD	RA-228	3.80E-01	(9.48E-01)	U4	PCI/SA	R	2.02E+00	4.39E+00		88%	
Calc	TF	FILTER	JK8HA1AD	RA-228	-7.51E-01	(9.69E-01)	U4	PCI/SA	R	2.24E+00	4.87E+00		88%	
Calc	TF	FILTER	JK8HA1AD	RA-228	-1.97E+00	(1.00E+00)	U4	PCI/SA	R	2.49E+00	5.41E+00		88%	
Calc	TF	FILTER	JK8HA1AD	RA-228	-7.81E-01	(5.62E-01)	U4	PCI/SA	A	1.30E+00	2.82E+00		88%	
Calc	TF	FILTER	JK8HA1AD	RA-228	2.38E+00	(4.17E+00)	U4	PCI/SA	R	8.43E+00	1.97E+01		88%	
Calc	TF	FILTER	JK8HC1AD	RA-228	2.37E+00	(1.01E+00)		PCI/SA	R	1.77E+00	3.91E+00		83%	
Calc	TF	FILTER	JK8HC1AD	RA-228	1.13E+00	(9.92E-01)	U4	PCI/SA	R	1.96E+00	4.33E+00		83%	
Calc	TF	FILTER	JK8HC1AD	RA-228	7.51E-01	(1.06E+00)	U4	PCI/SA	R	2.18E+00	4.81E+00		83%	
Calc	TF	FILTER	JK8HC1AD	RA-228	1.42E+00	(5.90E-01)		PCI/SA	A	1.14E+00	2.51E+00		83%	
Calc	TF	FILTER	JK8HC1AD	RA-228	3.40E+00	(4.12E+00)	U4	PCI/SA	R	7.95E+00	1.88E+01		83%	
Calc	TF	FILTER	JK8HD1AD	RA-228	8.17E-01	(8.35E-01)	U4	PCI/SA	R	1.66E+00	3.70E+00		83%	
Calc	TF	FILTER	JK8HD1AD	RA-228	7.49E-01	(9.11E-01)	U4	PCI/SA	R	1.84E+00	4.11E+00		83%	
Calc	TF	FILTER	JK8HD1AD	RA-228	1.31E-01	(9.45E-01)	U4	PCI/SA	R	2.04E+00	4.56E+00		83%	
Calc	TF	FILTER	JK8HD1AD	RA-228	5.66E-01	(5.18E-01)	U4	PCI/SA	A	1.07E+00	2.38E+00		83%	
Calc	TF	FILTER	JK8HD1AD	RA-228	3.03E+00	(4.31E+00)	U4	PCI/SA	R	8.55E+00	1.99E+01		83%	
Calc	TF	FILTER	JK8HL1AD	RA-228	1.60E+00	(8.23E-01)		PCI/SA	R	1.48E+00	3.28E+00		93%	
Calc	TF	FILTER	JK8HL1AD	RA-228	3.56E+00	(1.09E+00)		PCI/SA	R	1.64E+00	3.65E+00		93%	
Calc	TF	FILTER	JK8HL1AD	RA-228	2.27E+00	(1.04E+00)		PCI/SA	R	1.82E+00	4.05E+00		93%	
Calc	TF	FILTER	JK8HL1AD	RA-228	2.48E+00	(5.73E-01)		PCI/SA	A	9.49E-01	2.11E+00		93%	
Calc	TF	FILTER	JK8HL1AD	RA-228	4.59E+00	(4.14E+00)	U4	PCI/SA	R	7.76E+00	1.79E+01		93%	
Calc	TF	FILTER	JK8HP1AD	RA-228	1.56E+00	(9.07E-01)		PCI/SA	R	1.61E+00	3.64E+00		88%	
Calc	TF	FILTER	JK8HP1AD	RA-228	-8.03E-01	(7.36E-01)	U4	PCI/SA	R	1.79E+00	4.04E+00		88%	
Calc	TF	FILTER	JK8HP1AD	RA-228	4.69E-02	(9.11E-01)	U4	PCI/SA	R	1.99E+00	4.48E+00		88%	
Calc	TF	FILTER	JK8HP1AD	RA-228	2.68E-01	(4.94E-01)	U4	PCI/SA	A	1.04E+00	2.34E+00		88%	
Calc	TF	FILTER	JK8HP1AD	RA-228	1.01E+01	(5.52E+00)		PCI/SA	R	9.40E+00	2.15E+01		88%	
Calc	TF	FILTER	JK8HQ1AD	RA-228	-9.03E-01	(6.45E-01)	U4	PCI/SA	R	1.60E+00	3.57E+00		88%	
Calc	TF	FILTER	JK8HQ1AD	RA-228	-3.85E-01	(7.73E-01)	U4	PCI/SA	R	1.77E+00	3.96E+00		88%	
Calc	TF	FILTER	JK8HQ1AD	RA-228	-1.97E+00	(7.17E-01)	U4	PCI/SA	R	1.97E+00	4.40E+00		88%	

() - (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: 6347440

Alpha Beta, Ra-228 by GPC , Results

1/13/2007 8:50:27 AM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	TF	FILTER	JK8HQ1AD	RA-228	-1.08E+00	(4.12E-01)	U4	PCI/SA	A	1.03E+00	2.30E+00		88%	
Calc	TF	FILTER	JK8HQ1AD	RA-228	9.42E-01	(3.73E+00)	U4	PCI/SA	R	7.91E+00	1.84E+01		88%	
Calc	TF	FILTER	JK8HR1AD	RA-228	3.06E+00	(9.68E-01)		PCI/SA	R	1.52E+00	3.36E+00		86%	
Calc	TF	FILTER	JK8HR1AD	RA-228	7.58E-01	(8.35E-01)	U4	PCI/SA	R	1.69E+00	3.73E+00		86%	
Calc	TF	FILTER	JK8HR1AD	RA-228	2.45E+00	(1.07E+00)		PCI/SA	R	1.87E+00	4.14E+00		86%	
Calc	TF	FILTER	JK8HR1AD	RA-228	2.09E+00	(5.56E-01)		PCI/SA	A	9.77E-01	2.16E+00		86%	
Calc	TF	FILTER	JK8HR1AD	RA-228	-1.34E+00	(4.96E+00)	U4	PCI/SA	R	1.11E+01	2.45E+01		86%	
Calc	TF	FILTER	JK8HT1AD	RA-228	2.19E+00	(9.58E-01)		PCI/SA	R	1.75E+00	3.79E+00		95%	
Calc	TF	FILTER	JK8HT1AD	RA-228	-9.85E-01	(8.23E-01)	U4	PCI/SA	R	1.94E+00	4.20E+00		95%	
Calc	TF	FILTER	JK8HT1AD	RA-228	-9.63E-01	(9.22E-01)	U4	PCI/SA	R	2.16E+00	4.66E+00		95%	
Calc	TF	FILTER	JK8HT1AD	RA-228	7.94E-02	(5.21E-01)	U4	PCI/SA	A	1.13E+00	2.43E+00		95%	
Calc	TF	FILTER	JK8HT1AD	RA-228	-1.38E+00	(4.42E+00)	U4	PCI/SA	R	9.95E+00	2.19E+01		95%	
Calc	TF	FILTER	JLD011AA	RA-228	1.64E-01	(1.92E-01)	U4	PCI/SA	R	3.93E-01	8.59E-01	B	94%	
Calc	TF	FILTER	JLD011AA	RA-228	3.31E-01	(2.25E-01)	U4	PCI/SA	R	4.36E-01	9.53E-01	B	94%	
Calc	TF	FILTER	JLD011AA	RA-228	-3.26E-01	(1.98E-01)	U4	PCI/SA	R	4.84E-01	1.06E+00	B	94%	
Calc	TF	FILTER	JLD011AA	RA-228	5.63E-02	(1.18E-01)	U4	PCI/SA	A	2.53E-01	5.52E-01	B	94%	
Calc	TF	FILTER	JLD011AA	RA-228	2.99E+00	(1.49E+00)		PCI/SA	R	2.75E+00	6.00E+00	B	94%	
Calc	TF	FILTER	JLD011AC	RA-228	5.74E+00	(7.47E-01)		PCI/SA	R	4.35E-01	9.63E-01	S	76%	113%
Calc	TF	FILTER	JLD011AC	RA-228	5.95E+00	(7.88E-01)		PCI/SA	R	4.82E-01	1.07E+00	S	76%	117%
Calc	TF	FILTER	JLD011AC	RA-228	5.11E+00	(7.29E-01)		PCI/SA	R	5.35E-01	1.19E+00	S	76%	101%
Calc	TF	FILTER	JLD011AC	RA-228	5.60E+00	(4.36E-01)		PCI/SA	A	2.80E-01	6.19E-01	S	76%	110%
Calc	TF	FILTER	JLD011AC	RA-228	1.06E+01	(2.66E+00)		PCI/SA	R	3.94E+00	8.58E+00	S	76%	208%

Angela Long
1/15/07

P Anderson
1-15-07

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

Page 2

Q - Qualifier, U is Less Than Lc = 1.645*TPU
All Results Displayed to Three Digits Reguardless of Significants
Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:60
RADCALC v4.8.26
STL Richland

Batch Nbr: 6347440

Alpha Beta, Ra-228 by GPC , Calculated Results

Detailed Report

1/13/2007 8:50:28 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	TF	FILTER	*STLE	Ra228WoBS	JK8G81AD	PCI/SA		11/21/06 11:30	01/13/07 07:06	12/19/06 12:55	RATA25032	1	1.00 SA	
536403,P-0804					,J6L110190-1 v4.8.26		FILTER			31.2	01/12/07 09:32	RATA25032 Alq	108%	0.238784 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	01/12/07 14:13	RA-228	43	315	GPC7A	1	N	N	5.3665E-01	1.0000E+00	N	98%	N		1.6195E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.607E-02)	(0.000E+00)		8%			(0.000E+00)	4.187887		
1	01/12/07 15:08	RA-228	51	315	GPC7A	1	N	N	5.3665E-01	1.0000E+00	N	98%	N		1.7973E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.607E-02)	(0.000E+00)		8%			(0.000E+00)	4.187887		
2	01/12/07 16:03	RA-228	45	315	GPC7A	1	N	N	5.3665E-01	1.0000E+00	N	98%	N		1.9946E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.607E-02)	(0.000E+00)		8%			(0.000E+00)	4.187887		
3	01/13/07 07:06	RA-228	15	88	GPC2A	1	N	N	4.2708E-01	1.0000E+00	N	98%	N		1.0930E+01	4.5045E-01	1.0093E+00	
			50	400			N		(1.182E-02)	(0.000E+00)		8%			(0.000E+00)	4.187887		

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
	01/13/07	RA-228	R	**0.424584**	U4	7.25000E-02	0.222998	0.222998	1.00 SA	98%		3.734995		
				(0.811986)		(1.3845E-01)	(0.426278)	(0.426278)	(0.027062)			1.709806		
	01/13/07	RA-228	R	**1.511062**	U4	2.32500E-01	0.793631	0.793631	1.00 SA	98%		4.144991		
				(0.98432)		(1.4956E-01)	(0.515006)	(0.515006)	(0.027062)			1.897494		
	01/13/07	RA-228	R	**0.81142**	U4	1.12500E-01	0.426169	0.426169	1.00 SA	98%		4.599994		
				(1.022616)		(1.4131E-01)	(0.536546)	(0.536546)	(0.027062)			2.105785		
	01/13/07	RA-228	A	**0.915688**		1.39167E-01	0.480933	0.480933	1.00 SA	98%		2.401773		
				(0.545074)		(8.2668E-02)	(0.28574)	(0.28574)	(0.015624)			1.099484		
	01/13/07	RA-228	R	**3.973112**	U4	8.00000E-02	2.086736	2.086736	1.00 SA	98%		18.010421		
				(4.03977)		(8.0932E-02)	(2.118426)	(2.118426)	(0.027062)			7.663869		

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	JK8G91AD	PCI/SA		11/21/06 11:50	01/13/07 07:06	12/19/06 12:55	RATA25033	1	1.00 SA	
536403,P-0805					,J6L110190-2 v4.8.26		FILTER			30.6	01/12/07 09:32	RATA25033 Alq	112%	0.244138 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	01/12/07 14:13	RA-228	77	263	GPC7B	1	N	N	5.3752E-01	1.0000E+00	N	100%	N		1.6195E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.545E-02)	(0.000E+00)		8%			(0.000E+00)	4.096047		
1	01/12/07 15:08	RA-228	45	263	GPC7B	1	N	N	5.3752E-01	1.0000E+00	N	100%	N		1.7973E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.545E-02)	(0.000E+00)		8%			(0.000E+00)	4.096047		
2	01/12/07 16:03	RA-228	54	263	GPC7B	1	N	N	5.3752E-01	1.0000E+00	N	100%	N		1.9946E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.545E-02)	(0.000E+00)		8%			(0.000E+00)	4.096047		

() - (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: 6347440

Alpha Beta, Ra-228 by GPC , Calculated Results

1/13/2007 8:50:28 AM

3	01/13/07 07:06	RA-228	6	83	GPC2B	1	N	N	4.4537E-01	1.0000E+00	N	100%	N	1.0930E+01	4.5045E-01	1.0093E+00	
			50	400			N		(1.051E-02)	(0.000E+00)		8%		(0.000E+00)	4.096047		

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
	01/13/07	RA-228	R	**4.960809**		8.82500E-01	2.66392	2.66392	1.00 SA	100%		3.302137		
				(1.132507)		(1.8012E-01)	(0.588987)	(0.588987)	(0.027062)			1.499621		
	01/13/07	RA-228	R	**1.512806**		2.42500E-01	0.812366	0.812366	1.00 SA	100%		3.664618		
				(0.887928)		(1.4016E-01)	(0.474569)	(0.474569)	(0.027062)			1.664237		
	01/13/07	RA-228	R	**2.92504**		4.22500E-01	1.570726	1.570726	1.00 SA	100%		4.066889		
				(1.097069)		(1.5246E-01)	(0.58231)	(0.58231)	(0.027062)			1.846923		
	01/13/07	RA-228	A	**3.132885**		5.15833E-01	1.682337	1.682337	1.00 SA	100%		2.123426		
				(0.60319)		(9.1488E-02)	(0.318191)	(0.318191)	(0.015624)			0.964325		
	01/13/07	RA-228	R	**-4.006369**	U4	-8.75000E-02	-2.151392	-2.151392	1.00 SA	100%		16.197418		
				(2.506506)		(5.4025E-02)	(1.340407)	(1.340407)	(0.027062)			6.861954		

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	**JK8HA1AD**	**PCI/SA**		11/21/06 12:05	01/13/07 07:06	12/19/06 12:55	RATA25034	1	1.00 SA	
536403,P-0806					,J6L110190-3 v4.8.26		FILTER			30.3	01/12/07 09:32	RATA25034 Alq	100%	0.24683 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	01/12/07 14:13	RA-228	46	345	GPC7C	1	N	N	5.1299E-01	1.0000E+00	N	88%	N		1.6195E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.642E-02)	(0.000E+00)		7%			(0.000E+00)	4.051371		
1	01/12/07 15:08	RA-228	38	345	GPC7C	1	N	N	5.1299E-01	1.0000E+00	N	88%	N		1.7973E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.642E-02)	(0.000E+00)		7%			(0.000E+00)	4.051371		
2	01/12/07 16:03	RA-228	31	345	GPC7C	1	N	N	5.1299E-01	1.0000E+00	N	88%	N		1.9946E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.642E-02)	(0.000E+00)		7%			(0.000E+00)	4.051371		
3	01/13/07 07:06	RA-228	14	94	GPC2C	1	N	N	4.3253E-01	1.0000E+00	N	88%	N		1.0930E+01	4.5045E-01	1.0093E+00	
			50	400			N		(9.407E-03)	(0.000E+00)		7%			(0.000E+00)	4.051371		

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
	01/13/07	RA-228	R	**0.379757**	U4	5.75000E-02	0.206176	0.206176	1.00 SA	88%		4.391494		
				(0.947724)		(1.4337E-01)	(0.514401)	(0.514401)	(0.027062)			2.017964		
	01/13/07	RA-228	R	**-0.751269**	U4	-1.02500E-01	-0.407876	-0.407876	1.00 SA	88%		4.873556		
				(0.968715)		(1.3174E-01)	(0.52542)	(0.52542)	(0.027062)			2.239479		
	01/13/07	RA-228	R	**-1.9725**	U4	-2.42500E-01	-1.070903	-1.070903	1.00 SA	88%		5.408534		
				(1.002267)		(1.2065E-01)	(0.54073)	(0.54073)	(0.027062)			2.485311		
	01/13/07	RA-228	A	**-0.781337**	U4	-9.58333E-02	-0.424201	-0.424201	1.00 SA	88%		2.823933		
				(0.561855)		(7.6354E-02)	(0.304241)	(0.304241)	(0.015624)			1.297644		
	01/13/07	RA-228	R	**2.378952**	U4	4.50000E-02	1.291573	1.291573	1.00 SA	88%		19.718234		
				(4.165315)		(7.8661E-02)	(2.260226)	(2.260226)	(0.027062)			8.431465		

() - (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: 6347440 — Alpha Beta, Ra-228 by GPC , Calculated Results — 1/13/2007 8:50:28 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	**JK8HC1AD**	**PCI/SA**		11/21/06 11:35	01/13/07 07:06	12/19/06 12:55	RATA25035	1	1.00 SA	
536403,P-0807					,J6L110190-4 v4.8.26		FILTER			28.9	01/12/07 09:32	RATA25035 Alq	99%	0.250218 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	01/12/07 14:13	RA-228	49	252	GPC1B	1	N	N	5.2397E-01	1.0000E+00	N	83%	N		1.6214E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.539E-02)	(0.000E+00)		7%			(0.000E+00)	3.996509		
1	01/12/07 15:08	RA-228	39	252	GPC1B	1	N	N	5.2397E-01	1.0000E+00	N	83%	N		1.7994E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.539E-02)	(0.000E+00)		7%			(0.000E+00)	3.996509		
2	01/12/07 16:04	RA-228	36	252	GPC1B	1	N	N	5.2397E-01	1.0000E+00	N	83%	N		1.9969E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.539E-02)	(0.000E+00)		7%			(0.000E+00)	3.996509		
3	01/13/07 07:06	RA-228	13	79	GPC2D	1	N	N	4.4041E-01	1.0000E+00	N	83%	N		1.0930E+01	4.5045E-01	1.0093E+00	
			50	400			N		(1.316E-02)	(0.000E+00)		7%			(0.000E+00)	3.996509		

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
	01/13/07	RA-228	R	**2.372551**		3.50000E-01	1.30577	1.30577	1.00 SA	83%		3.905634		
				(1.014443)		(1.4552E-01)	(0.554177)	(0.554177)	(0.014142)			1.770165		
	01/13/07	RA-228	R	**1.128389**	U4	1.50000E-01	0.621026	0.621026	1.00 SA	83%		4.334225		
				(0.992274)		(1.3105E-01)	(0.545159)	(0.545159)	(0.014142)			1.964417		
	01/13/07	RA-228	R	**0.751352**	U4	9.00000E-02	0.413518	0.413518	1.00 SA	83%		4.81		
				(1.05783)		(1.2639E-01)	(0.581796)	(0.581796)	(0.014142)			2.180054		
	01/13/07	RA-228	A	**1.417431**		1.96667E-01	0.780105	0.780105	1.00 SA	83%		2.511447		
				(0.589982)		(7.7692E-02)	(0.323659)	(0.323659)	(0.008165)			1.138272		
	01/13/07	RA-228	R	**3.397897**	U4	6.25000E-02	1.870086	1.870086	1.00 SA	83%		18.835113		
				(4.116358)		(7.5457E-02)	(2.263417)	(2.263417)	(0.014142)			7.948948		

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	**JK8HD1AD**	**PCI/SA**		11/21/06 12:10	01/13/07 07:01	12/19/06 12:55	RATA25036	1	1.00 SA	
536403,000578					,J6L110190-5 v4.8.26		FILTER			29.6	01/12/07 09:32	RATA25036 Alq	97%	0.243537 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	01/12/07 14:13	RA-228	31	202	GPC1C	1	N	N	5.1189E-01	1.0000E+00	N	83%	N		1.6214E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.847E-02)	(0.000E+00)		7%			(0.000E+00)	4.106158		
1	01/12/07 15:08	RA-228	30	202	GPC1C	1	N	N	5.1189E-01	1.0000E+00	N	83%	N		1.7994E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.847E-02)	(0.000E+00)		7%			(0.000E+00)	4.106158		
2	01/12/07 16:04	RA-228	26	202	GPC1C	1	N	N	5.1189E-01	1.0000E+00	N	83%	N		1.9969E+00	4.5045E-01	1.0093E+00	
			50	400			Y		(1.847E-02)	(0.000E+00)		7%			(0.000E+00)	4.106158		
3	01/13/07 07:01	RA-228	15	97	GPC3A	1	N	N	4.6042E-01	1.0000E+00	N	83%	N		1.0832E+01	4.5045E-01	1.0093E+00	
			50	400			N		(4.094E-02)	(0.000E+00)		7%			(0.000E+00)	4.106158		

() - (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: 6347440

Alpha Beta, Ra-228 by GPC , Calculated Results

1/13/2007 8:50:29 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
	01/13/07	RA-228	R	**0.816752**	U4	1.15000E-01	0.437512	0.437512	1.00 SA	83%		3.703929		
				(0.834533)		(1.1689E-01)	(0.446344)	(0.446344)	(0.027062)			1.660481		
	01/13/07	RA-228	R	**0.748748**	U4	9.50000E-02	0.401084	0.401084	1.00 SA	83%		4.110386		
				(0.911034)		(1.1516E-01)	(0.487484)	(0.487484)	(0.027062)			1.842697		
	01/13/07	RA-228	R	**0.131201**	U4	1.50000E-02	0.070281	0.070281	1.00 SA	83%		4.56159		
				(0.944686)		(1.0799E-01)	(0.506027)	(0.506027)	(0.027062)			2.044973		
	01/13/07	RA-228	A	**0.565567**	U4	7.50000E-02	0.302959	0.302959	1.00 SA	83%		2.381744		
				(0.518423)		(6.5479E-02)	(0.277474)	(0.277474)	(0.015624)			1.067742		
	01/13/07	RA-228	R	**3.03311**	U4	5.75000E-02	1.624755	1.624755	1.00 SA	83%		19.941246		
				(4.306211)		(8.1279E-02)	(2.304872)	(2.304872)	(0.027062)			8.54618		

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	**JK8HL1AD**	**PCI/SA**		11/14/06 11:25	01/13/07 07:01	12/19/06 12:55	RATA25037	1	1.00 SA	
536403,P-0800					,J6L110193-1 v4.8.26		FILTER			30.3	01/12/07 09:32	RATA25037 Alq	106%	0.244429 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	01/12/07 14:13	RA-228	39	209	GPC1D	1	N	N	5.2202E-01	1.0000E+00	N	93%	N		1.6214E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.785E-02)	(0.000E+00)		7%			(0.000E+00)	4.091164		
1	01/12/07 15:08	RA-228	52	209	GPC1D	1	N	N	5.2202E-01	1.0000E+00	N	93%	N		1.7994E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.785E-02)	(0.000E+00)		7%			(0.000E+00)	4.091164		
2	01/12/07 16:04	RA-228	41	209	GPC1D	1	N	N	5.2202E-01	1.0000E+00	N	93%	N		1.9969E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.785E-02)	(0.000E+00)		7%			(0.000E+00)	4.091164		
3	01/13/07 07:01	RA-228	19	111	GPC3B	1	N	N	4.8281E-01	1.0000E+00	N	93%	N		1.0832E+01	4.5045E-01	1.0116E+00	
			50	400			N		(5.393E-02)	(0.000E+00)		7%			(0.000E+00)	4.091164		

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
	01/13/07	RA-228	R	**1.597179**		2.57500E-01	0.856711	0.856711	1.00 SA	93%		3.28459		
				(0.823397)		(1.3002E-01)	(0.438968)	(0.438968)	(0.027062)			1.47508		
	01/13/07	RA-228	R	**3.562105**		5.17500E-01	1.910678	1.910678	1.00 SA	93%		3.645031		
				(1.088321)		(1.4868E-01)	(0.573568)	(0.573568)	(0.027062)			1.63695		
	01/13/07	RA-228	R	**2.272568**		2.97500E-01	1.218984	1.218984	1.00 SA	93%		4.045152		
				(1.043546)		(1.3306E-01)	(0.555441)	(0.555441)	(0.027062)			1.816641		
	01/13/07	RA-228	A	**2.477284**		3.57500E-01	1.328791	1.328791	1.00 SA	93%		2.112096		
				(0.572656)		(7.9386E-02)	(0.303716)	(0.303716)	(0.015624)			0.948523		
	01/13/07	RA-228	R	**4.592138**	U4	1.02500E-01	2.463178	2.463178	1.00 SA	93%		17.948191		
				(4.136801)		(9.1070E-02)	(2.214516)	(2.214516)	(0.027062)			7.764589		

() - (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: 6347440

Alpha Beta, Ra-228 by GPC , Calculated Results

1/13/2007 8:50:29 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PpttWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
7	Calc	TF	FILTER	*STLE	Ra228WoBS	**JK8HP1AD**	**PCI/SA**		11/14/06 11:45	01/13/07 07:01	12/19/06 12:55	RATA25038	1	1.00 SA	
536403,P-0801					,J6L110193-2 v4.8.26		FILTER			30.0	01/12/07 09:32	RATA25038 Alq	101%	0.238346 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	01/12/07 14:13	RA-228	31	166	GPC3A	1	N	N	4.6168E-01	1.0000E+00	N	88%	N		1.6221E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.105E-02)	(0.000E+00)		7%			(0.000E+00)	4.195581		
1	01/12/07 15:09	RA-228	16	166	GPC3A	1	N	N	4.6168E-01	1.0000E+00	N	88%	N		1.8001E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.105E-02)	(0.000E+00)		7%			(0.000E+00)	4.195581		
2	01/12/07 16:04	RA-228	21	166	GPC3A	1	N	N	4.6168E-01	1.0000E+00	N	88%	N		1.9978E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.105E-02)	(0.000E+00)		7%			(0.000E+00)	4.195581		
3	01/13/07 07:01	RA-228	26	128	GPC3C	1	N	N	4.6501E-01	1.0000E+00	N	88%	N		1.0832E+01	4.5045E-01	1.0116E+00	
			50	400			N		(4.573E-02)	(0.000E+00)		7%			(0.000E+00)	4.195581		

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
	01/13/07	RA-228	R	**1.560921**		2.05000E-01	0.81643	0.81643	1.00 SA	88%		3.638357		
				(0.906528)		(1.1592E-01)	(0.471876)	(0.471876)	(0.027062)			1.61379		
	01/13/07	RA-228	R	**-0.802758**	U4	-9.50000E-02	-0.419877	-0.419877	1.00 SA	88%		4.037745		
				(0.736456)		(8.6241E-02)	(0.384458)	(0.384458)	(0.027062)			1.790939		
	01/13/07	RA-228	R	**0.046888**	U4	5.00000E-03	0.024525	0.024525	1.00 SA	88%		4.480975		
				(0.911031)		(9.7147E-02)	(0.476506)	(0.476506)	(0.027062)			1.987533		
	01/13/07	RA-228	A	**0.268351**	U4	3.83333E-02	0.140359	0.140359	1.00 SA	88%		2.339631		
				(0.493754)		(5.8035E-02)	(0.257668)	(0.257668)	(0.015624)			1.037741		
	01/13/07	RA-228	R	**10.096248**		2.00000E-01	5.280775	5.280775	1.00 SA	88%		21.515104		
				(5.523516)		(1.0583E-01)	(2.873396)	(2.873396)	(0.027062)			9.395089		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PpttWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	TF	FILTER	*STLE	Ra228WoBS	**JK8HQ1AD**	**PCI/SA**		11/14/06 12:05	01/13/07 07:01	12/19/06 12:55	RATA25039	1	1.00 SA	
536403,P-0802					,J6L110193-3 v4.8.26		FILTER			29.8	01/12/07 09:32	RATA25039 Alq	102%	0.248575 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	01/12/07 14:14	RA-228	18	196	GPC4A	1	N	N	4.8443E-01	1.0000E+00	N	88%	N		1.6229E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(2.054E-02)	(0.000E+00)		7%			(0.000E+00)	4.022927		
1	01/12/07 15:09	RA-228	22	196	GPC4A	1	N	N	4.8443E-01	1.0000E+00	N	88%	N		1.8011E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(2.054E-02)	(0.000E+00)		7%			(0.000E+00)	4.022927		
2	01/12/07 16:04	RA-228	13	196	GPC4A	1	N	N	4.8443E-01	1.0000E+00	N	88%	N		1.9988E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(2.054E-02)	(0.000E+00)		7%			(0.000E+00)	4.022927		
3	01/13/07 07:01	RA-228	14	104	GPC3D	1	N	N	4.7643E-01	1.0000E+00	N	88%	N		1.0832E+01	4.5045E-01	1.0116E+00	
			50	400			N		(4.505E-02)	(0.000E+00)		7%			(0.000E+00)	4.022927		

() - (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: 6347440

Alpha Beta, Ra-228 by GPC , Calculated Results

1/13/2007 8:50:29 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
	01/13/07	RA-228	R	**-0.902682**	U4	-1.30000E-01	-0.492407	-0.492407	1.00 SA	88%		3.57272		
				(0.644613)		(9.1788E-02)	(0.350516)	(0.350516)	(0.027062)			1.599135		
	01/13/07	RA-228	R	**-0.385296**	U4	-5.00000E-02	-0.210177	-0.210177	1.00 SA	88%		3.964903		
				(0.772654)		(1.0012E-01)	(0.421308)	(0.421308)	(0.027062)			1.774675		
	01/13/07	RA-228	R	**-1.966918**	U4	-2.30000E-01	-1.072941	-1.072941	1.00 SA	88%		4.400137		
				(0.717013)		(8.0156E-02)	(0.38634)	(0.38634)	(0.027062)			1.969484		
	01/13/07	RA-228	A	**-1.084965**	U4	-1.36667E-01	-0.591842	-0.591842	1.00 SA	88%		2.297423		
				(0.411856)		(5.2573E-02)	(0.223513)	(0.223513)	(0.015624)			1.028317		
	01/13/07	RA-228	R	**0.942458**	U4	2.00000E-02	0.514105	0.514105	1.00 SA	88%		18.355141		
				(3.727607)		(7.9057E-02)	(2.033175)	(2.033175)	(0.027062)			7.905233		

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	**JK8HR1AD**	**PCI/SA**		11/14/06 11:50	01/13/07 07:01	12/19/06 12:55	RATA25040	1	1.00 SA	
536403,P-0803					,J6L110193-4 v4.8.26		FILTER			30.0	01/12/07 09:32	RATA25040 Alq	99%	0.246246 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	01/12/07 14:14	RA-228	56	242	GPC5A	1.5	N	N	5.8567E-01	1.0000E+00	N	86%	N		1.6242E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.192E-02)	(0.000E+00)		7%			(0.000E+00)	4.060973		
1	01/12/07 15:09	RA-228	36	242	GPC5A	1.5	N	N	5.8567E-01	1.0000E+00	N	86%	N		1.8025E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.192E-02)	(0.000E+00)		7%			(0.000E+00)	4.060973		
2	01/12/07 16:05	RA-228	47	242	GPC5A	1.5	N	N	5.8567E-01	1.0000E+00	N	86%	N		2.0003E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.192E-02)	(0.000E+00)		7%			(0.000E+00)	4.060973		
3	01/13/07 07:01	RA-228	32	269	GPC6B	1.5	N	N	5.6344E-01	1.0000E+00	N	86%	N		1.0839E+01	4.5045E-01	1.0116E+00	
			50	400			N		(1.198E-02)	(0.000E+00)		7%			(0.000E+00)	4.060973		

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
	01/13/07	RA-228	R	**3.058813**		5.15000E-01	1.652925	1.652925	1.00 SA	86%		3.359943		
				(0.968276)		(1.5464E-01)	(0.51473)	(0.51473)	(0.027062)			1.519915		
	01/13/07	RA-228	R	**0.758014**	U4	1.15000E-01	0.409616	0.409616	1.00 SA	86%		3.72877		
				(0.834938)		(1.2614E-01)	(0.450583)	(0.450583)	(0.027062)			1.686759		
	01/13/07	RA-228	R	**2.450441**		3.35000E-01	1.324172	1.324172	1.00 SA	86%		4.137953		
				(1.071054)		(1.4252E-01)	(0.57386)	(0.57386)	(0.027062)			1.871858		
	01/13/07	RA-228	A	**2.089089**		3.21667E-01	1.128904	1.128904	1.00 SA	86%		2.160573		
				(0.555961)		(8.1743E-02)	(0.297637)	(0.297637)	(0.015624)			0.977364		
	01/13/07	RA-228	R	**-1.338993**	U4	-3.25000E-02	-0.723566	-0.723566	1.00 SA	86%		24.451232		
				(4.959724)		(1.2034E-01)	(2.679825)	(2.679825)	(0.027062)			11.115702		

() - (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: 6347440

Alpha Beta, Ra-228 by GPC , Calculated Results

1/13/2007 8:50:30 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	**JK8HT1AD**	**PCI/SA**		11/14/06 12:10	01/13/07 07:01	12/19/06 12:55	RATA25041	1	1.00 SA	
536403,000576					,J6L110193-5 v4.8.26		FILTER			31.2	01/12/07 09:32	RATA25041 Alq	105%	0.250646 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	01/12/07 14:14	RA-228	71	403	GPC5B	1.5	N	N	5.8763E-01	1.0000E+00	N	95%	N		1.6242E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.382E-02)	(0.000E+00)		8%			(0.000E+00)	3.989695		
1	01/12/07 15:09	RA-228	42	403	GPC5B	1.5	N	N	5.8763E-01	1.0000E+00	N	95%	N		1.8025E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.382E-02)	(0.000E+00)		8%			(0.000E+00)	3.989695		
2	01/12/07 16:05	RA-228	43	403	GPC5B	1.5	N	N	5.8763E-01	1.0000E+00	N	95%	N		2.0003E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.382E-02)	(0.000E+00)		8%			(0.000E+00)	3.989695		
3	01/13/07 07:01	RA-228	32	271	GPC6C	1.5	N	N	5.6583E-01	1.0000E+00	N	95%	N		1.0839E+01	4.5045E-01	1.0116E+00	
			50	400			N		(1.059E-02)	(0.000E+00)		8%			(0.000E+00)	3.989695		

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
	01/13/07	RA-228	R	**2.186007**		4.12500E-01	1.202386	1.202386	1.00 SA	95%		3.785214		
				(0.957595)		(1.7584E-01)	(0.522258)	(0.522258)	(0.027062)			1.750032		
	01/13/07	RA-228	R	**-0.98509**	**U4**	-1.67500E-01	-0.541837	-0.541837	1.00 SA	95%		4.200723		
				(0.823454)		(1.3899E-01)	(0.451882)	(0.451882)	(0.027062)			1.942136		
	01/13/07	RA-228	R	**-0.962661**	**U4**	-1.47500E-01	-0.5295	-0.5295	1.00 SA	95%		4.661697		
				(0.921611)		(1.4042E-01)	(0.506026)	(0.506026)	(0.027062)			2.15526		
	01/13/07	RA-228	A	**0.079419**	**U4**	3.25000E-02	0.043683	0.043683	1.00 SA	95%		2.434038		
				(0.521156)		(8.8164E-02)	(0.285387)	(0.285387)	(0.015624)			1.125338		
	01/13/07	RA-228	R	**-1.37728**	**U4**	-3.75000E-02	-0.757556	-0.757556	1.00 SA	95%		21.870503		
				(4.423761)		(1.2039E-01)	(2.432854)	(2.432854)	(0.027062)			9.945843		

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	**JLD011AA**	**PCI/SA**	**B**	11/14/06 11:25	01/13/07 07:01	12/19/06 12:55	RATA25042	1	1.00 SA	
0,INTRA-LAB BLANK					,J6L130000-440 v4.8.26		FILTER			30.5	01/12/07 09:32	RATA25042 Alq	106%	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	01/12/07 14:14	RA-228	46	319	GPC5C	1.5	N	N	5.9008E-01	1.0000E+00	N	94%	N		1.6242E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.181E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		
1	01/12/07 15:09	RA-228	51	319	GPC5C	1.5	N	N	5.9008E-01	1.0000E+00	N	94%	N		1.8025E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.181E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		
2	01/12/07 16:05	RA-228	30	319	GPC5C	1.5	N	N	5.9008E-01	1.0000E+00	N	94%	N		2.0003E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.181E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		
3	01/13/07 07:01	RA-228	56	320	GPC6D	1.5	N	N	5.6405E-01	1.0000E+00	N	94%	N		1.0839E+01	4.5045E-01	1.0116E+00	
			50	400			N		(1.117E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		

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

RecCnt:11 RADCALC v4.8.26
STL Richland

Batch Nbr: 6347440

Alpha Beta, Ra-228 by GPC , Calculated Results

1/13/2007 8:50:30 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
	01/13/07	RA-228	R	**0.163987**	U4	1.22500E-01	0.359862	0.359862	1.00 SA	94%		0.858706		
				(0.191845)		(1.4281E-01)	(0.420564)	(0.420564)	(0.017321)			0.393309		
	01/13/07	RA-228	R	**0.330549**	U4	2.22500E-01	0.725377	0.725377	1.00 SA	94%		0.952968		
				(0.224662)		(1.4965E-01)	(0.491516)	(0.491516)	(0.017321)			0.436483		
	01/13/07	RA-228	R	**-0.325607**	U4	-1.97500E-01	-0.714531	-0.714531	1.00 SA	94%		1.057543		
				(0.197618)		(1.1830E-01)	(0.432015)	(0.432015)	(0.017321)			0.484381		
	01/13/07	RA-228	A	**0.05631**	U4	4.91667E-02	0.12357	0.12357	1.00 SA	94%		0.552181		
				(0.118477)		(7.9429E-02)	(0.259294)	(0.259294)	(0.01)			0.252913		
	01/13/07	RA-228	R	**2.99058**		3.20000E-01	6.562709	6.562709	1.00 SA	94%		6.003437		
				(1.488918)		(1.5620E-01)	(3.248864)	(3.248864)	(0.017321)			2.750086		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
12	Calc	TF	FILTER	*STLE	Ra228WoBS	**JLD011AC**	**PCI/SA**	**S**	11/14/06 11:25	01/13/07 08:00	12/19/06 12:55	RASC4300	1	1.00 SA	
0,INTRA-LAB CHECK					,J6L130000-440		FILTER			28.3	01/12/07 09:32	RASC4300 Alq	92%	1.00 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	01/12/07 14:14	RA-228	195	233	GPC5D	1.5	N	N	5.6365E-01	1.0000E+00	N	76%	N		1.6242E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.262E-02)	(0.000E+00)		6%			(0.000E+00)	1.00		
1	01/12/07 15:09	RA-228	184	233	GPC5D	1.5	N	N	5.6365E-01	1.0000E+00	N	76%	N		1.8025E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.262E-02)	(0.000E+00)		6%			(0.000E+00)	1.00		
2	01/12/07 16:05	RA-228	149	233	GPC5D	1.5	N	N	5.6365E-01	1.0000E+00	N	76%	N		2.0003E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(1.262E-02)	(0.000E+00)		6%			(0.000E+00)	1.00		
3	01/13/07 08:00	RA-228	83	339	GPC6A	1.5	N	N	5.5861E-01	1.0000E+00	N	76%	N		1.2102E+01	4.5045E-01	1.0116E+00	
			50	400			N		(1.161E-02)	(0.000E+00)		6%			(0.000E+00)	1.00		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	01/13/07	RA-228	R	**5.742651**		3.31750E+00	12.60202	12.60202	1.00 SA	76%	113%	0.962616		
				(0.747004)		(2.8188E-01)	(1.49751)	(1.49751)	(0.017321)			0.434656		
	01/13/07	RA-228	R	**5.950404**		3.09750E+00	13.057925	13.057925	1.00 SA	76%	117%	1.068284		
				(0.787707)		(2.7396E-01)	(1.584489)	(1.584489)	(0.017321)			0.482369		
	01/13/07	RA-228	R	**5.111092**		2.39750E+00	11.216089	11.216089	1.00 SA	76%	101%	1.185514		
				(0.728639)		(2.4710E-01)	(1.484744)	(1.484744)	(0.017321)			0.535302		
	01/13/07	RA-228	A	**5.601382**		2.93750E+00	12.292012	12.292012	1.00 SA	76%	110%	0.618999		
				(0.435815)		(1.5476E-01)	(0.879243)	(0.879243)	(0.01)			0.2795		
	01/13/07	RA-228	R	**10.573628**		8.12500E-01	23.203407	23.203407	1.00 SA	76%	208%	8.58375		
				(2.656747)		(1.8793E-01)	(5.699373)	(5.699373)	(0.017321)			3.941544		

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

IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration

Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:12

RADCALC v4.8.26

STL Richland

UST Number: JK8G81AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-A File: [quad7.sample.A]JK8G81AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.A_1;3134

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00043	0050	01150	1700	12-JAN-2007 14:13:02.84
2	00000	00051	0050	01146	1700	12-JAN-2007 15:08:18.52
3	00000	00045	0050	01145	1700	12-JAN-2007 16:03:34.36

Bkg File: [quad7.bkgrnd]2007-01-12_0238.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00315	0400	0.79	09265	1700	12-JAN-2007 02:38:08.32

OK
AL 1/15/07

UST Number: JK8G81AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-A File: [quad2.sample.A]JK8G81AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.A_1;3724

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01155	1810	13-JAN-2007 07:06:12.64

Bkg File: [quad2.bkgrnd]2007-01-13_0236.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00088	0400	0.22	09315	1810	13-JAN-2007 02:36:54.48

UST Number: JK8G91AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-B File: [quad7.sample.B]JK8G91AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.B_1;3121

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00077	0050	01150	1700	12-JAN-2007 14:13:02.84
2	00000	00045	0050	01146	1700	12-JAN-2007 15:08:18.52
3	00000	00054	0050	01145	1700	12-JAN-2007 16:03:34.36

Bkg File: [quad7.bkgrnd]2007-01-12_0238.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00263	0400	0.66	09265	1700	12-JAN-2007 02:38:08.32

UST Number: JK8G91AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-B File: [quad2.sample.B]JK8G91AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.B_1;3721

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00006	0050	01155	1810	13-JAN-2007 07:06:12.64

Bkg File: [quad2.bkgrnd]2007-01-13_0236.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00083	0400	0.21	09315	1810	13-JAN-2007 02:36:54.48

UST Number: JK8HA1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-C File: [quad7.sample.C]JK8HA1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.C_1;3126

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00046	0050	01150	1700	12-JAN-2007 14:13:02.84
2	00000	00038	0050	01146	1700	12-JAN-2007 15:08:18.52
3	00000	00031	0050	01145	1700	12-JAN-2007 16:03:34.36

Bkg File: [quad7.bkgrnd]2007-01-12_0238.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00345	0400	0.86	09265	1700	12-JAN-2007 02:38:08.32

UST Number: JK8HA1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-C File: [quad2.sample.C]JK8HA1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.C_1;3722

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00014	0050	01155	1810	13-JAN-2007 07:06:12.64

Bkg File: [quad2.bkgrnd]2007-01-13_0236.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00094	0400	0.24	09315	1810	13-JAN-2007 02:36:54.48

UST Number: JK8HC1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-B File: [quad1.sample.B]JK8HC1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.B_1;3184

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00049	0050	01161	1650	12-JAN-2007 14:13:39.05
2	00000	00039	0050	01144	1650	12-JAN-2007 15:08:54.81
3	00000	00036	0050	01152	1650	12-JAN-2007 16:04:10.56

Bkg File: [quad1.bkgrnd]2007-01-12_0237.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00252	0400	0.63	09312	1650	12-JAN-2007 02:37:28.78

UST Number: JK8HC1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-D File: [quad2.sample.D]JK8HC1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.D_1;3721

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00013	0050	01155	1810	13-JAN-2007 07:06:12.64

Bkg File: [quad2.bkgrnd]2007-01-13_0236.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00079	0400	0.20	09315	1810	13-JAN-2007 02:36:54.48

UST Number: JK8HD1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-C File: [quad1.sample.C]JK8HD1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.C_1;3181

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00031	0050	01161	1650	12-JAN-2007 14:13:39.05
2	00000	00030	0050	01144	1650	12-JAN-2007 15:08:54.81
3	00000	00026	0050	01152	1650	12-JAN-2007 16:04:10.56

Bkg File: [quad1.bkgrnd]2007-01-12_0237.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00202	0400	0.51	09312	1650	12-JAN-2007 02:37:28.78

UST Number: JK8HD1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JK8HD1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.A_1;5639

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01236	1920	13-JAN-2007 07:01:24.44

Bkg File: [quad3.bkgrnd]2007-01-13_0236.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00097	0400	0.24	09865	1920	13-JAN-2007 02:36:59.25

UST Number: JK8HL1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-D File: [quad1.sample.D]JK8HL1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.D_1;3184

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00039	0050	01161	1650	12-JAN-2007 14:13:39.05
2	00000	00052	0050	01144	1650	12-JAN-2007 15:08:54.81
3	00000	00041	0050	01152	1650	12-JAN-2007 16:04:10.56

Bkg File: [quad1.bkgrnd]2007-01-12_0237.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00209	0400	0.52	09312	1650	12-JAN-2007 02:37:28.78

UST Number: JK8HL1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JK8HL1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.B_1;5647

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01236	1920	13-JAN-2007 07:01:24.44

Bkg File: [quad3.bkgrnd]2007-01-13_0236.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00111	0400	0.28	09865	1920	13-JAN-2007 02:36:59.25

UST Number: JK8HP1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JK8HP1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.A_1;5638

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00031	0050	01218	1920	12-JAN-2007 14:13:52.94
2	00000	00016	0050	01224	1920	12-JAN-2007 15:09:08.68
3	00000	00021	0050	01233	1920	12-JAN-2007 16:04:24.29

Bkg File: [quad3.bkgrnd]2007-01-12_0232.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00166	0400	0.42	09924	1920	12-JAN-2007 02:32:44.83

UST Number: JK8HP1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JK8HP1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.C_1;5652

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00026	0050	01236	1920	13-JAN-2007 07:01:24.44

Bkg File: [quad3.bkgrnd]2007-01-13_0236.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00128	0400	0.32	09865	1920	13-JAN-2007 02:36:59.25

UST Number: JK8HQ1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JK8HQ1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.A_1;5655

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00018	0050	01196	1850	12-JAN-2007 14:14:08.65
2	00000	00022	0050	01184	1850	12-JAN-2007 15:09:24.46
3	00000	00013	0050	01211	1850	12-JAN-2007 16:04:40.36

Bkg File: [quad4.bkgrnd]2007-01-12_0237.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00196	0400	0.49	09588	1850	12-JAN-2007 02:37:48.93

UST Number: JK8HQ1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JK8HQ1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.D_1;5637

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00014	0050	01236	1920	13-JAN-2007 07:01:24.44

Bkg File: [quad3.bkgrnd]2007-01-13_0236.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00104	0400	0.26	09865	1920	13-JAN-2007 02:36:59.25

UST Number: JK8HR1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 5-A File: [quad5.sample.A]JK8HR1AD.180
Dish Size: 15 Bkg File: $DISK1:[QUAD5.BKGRND]CURRENT.A_15;5700

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00056	0050	01255	1800	12-JAN-2007 14:14:34.18
2	00000	00036	0050	01265	1800	12-JAN-2007 15:09:50.07
3	00000	00047	0050	01262	1800	12-JAN-2007 16:05:05.71

Bkg File: [quad5.bkgrnd]2007-01-12_0314.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00242	0400	0.61	10137	1800	12-JAN-2007 03:14:56.04

UST Number: JK8HR1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 6-B File: [quad6.sample.B]JK8HR1AD.430
Dish Size: 15 Bkg File: $DISK1:[QUAD6.BKGRND]CURRENT.B_15;5757

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00032	0050	01279	1800	13-JAN-2007 07:01:45.49

Bkg File: [quad6.bkgrnd]2007-01-13_0237.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00269	0400	0.67	10304	1800	13-JAN-2007 02:37:22.81

UST Number: JK8HT1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 5-B File: [quad5.sample.B]JK8HT1AD.180
Dish Size: 15 Bkg File: $DISK1:[QUAD5.BKGRND]CURRENT.B_15;5693

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00071	0050	01255	1800	12-JAN-2007 14:14:34.18
2	00000	00042	0050	01265	1800	12-JAN-2007 15:09:50.07
3	00000	00043	0050	01262	1800	12-JAN-2007 16:05:05.71

Bkg File: [quad5.bkgrnd]2007-01-12_0314.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00403	0400	1.01	10137	1800	12-JAN-2007 03:14:56.04

UST Number: JK8HT1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 6-C File: [quad6.sample.C]JK8HT1AD.430
Dish Size: 15 Bkg File: $DISK1:[QUAD6.BKGRND]CURRENT.C_15;5719

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00032	0050	01279	1800	13-JAN-2007 07:01:45.49

Bkg File: [quad6.bkgrnd]2007-01-13_0237.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00271	0400	0.68	10304	1800	13-JAN-2007 02:37:22.81

UST Number: JLD011AA Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 5-C File: [quad5.sample.C]JLD011AA.180
Dish Size: 15 Bkg File: $DISK1:[QUAD5.BKGRND]CURRENT.C_15;5713

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00046	0050	01255	1800	12-JAN-2007 14:14:34.18
2	00000	00051	0050	01265	1800	12-JAN-2007 15:09:50.07
3	00000	00030	0050	01262	1800	12-JAN-2007 16:05:05.71

Bkg File: [quad5.bkgrnd]2007-01-12_0314.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00319	0400	0.80	10137	1800	12-JAN-2007 03:14:56.04

UST Number: JLD011AA Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 6-D File: [quad6.sample.D]JLD011AA.430
Dish Size: 15 Bkg File: $DISK1:[QUAD6.BKGRND]CURRENT.D_15;5718

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00056	0050	01279	1800	13-JAN-2007 07:01:45.49

Bkg File: [quad6.bkgrnd]2007-01-13_0237.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00320	0400	0.80	10304	1800	13-JAN-2007 02:37:22.81

UST Number: JLD011AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 5-D File: [quad5.sample.D]JLD011AC.180
Dish Size: 15 Bkg File: $DISK1:[QUAD5.BKGRND]CURRENT.D_15;5766

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00195	0050	01255	1800	12-JAN-2007 14:14:34.18
2	00000	00184	0050	01265	1800	12-JAN-2007 15:09:50.07
3	00000	00149	0050	01262	1800	12-JAN-2007 16:05:05.71

Bkg File: [quad5.bkgrnd]2007-01-12_0314.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00233	0400	0.58	10137	1800	12-JAN-2007 03:14:56.04

UST Number: JLD011AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 6-A File: [quad6.sample.A]JLD011AC.430
Dish Size: 15 Bkg File: $DISK1:[QUAD6.BKGRND]CURRENT.A_15;5716

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00083	0050	01277	1800	13-JAN-2007 08:00:13.47

Bkg File: [quad6.bkgrnd]2007-01-13_0237.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00339	0400	0.85	10304	1800	13-JAN-2007 02:37:22.81

RADIUM 226

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

1/12/2007 2:26:52 PM

Lot No., Due Date: J6L110190,J6L110193; 01/04/2007

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6347439; RRA2267 Ra-226 by ASC-7

SDG, Matrix: 33221,33222; 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 Angela Long Pam Anderson **Date** 1-12-07

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 647459

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: 1-15-07

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

12

STL RICHLAND

12/16/2006 11:55:38 AM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 01/03/2007

Sep1 DT/Tm Tech: AL 12/19/06 12:55

Batch: 6347439 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6347440, BXTF All Tests: 6347434 9NS1, 6347436 BAS7, 6347439 BXTE, 6347440 BXTF,

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 JK8G8-1-AC J6L110190-1-SAMP	0.833sa	523.73sa	150.13g,in	0.2388g 7.4541 – 8.064 .9244 ✓	RATA25032 12/04/06	100	G8	1833	12/19/06 OD 12/22/06 1418 p 2MA 1/11/07 1001 p	
11/21/2006 11:30			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
2 JK8G9-1-AC J6L110190-2-SAMP	0.833sa	513.20sa	150.41g,in	0.2441g 7.4925 – 8.407 .8912 ✓	RATA25033 12/04/06		G6	1913	12/19/06 OD 12/22/06 1418 p 8HC 1/11/07 0953 p	
11/21/2006 11:50			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
3 JK8HA-1-AC J6L110190-3-SAMP	0.833sa	506.69sa	150.27g,in	0.247g 7.4733 – 7.470 1.0084 ✓	RATA25034 12/04/06		G8	1913	12/19/06 OD 12/22/06 1418 p BMB 1/11/07 0959 p	
11/21/2006 12:05			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
4 JK8HC-1-AC J6L110190-4-SAMP	0.833sa	502.36sa	150.90g,in	0.2502g 7.4829 – 7.388 1.0128 ✓	RATA25035 12/04/06		G5	1914	12/19/06 OD 12/22/06 1418 p ASC 1/11/07 1000 p	
11/21/2006 11:35			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:

STL RICHLAND

12/16/2006 11:55:44 AM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 01/03/2007

Sep1 DT/Tm Tech:

Batch: 6347439 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6347440, 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 JK8HD-1-AC J6L110190-5-SAMP	0.833sa	514.33sa	150.37g,in	0.2435g 7.4733 = 7.231 1.0335 ✓	RATA25036 12/04/06	100	G8 12/19/06	1947	12/19/06	
								12/22/06	1418	
							3HA	1/11/07	1031	
11/21/2006 12:10		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
6 JK8HL-1-AC J6L110193-1-SAMP	0.833sa	512.52sa	150.39g,in	0.2444g 7.4349 = 7.880 .9435 ✓	RATA25037 12/04/06		G6	1947	12/19/06	
								12/22/06	1418	
							DUA	1/11/07	1025	
11/14/2006 11:25		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
7 JK8HP-1-AC J6L110193-2-SAMP	0.833g	526.16g	150.55g,in	0.2383g 7.4829 = 7.57 .9885 ✓	RATA25038 12/04/06		G5 9" 9"	1947 0626 0848	12/19/06 12/22/06 12/22/06	
								12/22/06	1418	
							FAB	1/11/07	1031	
11/14/2006 11:45		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
8 JK8HQ-1-AC J6L110193-3-SAMP	0.833sa	503.67sa	150.30g,in	0.2486g 7.4733 = 7.630 .9795 ✓	RATA25039 12/04/06		G8	2021	12/19/06	
								12/22/06	1418	
							GSB	1/11/07	1033	
11/14/2006 12:05		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:

STL RICHLAND

12/16/2006 11:55:44 AM

536403, Brown and Caldwell , Brown & Caldwell

AnalyDueDate: 01/03/2007

Sample Preparation/Analysis

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Balance Id:1120373922,1120373922,1120

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Batch: 6347439 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: 6347440, BXTF

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
9 JK8HR-1-AC J6L110193-4-SAMP	0.833sa	509.11sa	150.50g,in	0.2462g 7.5021 – 7.433 1.0093 ✓	RATA25040 12/04/06	100	G6	2021	12/19/06 CW 12/22/06 1440 p LMC 1/11/07 1158	
11/14/2006 11:50			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
10 JK8HT-1-AC J6L110193-5-SAMP	0.833sa	500.44sa	150.58g,in	0.2506g 7.4445 – 7.783 – .9565 ✓	RATA25041 12/04/06		G5	2021	12/19/06 CW 12/22/06 1440 p MRA 1/11/07 1151	
11/14/2006 12:10			AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:
11 JLD0Q-1-AA-B J6L130000-439-BLK			151.56g,in	151.56g 7.4420 – 7.865 .9462 ✓	RATA25042 12/13/06		G6	2054	12/19/06 CW 12/22/06 1440 p NMA 1/11/07 1157	
11/14/2006 11:25			AmtRec:	#Containers: 1				Scr:	Alpha:	Beta:
12 JLD0Q-1-AC-C J6L130000-439-LCS			151.72g,in	151.72g 7.4414 6.862 1.0844 ✓	RASC4300 11/22/06		G8	2054	12/19/06 CW 12/22/06 1440 p PMB 1/11/07 1157	
11/14/2006 11:25			AmtRec:	#Containers: 1				Scr:	Alpha:	Beta:

1/12/2007 2:25:57 PM

ICOC Fraction Transfer/Status Report

ByDate: 1/12/2006, 1/17/2007, Batch: '6347439', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6347439						
AC		**CalcC**	**WoodT**	12/14/2006 1:27:17		
SC			wagarr	IsBatched	12/13/2006 2:04:14 PM	ICOC_RADCALC v4.8.26
SC			WoodT	InPrep	12/14/2006 1:27:17 PM	RICH-RC-5016 REVISION 5
SC			WoodT	Prep1C	12/14/2006 2:56:25 PM	RICH-RC-5016 REVISION 5
SC			HarrisonJ	InPrep	12/16/2006 11:39:26 AM	RICH-RC-5005 Revision 5
SC			LongA	Sep1C	12/19/2006 2:12:48 PM	RICH-RC-5005 REVISION 5
SC			DAWKINSO	InCnt1	12/19/2006 4:29:31 PM	RICH-RD-0007 REVISION 5
SC			DAWKINSO	Cnt1C	12/19/2006 9:00:02 PM	RICH-RD-0007 REVISION 5
SC			PetersonJ	InSep2	12/22/2006 2:39:22 PM	RICH-RC-5005 REVISION 5
SC			PetersonJ	CalcC	1/11/2007 4:16:52 PM	RICH-RC-5005 REVISION 5
AC			**WoodT**	12/14/2006 2:56:25		
AC			**HarrisonJ**	12/16/2006 11:39:26		
AC			**LongA**	12/19/2006 2:12:48		
AC			**DAWKINSO**	12/19/2006 4:29:31		
AC			**DAWKINSO**	12/19/2006 9:00:02		
AC			**PetersonJ**	12/22/2006 2:39:22		
AC			**PetersonJ**	1/11/2007 4:16:52 PM		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 8

ICOCFractions v4.8.26

1/12/2007 2:25:56 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	Sample Date / mda	Units	Expected	Yield	Volumes
33221	**9JK8G810**			**J6L1101901**	P-0804	FILTER	12/7/2006 10:00:00	11/21/2006 11:30:00 AM				
ALPHA	BAS7	0		1/3/2007 7:25:46 PM	**4.51E+00**	1.582E+00	1.672E+00	4.892E+00	PCI/SA	1.0	1.0E+0	2.001E-2
RA-226	BXTE	0		1/11/2007 1:01:00 PM	**7.6079E-02**	6.069E-02	6.121E-02	2.136E-01	PCI/SA	1.082	8.33E-1	2.388E-1
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**1.1124E-01**	8.021E-02	8.083E-02	2.669E-01	PCI/SA	0.906	1.0E+0	7.97E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**3.648E-01**	1.305E-01	1.346E-01	2.574E-01	PCI/SA	0.906	1.0E+0	7.97E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**0.0E+00**	0.0E+00	4.798E-02	2.574E-01	PCI/SA	0.906	1.0E+0	7.97E-2
33221	**9JK8G910**			**J6L1101902**	P-0805	FILTER	12/7/2006 10:00:00	11/21/2006 11:50:00 AM				
ALPHA	BAS7	0		1/3/2007 7:25:46 PM	**6.6195E+00**	1.704E+00	1.868E+00	4.122E+00	PCI/SA	1.0	1.0E+0	2.037E-2
RA-226	BXTE	0		1/11/2007 12:53:00 PM	**1.0966E+00**	1.278E-01	1.697E-01	1.981E-01	PCI/SA	1.122	8.33E-1	2.441E-1
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**1.3383E-01**	7.883E-02	7.97E-02	2.293E-01	PCI/SA	1.014	1.0E+0	8.164E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**5.7169E-01**	1.554E-01	1.633E-01	3.1E-01	PCI/SA	1.014	1.0E+0	8.164E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**1.1065E-01**	6.649E-02	6.72E-02	2.212E-01	PCI/SA	1.014	1.0E+0	8.164E-2
33221	**9JK8HA10**			**J6L1101903**	P-0806	FILTER	12/7/2006 10:00:00	11/21/2006 12:05:00 PM				
ALPHA	BAS7	0		1/3/2007 7:25:46 PM	**7.2979E+00**	1.841E+00	2.031E+00	4.928E+00	PCI/SA	1.0	1.0E+0	2.058E-2
RA-226	BXTE	0		1/11/2007 12:59:00 PM	**-3.4572E-02**	6.847E-02	6.855E-02	2.812E-01	PCI/SA	1.0	8.33E-1	2.468E-1
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**2.692E-01**	1.346E-01	1.368E-01	4.166E-01	PCI/SA	0.993	1.0E+0	8.269E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.9475E-01**	9.916E-02	1.007E-01	2.596E-01	PCI/SA	0.993	1.0E+0	8.269E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**-2.1639E-02**	4.839E-02	4.842E-02	2.596E-01	PCI/SA	0.993	1.0E+0	8.269E-2
33221	**9JK8HC10**			**J6L1101904**	P-0807	FILTER	12/7/2006 10:00:00	11/21/2006 11:35:00 AM				
ALPHA	BAS7	0		1/3/2007 7:25:46 PM	**4.7441E+00**	1.611E+00	1.704E+00	5.053E+00	PCI/SA	1.0	1.0E+0	2.084E-2
RA-226	BXTE	0		1/11/2007 1:00:00 PM	**8.7243E-02**	8.349E-02	8.404E-02	3.016E-01	PCI/SA	0.987	8.33E-1	2.502E-1
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**2.3981E-02**	5.362E-02	5.366E-02	2.877E-01	PCI/SA	0.941	1.0E+0	8.349E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.8505E-01**	9.537E-02	9.675E-02	2.775E-01	PCI/SA	0.941	1.0E+0	8.349E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**9.2527E-02**	6.94E-02	6.987E-02	2.775E-01	PCI/SA	0.941	1.0E+0	8.349E-2
33221	**9JK8HD10**			**J6L1101905**	000578	FILTER	12/7/2006 10:00:00	11/21/2006 12:10:00 PM				
ALPHA	BAS7	0		1/3/2007 7:25:46 PM	**5.3825E+00**	1.827E+00	1.935E+00	5.978E+00	PCI/SA	1.0	1.0E+0	2.054E-2
RA-226	BXTE	0		1/11/2007 1:31:00 PM	**1.1362E-01**	1.037E-01	1.043E-01	3.665E-01	PCI/SA	0.968	8.33E-1	2.435E-1
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**3.892E-02**	6.154E-02	6.163E-02	2.864E-01	PCI/SA	1.048	1.0E+0	8.182E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.5017E-01**	8.804E-02	8.903E-02	2.763E-01	PCI/SA	1.048	1.0E+0	8.182E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**1.1263E-01**	6.768E-02	6.84E-02	2.252E-01	PCI/SA	1.048	1.0E+0	8.182E-2
33222	**9JK8HL10**			**J6L1101931**	P-0800	FILTER	12/7/2006 10:00:00	11/14/2006 11:25:00 AM				
ALPHA	BAS7	0		1/5/2007 11:42:09 AM	**2.7268E+00**	1.355E+00	1.394E+00	4.806E+00	PCI/SA	1.0	1.0E+0	2.037E-2
RA-226	BXTE	0		1/11/2007 1:25:00 PM	**2.3392E-01**	8.846E-02	9.174E-02	2.731E-01	PCI/SA	1.06	8.33E-1	2.444E-1
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**2.285E-01**	1.039E-01	1.058E-01	2.492E-01	PCI/SA	0.957	1.0E+0	8.128E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**7.9593E-02**	7.445E-02	7.479E-02	2.929E-01	PCI/SA	0.957	1.0E+0	8.128E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**3.9796E-02**	4.449E-02	4.463E-02	2.387E-01	PCI/SA	0.957	1.0E+0	8.128E-2
33222	**9JK8HP10**			**J6L1101932**	P-0801	FILTER	12/7/2006 10:00:00	11/14/2006 11:45:00 AM				
ALPHA	BAS7	0		1/5/2007 11:42:09 AM	**2.404E+00**	1.189E+00	1.222E+00	4.003E+00	PCI/SA	1.0	1.0E+0	1.982E-2
RA-226	BXTE	0		1/11/2007 1:03:00 PM	**-1.8936E-01**	8.102E-02	8.327E-02	3.628E-01	PCI/SA	1.012	8.33E-1	2.383E-1
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**9.0726E-02**	6.804E-02	6.852E-02	2.721E-01	PCI/SA	1.052	1.0E+0	7.943E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**2.1727E-01**	9.957E-02	1.014E-01	2.606E-01	PCI/SA	1.052	1.0E+0	7.943E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**1.3036E-01**	7.834E-02	7.919E-02	2.606E-01	PCI/SA	1.052	1.0E+0	7.943E-2
33222	**9JK8HQ10**			**J6L1101933**	P-0802	FILTER	12/7/2006 10:00:00	11/14/2006 12:05:00 PM				
ALPHA	BAS7	0		1/5/2007 11:42:09 AM	**2.94E+00**	1.339E+00	1.383E+00	4.606E+00	PCI/SA	1.0	1.0E+0	2.081E-2
RA-226	BXTE	0		1/11/2007 1:33:00 PM	**9.2419E-02**	7.755E-02	7.816E-02	2.736E-01	PCI/SA	1.021	8.33E-1	2.486E-1
TH-228	9NS1	0		12/27/2006 8:02:38 PM	**7.4615E-02**	5.596E-02	5.635E-02	2.238E-01	PCI/SA	0.971	1.0E+0	8.294E-2
TH-230	9NS1	0		12/27/2006 8:02:38 PM	**1.4295E-01**	7.368E-02	7.474E-02	2.144E-01	PCI/SA	0.971	1.0E+0	8.294E-2
TH-232	9NS1	0		12/27/2006 8:02:38 PM	**-1.7869E-02**	3.996E-02	3.999E-02	2.144E-01	PCI/SA	0.971	1.0E+0	8.294E-2
33222	**9JK8HR10**			**J6L1101934**	P-0803	FILTER	12/7/2006 10:00:00	11/14/2006 11:50:00 AM				
ALPHA	BAS7	0		1/5/2007 11:42:09 AM	**-5.3459E-01**	8.827E-01	8.85E-01	4.897E+00	PCI/SA	1.0	1.0E+0	2.057E-2
RA-226	BXTE	0		1/11/2007 2:58:00 PM	**2.5316E-01**	8.141E-02	8.611E-02	2.32E-01	PCI/SA	0.991	8.33E-1	2.462E-1
TH-228	9NS1	0		12/27/2006 8:03:20 PM	**3.6228E-02**	8.495E-02	8.501E-02	3.899E-01	PCI/SA	1.046	1.0E+0	8.183E-2

6347439, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 10,
**Results Inserted | ReTestInserted | Updated | NotInserted => 12 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Matrix / Cnt Uncert	Received Date / Tot Uncert	Sample Date / Mda	Units	Expected	Yield	Volumes	
TH-230	9NS1	0		12/27/2006 8:03:20 PM	**1.735E-01**	7.951E-02	8.094E-02	2.081E-01	PCI/SA		1.046	1.0E+0	8.183E-2
TH-232	9NS1	0		12/27/2006 8:03:20 PM	**-3.4699E-02**	4.25E-02	4.261E-02	2.554E-01	PCI/SA		1.046	1.0E+0	8.183E-2
33222	**9JK8HT10**			**J6L1101935**	000576	FILTER	12/7/2006 10:00:00	11/14/2006 12:10:00 PM					
ALPHA	BAS7	0		1/5/2007 11:42:09 AM	**3.5491E+00**	1.363E+00	1.427E+00	4.302E+00	PCI/SA		1.0	1.0E+0	2.089E-2
RA-226	BXTE	0		1/11/2007 2:51:00 PM	**2.0719E-01**	7.357E-02	7.69E-02	2.134E-01	PCI/SA		1.045	8.33E-1	2.506E-1
TH-228	9NS1	0		12/27/2006 8:03:32 PM	**1.4139E-01**	1.03E-01	1.038E-01	3.805E-01	PCI/SA		0.963	1.0E+0	8.331E-2
TH-230	9NS1	0		12/27/2006 8:03:32 PM	**4.063E-01**	1.185E-01	1.237E-01	2.031E-01	PCI/SA		0.963	1.0E+0	8.331E-2
TH-232	9NS1	0		12/27/2006 8:03:32 PM	**3.3859E-02**	3.785E-02	3.797E-02	2.031E-01	PCI/SA		0.963	1.0E+0	8.331E-2
33221	**JLD0Q1AB**			**J6L130000439**	INTRA-LAB BLANK	FILTER	12/7/2006 10:00:00	11/14/2006 11:25:00 AM					
RA-226	BXTE	0	B	1/11/2007 2:57:00 PM	**3.4532E-05**	1.235E-04	1.235E-04	4.815E-04	PCI/SA		1.057	1.0E+0	1.516E+2
33221	**JLD0Q1CS**			**J6L130000439**	INTRA-LAB CHECK	FILTER	12/7/2006 10:00:00	11/14/2006 11:25:00 AM					
RA-226	BXTE	0	S	1/11/2007 2:57:00 PM	**8.4511E-03**	4.868E-04	9.926E-04	4.15E-04	PCI/SA	9.0463E-03	0.922	1.0E+0	1.517E+2

6347439, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 10,
**Results Inserted | ReTestInserted | Updated | NotInserted => 12 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 6347439

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

1/11/2007 4:15:29 PM

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	**JK8G81AC**	RA-226	**7.61E-02**	**(6.12E-02)**	**U4**	PCI/SA	R	8.81E-02	2.14E-01		108%	
Calc	TE	FILTER	**JK8G91AC**	RA-226	**1.10E+00**	**(1.70E-01)**		PCI/SA	R	8.17E-02	1.98E-01		112%	
Calc	TE	FILTER	**JK8HA1AC**	RA-226	**-3.46E-02**	**(6.86E-02)**	**U4**	PCI/SA	R	1.23E-01	2.81E-01		100%	
Calc	TE	FILTER	**JK8HC1AC**	RA-226	**8.72E-02**	**(8.40E-02)**	**U4**	PCI/SA	R	1.26E-01	3.02E-01		99%	
Calc	TE	FILTER	**JK8HD1AC**	RA-226	**1.14E-01**	**(1.04E-01)**	**U4**	PCI/SA	R	1.65E-01	3.67E-01		97%	
Calc	TE	FILTER	**JK8HL1AC**	RA-226	**2.34E-01**	**(9.17E-02)**		PCI/SA	R	1.19E-01	2.73E-01		106%	
Calc	TE	FILTER	**JK8HP1AC**	RA-226	**-1.89E-01**	**(8.33E-02)**	**U4**	PCI/SA	R	1.64E-01	3.63E-01		101%	
Calc	TE	FILTER	**JK8HQ1AC**	RA-226	**9.24E-02**	**(7.82E-02)**	**U4**	PCI/SA	R	1.19E-01	2.74E-01		102%	
Calc	TE	FILTER	**JK8HR1AC**	RA-226	**2.53E-01**	**(8.61E-02)**		PCI/SA	R	9.80E-02	2.32E-01		99%	
Calc	TE	FILTER	**JK8HT1AC**	RA-226	**2.07E-01**	**(7.69E-02)**		PCI/SA	R	8.88E-02	2.13E-01		105%	
Calc	TE	FILTER	**JLD0Q1AA**	RA-226	**3.45E-05**	**(1.24E-04)**	**U4**	PCI/SA	R	2.06E-04	4.82E-04	**B**	106%	
Calc	TE	FILTER	**JLD0Q1AC**	RA-226	**8.45E-03**	**(9.93E-04)**		PCI/SA	R	1.71E-04	4.15E-04	**S**	92%	93%

SRDL not

P Anderson
1-12-07

Angela Long
1/12/07

() - (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:12
RADCALC v4.8.26
STL Richland

Batch Nbr: 6347439

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

1/11/2007 4:15:30 PM

Detailed Report

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
1	Calc	TE	FILTER	*STLE	Ra226WoBS	**JK8G81AC**	**PCI/SA**		11/21/06 11:30	01/11/07 13:01	12/22/06 14:18	RATA25032	1	0.833 SA	
CID:P-0804LOT:J6L1101901 v4.8.26							FILTER				01/11/07 10:01	RATA25032 Alq	108%	0.238784 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	01/11/07 13:01	RA-226	13	9	ASC2MA	ASC		N	2.3937E+00	1.0000E+00	N	108%	N		1.0535E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(8.067E-02)	(0.000E+00)		9%			(0.000E+00)	3.48851		

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
	01/11/07	RA-226	R	**0.076079**	**U4**	1.10000E-01	0.048413	0.048413	0.833 SA	108%		0.213639		
				(0.061208)		(8.7750E-02)	(0.038848)	(0.038848)	(0.024495)			0.088128		

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	**JK8G91AC**	**PCI/SA**		11/21/06 11:50	01/11/07 12:53	12/22/06 14:18	RATA25033	1	0.833 SA	
CID:P-0805LOT:J6L1101902 v4.8.26							FILTER				01/11/07 09:53	RATA25033 Alq	112%	0.244138 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	01/11/07 12:53	RA-226	93	9	ASC8HC	ASC		N	2.5249E+00	1.0000E+00	N	112%	N		1.0535E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(6.186E-02)	(0.000E+00)		9%			(0.000E+00)	3.412007		

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
	01/11/07	RA-226	R	**1.096645**		1.71000E+00	0.713499	0.713499	0.833 SA	112%		0.198096		
				(0.169685)		(1.9925E-01)	(0.102349)	(0.102349)	(0.024495)			0.081717		

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	**JK8HA1AC**	**PCI/SA**		11/21/06 12:05	01/11/07 12:59	12/22/06 14:18	RATA25034	1	0.833 SA	
CID:P-0806LOT:J6L1101903 v4.8.26							FILTER				01/11/07 09:59	RATA25034 Alq	100%	0.24683 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	01/11/07 12:59	RA-226	14	20	ASCBMB	ASC		N	2.4717E+00	1.0000E+00	N	100%	N		1.0535E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(2.991E-02)	(0.000E+00)		8%			(0.000E+00)	3.374792		

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
	01/11/07	RA-226	R	**-0.034572**	**U4**	-5.33333E-02	-0.022741	-0.022741	0.833 SA	100%		0.281246		
				(0.068552)		(1.0562E-01)	(0.045074)	(0.045074)	(0.024495)			0.123129		

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	**JK8HC1AC**	**PCI/SA**		11/21/06 11:35	01/11/07 13:00	12/22/06 14:18	RATA25035	1	0.833 SA	
CID:P-0807LOT:J6L1101904 v4.8.26							FILTER				01/11/07 10:00	RATA25035 Alq	99%	0.250218 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	01/11/07 13:00	RA-226	13	10	ASCASC	ASC		N	1.7118E+00	1.0000E+00	N	99%	N		1.0535E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(9.244E-02)	(0.000E+00)		8%			(0.000E+00)	3.329092		

() - (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: 6347439

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

1/11/2007 4:15:30 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
	01/11/07	RA-226	R	**0.087243**	U4	9.33333E-02	0.058176	0.058176	0.833 SA	99%		0.301614		
				(0.084036)		(8.9318E-02)	(0.055956)	(0.055956)	(0.01178)			0.12555		

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	**JK8HD1AC**	**PCI/SA**		11/21/06 12:10	01/11/07 13:31	12/22/06 14:18	RATA25036	1	0.833 SA	
CID:000578LOT:J6L1101905 v4.8.26							FILTER				01/11/07 10:31	RATA25036 Alq	97%	0.243537 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	01/11/07 13:31	RA-226	34	31	ASC3HA	ASC		N	2.4113E+00	1.0000E+00	N	97%	N		1.0534E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(4.316E-02)	(0.000E+00)		8%			(0.000E+00)	3.42043		

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
	01/11/07	RA-226	R	**0.113625**	U4	1.63333E-01	0.073744	0.073744	0.833 SA	97%		0.366534		
				(0.104303)		(1.4903E-01)	(0.067559)	(0.067559)	(0.024495)			0.164512		

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	**JK8HL1AC**	**PCI/SA**		11/14/06 11:25	01/11/07 13:25	12/22/06 14:18	RATA25037	1	0.833 SA	
CID:P-0800LOT:J6L1101931 v4.8.26							FILTER				01/11/07 10:25	RATA25037 Alq	106%	0.244429 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	01/11/07 13:25	RA-226	34	19	ASCDUA	ASC		N	2.5119E+00	1.0000E+00	N	106%	N		1.0534E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(8.138E-02)	(0.000E+00)		8%			(0.000E+00)	3.407939		

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
	01/11/07	RA-226	R	**0.233918**		3.63333E-01	0.152372	0.152372	0.833 SA	106%		0.273142		
				(0.091741)		(1.3740E-01)	(0.059102)	(0.059102)	(0.024495)			0.119194		

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	**JK8HP1AC**	**PCI/SA**		11/14/06 11:45	01/11/07 13:03	12/22/06 14:18	RATA25038	1	0.833 SA	
CID:P-0801LOT:J6L1101932 v4.8.26							FILTER				01/11/07 10:31	RATA25038 Alq	101%	0.238346 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	01/11/07 13:03	RA-226	14	34	ASCFAB	ASC		N	2.5018E+00	1.0000E+00	N	101%	N		1.0497E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(5.854E-02)	(0.000E+00)		8%			(0.000E+00)	3.494919		

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
	01/11/07	RA-226	R	**-0.189363**	U4	-2.86667E-01	-0.120279	-0.120279	0.833 SA	101%		0.362803		
				(0.083273)		(1.2266E-01)	(0.052431)	(0.052431)	(0.024495)			0.163597		

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	**JK8HQ1AC**	**PCI/SA**		11/14/06 12:05	01/11/07 13:33	12/22/06 14:18	RATA25039	1	0.833 SA	
CID:P-0802LOT:J6L1101933 v4.8.26							FILTER				01/11/07 10:33	RATA25039 Alq	102%	0.248575 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: 6347439

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

1/11/2007 4:15:30 PM

1	01/11/07 13:33	RA-226	22	18	ASCGSB	ASC		N	2.4088E+00	1.0000E+00	N	102%	N		1.0534E+00	4.5045E-01	1.0000E+00
			50	60			Y		(9.081E-02)	(0.000E+00)		8%			(0.000E+00)	3.351098	

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
	01/11/07	RA-226	R	**0.092419**	**U4**	1.40000E-01	0.061222	0.061222	0.833 SA	102%		0.273552		
				(0.078162)		(1.1747E-01)	(0.051656)	(0.051656)	(0.024495)			0.118957		

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	**JK8HR1AC**	**PCI/SA**		11/14/06 11:50	01/11/07 14:58	12/22/06 14:40	RATA25040	1	0.833 SA	
CID:P-0803LOT:J6L1101934 v4.8.26							FILTER				01/11/07 11:58	RATA25040 Alq	99%	0.246246 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	01/11/07 14:58	RA-226	29	12	ASCLMC	ASC		N	2.4313E+00	1.0000E+00	N	99%	N		1.0531E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.218E-01)	(0.000E+00)		8%			(0.000E+00)	3.382791		

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
	01/11/07	RA-226	R	**0.253159**		3.80000E-01	0.166131	0.166131	0.833 SA	99%		0.232034		
				(0.086108)		(1.2220E-01)	(0.055679)	(0.055679)	(0.024495)			0.098021		

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	**JK8HT1AC**	**PCI/SA**		11/14/06 12:10	01/11/07 14:51	12/22/06 14:40	RATA25041	1	0.833 SA	
CID:000576LOT:J6L1101935 v4.8.26							FILTER				01/11/07 11:51	RATA25041 Alq	105%	0.250646 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	01/11/07 14:51	RA-226	24	10	ASCMRA	ASC		N	2.3844E+00	1.0000E+00	N	105%	N		1.0532E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.044E-01)	(0.000E+00)		8%			(0.000E+00)	3.323416		

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
	01/11/07	RA-226	R	**0.207193**		3.13333E-01	0.138396	0.138396	0.833 SA	105%		0.213366		
				(0.076901)		(1.1126E-01)	(0.050736)	(0.050736)	(0.024495)			0.088816		

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	**JLD0Q1AA**	**PCI/SA**	**B**	11/14/06 11:25	01/11/07 14:57	12/22/06 14:40	RATA25042	1	1.00 SA	
CID:INTRA-LAB BLANKLOT:J6L130000439 v4.8.26							FILTER				01/11/07 11:57	RATA25042 Alq	106%	151.56 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	01/11/07 14:57	RA-226	13	14	ASCNMA	ASC		N	2.4172E+00	1.0000E+00	N	106%	N		1.0532E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.136E-01)	(0.000E+00)		8%			(0.000E+00)	0.006598		

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
	01/11/07	RA-226	R	**3.4532E-05**	**U4**	2.66667E-02	0.011618	0.011618	1.00 SA	106%		0.000482		
				(0.000124)		(9.5336E-02)	(0.041551)	(0.041551)	(0.014142)			0.000206		

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

RecCnt:12

RADCALC v4.8.26
STL Richland

Batch Nbr: 6347439

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

1/11/2007 4:15:31 PM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
12	Calc	TE	FILTER	*STLE	Ra226WoBS	**JLD0Q1AC**	**PCI/SA**	**S**	11/14/06 11:25	01/11/07 14:57	12/22/06 14:40	RASC4300	1	1.00 SA	
CID:INTRA-LAB CHECKLOT:J6L130000439 v4.8.26							FILTER				01/11/07 11:57	RASC4300 Alq	92%	151.72 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	01/11/07 14:57	RA-226	322	9	ASCPMB	ASC		N	2.5237E+00	1.0000E+00	N	92%	N		1.0532E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(9.363E-02)	(0.000E+00)		7%			(0.000E+00)	0.006591		

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
	01/11/07	RA-226	R	**0.008451**		6.29000E+00	2.846355	2.846355	1.00 SA	92%	93%	0.000415		
				(0.000993)		(3.6235E-01)	(0.299816)	(0.299816)	(0.014142)			0.000171		

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

IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration

Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:12

RADCALC v4.8.26

STL Richland

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

Sample ID: JK8G81AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6347439 Activity Unit: PCI/SA Multiplier: 0.9244
Technician: JP

Analysis Size: 0.2388 Analysis Unit: SA

Report Date: 11-JAN-2007 13:51:00.58
First Separation Date: 22-DEC-2006 14:18:00.00
Second Separation Date: 11-JAN-2007 10:01:00.00

Detector ID: 2 Cell ID: 2MA

Bkg Date: 3-JAN-2007 09:58:17.55
Bkg Counts: 000009 Bkg Duration: 000060.0

Count Date: 11-JAN-2007 13:01:00.27
Counts: 000013 Count Duration: 000050.0

End of Report

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

Sample ID: JK8G91AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6347439 Activity Unit: PCI/SA Multiplier: 0.8912
Technician: JP

Analysis Size: 0.2441 Analysis Unit: SA

Report Date: 11-JAN-2007 13:43:00.60
First Separation Date: 22-DEC-2006 14:18:00.00
Second Separation Date: 11-JAN-2007 09:53:00.00

Detector ID: 8 Cell ID: 8HC

Bkg Date: 12-DEC-2006 08:31:29.61
Bkg Counts: 000009 Bkg Duration: 000060.0

Count Date: 11-JAN-2007 12:53:00.28
Counts: 000093 Count Duration: 000050.0

End of Report

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

Sample ID: JK8HA1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6347439 Activity Unit: PCI/SA Multiplier: 1.0004
Technician: JP

Analysis Size: 0.247 Analysis Unit: SA

Report Date: 11-JAN-2007 13:49:00.62
First Separation Date: 22-DEC-2006 14:18:00.00
Second Separation Date: 11-JAN-2007 09:59:00.00

Detector ID: 11 Cell ID: BMB

Bkg Date: 2-DEC-2006 15:15:20.43
Bkg Counts: 000020 Bkg Duration: 000060.0

Count Date: 11-JAN-2007 12:59:00.26
Counts: 000014 Count Duration: 000050.0

End of Report

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

Sample ID: JK8HC1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6347439 Activity Unit: PCI/SA Multiplier: 1.0128
Technician: JP

Analysis Size: 0.2502 Analysis Unit: SA

Report Date: 11-JAN-2007 13:50:00.58
First Separation Date: 22-DEC-2006 14:18:00.00
Second Separation Date: 11-JAN-2007 10:00:00.00

Detector ID: 10 Cell ID: ASC

Bkg Date: 9-JAN-2007 08:45:37.86
Bkg Counts: 000010 Bkg Duration: 000060.0

Count Date: 11-JAN-2007 13:00:00.28
Counts: 000013 Count Duration: 000050.0

End of Report

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

Sample ID: JK8HD1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6347439 Activity Unit: PCI/SA Multiplier: 1.0335
Technician: JP

Analysis Size: 0.2435 Analysis Unit: SA

Report Date: 11-JAN-2007 14:21:00.57
First Separation Date: 22-DEC-2006 14:18:00.00
Second Separation Date: 11-JAN-2007 10:31:00.00

Detector ID: 3 Cell ID: 3HA

Bkg Date: 10-JAN-2007 11:42:45.86
Bkg Counts: 000031 Bkg Duration: 000060.0

Count Date: 11-JAN-2007 13:31:00.27
Counts: 000034 Count Duration: 000050.0

End of Report

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

Sample ID: JK8HL1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6347439 Activity Unit: PCI/SA Multiplier: 0.9435
Technician: JP

Analysis Size: 0.2444 Analysis Unit: SA

Report Date: 11-JAN-2007 14:15:00.73
First Separation Date: 22-DEC-2006 14:18:00.00
Second Separation Date: 11-JAN-2007 10:25:00.00

Detector ID: 13 Cell ID: DUA

Bkg Date: 13-JUL-2006 09:20:42.61
Bkg Counts: 000019 Bkg Duration: 000060.0

Count Date: 11-JAN-2007 13:25:00.33
Counts: 000034 Count Duration: 000050.0

End of Report

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

Sample ID: JK8HP1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6347439 Activity Unit: PCI/SA Multiplier: 0.9885
Technician: JP

Analysis Size: 0.2383 Analysis Unit: SA

Report Date: 11-JAN-2007 13:53:00.58
First Separation Date: 22-DEC-2006 14:18:00.00
Second Separation Date: 11-JAN-2007 10:31

Detector ID: 15 Cell ID: FAB

Bkg Date: 12-OCT-2006 09:05:25.69
Bkg Counts: 000034 Bkg Duration: 000060.0

Count Date: 11-JAN-2007 13:03:00.27
Counts: 000014 Count Duration: 000050.0

End of Report

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

Sample ID: JK8HQ1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6347439 Activity Unit: PCI/SA Multiplier: 0.9795
Technician: JP

Analysis Size: 0.2486 Analysis Unit: SA

Report Date: 11-JAN-2007 14:23:00.59
First Separation Date: 22-DEC-2006 14:18:00.00
Second Separation Date: 11-JAN-2007 10:33:00.00

Detector ID: 16 Cell ID: GSB

Bkg Date: 2-JAN-2007 08:41:51.89
Bkg Counts: 000018 Bkg Duration: 000060.0

Count Date: 11-JAN-2007 13:33:00.27
Counts: 000022 Count Duration: 000050.0

End of Report

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

Sample ID: JK8HR1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6347439 Activity Unit: PCI/SA Multiplier: 1.0093
Technician: JP

Analysis Size: 0.2462 Analysis Unit: SA

Report Date: 11-JAN-2007 15:48:00.64
First Separation Date: 22-DEC-2006 14:40:00.00
Second Separation Date: 11-JAN-2007 11:58:00.00

Detector ID: 20 Cell ID: LMC

Bkg Date: 11-JAN-2007 10:05:52.95
Bkg Counts: 000012 Bkg Duration: 000060.0

Count Date: 11-JAN-2007 14:58:00.29
Counts: 000029 Count Duration: 000050.0

End of Report

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

Sample ID: JK8HT1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6347439 Activity Unit: PCI/SA Multiplier: 0.9565
Technician: JP

Analysis Size: 0.2506 Analysis Unit: SA

Report Date: 11-JAN-2007 15:41:00.77
First Separation Date: 22-DEC-2006 14:40:00.00
Second Separation Date: 11-JAN-2007 11:51:00.00

Detector ID: 21 Cell ID: MRA

Bkg Date: 11-JAN-2007 09:45:37.87
Bkg Counts: 000010 Bkg Duration: 000060.0

Count Date: 11-JAN-2007 14:51:00.36
Counts: 000024 Count Duration: 000050.0

End of Report

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

Sample ID: JLD0Q1AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6347439 Activity Unit: PCI/SA Multiplier: 0.9462
Technician: JP

Analysis Size: 1.0 Analysis Unit: SA

Report Date: 11-JAN-2007 15:47:00.83
First Separation Date: 22-DEC-2006 14:40:00.00
Second Separation Date: 11-JAN-2007 11:57:00.00

Detector ID: 22 Cell ID: NMA

Bkg Date: 9-JAN-2007 08:47:28.40
Bkg Counts: 000014 Bkg Duration: 000060.0

Count Date: 11-JAN-2007 14:57:00.37
Counts: 000013 Count Duration: 000050.0

End of Report

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

Sample ID: JLD0Q1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6347439 Activity Unit: PCI/SA Multiplier: 1.0844
Technician: JP

Analysis Size: 1.0 Analysis Unit: SA

Report Date: 11-JAN-2007 15:47:00.94
First Separation Date: 22-DEC-2006 14:40:00.00
Second Separation Date: 11-JAN-2007 11:57:00.00

Detector ID: 23 Cell ID: PMB

Bkg Date: 11-JAN-2007 09:14:14.01
Bkg Counts: 000009 Bkg Duration: 000060.0

Count Date: 11-JAN-2007 14:57:00.42
Counts: 000322 Count Duration: 000050.0

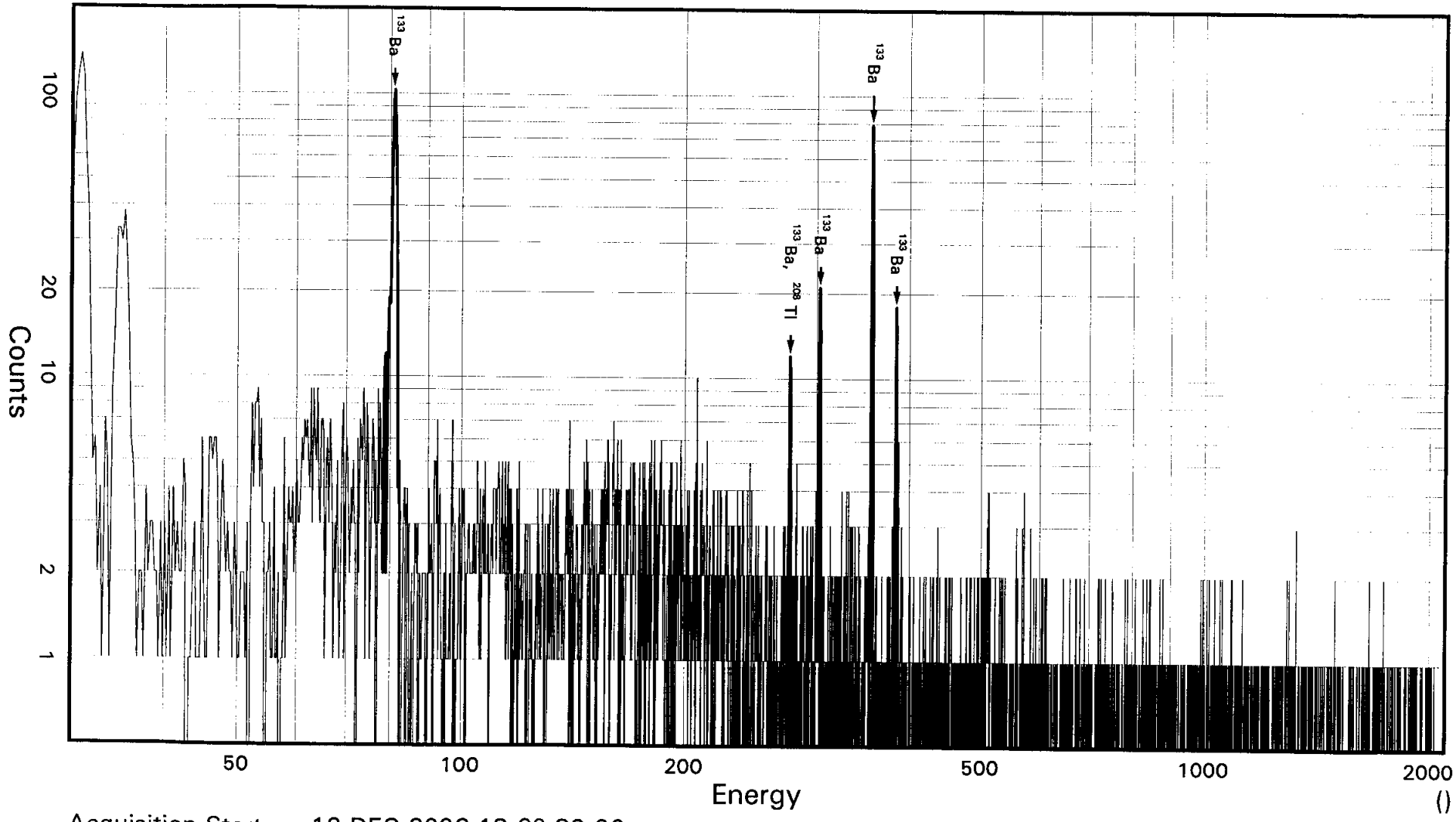
End of Report

STL Richland WA.

BA133

Sample ID: JK8G81AC
Detector ID: GER8 1

Batch ID: 6347439



Acquisition Start: 19-DEC-2006 18:03:39.26
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 3.66137E-01
Slope: 2.49855E-01
Quadrature: 9.45922E-09

SAMPLE IDENTIFICATION: JK8G81AC

CONFIGURATION ID: GER8:JK8G81AC_191261803
TITLE : BA133
SAMPLE ID : JK8G81AC

REPORT DATE: 19-DEC-06
ACQUIRE DATE: 19-DEC-06 18:03:39
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 4-DEC-2006 12:00:00.00
CALIB DATE: 19-DEC-2006 05:17:47.72
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 3.6614E-01 keV
ENERGY SLOPE: 2.4986E-01 keV/C
ENERGY Q COEFF: 9.4592E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.7708E-01 keV
FWHM SLOPE: 2.0132E-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 19-DEC-2006 18:33:58

Configuration : $DISK1:[GER8.SAMPLE]JK8G81AC_191261803.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00
Sample ID : JK8G81AC
Sample type :
Elapsed live time: 0 00:30:00.00
Start energy : 20.35
Sensitivity : 5.00
Critical level : No

Acquisition date : 19-DEC-2006 18:03:39
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.21 0.0%
End energy : 2047.81
Gaussian : 10.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.78	628	121	1.09	121.74	110	20	3.49E-01	5.8	
2	0	35.08	192	38	1.31	138.94	131	17	1.07E-01	10.3	
3	0	80.92	504	44	1.09	322.38	311	20	2.80E-01	5.4	
4	0	276.31	48	3	0.82	1104.38	1096	14	2.68E-02	16.5	
5	0	302.98	84	27	1.26	1211.10	1202	15	4.69E-02	17.2	
6	0	356.00	356	5	1.06	1423.28	1415	19	1.98E-01	5.5	
7	0	383.49	64	0	0.54	1533.28	1524	18	3.56E-02	12.5	

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

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 18:33:58

Configuration : $DISK1:[GER8.SAMPLE]JK8G81AC_191261803.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00
Sample ID : JK8G81AC
Sample type :
Elapsed live time: 0 00:30:00.00
Energy tolerance : 1.50
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 19-DEC-2006 18:03:39
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.21 0.0%
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	504	33.00	2.202E+00	2.314E+03	2.321E+03	7.68
	276.40	48	6.90	2.371E+00	9.818E+02	9.845E+02	17.36
	302.84	84	17.80	2.374E+00	6.657E+02	6.675E+02	17.98
	356.00	356	62.05*	2.376E+00	8.042E+02	8.064E+02	7.70
	383.85	64	8.70	2.375E+00	1.032E+03	1.035E+03	13.61

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JK8G81AC

Acquisition date : 19-DEC-2006 18:03:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.78	628	121	1.09	121.74	110	20	3.49E-01	5.8	1.93E+00	
0	35.08	192	38	1.31	138.94	131	17	1.07E-01	10.3	1.97E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JK8G81AC

Acquisition date : 19-DEC-2006 18:03:39

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	9.962E+02	17.36	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 19-DEC-2006 18:34:00

Configuration : $DISK1:[GER8.SAMPLE]JK8G81AC_191261803.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 : 4-DEC-2006 12:00:00
Sample ID : JK8G81AC
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 : 19-DEC-2006 18:03:39
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.21 0.0%
Confidence level : 5.00 %
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy
WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

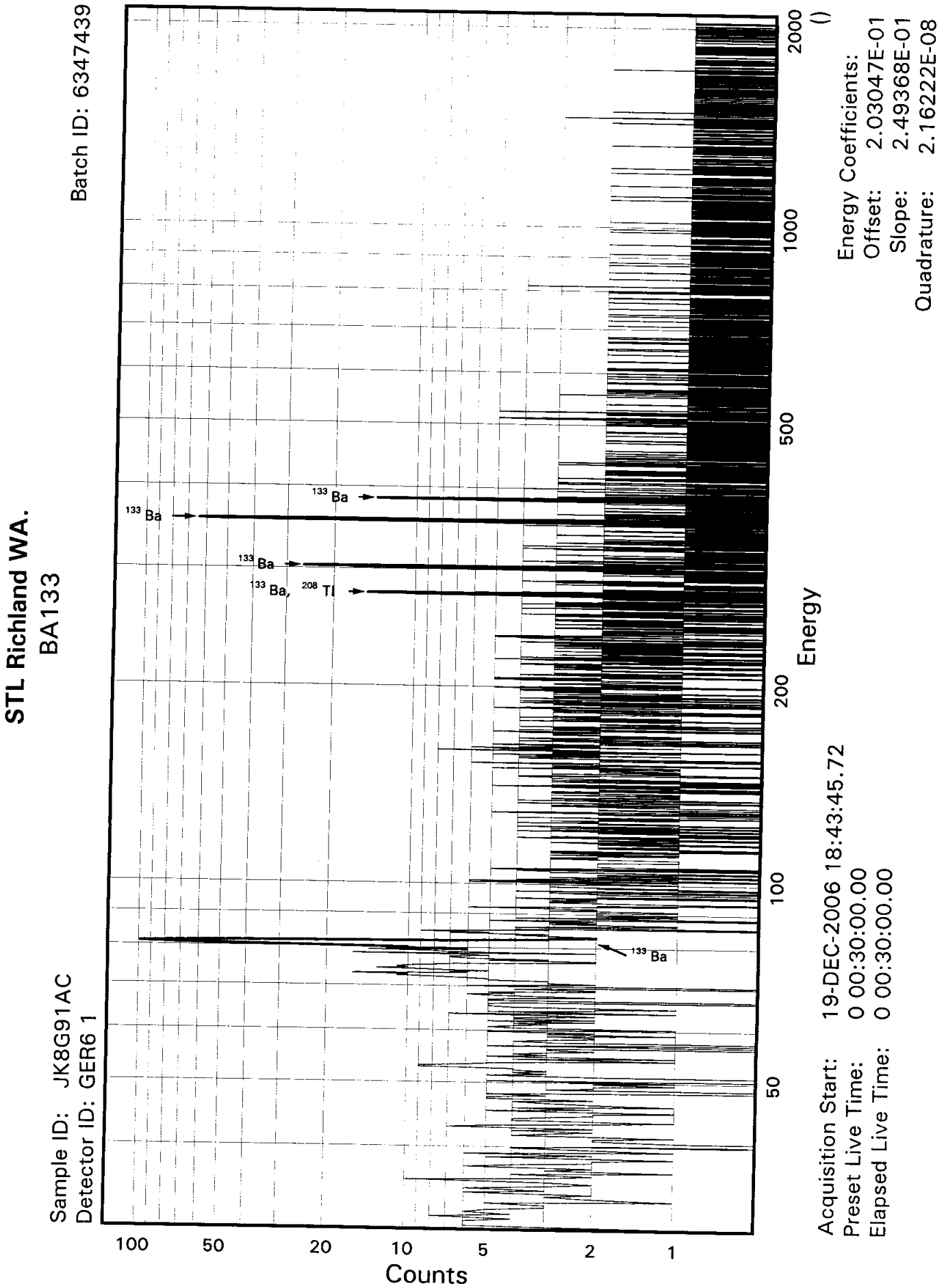
Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	8.064E+02	6.211E+01	4.733E+01	9.467E-01	17.037

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	3.710E+01		6.405E+01	2.725E+02	5.466E+00	0.136
NA-22	3.004E+00		2.130E+00	1.394E+01	2.949E-01	0.216
K-40	-2.134E+01		2.524E+01	1.488E+02	3.188E+00	-0.143
SC-46	4.499E-02		4.063E+00	1.792E+01	3.752E-01	0.003
CR-51	-2.210E+01		1.167E+02	4.333E+02	8.669E+00	-0.051
MN-54	1.311E+00		4.007E+00	1.787E+01	3.665E-01	0.073
CO-57	-1.549E+02		1.189E+02	3.918E+02	8.090E+00	-0.395
CO-58	-1.719E-01		4.181E+00	1.805E+01	3.696E-01	-0.010
FE-59	-3.206E+00		5.652E+00	2.419E+01	5.055E-01	-0.133
CO-60	-1.540E+00		1.543E+00	4.051E+00	8.606E-02	-0.380
ZN-65	-3.982E-01		5.896E+00	2.726E+01	5.705E-01	-0.015
SE-75	1.495E+01		1.242E+01	5.266E+01	1.057E+00	0.284
SR-85	-1.789E+01		1.034E+01	3.377E+01	6.785E-01	-0.530
Y-88	1.712E+00		1.714E+00	1.259E+01	2.763E-01	0.136
NB-94	1.234E+00		3.897E+00	1.731E+01	3.560E-01	0.071
NB-95	4.901E+00		5.741E+00	2.658E+01	5.426E-01	0.184
TC-95M	-2.939E+01		1.990E+01	6.669E+01	1.348E+00	-0.441
ZR-95	-1.300E+01		8.730E+00	2.766E+01	5.642E-01	-0.470
ZRNB-95	8.136E+00		9.937E+00	4.594E+01	9.376E-01	0.177
MO-99	8.227E+02		5.997E+02	2.314E+03	4.770E+01	0.355
RH-101	8.231E+00		1.582E+01	5.960E+01	1.206E+00	0.138
RH-102M	-7.994E+00		5.416E+00	1.813E+01	3.637E-01	-0.441
RU-103	-1.099E+01		7.561E+00	2.534E+01	5.087E-01	-0.434
RU-106DA	-1.410E+01		3.911E+01	1.602E+02	3.239E+00	-0.088
AG-108M	-9.443E+00		6.959E+00	2.280E+01	4.567E-01	-0.414
AG-110M	-7.272E+00		5.611E+00	1.838E+01	3.783E-01	-0.396
SN-113DA	2.716E+01		1.172E+01	5.272E+01	1.055E+00	0.515

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-8.406E+00		7.028E+00	2.419E+01	4.885E-01	-0.347
SB-125	-1.771E+00		1.981E+01	7.673E+01	1.536E+00	-0.023
SN-126DA	1.428E+00		3.181E+00	1.531E+01	3.103E-01	0.093
I-131	1.079E+01		3.044E+01	1.207E+02	2.414E+00	0.089
CS-134	6.712E+00		4.870E+00	2.401E+01	4.912E-01	0.279
CS-137DA	1.927E+00		4.466E+00	2.035E+01	4.125E-01	0.095
LA-138	-7.051E+00		4.089E+00	6.082E+00	1.301E-01	-1.159
CE-139	-3.793E+01		1.742E+01	5.346E+01	1.091E+00	-0.710
BA-140	7.984E+01		5.123E+01	2.340E+02	4.707E+00	0.341
BALA-140	-2.119E+01		1.229E+01	1.964E+01	4.247E-01	-1.079
CE-141	-1.249E+01		3.395E+01	1.189E+02	2.444E+00	-0.105
CE-144	7.415E+01		1.083E+02	4.061E+02	8.397E+00	0.183
CEPR-144	1.494E+02		2.167E+02	8.126E+02	1.680E+01	0.184
PM-144	1.558E+00		4.392E+00	1.930E+01	3.901E-01	0.081
PM-146	1.573E+00		7.384E+00	3.060E+01	6.132E-01	0.051
EU-152	1.124E+01		2.631E+01	1.042E+02	2.084E+00	0.108
EU-154	8.391E+00		5.951E+00	3.893E+01	8.238E-01	0.216
EU-155	1.068E+01		6.137E+01	2.225E+02	4.684E+00	0.048
HF-181	-9.511E+00		9.207E+00	3.274E+01	6.569E-01	-0.291
BI-207	8.762E+00		5.746E+00	2.616E+01	5.272E-01	0.335
TL-208	1.352E+01		5.844E+00	2.925E+01	5.900E-01	0.462
BI-210M	-9.788E+00		1.313E+01	4.743E+01	9.513E-01	-0.206
BI-212	-2.382E+01		7.886E+01	3.059E+02	9.348E+00	-0.078
PB-212	1.212E+01		2.102E+01	8.355E+01	1.680E+00	0.145
BI-214	-3.866E+01		1.481E+01	4.696E+01	9.486E-01	-0.823
PB-214	9.662E+00		2.236E+01	8.932E+01	1.786E+00	0.108
RA-223	-4.524E+01		5.553E+01	1.970E+02	3.951E+00	-0.230
RA-224DA	1.231E+01		2.135E+01	8.483E+01	1.706E+00	0.145
RA-226DA	-3.878E+01		1.480E+01	4.685E+01	9.465E-01	-0.828
AC-227DA	-1.224E+02		8.403E+01	2.807E+02	5.647E+00	-0.436
AC-228	9.322E+00		1.586E+01	7.154E+01	1.475E+00	0.130
RA-228DA	9.370E+00		1.594E+01	7.190E+01	1.483E+00	0.130
TH-228DA	3.822E+01		1.651E+01	8.267E+01	1.667E+00	0.462
TH-232DA	-1.224E+01		6.745E+01	2.483E+02	4.966E+00	-0.049
TH-234DA	2.379E+02		4.949E+02	2.410E+03	5.001E+01	0.099
U-234DA	-1.280E+01		4.482E+01	1.696E+02	3.396E+00	-0.075
U-235HP	-1.424E+02		1.069E+02	3.512E+02	7.228E+00	-0.405
NP-237DA	-7.803E+00		1.830E+01	6.788E+01	1.358E+00	-0.115
U-238DA	9.662E+00		2.236E+01	8.932E+01	1.786E+00	0.108
U-238DHP	3.076E+02		4.908E+02	1.831E+03	4.060E+01	0.168
AM-241HP	-1.345E+01		4.247E+01	1.502E+02	3.357E+00	-0.090


STL Richland WA.
BA133
Batch ID: 6347439
Sample ID: JK8G91AC
Detector ID: GER6 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
()
Energy Coefficients:
Offset: 2.03047E-01
Slope: 2.49368E-01
Quadrature: 2.16222E-08
Acquisition Start: 19-DEC-2006 18:43:45.72
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JK8G91AC

CONFIGURATION ID: GER6:JK8G91AC_191261843
TITLE : BA133
SAMPLE ID : JK8G91AC

REPORT DATE: 19-DEC-06
ACQUIRE DATE: 19-DEC-06 18:43:45
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 4-DEC-2006 12:00:00.00
CALIB DATE: 19-DEC-2006 05:16:54.48
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 2.0305E-01 keV
ENERGY SLOPE: 2.4937E-01 keV/C
ENERGY Q COEFF: 2.1622E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 2.1376E-01 keV
FWHM SLOPE: 6.3154E-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 19-DEC-2006 19:14:02

Configuration : $DISK1:[GER6.SAMPLE]JK8G91AC_191261843.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00
Sample ID : JK8G91AC
Sample type :
Elapsed live time: 0 00:30:00.00
Start energy : 20.15
Sensitivity : 5.00
Critical level : No

Acquisition date : 19-DEC-2006 18:43:45
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.22 0.0%
End energy : 2044.48
Gaussian : 10.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.05	337	77	0.84	324.19	318	15	1.87E-01	8.1	
2	0	276.34	49	18	0.95	1107.25	1097	16	2.75E-02	24.5	
3	0	302.92	116	4	1.04	1213.79	1205	18	6.43E-02	10.2	
4	0	356.02	365	0	1.34	1426.70	1417	20	2.03E-01	5.2	
5	0	384.11	62	4	0.85	1539.30	1530	17	3.42E-02	14.9	

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

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 19:14:03

Configuration : $DISK1:[GER6.SAMPLE]JK8G91AC_191261843.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00
Sample ID : JK8G91AC
Sample type :
Elapsed live time: 0 00:30:00.00
Energy tolerance : 1.50
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 19-DEC-2006 18:43:45
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.22 0.0%
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	337	33.00	2.167E+00	1.571E+03	1.575E+03	9.79
	276.40	49	6.90	2.334E+00	1.024E+03	1.027E+03	25.10
	302.84	116	17.80	2.337E+00	9.272E+02	9.297E+02	11.57
	356.00	365	62.05*	2.339E+00	8.384E+02	8.407E+02	7.51
	383.85	62	8.70	2.338E+00	1.008E+03	1.011E+03	15.84

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JK8G91AC

Acquisition date : 19-DEC-2006 18:43:45

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	1.039E+03	25.10	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 19:14:06

Configuration : $DISK1:[GER6.SAMPLE]JK8G91AC_191261843.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 : 4-DEC-2006 12:00:00
Sample ID : JK8G91AC
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 : 19-DEC-2006 18:43:45
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 ----

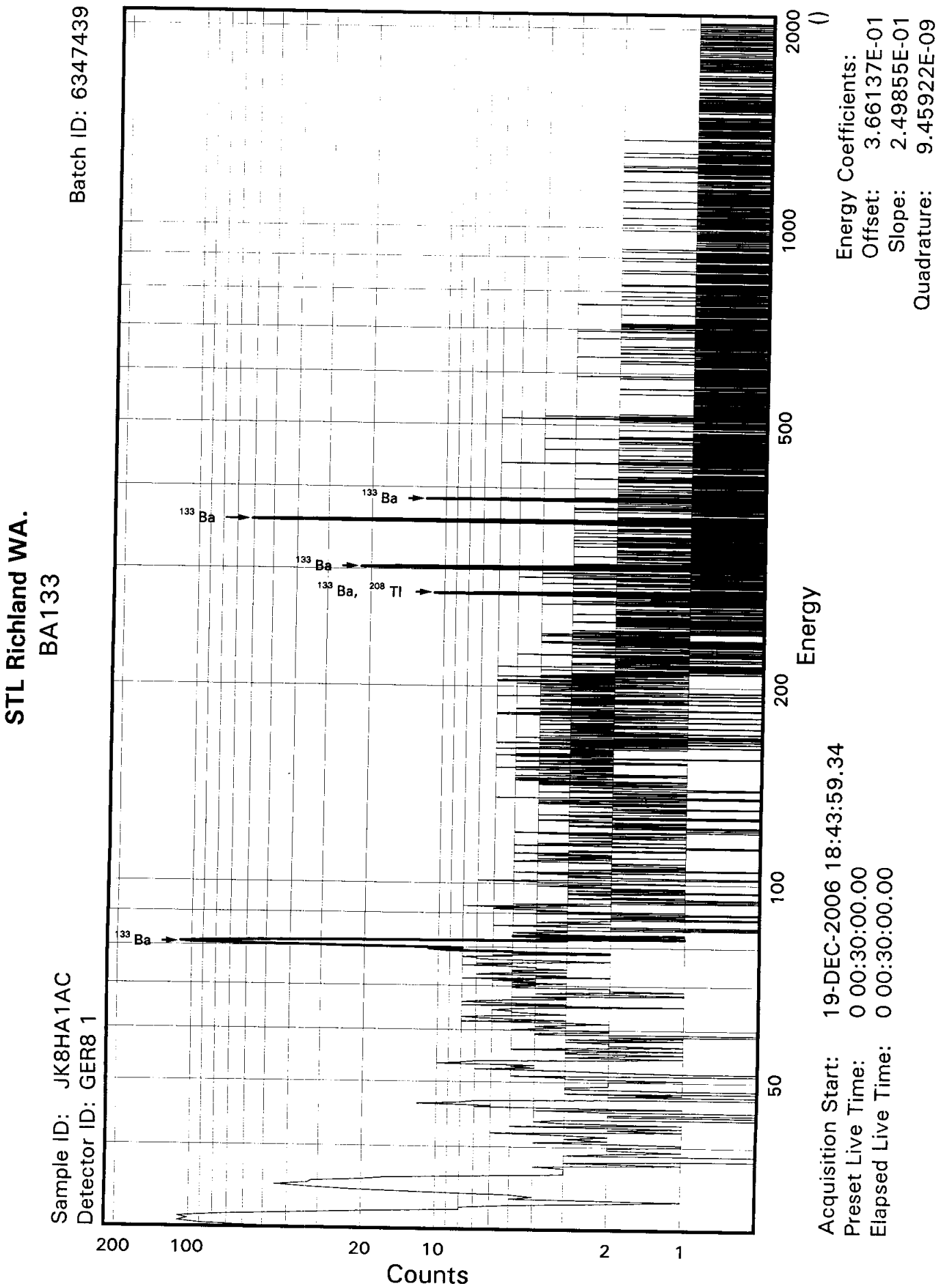
Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	8.407E+02	6.314E+01	4.592E+01	9.184E-01	18.307

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.245E+02		6.924E+01	2.195E+02	4.404E+00	-0.567
NA-22	-2.991E+00		3.717E+00	1.416E+01	2.997E-01	-0.211
K-40	-6.414E+01		6.539E+01	3.050E+02	6.539E+00	-0.210
SC-46	1.692E+00		5.081E+00	2.218E+01	4.644E-01	0.076
CR-51	-1.533E+02		1.155E+02	3.851E+02	7.705E+00	-0.398
MN-54	-1.744E+00		5.519E+00	2.132E+01	4.372E-01	-0.082
CO-57	-7.454E+01		9.302E+01	3.292E+02	6.799E+00	-0.226
CO-58	-1.021E-01		6.408E+00	2.559E+01	5.240E-01	-0.004
FE-59	3.429E+00		8.816E+00	4.013E+01	8.390E-01	0.085
CO-60	-6.184E+00		4.353E+00	1.413E+01	3.003E-01	-0.438
ZN-65	1.019E+01		1.201E+01	5.184E+01	1.085E+00	0.197
SE-75	1.604E+01		1.543E+01	6.138E+01	1.231E+00	0.261
SR-85	-2.417E+01		1.194E+01	3.759E+01	7.552E-01	-0.643
Y-88	6.959E+00		3.500E+00	2.088E+01	4.587E-01	0.333
NB-94	-1.709E+00		3.971E+00	1.577E+01	3.242E-01	-0.108
NB-95	2.171E+00		7.056E+00	2.959E+01	6.040E-01	0.073
TC-95M	1.393E+01		1.908E+01	7.329E+01	1.482E+00	0.190
ZR-95	-1.107E+01		8.816E+00	3.026E+01	6.174E-01	-0.366
ZRNB-95	3.405E+00		1.224E+01	5.123E+01	1.046E+00	0.066
MO-99	4.042E+02		4.561E+02	1.822E+03	3.756E+01	0.222
RH-101	2.673E+01		1.521E+01	6.111E+01	1.237E+00	0.437
RH-102M	8.225E+00		6.216E+00	2.771E+01	5.557E-01	0.297
RU-103	-6.865E-01		8.682E+00	3.414E+01	6.855E-01	-0.020
RU-106DA	-2.559E+01		5.620E+01	2.152E+02	4.350E+00	-0.119
AG-108M	-1.541E+01		8.970E+00	2.849E+01	5.706E-01	-0.541
AG-110M	3.365E-01		6.561E+00	2.762E+01	5.686E-01	0.012
SN-113DA	-1.306E+01		1.265E+01	4.400E+01	8.804E-01	-0.297

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-1.432E+01		6.292E+00	1.749E+01	3.532E-01	-0.819
SB-125	-2.926E+01		2.452E+01	8.296E+01	1.661E+00	-0.353
SN-126DA	-1.530E+00		5.236E+00	2.037E+01	4.131E-01	-0.075
I-131	4.795E+01		3.220E+01	1.392E+02	2.783E+00	0.345
CS-134	-2.325E-03		5.998E+00	2.440E+01	4.991E-01	0.000
CS-137DA	1.664E+00		5.110E+00	2.226E+01	4.512E-01	0.075
LA-138	1.825E-01		6.403E+00	2.745E+01	5.874E-01	0.007
CE-139	5.918E-01		1.446E+01	5.260E+01	1.074E+00	0.011
BA-140	-3.903E+01		3.988E+01	1.427E+02	2.872E+00	-0.273
BALA-140	-8.251E+00		1.990E+01	7.954E+01	1.721E+00	-0.104
CE-141	5.578E+01		2.619E+01	1.108E+02	2.279E+00	0.503
CE-144	1.100E+02		8.662E+01	3.535E+02	7.311E+00	0.311
CEPR-144	2.189E+02		1.731E+02	7.065E+02	1.461E+01	0.310
PM-144	-2.810E+00		4.171E+00	1.610E+01	3.254E-01	-0.175
PM-146	-7.545E+00		9.329E+00	3.309E+01	6.632E-01	-0.228
EU-152	2.063E+01		2.703E+01	1.092E+02	2.183E+00	0.189
EU-154	-8.353E+00		1.038E+01	3.956E+01	8.372E-01	-0.211
EU-155	6.370E+01		4.768E+01	1.904E+02	4.009E+00	0.335
HF-181	9.268E+00		8.200E+00	3.691E+01	7.406E-01	0.251
BI-207	-4.493E+00		6.604E+00	2.372E+01	4.781E-01	-0.189
TL-208	-1.138E+00		7.101E+00	2.832E+01	5.712E-01	-0.040
BI-210M	6.271E+00		1.804E+01	6.772E+01	1.358E+00	0.093
BI-212	2.585E+00		5.296E+01	2.372E+02	7.249E+00	0.011
PB-212	7.873E+01		2.601E+01	1.077E+02	2.166E+00	0.731
BI-214	2.922E+01		1.363E+01	6.298E+01	1.272E+00	0.464
PB-214	2.630E+01		2.044E+01	7.783E+01	1.557E+00	0.338
RA-223	1.258E+01		6.139E+01	2.367E+02	4.747E+00	0.053
RA-224DA	7.994E+01		2.641E+01	1.094E+02	2.199E+00	0.731
RA-226DA	2.935E+01		1.364E+01	6.306E+01	1.274E+00	0.465
AC-227DA	-1.084E+02		9.411E+01	3.163E+02	6.364E+00	-0.343
AC-228	1.632E+01		1.750E+01	7.962E+01	1.642E+00	0.205
RA-228DA	1.641E+01		1.759E+01	8.002E+01	1.650E+00	0.205
TH-228DA	-3.215E+00		2.007E+01	8.004E+01	1.614E+00	-0.040
TH-232DA	4.302E+01		5.219E+01	2.164E+02	4.327E+00	0.199
TH-234DA	2.009E+02		7.630E+02	3.207E+03	6.658E+01	0.063
U-234DA	-1.110E+01		3.303E+01	1.252E+02	2.507E+00	-0.089
U-235HP	-2.112E+02		9.381E+01	2.898E+02	5.964E+00	-0.729
NP-237DA	2.668E+01		2.200E+01	9.043E+01	1.810E+00	0.295
U-238DA	2.630E+01		2.044E+01	7.783E+01	1.557E+00	0.338
U-238DHP	-1.035E+02		3.250E+02	1.159E+03	2.571E+01	-0.089
AM-241HP	-3.253E+01		3.246E+01	1.092E+02	2.442E+00	-0.298


STL Richland WA.
BA133
Batch ID: 6347439
Sample ID: JK8HA1AC
Detector ID: GER8 1
133 Ba
133 Ba
133 Ba
133 Ba, 208 Tl
133 Ba
Counts
200
100
20
10
2
1
Energy
50
100
200
500
1000
2000
()
Energy Coefficients:
Offset: 3.66137E-01
Slope: 2.49855E-01
Quadrature: 9.45922E-09
Acquisition Start: 19-DEC-2006 18:43:59.34
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JK8HA1AC

CONFIGURATION ID: GER8:JK8HA1AC_191261843
TITLE : BA133
SAMPLE ID : JK8HA1AC

REPORT DATE: 19-DEC-06
ACQUIRE DATE: 19-DEC-06 18:43:59
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 4-DEC-2006 12:00:00.00
CALIB DATE: 19-DEC-2006 05:17:47.72
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 3.6614E-01 keV
ENERGY SLOPE: 2.4986E-01 keV/C
ENERGY Q COEFF: 9.4592E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.7708E-01 keV
FWHM SLOPE: 2.0132E-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 19-DEC-2006 19:14:18

Configuration : $DISK1:[GER8.SAMPLE]JK8HA1AC_191261843.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00
Sample ID : JK8HA1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Start energy : 20.35
Sensitivity : 5.00
Critical level : No

Acquisition date : 19-DEC-2006 18:43:59
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.21 0.0%
End energy : 2047.81
Gaussian : 10.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	30.83	593	97	1.27	121.94	110	43	3.29E-01	5.3	1.01E+00
2	2	35.02	206	22	1.33	138.70	110	43	1.14E-01	11.7	
3	0	46.34*	18	11	1.04	184.00	178	11	1.00E-02	50.1	
4	0	80.91	500	53	1.02	322.35	312	21	2.78E-01	5.8	
5	0	276.87	33	22	1.15	1106.59	1097	14	1.86E-02	33.9	
6	0	302.83	126	9	1.50	1210.52	1202	17	6.97E-02	10.4	
7	0	355.98	329	14	1.31	1423.22	1414	18	1.83E-01	6.1	
8	0	383.96	38	9	0.58	1535.18	1529	12	2.11E-02	22.6	

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

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 19:14:19

Configuration : $DISK1:[GER8.SAMPLE]JK8HA1AC_191261843.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00
Sample ID : JK8HA1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Energy tolerance : 1.50
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 19-DEC-2006 18:43:59
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.21 0.0%
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	500	33.00	2.202E+00	2.295E+03	2.302E+03	7.92
	276.40	33	6.90	2.371E+00	6.818E+02	6.836E+02	34.31
	302.84	126	17.80	2.374E+00	9.901E+02	9.929E+02	11.71
	356.00	329	62.05*	2.376E+00	7.449E+02	7.470E+02	8.14
	383.85	38	8.70	2.375E+00	6.128E+02	6.145E+02	23.28

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JK8HA1AC

Acquisition date : 19-DEC-2006 18:43:59

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	30.83	593	97	1.27	121.94	110	43	3.29E-01	5.3	1.93E+00	
2	35.02	206	22	1.33	138.70	110	43	1.14E-01	11.7	1.97E+00	
0	46.34	18	11	1.04	184.00	178	11	1.00E-02	50.1	2.06E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JK8HA1AC

Acquisition date : 19-DEC-2006 18:43:59

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	6.918E+02	34.31	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 19-DEC-2006 19:14:20

Configuration : $DISK1:[GER8.SAMPLE]JK8HA1AC_191261843.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 : 4-DEC-2006 12:00:00
Sample ID : JK8HA1AC
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 : 19-DEC-2006 18:43:59
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.21 0.0%
Confidence level : 5.00 %
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy
WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.470E+02	6.078E+01	4.298E+01	8.597E-01	17.378

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	8.652E+01		7.026E+01	3.083E+02	6.185E+00	0.281
NA-22	2.977E+00		3.022E+00	1.616E+01	3.419E-01	0.184
K-40	-4.882E+01		3.329E+01	1.516E+02	3.248E+00	-0.322
SC-46	4.500E-02		4.064E+00	1.793E+01	3.753E-01	0.003
CR-51	-4.152E+01		1.029E+02	3.804E+02	7.610E+00	-0.109
MN-54	-4.762E+00		4.059E+00	1.381E+01	2.833E-01	-0.345
CO-57	-7.982E+01		1.083E+02	3.726E+02	7.693E+00	-0.214
CO-58	3.185E+00		4.812E+00	2.199E+01	4.502E-01	0.145
FE-59	-1.620E+01		8.657E+00	2.420E+01	5.058E-01	-0.670
CO-60	-7.492E-01		2.871E+00	1.274E+01	2.707E-01	-0.059
ZN-65	5.643E+00		7.288E+00	3.572E+01	7.475E-01	0.158
SE-75	-3.736E+00		1.303E+01	4.880E+01	9.790E-01	-0.077
SR-85	-1.294E+01		1.022E+01	3.485E+01	7.002E-01	-0.371
Y-88	-1.719E+00		1.721E+00	4.627E+00	1.016E-01	-0.371
NB-94	5.631E+00		4.141E+00	2.033E+01	4.180E-01	0.277
NB-95	-8.036E+00		5.603E+00	1.801E+01	3.676E-01	-0.446
TC-95M	-2.448E-01		2.218E+01	8.073E+01	1.632E+00	-0.003
ZR-95	6.042E+00		6.148E+00	3.285E+01	6.700E-01	0.184
ZRNB-95	-1.400E+01		9.765E+00	3.139E+01	6.406E-01	-0.446
MO-99	-5.159E+02		5.888E+02	2.001E+03	4.125E+01	-0.258
RH-101	3.748E+00		1.553E+01	5.782E+01	1.170E+00	0.065
RH-102M	6.646E-01		5.821E+00	2.372E+01	4.758E-01	0.028
RU-103	-3.707E+00		6.337E+00	2.467E+01	4.952E-01	-0.150
RU-106DA	6.754E+01		5.252E+01	2.420E+02	4.892E+00	0.279
AG-108M	-1.869E+01		8.756E+00	2.603E+01	5.213E-01	-0.718
AG-110M	-8.725E+00		4.388E+00	5.609E+00	1.154E-01	-1.556
SN-113DA	1.117E+01		1.153E+01	4.766E+01	9.536E-01	0.234

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

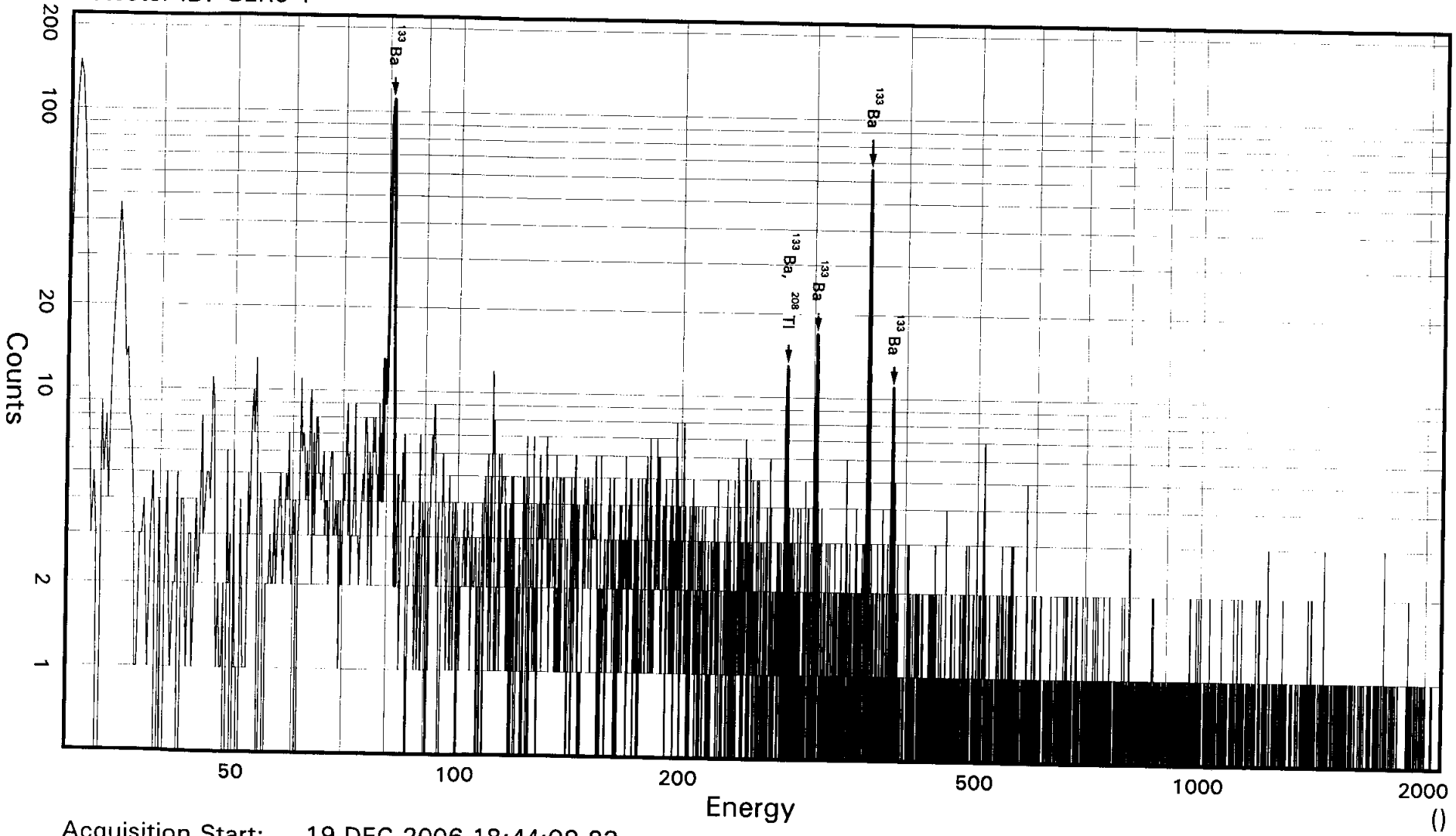
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	8.086E+00		4.465E+00	2.377E+01	4.800E-01	0.340
SB-125	8.130E+00		1.976E+01	8.059E+01	1.614E+00	0.101
SN-126DA	5.701E+00		4.936E+00	2.256E+01	4.574E-01	0.253
I-131	-4.464E+01		2.740E+01	8.688E+01	1.738E+00	-0.514
CS-134	-1.564E-01		4.238E+00	1.833E+01	3.749E-01	-0.009
CS-137DA	-8.315E+00		6.481E+00	2.191E+01	4.441E-01	-0.380
LA-138	-7.152E+00		5.226E+00	1.655E+01	3.540E-01	-0.432
CE-139	1.332E-01		1.610E+01	5.740E+01	1.171E+00	0.002
BA-140	-9.862E+00		3.812E+01	1.560E+02	3.138E+00	-0.063
BALA-140	-1.395E+01		1.427E+01	5.351E+01	1.157E+00	-0.261
CE-141	6.023E+00		3.806E+01	1.360E+02	2.797E+00	0.044
CE-144	9.987E+01		1.062E+02	4.048E+02	8.370E+00	0.247
CEPR-144	2.020E+02		2.126E+02	8.105E+02	1.676E+01	0.249
PM-144	-2.819E+00		4.621E+00	1.768E+01	3.574E-01	-0.159
PM-146	-1.201E+01		8.144E+00	2.596E+01	5.203E-01	-0.463
EU-152	4.587E+00		2.447E+01	9.617E+01	1.924E+00	0.048
EU-154	8.315E+00		8.441E+00	4.513E+01	9.550E-01	0.184
EU-155	-7.858E+01		5.791E+01	1.916E+02	4.034E+00	-0.410
HF-181	4.048E+00		8.895E+00	3.706E+01	7.436E-01	0.109
BI-207	2.803E+00		4.491E+00	2.016E+01	4.064E-01	0.139
TL-208	-1.365E+00		5.513E+00	2.209E+01	4.456E-01	-0.062
BI-210M	-1.843E+00		1.600E+01	5.995E+01	1.203E+00	-0.031
BI-212	6.145E+01		4.805E+01	2.566E+02	7.841E+00	0.240
PB-212	1.426E+01		2.291E+01	8.984E+01	1.807E+00	0.159
BI-214	-7.195E-01		9.672E+00	4.593E+01	9.278E-01	-0.016
PB-214	-3.105E+01		2.221E+01	7.386E+01	1.477E+00	-0.420
RA-223	1.761E+01		5.933E+01	2.289E+02	4.590E+00	0.077
RA-224DA	1.448E+01		2.326E+01	9.122E+01	1.835E+00	0.159
RA-226DA	-7.197E-01		9.672E+00	4.593E+01	9.279E-01	-0.016
AC-227DA	-6.622E+01		9.438E+01	3.322E+02	6.683E+00	-0.199
AC-228	-1.937E+01		1.428E+01	4.846E+01	9.994E-01	-0.400
RA-228DA	-1.947E+01		1.435E+01	4.871E+01	1.004E+00	-0.400
TH-228DA	-3.857E+00		1.558E+01	6.243E+01	1.259E+00	-0.062
TH-232DA	-2.225E+01		5.599E+01	2.065E+02	4.131E+00	-0.108
TH-234DA	4.480E+02		3.177E+02	2.079E+03	4.314E+01	0.216
U-234DA	-9.218E+01		4.795E+01	1.579E+02	3.162E+00	-0.584
U-235HP	2.275E+02		1.208E+02	4.699E+02	9.669E+00	0.484
NP-237DA	-2.191E+01		2.081E+01	7.172E+01	1.435E+00	-0.306
U-238DA	-3.105E+01		2.221E+01	7.386E+01	1.477E+00	-0.420
U-238DHP	-1.784E+02		4.699E+02	1.700E+03	3.772E+01	-0.105
AM-241HP	-7.700E+01		4.198E+01	1.365E+02	3.051E+00	-0.564

STL Richland WA.

BA133

Sample ID: JK8HC1AC
Detector ID: GER5 1

Batch ID: 6347439



Acquisition Start: 19-DEC-2006 18:44:09.83
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -3.40410E-01
Slope: 2.49448E-01
Quadrature: -2.90515E-09

SAMPLE IDENTIFICATION: JK8HC1AC

CONFIGURATION ID: GER5:JK8HC1AC_191261844
TITLE : BA133
SAMPLE ID : JK8HC1AC

REPORT DATE: 19-DEC-06
ACQUIRE DATE: 19-DEC-06 18:44:09
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 4-DEC-2006 12:00:00.00
CALIB DATE: 19-DEC-2006 05:17:09.30
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.3404E+00 keV
ENERGY SLOPE: 2.4945E-01 keV/C
ENERGY Q COEFF: -.2905E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 7.0685E-01 keV
FWHM SLOPE: 3.0233E-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 19-DEC-2006 19:14:21

Configuration : RDND06$DKA100:[GER5.SAMPLE]JK8HC1AC_191261844.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00
Sample ID : JK8HC1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Start energy : 19.62
Sensitivity : 5.00
Critical level : No

Acquisition date : 19-DEC-2006 18:44:09
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.23 0.0%
End energy : 2042.94
Gaussian : 10.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.97	550	125	0.92	125.52	119	16	3.06E-01	6.4	
2	0	35.15	217	21	0.90	142.26	134	17	1.21E-01	8.4	
3	0	53.25	36	17	0.94	214.82	209	10	1.99E-02	27.4	
4	0	81.02	425	77	0.89	326.17	316	17	2.36E-01	6.7	
5	0	276.47	39	20	1.08	1109.71	1102	14	2.17E-02	29.5	
6	0	302.74	92	0	1.42	1215.03	1206	16	5.11E-02	10.4	
7	0	355.98	286	9	0.95	1428.48	1420	17	1.59E-01	6.4	
8	0	383.54	56	0	0.98	1538.96	1530	17	3.11E-02	13.4	

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

VMS Nuclide Identification Report V3.1 Generated 19-DEC-2006 19:14:22

Configuration : RDND06$DKA100:[GER5.SAMPLE]JK8HC1AC_191261844.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00
Sample ID : JK8HC1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Energy tolerance : 1.50
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 19-DEC-2006 18:44:09
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.23 0.0%
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	425	33.00	1.924E+00	2.231E+03	2.238E+03	8.63
	276.40	39	6.90	2.077E+00	9.076E+02	9.101E+02	29.99
	302.84	92	17.80	2.080E+00	8.284E+02	8.307E+02	11.73
	356.00	286	62.05*	2.082E+00	7.368E+02	7.388E+02	8.34
	383.85	56	8.70	2.081E+00	1.031E+03	1.034E+03	14.41

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JK8HC1AC

Acquisition date : 19-DEC-2006 18:44:09

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.97	550	125	0.92	125.52	119	16	3.06E-01	6.4	1.68E+00	
0	35.15	217	21	0.90	142.26	134	17	1.21E-01	8.4	1.72E+00	
0	53.25	36	17	0.94	214.82	209	10	1.99E-02	27.4	1.83E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JK8HC1AC

Acquisition date : 19-DEC-2006 18:44:09

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	9.209E+02	29.99	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 19-DEC-2006 19:14:23

Configuration : RDND06$DKA100:[GER5.SAMPLE]JK8HC1AC_191261844.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 : 4-DEC-2006 12:00:00
Sample ID : JK8HC1AC
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 : 19-DEC-2006 18:44:09
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.23 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	7.388E+02	6.159E+01	4.951E+01	9.901E-01	14.924

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.059E+02		8.727E+01	2.938E+02	5.894E+00	-0.361
NA-22	3.476E+00		3.421E+00	1.848E+01	3.918E-01	0.188
NA-24	-3.552E+01		4.367E+01	Half-Life too short		
K-40	-5.276E+01		6.392E+01	3.139E+02	6.743E+00	-0.168
SC-46	9.461E+00		5.091E+00	2.685E+01	5.629E-01	0.352
CR-51	-8.919E+01		1.327E+02	4.816E+02	9.635E+00	-0.185
MN-54	-1.363E+00		4.374E+00	1.829E+01	3.755E-01	-0.074
CO-57	-1.511E+02		1.419E+02	4.718E+02	9.753E+00	-0.320
CO-58	-2.281E+00		5.213E+00	2.062E+01	4.226E-01	-0.111
FE-59	7.314E+00		9.309E+00	4.515E+01	9.452E-01	0.162
CO-60	0.000E+00		8.570E-02	4.633E+00	9.864E-02	0.000
ZN-65	-3.208E+01		1.083E+01	9.333E+00	1.956E-01	-3.437
SE-75	2.952E+01		1.747E+01	7.254E+01	1.455E+00	0.407
SR-85	-4.522E+01		1.301E+01	3.294E+01	6.620E-01	-1.373
Y-88	3.921E+00		2.781E+00	1.819E+01	4.007E-01	0.216
NB-94	-1.834E+00		4.181E+00	1.713E+01	3.525E-01	-0.107
NB-95	2.078E+00		5.021E+00	2.385E+01	4.871E-01	0.087
TC-95M	-4.747E+01		2.462E+01	7.910E+01	1.600E+00	-0.600
ZR-95	-6.059E+00		1.028E+01	3.934E+01	8.030E-01	-0.154
ZRNB-95	3.622E+00		8.750E+00	4.156E+01	8.488E-01	0.087
MO-99	-5.775E+02		6.987E+02	2.363E+03	4.875E+01	-0.244
RH-101	1.952E+01		2.027E+01	7.646E+01	1.548E+00	0.255
RH-102M	-8.753E-01		6.859E+00	2.665E+01	5.346E-01	-0.033
RU-103	-2.095E+01		1.083E+01	3.258E+01	6.543E-01	-0.643
RU-106DA	-3.238E+01		4.103E+01	1.578E+02	3.191E+00	-0.205
AG-108M	-1.070E+01		9.155E+00	3.116E+01	6.240E-01	-0.344
AG-110M	3.244E-01		6.592E+00	2.846E+01	5.863E-01	0.011

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

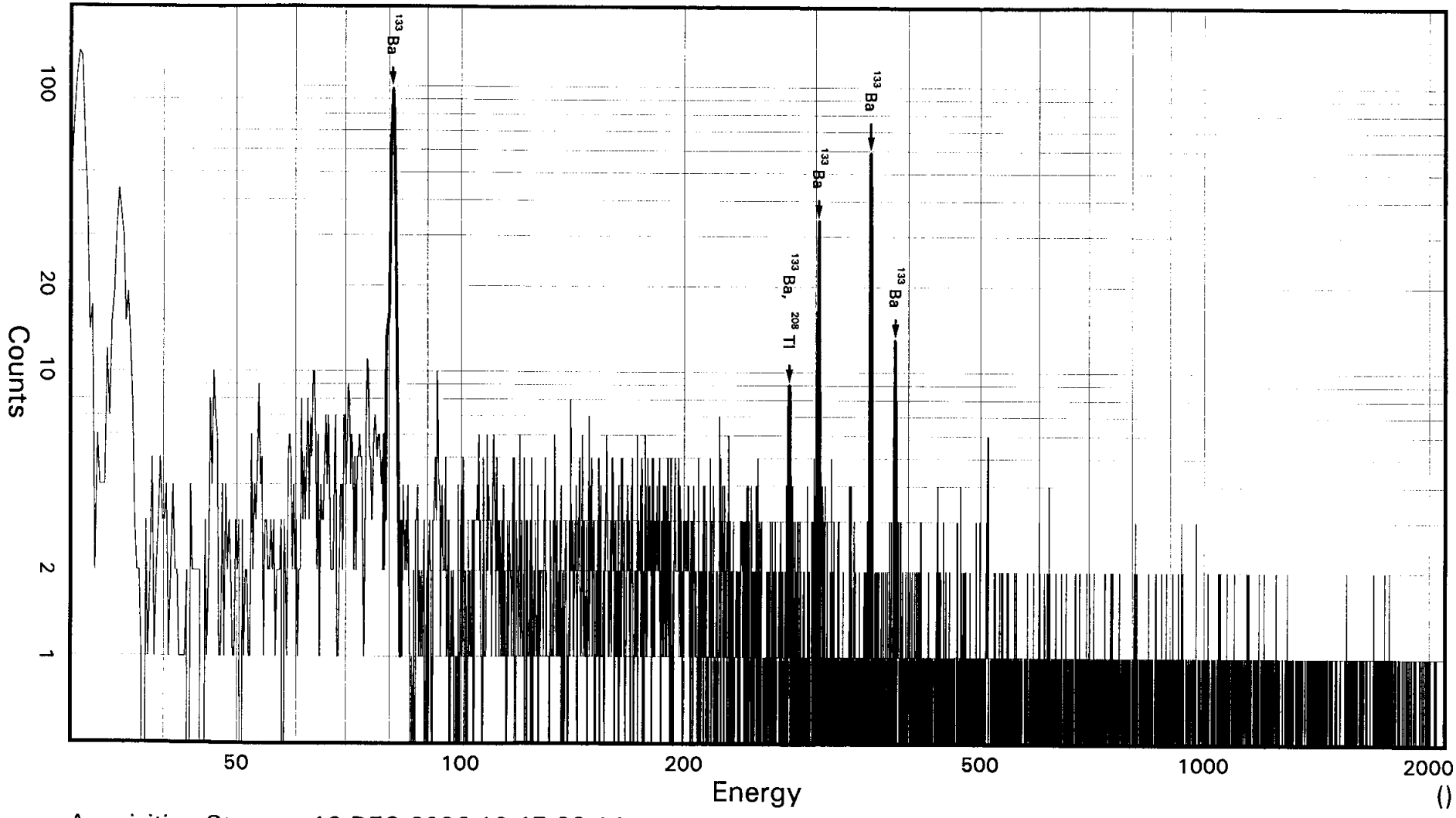
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	4.804E-01		1.256E+01	4.899E+01	9.802E-01	0.010
SB-124	-1.532E+00		6.985E+00	2.777E+01	5.610E-01	-0.055
SB-125	-2.347E+01		2.055E+01	7.099E+01	1.422E+00	-0.331
SN-126DA	-3.188E+00		5.122E+00	1.950E+01	3.956E-01	-0.163
I-131	3.337E+00		3.693E+01	1.435E+02	2.870E+00	0.023
CS-134	5.839E+00		3.386E+00	2.094E+01	4.286E-01	0.279
CS-137DA	-3.695E+00		7.115E+00	2.691E+01	5.457E-01	-0.137
LA-138	2.574E+00		2.578E+00	1.893E+01	4.060E-01	0.136
CE-139	-1.351E+01		1.726E+01	6.071E+01	1.240E+00	-0.223
BA-140	-1.083E+02		6.785E+01	2.138E+02	4.302E+00	-0.506
BALA-140	3.375E-01		1.154E+01	6.124E+01	1.328E+00	0.006
LA-140	1.849E-05		6.335E-04	Half-Life too short		
CE-141	-1.879E+01		3.997E+01	1.379E+02	2.838E+00	-0.136
CE-144	6.784E+01		1.411E+02	5.130E+02	1.062E+01	0.132
CEPR-144	1.370E+02		2.822E+02	1.027E+03	2.125E+01	0.133
PM-144	5.339E+00		4.466E+00	2.225E+01	4.499E-01	0.240
PM-146	6.148E+00		1.076E+01	4.422E+01	8.863E-01	0.139
EU-152	5.694E+01		3.324E+01	1.419E+02	2.839E+00	0.401
EU-154	9.709E+00		9.554E+00	5.161E+01	1.094E+00	0.188
EU-155	-2.335E+01		6.076E+01	2.156E+02	4.549E+00	-0.108
HF-181	1.527E+01		1.298E+01	5.370E+01	1.077E+00	0.284
BI-207	2.347E+00		4.928E+00	2.206E+01	4.447E-01	0.106
TL-208	2.041E+01		1.013E+01	4.436E+01	8.949E-01	0.460
BI-210M	-5.279E+01		2.106E+01	6.135E+01	1.231E+00	-0.860
BI-212	-4.142E+01		8.088E+01	3.096E+02	9.465E+00	-0.134
PB-212	1.587E+01		2.779E+01	1.107E+02	2.226E+00	0.143
BI-214	3.515E+01		1.316E+01	6.574E+01	1.328E+00	0.535
PB-214	2.128E+01		2.457E+01	9.489E+01	1.898E+00	0.224
RA-223	1.083E+02		7.165E+01	2.933E+02	5.882E+00	0.369
RA-224DA	1.611E+01		2.822E+01	1.124E+02	2.260E+00	0.143
RA-226DA	3.515E+01		1.316E+01	6.574E+01	1.328E+00	0.535
AC-227DA	-2.143E+02		1.086E+02	3.427E+02	6.896E+00	-0.625
AC-228	-2.100E+00		1.916E+01	8.467E+01	1.748E+00	-0.025
RA-228DA	-2.110E+00		1.925E+01	8.510E+01	1.757E+00	-0.025
TH-228DA	5.769E+01		2.864E+01	1.254E+02	2.529E+00	0.460
TH-232DA	5.166E+01		7.492E+01	2.980E+02	5.960E+00	0.173
TH-234DA	1.024E+03		7.262E+02	3.608E+03	7.498E+01	0.284
U-234DA	5.921E+01		5.540E+01	2.167E+02	4.340E+00	0.273
U-235HP	2.838E+02		1.245E+02	5.050E+02	1.040E+01	0.562
NP-237DA	-3.816E+00		2.346E+01	8.665E+01	1.734E+00	-0.044
U-238DA	2.128E+01		2.457E+01	9.489E+01	1.898E+00	0.224
U-238DHP	-1.552E+02		5.113E+02	1.923E+03	4.282E+01	-0.081
AM-241HP	-8.371E+01		4.754E+01	1.568E+02	3.518E+00	-0.534

STL Richland WA.

BA133

Sample ID: JK8HD1AC
Detector ID: GER8 1

Batch ID: 6347439



Acquisition Start: 19-DEC-2006 19:17:33.14
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 3.66137E-01
Slope: 2.49855E-01
Quadrature: 9.45922E-09

SAMPLE IDENTIFICATION: JK8HD1AC

CONFIGURATION ID: GER8:JK8HD1AC_191261917
TITLE : BA133
SAMPLE ID : JK8HD1AC

REPORT DATE: 19-DEC-06
ACQUIRE DATE: 19-DEC-06 19:17:33
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 4-DEC-2006 12:00:00.00
CALIB DATE: 19-DEC-2006 05:17:47.72
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 3.6614E-01 keV
ENERGY SLOPE: 2.4986E-01 keV/C
ENERGY Q COEFF: 9.4592E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.7708E-01 keV
FWHM SLOPE: 2.0132E-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 19-DEC-2006 19:54:07

Configuration : $DISK1:[GER8.SAMPLE]JK8HD1AC_191261917.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00
Sample ID : JK8HD1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Start energy : 20.35
Sensitivity : 5.00
Critical level : No

Acquisition date : 19-DEC-2006 19:17:33
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.22 0.0%
End energy : 2047.81
Gaussian : 10.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	30.82	600	96	1.20	121.87	112	36	3.34E-01	5.3	1.64E+00
2	1	34.96	190	38	1.21	138.44	112	36	1.06E-01	12.3	
3	0	80.94	458	50	1.09	322.46	313	18	2.55E-01	5.9	
4	0	276.41	45	16	1.29	1104.76	1097	16	2.50E-02	24.8	
5	0	302.82	144	0	0.66	1210.45	1203	14	8.00E-02	8.3	
6	0	355.89	319	4	1.32	1422.83	1412	19	1.77E-01	5.8	
7	0	383.77	59	4	1.19	1534.41	1526	14	3.27E-02	14.7	

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

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 19:54:08

Configuration : $DISK1:[GER8.SAMPLE]JK8HD1AC_191261917.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00
Sample ID : JK8HD1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Energy tolerance : 1.50
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 19-DEC-2006 19:17:33
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.22 0.0%
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	458	33.00	2.202E+00	2.102E+03	2.108E+03	8.03
	276.40	45	6.90	2.371E+00	9.171E+02	9.196E+02	25.42
	302.84	144	17.80	2.374E+00	1.136E+03	1.139E+03	9.92
	356.00	319	62.05*	2.376E+00	7.211E+02	7.231E+02	7.94
	383.85	59	8.70	2.375E+00	9.508E+02	9.534E+02	15.67

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JK8HD1AC

Acquisition date : 19-DEC-2006 19:17:33

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	30.82	600	96	1.20	121.87	112	36	3.34E-01	5.3	1.93E+00	
1	34.96	190	38	1.21	138.44	112	36	1.06E-01	12.3	1.97E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JK8HD1AC

Acquisition date : 19-DEC-2006 19:17:33

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	9.305E+02	25.42	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 19:54:09

Configuration : $DISK1:[GER8.SAMPLE]JK8HD1AC_191261917.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 : 4-DEC-2006 12:00:00
Sample ID : JK8HD1AC
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 : 19-DEC-2006 19:17:33
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	7.231E+02	5.738E+01	3.785E+01	7.570E-01	19.106

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-7.453E+00		6.976E+01	2.743E+02	5.503E+00	-0.027
NA-22	2.420E-02		1.907E-01	4.946E+00	1.047E-01	0.005
K-40	-2.064E+01		3.873E+01	1.846E+02	3.956E+00	-0.112
SC-46	5.893E-02		4.694E+00	2.001E+01	4.188E-01	0.003
CR-51	-1.653E+02		1.231E+02	4.102E+02	8.208E+00	-0.403
MN-54	-3.214E+00		3.748E+00	1.381E+01	2.833E-01	-0.233
CO-57	-9.291E+01		1.034E+02	3.524E+02	7.276E+00	-0.264
CO-58	6.198E+00		6.337E+00	2.778E+01	5.688E-01	0.223
FE-59	1.325E+01		9.310E+00	4.639E+01	9.697E-01	0.286
CO-60	-8.328E-02		3.039E+00	1.391E+01	2.954E-01	-0.006
ZN-65	-1.191E+01		8.507E+00	2.803E+01	5.866E-01	-0.425
SE-75	-4.020E+00		1.527E+01	5.631E+01	1.130E+00	-0.071
SR-85	-1.584E+01		9.991E+00	3.308E+01	6.646E-01	-0.479
Y-88	0.000E+00		0.000E+00	4.628E+00	1.016E-01	0.000
NB-94	-1.388E-01		2.955E+00	1.339E+01	2.752E-01	-0.010
NB-95	-8.824E+00		5.472E+00	1.666E+01	3.400E-01	-0.530
TC-95M	-8.993E+00		1.965E+01	7.045E+01	1.424E+00	-0.128
ZR-95	-3.906E+00		1.109E+01	4.266E+01	8.703E-01	-0.092
ZRNB-95	-1.578E+01		9.464E+00	2.826E+01	5.768E-01	-0.558
MO-99	4.892E+02		5.741E+02	2.176E+03	4.485E+01	0.225
RH-101	-1.247E+01		1.696E+01	5.949E+01	1.204E+00	-0.210
RH-102M	9.821E-01		6.525E+00	2.615E+01	5.246E-01	0.038
RU-103	-5.196E+00		8.775E+00	3.279E+01	6.583E-01	-0.158
RU-106DA	-5.799E+01		5.124E+01	1.788E+02	3.614E+00	-0.324
AG-108M	-1.994E+01		7.690E+00	2.057E+01	4.120E-01	-0.969
AG-110M	-2.500E+00		5.654E+00	2.232E+01	4.595E-01	-0.112
SN-113DA	1.112E+01		1.100E+01	4.608E+01	9.220E-01	0.241

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

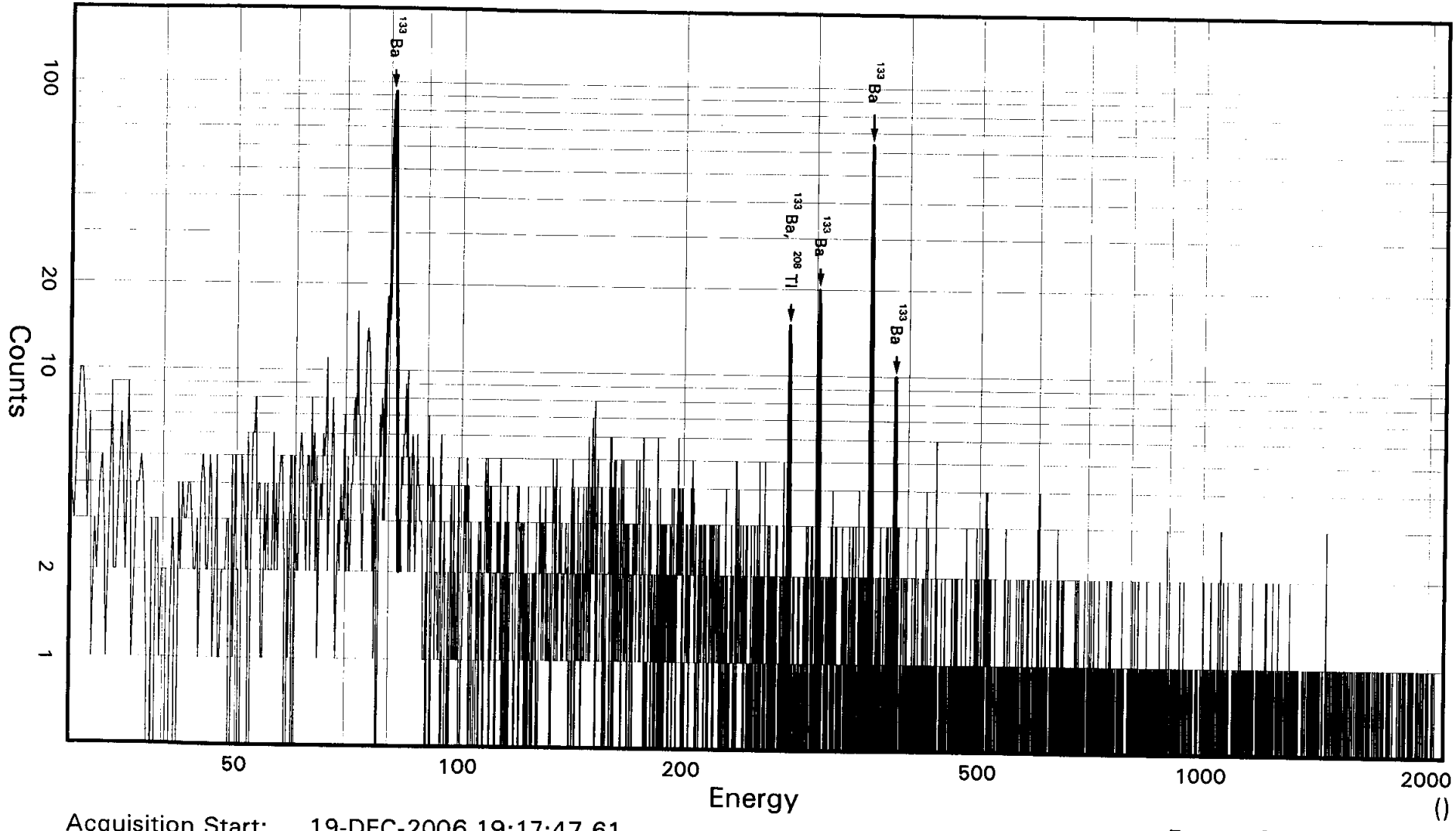
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-3.165E+00		6.836E+00	2.591E+01	5.232E-01	-0.122
SB-125	3.511E+00		1.782E+01	7.262E+01	1.454E+00	0.048
SN-126DA	-1.414E+00		3.762E+00	1.531E+01	3.103E-01	-0.092
I-131	1.067E+01		3.327E+01	1.297E+02	2.594E+00	0.082
CS-134	6.816E+00		3.428E+00	2.045E+01	4.184E-01	0.333
CS-137DA	3.354E+00		4.097E+00	2.007E+01	4.069E-01	0.167
LA-138	4.400E+00		4.558E+00	2.421E+01	5.179E-01	0.182
CE-139	3.639E+00		1.502E+01	5.466E+01	1.116E+00	0.067
BA-140	-8.918E+00		4.585E+01	1.831E+02	3.683E+00	-0.049
BALA-140	-6.881E+00		1.239E+01	5.357E+01	1.158E+00	-0.128
CE-141	1.328E+01		3.447E+01	1.259E+02	2.589E+00	0.106
CE-144	3.555E+01		1.058E+02	3.900E+02	8.064E+00	0.091
CEPR-144	7.111E+01		2.115E+02	7.800E+02	1.613E+01	0.091
PM-144	9.995E+00		5.269E+00	2.536E+01	5.127E-01	0.394
PM-146	-8.937E-01		7.706E+00	3.043E+01	6.098E-01	-0.029
EU-152	1.676E+01		2.344E+01	9.716E+01	1.943E+00	0.173
EU-154	1.579E+00		2.576E+00	2.331E+01	4.932E-01	0.068
EU-155	6.064E+01		5.829E+01	2.221E+02	4.676E+00	0.273
HF-181	2.883E+00		7.684E+00	3.277E+01	6.574E-01	0.088
BI-207	-1.287E+00		3.772E+00	1.558E+01	3.139E-01	-0.083
TL-208	5.122E+00		4.425E+00	2.201E+01	4.440E-01	0.233
BI-210M	-8.723E-01		1.701E+01	6.360E+01	1.276E+00	-0.014
BI-212	2.564E+01		7.327E+01	3.110E+02	9.505E+00	0.082
PB-212	1.901E+01		2.284E+01	9.055E+01	1.821E+00	0.210
BI-214	-9.645E+00		1.256E+01	5.097E+01	1.030E+00	-0.189
PB-214	-1.718E+01		2.332E+01	8.220E+01	1.644E+00	-0.209
RA-223	7.192E+01		5.892E+01	2.418E+02	4.848E+00	0.297
RA-224DA	1.930E+01		2.319E+01	9.194E+01	1.849E+00	0.210
RA-226DA	-9.646E+00		1.256E+01	5.097E+01	1.030E+00	-0.189
AC-227DA	-8.906E+01		7.923E+01	2.725E+02	5.482E+00	-0.327
AC-228	1.121E+01		1.452E+01	6.842E+01	1.411E+00	0.164
RA-228DA	1.126E+01		1.459E+01	6.877E+01	1.418E+00	0.164
TH-228DA	1.448E+01		1.250E+01	6.222E+01	1.255E+00	0.233
TH-232DA	-2.331E+01		6.248E+01	2.283E+02	4.566E+00	-0.102
TH-234DA	7.969E+02		4.247E+02	2.570E+03	5.334E+01	0.310
U-234DA	-8.839E+01		4.931E+01	1.641E+02	3.286E+00	-0.539
U-235HP	-1.398E+02		1.196E+02	3.967E+02	8.164E+00	-0.352
NP-237DA	-2.878E+01		2.164E+01	7.236E+01	1.448E+00	-0.398
U-238DA	-1.718E+01		2.332E+01	8.220E+01	1.644E+00	-0.209
U-238DHP	3.165E+02		4.606E+02	1.738E+03	3.855E+01	0.182
AM-241HP	-1.222E+01		4.167E+01	1.477E+02	3.301E+00	-0.083

STL Richland WA.

BA133

Sample ID: JK8HL1AC
Detector ID: GER6 1

Batch ID: 6347439



Acquisition Start: 19-DEC-2006 19:17:47.61
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 2.03047E-01
Slope: 2.49368E-01
Quadrature: 2.16222E-08

SAMPLE IDENTIFICATION: JK8HL1AC

CONFIGURATION ID: GER6:JK8HL1AC_191261917
TITLE : BA133
SAMPLE ID : JK8HL1AC

REPORT DATE: 19-DEC-06
ACQUIRE DATE: 19-DEC-06 19:17:47
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 4-DEC-2006 12:00:00.00
CALIB DATE: 19-DEC-2006 05:16:54.48
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 2.0305E-01 keV
ENERGY SLOPE: 2.4937E-01 keV/C
ENERGY Q COEFF: 2.1622E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 2.1376E-01 keV
FWHM SLOPE: 6.3154E-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 19-DEC-2006 19:53:48

Configuration	: $DISK1:[GER6.SAMPLE]JK8HL1AC_191261917.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6		
Sample title	: BA133		
Sample date	: 4-DEC-2006 12:00:00	Acquisition date	: 19-DEC-2006 19:17:47
Sample ID	: JK8HL1AC	Sample quantity	: 1.0000 SAMPL
Sample type	:	Sample geometry	: BA133T15
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.23 0.0%
Start energy	: 20.15	End energy	: 2044.48
Sensitivity	: 5.00	Gaussian	: 10.00
Critical level	: No		

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.92	399	63	0.88	323.68	315	17	2.21E-01	6.8	
2	0	276.57	59	12	1.06	1108.18	1102	12	3.28E-02	17.5	
3	0	302.83	118	3	1.44	1213.44	1206	14	6.54E-02	9.8	
4	0	356.07	342	14	1.19	1426.89	1418	19	1.90E-01	6.0	
5	0	383.94	34	21	1.08	1538.62	1530	13	1.88E-02	33.6	

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

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 19:53:48

Configuration : $DISK1:[GER6.SAMPLE]JK8HL1AC_191261917.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00
Sample ID : JK8HL1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Energy tolerance : 1.50
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 19-DEC-2006 19:17:47
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.23 0.0%
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	399	33.00	2.167E+00	1.858E+03	1.863E+03	8.71
	276.40	59	6.90	2.334E+00	1.223E+03	1.226E+03	18.33
	302.84	118	17.80	2.337E+00	9.435E+02	9.461E+02	11.19
	356.00	342	62.05*	2.339E+00	7.858E+02	7.880E+02	8.07
	383.85	34	8.70	2.338E+00	5.537E+02	5.552E+02	34.03

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JK8HL1AC

Acquisition date : 19-DEC-2006 19:17:47

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.241E+03	18.33	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 19-DEC-2006 19:53:50

Configuration : $DISK1:[GER6.SAMPLE]JK8HL1AC_191261917.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 : 4-DEC-2006 12:00:00
Sample ID : JK8HL1AC
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 : 19-DEC-2006 19:17:47
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.23 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	7.880E+02	6.363E+01	4.887E+01	9.773E-01	16.125

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-4.123E+01		7.843E+01	2.913E+02	5.843E+00	-0.142
NA-22	1.557E+00		3.400E+00	1.642E+01	3.475E-01	0.095
K-40	-5.052E+01		5.345E+01	2.788E+02	5.976E+00	-0.181
SC-46	8.467E+00		6.124E+00	2.820E+01	5.905E-01	0.300
CR-51	3.949E+01		1.171E+02	4.533E+02	9.069E+00	0.087
MN-54	-7.827E+00		5.114E+00	1.627E+01	3.337E-01	-0.481
CO-57	-5.892E+01		1.059E+02	3.780E+02	7.806E+00	-0.156
CO-58	5.058E+00		5.681E+00	2.559E+01	5.241E-01	0.198
FE-59	6.279E+00		8.081E+00	3.960E+01	8.278E-01	0.159
CO-60	2.999E+00		4.327E+00	1.995E+01	4.240E-01	0.150
ZN-65	7.112E+00		9.856E+00	4.415E+01	9.240E-01	0.161
SE-75	4.023E+00		1.632E+01	6.094E+01	1.222E+00	0.066
SR-85	-2.280E+01		1.249E+01	4.014E+01	8.065E-01	-0.568
Y-88	3.522E+00		3.464E+00	1.872E+01	4.111E-01	0.188
NB-94	-3.041E-01		4.732E+00	1.920E+01	3.949E-01	-0.016
NB-95	6.631E-02		3.913E+00	1.831E+01	3.737E-01	0.004
TC-95M	1.826E+01		1.939E+01	7.511E+01	1.518E+00	0.243
ZR-95	3.376E+00		9.220E+00	4.065E+01	8.293E-01	0.083
ZRNB-95	-2.622E-01		6.721E+00	3.126E+01	6.382E-01	-0.008
MO-99	3.976E+02		5.045E+02	1.974E+03	4.068E+01	0.201
RH-101	3.634E+01		1.468E+01	6.118E+01	1.238E+00	0.594
RH-102M	-6.302E-01		6.502E+00	2.549E+01	5.112E-01	-0.025
RU-103	9.789E+00		9.446E+00	4.024E+01	8.079E-01	0.243
RU-106DA	-1.944E+01		6.078E+01	2.338E+02	4.728E+00	-0.083
AG-108M	-1.641E+01		7.273E+00	2.080E+01	4.166E-01	-0.789
AG-110M	-1.279E+00		7.523E+00	3.005E+01	6.186E-01	-0.043
SN-113DA	-1.618E+01		1.038E+01	3.395E+01	6.792E-01	-0.477

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-3.030E+00		8.738E+00	3.273E+01	6.610E-01	-0.093
SB-125	-3.390E+00		2.187E+01	8.364E+01	1.675E+00	-0.041
SN-126DA	-1.610E+00		5.616E+00	2.163E+01	4.386E-01	-0.074
I-131	8.228E-01		3.582E+01	1.373E+02	2.747E+00	0.006
CS-134	-1.733E+00		4.582E+00	1.862E+01	3.809E-01	-0.093
CS-137DA	-1.761E+00		6.144E+00	2.394E+01	4.853E-01	-0.074
LA-138	-2.150E+00		5.053E+00	2.122E+01	4.541E-01	-0.101
CE-139	1.458E+01		1.487E+01	5.687E+01	1.161E+00	0.256
BA-140	-3.849E+01		6.088E+01	2.209E+02	4.443E+00	-0.174
BALA-140	7.404E+00		7.415E+00	5.444E+01	1.178E+00	0.136
CE-141	-1.943E+00		2.846E+01	1.050E+02	2.159E+00	-0.019
CE-144	-3.527E+01		9.735E+01	3.545E+02	7.332E+00	-0.099
CEPR-144	-7.281E+01		1.945E+02	7.080E+02	1.464E+01	-0.103
PM-144	5.158E-01		5.942E+00	2.391E+01	4.833E-01	0.022
PM-146	-7.405E+00		7.502E+00	2.631E+01	5.273E-01	-0.281
EU-152	-7.822E+00		2.759E+01	1.017E+02	2.035E+00	-0.077
EU-154	4.350E+00		9.497E+00	4.586E+01	9.706E-01	0.095
EU-155	-9.235E+00		4.160E+01	1.525E+02	3.211E+00	-0.061
HF-181	-1.306E+00		9.968E+00	3.861E+01	7.748E-01	-0.034
BI-207	-8.364E+00		5.788E+00	1.875E+01	3.780E-01	-0.446
TL-208	3.524E+00		6.778E+00	2.916E+01	5.881E-01	0.121
BI-210M	1.887E+01		1.755E+01	6.946E+01	1.393E+00	0.272
BI-212	5.185E+01		9.694E+01	3.996E+02	1.221E+01	0.130
PB-212	-5.388E+00		2.364E+01	8.476E+01	1.705E+00	-0.064
BI-214	1.329E+01		1.442E+01	6.054E+01	1.223E+00	0.220
PB-214	-1.683E+01		2.833E+01	8.200E+01	1.640E+00	-0.205
RA-223	-9.624E+01		6.375E+01	2.138E+02	4.288E+00	-0.450
RA-224DA	-5.470E+00		2.401E+01	8.606E+01	1.731E+00	-0.064
RA-226DA	1.330E+01		1.442E+01	6.054E+01	1.223E+00	0.220
AC-227DA	6.152E+01		8.958E+01	3.414E+02	6.869E+00	0.180
AC-228	-4.699E+00		1.742E+01	6.951E+01	1.434E+00	-0.068
RA-228DA	-4.723E+00		1.751E+01	6.986E+01	1.441E+00	-0.068
TH-228DA	9.959E+00		1.916E+01	8.240E+01	1.662E+00	0.121
TH-232DA	1.052E+02		6.556E+01	2.732E+02	5.465E+00	0.385
TH-234DA	1.079E+03		8.862E+02	3.938E+03	8.175E+01	0.274
U-234DA	-2.956E+01		3.995E+01	1.429E+02	2.861E+00	-0.207
U-235HP	-1.826E+01		9.350E+01	3.428E+02	7.055E+00	-0.053
NP-237DA	-2.916E+00		2.352E+01	8.722E+01	1.746E+00	-0.033
U-238DA	-1.683E+01		2.833E+01	8.200E+01	1.640E+00	-0.205
U-238DHP	8.875E+01		3.539E+02	1.291E+03	2.864E+01	0.069
AM-241HP	-2.633E+01		3.350E+01	1.144E+02	2.559E+00	-0.230

1st count

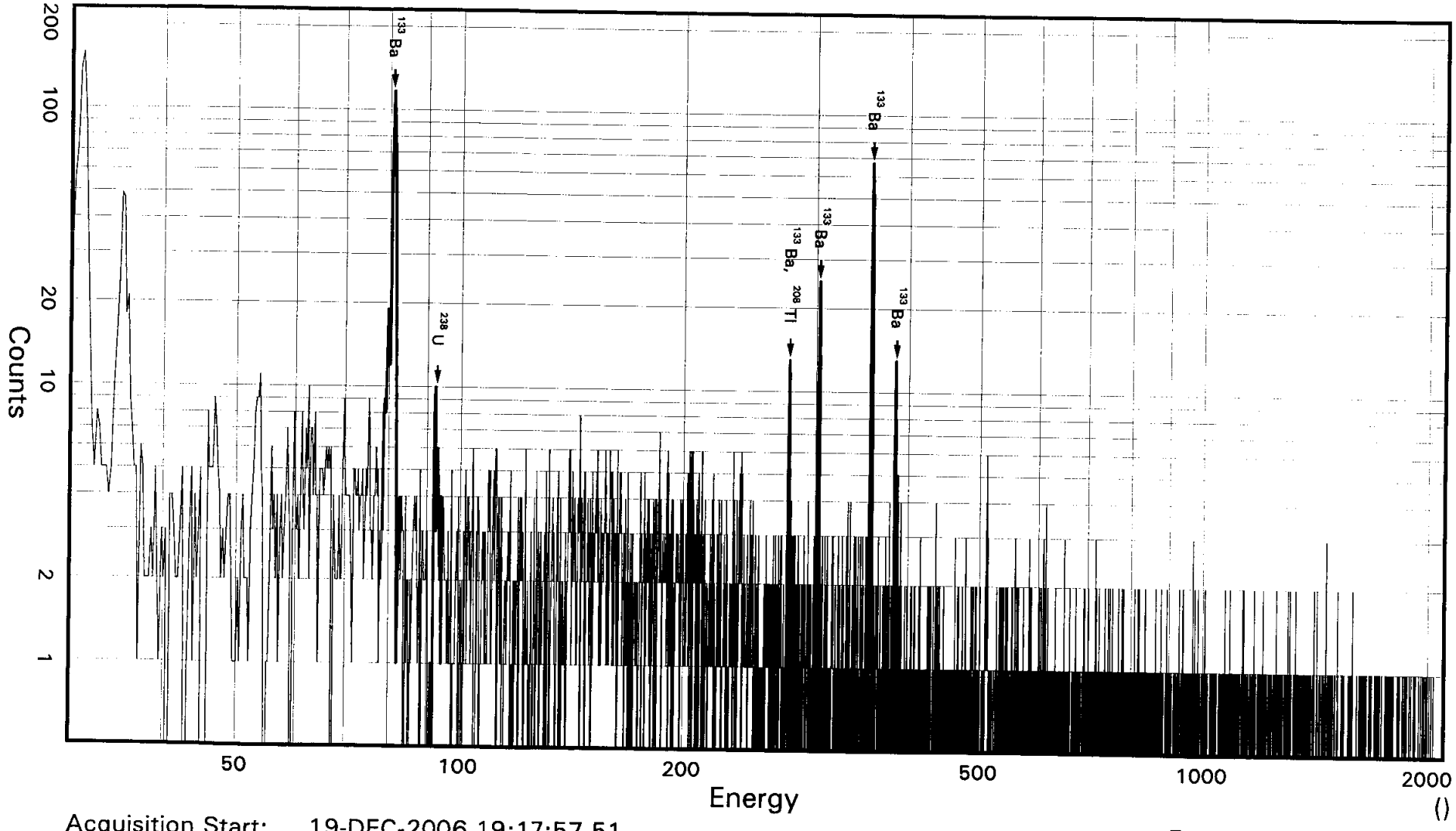
not used

STL Richland WA.

BA133

Sample ID: JK8HP1AC
Detector ID: GER5 1

Batch ID: 6347439



Acquisition Start: 19-DEC-2006 19:17:57.51
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -3.40410E-01
Slope: 2.49448E-01
Quadrature: -2.90515E-09

SAMPLE IDENTIFICATION: JK8HP1AC

CONFIGURATION ID: GER5:JK8HP1AC_191261917
TITLE : BA133
SAMPLE ID : JK8HP1AC

REPORT DATE: 19-DEC-06
ACQUIRE DATE: 19-DEC-06 19:17:57
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 4-DEC-2006 12:00:00.00
CALIB DATE: 19-DEC-2006 05:17:09.30
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.3404E+00 keV
ENERGY SLOPE: 2.4945E-01 keV/C
ENERGY Q COEFF: -.2905E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 7.0685E-01 keV
FWHM SLOPE: 3.0233E-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 19-DEC-2006 19:48:09

Configuration : RDND06$DKA100:[GER5.SAMPLE]JK8HP1AC_191261917.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00 Acquisition date : 19-DEC-2006 19:17:57
Sample ID : JK8HP1AC 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 : 19.62 End energy : 2042.94
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.96	520	138	0.73	125.47	118	15	2.89E-01	6.6	
2	0	35.28	170	48	0.62	142.81	137	13	9.47E-02	11.4	
3	0	53.52	46	16	1.07	215.90	209	13	2.57E-02	23.1	
4	0	80.85	451	54	0.89	325.48	316	18	2.51E-01	6.1	
5	0	92.88*	15	12	1.17	373.71	365	16	8.19E-03	68.7	
6	0	276.31	35	10	0.59	1109.08	1104	10	1.94E-02	24.0	
7	0	302.89	109	5	0.87	1215.61	1208	17	6.07E-02	10.5	
8	0	355.99	336	0	1.20	1428.50	1421	18	1.87E-01	5.5	
9	0	384.28	51	18	1.08	1541.92	1530	24	2.84E-02	26.1	

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

VMS Nuclide Identification Report V3.1 Generated 19-DEC-2006 19:48:09

Configuration	: RDND06$DKA100:[GER5.SAMPLE]JK8HP1AC_191261917.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: BA133		
Sample date	: 4-DEC-2006 12:00:00	Acquisition date	: 19-DEC-2006 19:17:57
Sample ID	: JK8HP1AC	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	451	33.00	1.924E+00	2.370E+03	2.376E+03	8.15
	276.40	35	6.90	2.077E+00	8.115E+02	8.138E+02	24.58
	302.84	109	17.80	2.080E+00	9.844E+02	9.872E+02	11.81
	356.00	336	62.05*	2.082E+00	8.671E+02	8.695E+02	7.67
	383.85	51	8.70	2.081E+00	9.401E+02	9.427E+02	26.60

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JK8HP1AC

Acquisition date : 19-DEC-2006 19:17:57

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.96	520	138	0.73	125.47	118	15	2.89E-01	6.6	1.68E+00	
0	35.28	170	48	0.62	142.81	137	13	9.47E-02	11.4	1.72E+00	
0	53.52	46	16	1.07	215.90	209	13	2.57E-02	23.1	1.83E+00	
0	92.88	15	12	1.17	373.71	365	16	8.19E-03	68.7	1.95E+00	T

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JK8HP1AC

Acquisition date : 19-DEC-2006 19:17:57

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	8.235E+02	24.58	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			
U-238DHP	4.47E+09Y	0.00	63.28*	3.80	--- Not Found ---		Abun.
			92.59	5.41	4.658E+02	68.95	
		% Abundances Found =		58.74			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 19-DEC-2006 19:48:11

Configuration : RDND06$DKA100:[GER5.SAMPLE]JK8HP1AC_191261917.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 : 4-DEC-2006 12:00:00
Sample ID : JK8HP1AC
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 : 19-DEC-2006 19:17:57
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.23 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	8.695E+02	6.665E+01	5.702E+01	1.140E+00	15.250

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.460E+01		7.856E+01	3.131E+02	6.282E+00	0.047
NA-22	-6.628E+00		4.786E+00	1.594E+01	3.380E-01	-0.416
NA-24	1.195E-01		4.479E+01	Half-Life too short		
K-40	-1.170E+02		5.049E+01	2.556E+02	5.491E+00	-0.458
SC-46	-2.033E+00		3.376E+00	1.401E+01	2.938E-01	-0.145
CR-51	-3.691E+02		1.324E+02	3.792E+02	7.586E+00	-0.974
MN-54	-6.470E+00		5.657E+00	2.001E+01	4.108E-01	-0.323
CO-57	5.092E+00		1.156E+02	4.195E+02	8.672E+00	0.012
CO-58	9.406E+00		5.837E+00	2.878E+01	5.897E-01	0.327
FE-59	-7.944E+00		9.399E+00	3.492E+01	7.310E-01	-0.228
CO-60	1.672E+00		5.101E+00	2.234E+01	4.756E-01	0.075
ZN-65	3.119E+00		9.266E+00	4.145E+01	8.688E-01	0.075
SE-75	-1.406E+01		1.787E+01	6.219E+01	1.248E+00	-0.226
SR-85	-2.370E+01		1.293E+01	4.050E+01	8.139E-01	-0.585
Y-88	4.940E-01		9.845E-01	9.875E+00	2.175E-01	0.050
NB-94	-3.043E+00		3.938E+00	1.529E+01	3.148E-01	-0.199
NB-95	-7.001E+00		6.012E+00	2.058E+01	4.204E-01	-0.340
TC-95M	5.267E+01		2.491E+01	9.915E+01	2.005E+00	0.531
ZR-95	1.959E+00		1.156E+01	4.816E+01	9.831E-01	0.041
ZRNB-95	-1.220E+01		1.047E+01	3.586E+01	7.324E-01	-0.340
MO-99	1.291E+03		6.916E+02	2.723E+03	5.617E+01	0.474
RH-101	2.298E+01		1.657E+01	6.557E+01	1.328E+00	0.350
RH-102M	-5.532E+00		6.727E+00	2.407E+01	4.828E-01	-0.230
RU-103	-2.357E+00		1.005E+01	3.817E+01	7.665E-01	-0.062
RU-106DA	3.534E+01		5.325E+01	2.394E+02	4.841E+00	0.148
AG-108M	-1.081E+01		7.615E+00	2.514E+01	5.035E-01	-0.430
AG-110M	-4.096E+00		5.747E+00	2.252E+01	4.640E-01	-0.182

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	3.284E+01		1.384E+01	6.217E+01	1.244E+00	0.528
SB-124	-1.470E+00		7.506E+00	2.958E+01	5.975E-01	-0.050
SB-125	1.794E+01		2.427E+01	1.011E+02	2.025E+00	0.177
SN-126DA	3.270E+00		3.976E+00	1.950E+01	3.956E-01	0.168
I-131	4.276E+01		3.682E+01	1.549E+02	3.098E+00	0.276
CS-134	3.647E+00		5.597E+00	2.550E+01	5.220E-01	0.143
CS-137DA	4.849E+00		4.872E+00	2.405E+01	4.876E-01	0.202
LA-138	2.508E+00		4.470E+00	2.383E+01	5.111E-01	0.105
CE-139	1.456E+01		1.700E+01	6.550E+01	1.338E+00	0.222
BA-140	6.902E+01		6.235E+01	2.681E+02	5.394E+00	0.257
BALA-140	0.000E+00		4.169E-01	2.254E+01	4.887E-01	0.000
LA-140	0.000E+00		2.308E-05	Half-Life too short		
CE-141	6.068E+01		4.046E+01	1.548E+02	3.185E+00	0.392
CE-144	-5.123E+01		1.212E+02	4.239E+02	8.775E+00	-0.121
CEPR-144	-9.863E+01		2.426E+02	8.495E+02	1.759E+01	-0.116
PM-144	-6.363E-01		6.518E+00	2.585E+01	5.226E-01	-0.025
PM-146	1.227E+01		8.280E+00	3.929E+01	7.874E-01	0.312
EU-152	3.756E+01		3.241E+01	1.346E+02	2.693E+00	0.279
EU-154	-1.851E+01		1.337E+01	4.452E+01	9.439E-01	-0.416
EU-155	-5.571E+01		5.977E+01	2.043E+02	4.310E+00	-0.273
HF-181	-1.322E+01		9.875E+00	3.265E+01	6.552E-01	-0.405
BI-207	-6.010E+00		5.563E+00	1.984E+01	4.000E-01	-0.303
TL-208	1.587E+01		8.925E+00	3.972E+01	8.015E-01	0.399
BI-210M	5.321E+00		1.905E+01	7.232E+01	1.451E+00	0.074
BI-212	-5.296E+01		9.370E+01	3.493E+02	1.068E+01	-0.152
PB-212	3.230E+01		2.888E+01	1.168E+02	2.350E+00	0.276
BI-214	1.703E+01		1.645E+01	6.940E+01	1.402E+00	0.245
PB-214	3.281E+01		2.559E+01	1.011E+02	2.022E+00	0.325
RA-223	4.465E+01		6.817E+01	2.668E+02	5.351E+00	0.167
RA-224DA	3.280E+01		2.932E+01	1.186E+02	2.386E+00	0.276
RA-226DA	1.731E+01		1.648E+01	6.957E+01	1.406E+00	0.249
AC-227DA	-2.581E+02		1.169E+02	3.633E+02	7.310E+00	-0.710
AC-228	-3.255E+01		1.372E+01	4.387E+01	9.058E-01	-0.742
RA-228DA	-3.272E+01		1.379E+01	4.410E+01	9.104E-01	-0.742
TH-228DA	4.484E+01		2.522E+01	1.123E+02	2.265E+00	0.399
TH-232DA	-1.786E+01		7.083E+01	2.656E+02	5.312E+00	-0.067
TH-234DA	-1.280E+03		8.520E+02	2.754E+03	5.723E+01	-0.465
U-234DA	6.859E+01		4.577E+01	1.907E+02	3.819E+00	0.360
U-235HP	-5.041E+01		1.430E+02	4.997E+02	1.029E+01	-0.101
NP-237DA	1.453E+01		2.239E+01	8.926E+01	1.786E+00	0.163
U-238DA	3.281E+01		2.559E+01	1.011E+02	2.022E+00	0.325
U-238DHP	-5.810E+02		5.006E+02	1.826E+03	4.064E+01	-0.318
AM-241HP	-3.409E+01		4.755E+01	1.663E+02	3.731E+00	-0.205

2nd count

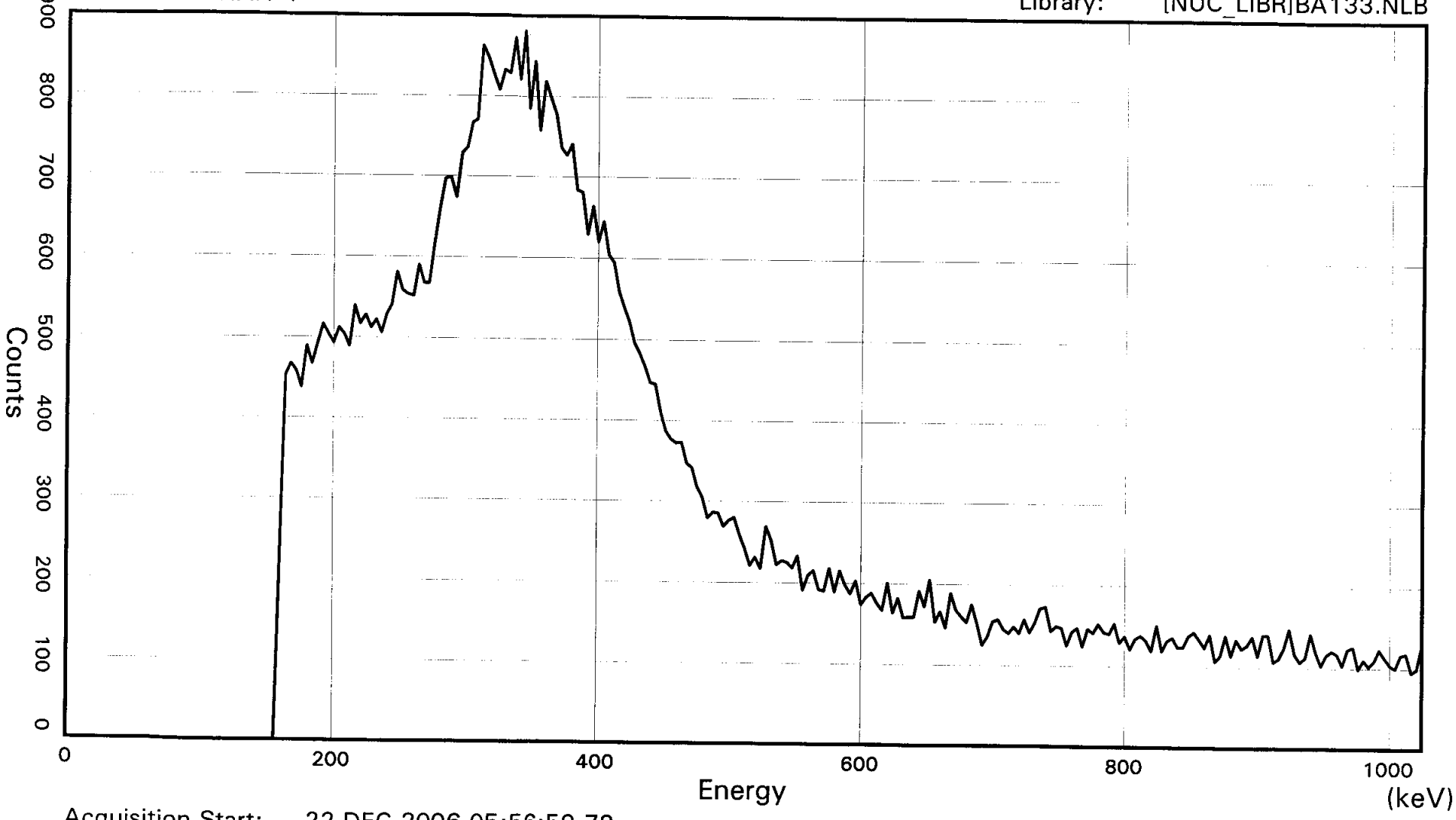
not used

STL Richland WA.

BA133

Sample ID: JK8HP1AC
Detector ID: NAI1 1

BatchID: 6347439
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 22-DEC-2006 05:56:59.79
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: JK8HP1AC

CONFIGURATION ID: NAI1:JK8HP1AC_221260556
TITLE : BA133
SAMPLE ID : JK8HP1AC

REPORT DATE: 22-DEC-06
ACQUIRE DATE: 22-DEC-06 05:56:59
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 4-DEC-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 22-DEC-2006 06:27:04

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JK8HP1AC_221260556.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 4-DEC-2006 12:00:00	Acquisition date	: 22-DEC-2006 05:56:59
Sample ID	: JK8HP1AC	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.73 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:	9.5	7.3	7.1	5.9	7.4	3.6	6.4	1.3
88:	3.4	-0.8	0.6	-0.4	-0.1	-3.2	-1.4	-0.9
96:	-2.9	-3.7	-5.4	-3.4	-6.0	-2.3	-4.1	-3.9
104:	-6.0	-5.6	-5.6	-5.4	-5.6	-5.5	-6.0	-5.3
112:	-5.5	-5.9						

List of Suspicious Channels

81 82 83 84 85

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.82E+01	0.00E+00	1.05E+00
2	5.18E+00	0.00E+00	1.08E+00
3	1.70E+00	0.00E+00	1.10E+00
4	1.30E+00	0.00E+00	1.11E+00
5	1.21E+00	0.00E+00	1.11E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	876.	10.6
Total Activity :	876.	

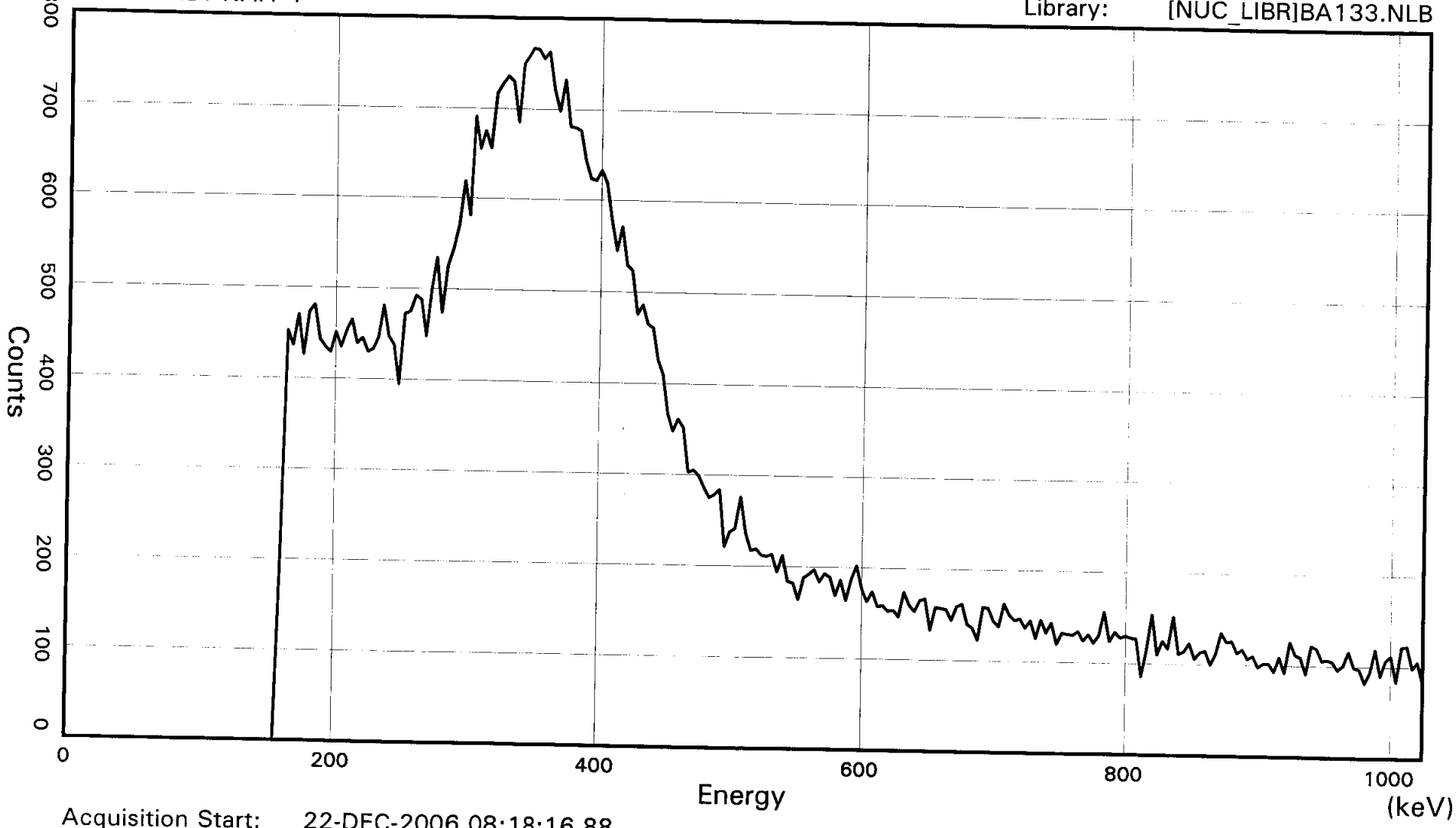
3rd count

STL Richland WA.

BA133

Sample ID: JK8HP1AC
Detector ID: NAI1 1

BatchID: 6347439
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 22-DEC-2006 08:18:16.88
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: JK8HP1AC

CONFIGURATION ID: NAI1:JK8HP1AC_221260818
TITLE : BA133
SAMPLE ID : JK8HP1AC

REPORT DATE: 22-DEC-06
ACQUIRE DATE: 22-DEC-06 08:18:16
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 4-DEC-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 22-DEC-2006 08:48:21

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JK8HP1AC_221260818.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 4-DEC-2006 12:00:00	Acquisition date	: 22-DEC-2006 08:18:16
Sample ID	: JK8HP1AC	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.66 0.0%
Sample Multiplier	: 1.00	Rejection Coeff.	: 0.00
Gain shift type	: ITER	Threshold Shift	: No
Weighting type	: DERIVED	Calculated counts	: No
Iterations	: 5		

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	6.7	6.0	5.5	4.4	2.4	3.3	4.2	3.2
88:	3.1	1.7	1.1	-0.7	-0.5	-0.7	-0.6	-0.6
96:	-0.6	-2.5	-3.2	-2.5	-3.0	-0.9	-2.9	-3.5
104:	-3.2	-4.0	-3.7	-4.4	-3.4	-3.5	-3.6	-4.4
112:	-3.8	-5.1						

List of Suspicious Channels

81 82 83 84 85 86 87

NAI Fit Report

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	7.82E+00	0.00E+00	1.03E+00
2	2.71E+00	0.00E+00	1.05E+00
3	1.65E+00	0.00E+00	1.06E+00
4	1.22E+00	0.00E+00	1.07E+00
5	9.87E-01	0.00E+00	1.07E+00

Brief Report

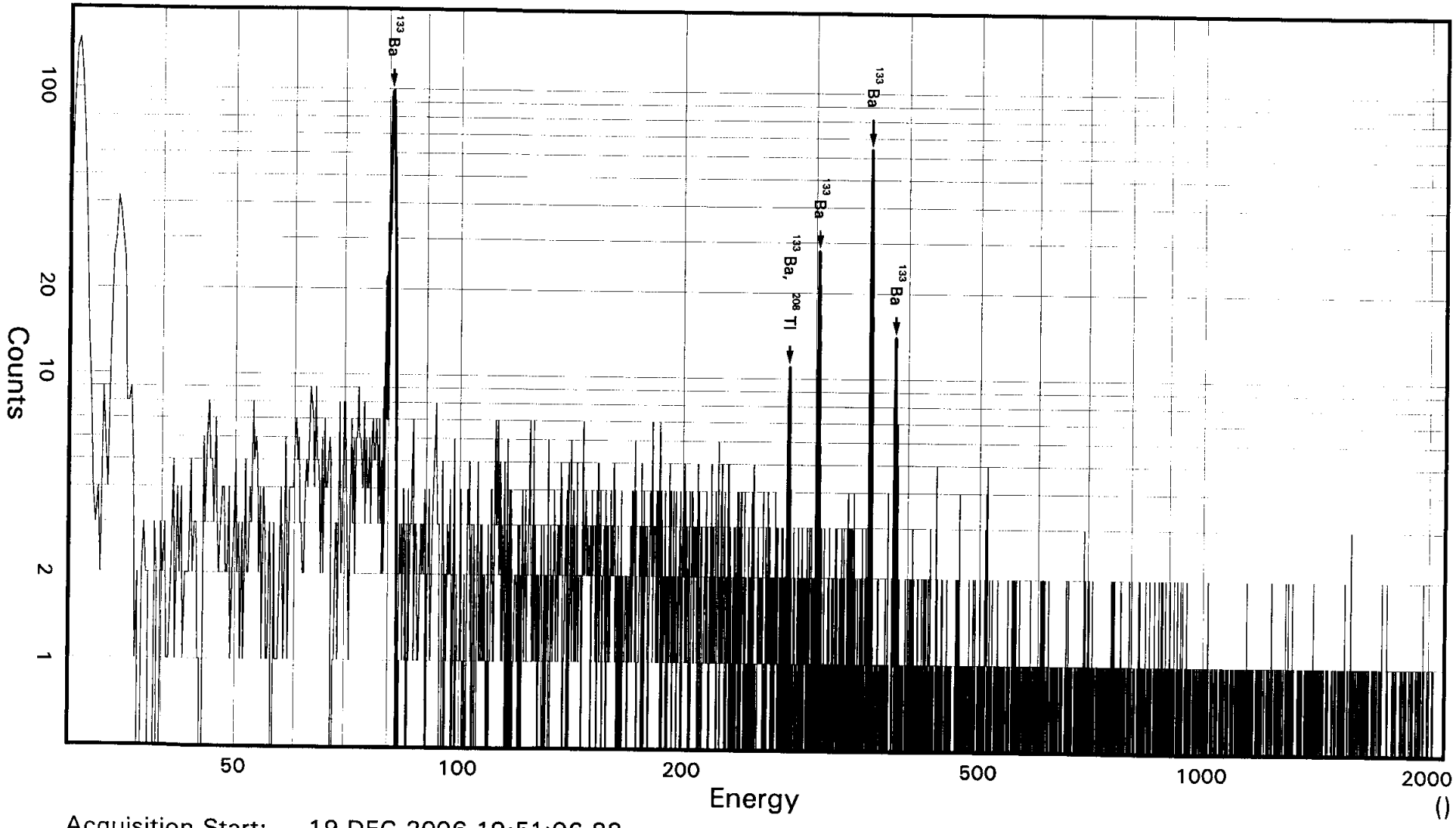
Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	757.	8.98
Total Activity :	757.	

STL Richland WA.

BA133

Sample ID: JK8HQ1AC
Detector ID: GER8 1

Batch ID: 6347439



Acquisition Start: 19-DEC-2006 19:51:06.88
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 3.66137E-01
Slope: 2.49855E-01
Quadrature: 9.45922E-09

SAMPLE IDENTIFICATION: JK8HQ1AC

CONFIGURATION ID: GER8:JK8HQ1AC_191261951
TITLE : BA133
SAMPLE ID : JK8HQ1AC

REPORT DATE: 19-DEC-06
ACQUIRE DATE: 19-DEC-06 19:51:06
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 4-DEC-2006 12:00:00.00
CALIB DATE: 19-DEC-2006 05:17:47.72
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 3.6614E-01 keV
ENERGY SLOPE: 2.4986E-01 keV/C
ENERGY Q COEFF: 9.4592E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.7708E-01 keV
FWHM SLOPE: 2.0132E-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 19-DEC-2006 20:21:34

Configuration	: $DISK1:[GER8.SAMPLE]JK8HQ1AC_191261951.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6		
Sample title	: BA133		
Sample date	: 4-DEC-2006 12:00:00	Acquisition date	: 19-DEC-2006 19:51:06
Sample ID	: JK8HQ1AC	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	: 20.35	End energy	: 2047.81
Sensitivity	: 5.00	Gaussian	: 10.00
Critical level	: No		

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.79	651	119	1.01	121.77	112	18	3.62E-01	5.5	
2	0	35.03	222	39	1.36	138.73	130	18	1.23E-01	9.5	
3	0	80.90	494	36	1.05	322.31	313	17	2.75E-01	5.3	
4	0	276.28	52	5	0.93	1104.26	1094	17	2.90E-02	16.6	
5	0	302.93	105	21	0.85	1210.90	1201	16	5.86E-02	13.6	
6	0	355.97	337	11	1.08	1423.17	1411	21	1.87E-01	6.0	
7	0	383.76	47	11	0.98	1534.38	1527	15	2.59E-02	21.5	

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

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 20:21:34

Configuration	: $DISK1:[GER8.SAMPLE]JK8HQ1AC_191261951.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: BA133		
Sample date	: 4-DEC-2006 12:00:00	Acquisition date	: 19-DEC-2006 19:51:06
Sample ID	: JK8HQ1AC	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	494	33.00	2.202E+00	2.269E+03	2.275E+03	7.57
	276.40	52	6.90	2.371E+00	1.062E+03	1.065E+03	17.48
	302.84	105	17.80	2.374E+00	8.315E+02	8.338E+02	14.64
	356.00	337	62.05*	2.376E+00	7.609E+02	7.630E+02	8.03
	383.85	47	8.70	2.375E+00	7.523E+02	7.544E+02	22.13

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JK8HQ1AC

Acquisition date : 19-DEC-2006 19:51:06

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.79	651	119	1.01	121.77	112	18	3.62E-01	5.5	1.93E+00	
0	35.03	222	39	1.36	138.73	130	18	1.23E-01	9.5	1.97E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JK8HQ1AC

Acquisition date : 19-DEC-2006 19:51:06

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	1.078E+03	17.48	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 19-DEC-2006 20:21:36

Configuration : $DISK1:[GER8.SAMPLE]JK8HQ1AC_191261951.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 : 4-DEC-2006 12:00:00
Sample ID : JK8HQ1AC
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 : 19-DEC-2006 19:51:06
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	7.630E+02	6.128E+01	5.127E+01	1.025E+00	14.882

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	4.182E+00		5.970E+01	2.454E+02	4.922E+00	0.017
NA-22	-1.505E+00		1.543E+00	4.946E+00	1.047E-01	-0.304
K-40	2.300E+01		3.552E+01	1.986E+02	4.256E+00	0.116
SC-46	1.697E+00		3.716E+00	1.793E+01	3.754E-01	0.095
CR-51	1.247E+02		1.112E+02	4.583E+02	9.170E+00	0.272
MN-54	5.956E+00		2.995E+00	1.787E+01	3.665E-01	0.333
CO-57	1.296E+02		1.103E+02	4.242E+02	8.758E+00	0.306
CO-58	-5.735E-02		2.416E+00	1.235E+01	2.528E-01	-0.005
FE-59	-2.780E+00		3.485E+00	1.469E+01	3.071E-01	-0.189
CO-60	0.000E+00		0.000E+00	4.051E+00	8.606E-02	0.000
ZN-65	-2.903E+00		7.950E+00	3.250E+01	6.800E-01	-0.089
SE-75	-1.651E+01		1.631E+01	5.637E+01	1.131E+00	-0.293
SR-85	-3.150E+01		1.010E+01	2.773E+01	5.572E-01	-1.136
Y-88	1.699E+00		3.836E+00	1.842E+01	4.045E-01	0.092
NB-94	8.586E+00		4.131E+00	2.165E+01	4.451E-01	0.397
NB-95	-8.749E-01		3.733E+00	1.667E+01	3.402E-01	-0.052
TC-95M	-1.437E+01		2.023E+01	7.128E+01	1.441E+00	-0.202
ZR-95	-7.874E-01		1.064E+01	4.267E+01	8.705E-01	-0.018
ZRNB-95	-1.931E+00		6.396E+00	2.827E+01	5.770E-01	-0.068
MO-99	-8.519E+01		6.224E+02	2.213E+03	4.560E+01	-0.039
RH-101	-2.329E+01		1.477E+01	4.918E+01	9.955E-01	-0.474
RH-102M	-6.581E+00		5.223E+00	1.813E+01	3.637E-01	-0.363
RU-103	-1.153E+01		6.949E+00	2.230E+01	4.478E-01	-0.517
RU-106DA	-6.014E+00		3.486E+01	1.510E+02	3.053E+00	-0.040
AG-108M	-1.177E+01		6.300E+00	1.876E+01	3.758E-01	-0.627
AG-110M	-8.939E+00		6.116E+00	1.926E+01	3.964E-01	-0.464
SN-113DA	-1.317E+01		1.108E+01	3.734E+01	7.471E-01	-0.353

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

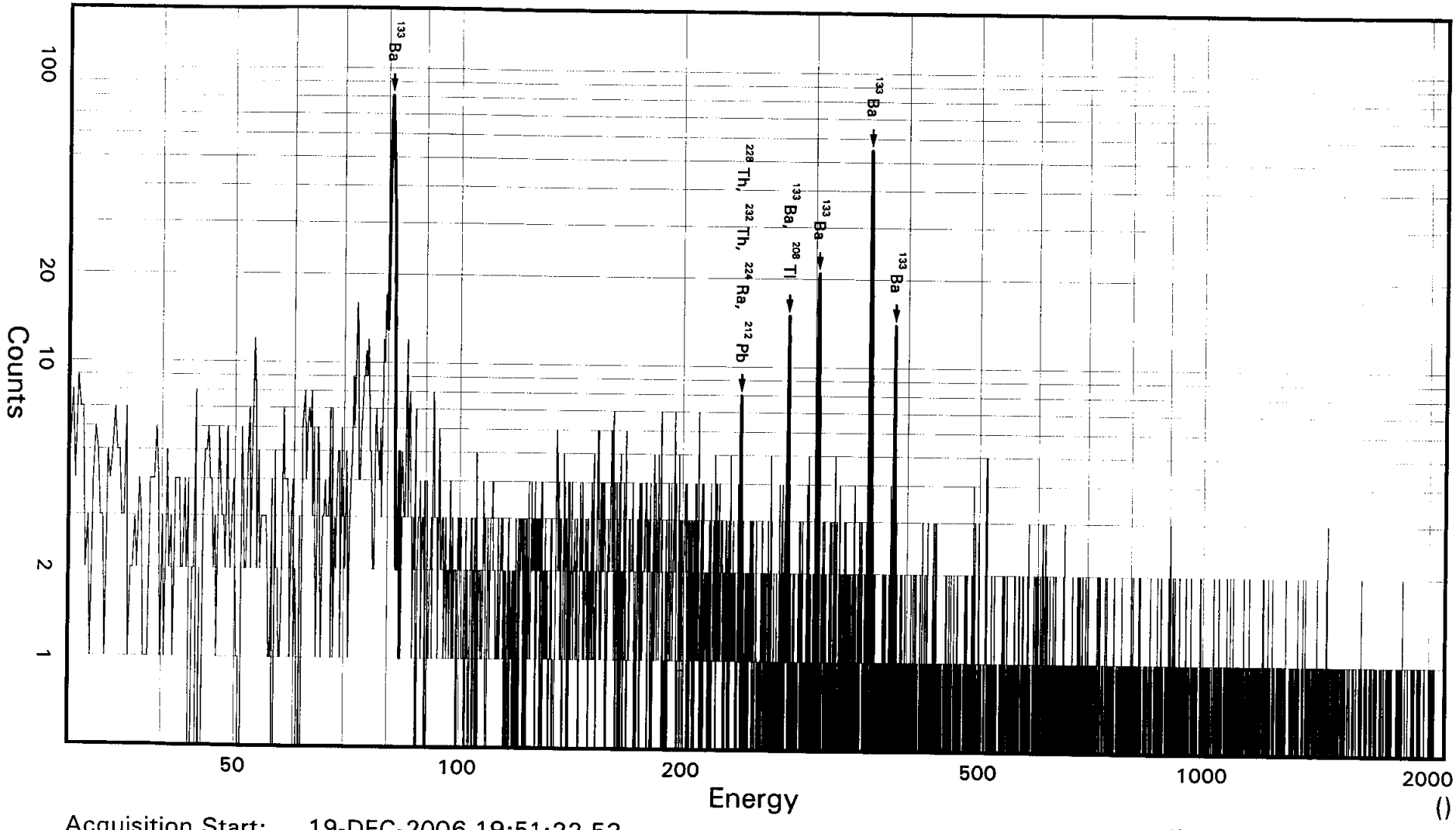
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-1.471E+00		6.623E+00	2.591E+01	5.233E-01	-0.057
SB-125	7.600E+00		1.969E+01	8.018E+01	1.606E+00	0.095
SN-126DA	6.832E-03		3.483E+00	1.531E+01	3.103E-01	0.000
I-131	5.781E+00		2.172E+01	9.137E+01	1.827E+00	0.063
CS-134	-3.129E-01		5.994E+00	2.402E+01	4.912E-01	-0.013
CS-137DA	-1.859E-01		4.687E+00	1.983E+01	4.020E-01	-0.009
LA-138	2.566E+00		2.407E+00	1.726E+01	3.692E-01	0.149
CE-139	1.046E+00		1.249E+01	4.593E+01	9.373E-01	0.023
BA-140	-1.009E+01		4.213E+01	1.698E+02	3.416E+00	-0.059
BALA-140	-2.098E+00		9.314E+00	4.779E+01	1.033E+00	-0.044
CE-141	-1.477E+01		3.545E+01	1.234E+02	2.538E+00	-0.120
CE-144	7.574E+01		1.026E+02	3.886E+02	8.036E+00	0.195
CEPR-144	1.526E+02		2.053E+02	7.777E+02	1.608E+01	0.196
PM-144	5.936E+00		4.165E+00	2.076E+01	4.197E-01	0.286
PM-146	-5.380E+00		8.376E+00	3.052E+01	6.116E-01	-0.176
EU-152	-1.061E+00		2.503E+01	9.598E+01	1.920E+00	-0.011
EU-154	-2.692E+00		4.989E+00	2.331E+01	4.932E-01	-0.115
EU-155	9.138E+00		5.095E+01	1.884E+02	3.967E+00	0.049
HF-181	-1.109E+01		8.003E+00	2.718E+01	5.454E-01	-0.408
BI-207	-2.695E+00		4.028E+00	1.558E+01	3.139E-01	-0.173
TL-208	-5.975E-01		5.121E+00	2.116E+01	4.269E-01	-0.028
BI-210M	2.699E+01		1.712E+01	7.078E+01	1.420E+00	0.381
BI-212	2.080E+01		5.778E+01	2.605E+02	7.962E+00	0.080
PB-212	-8.423E+00		2.258E+01	8.395E+01	1.688E+00	-0.100
BI-214	-8.693E+00		1.268E+01	5.170E+01	1.044E+00	-0.168
PB-214	-1.645E+01		2.487E+01	8.635E+01	1.727E+00	-0.190
RA-223	-4.680E+01		6.882E+01	2.435E+02	4.882E+00	-0.192
RA-224DA	-8.552E+00		2.293E+01	8.523E+01	1.714E+00	-0.100
RA-226DA	-8.571E+00		1.269E+01	5.180E+01	1.046E+00	-0.165
AC-227DA	1.326E+01		7.970E+01	3.013E+02	6.062E+00	0.044
AC-228	2.100E+01		1.621E+01	7.779E+01	1.604E+00	0.270
RA-228DA	2.110E+01		1.630E+01	7.818E+01	1.612E+00	0.270
TH-228DA	-1.689E+00		1.447E+01	5.981E+01	1.206E+00	-0.028
TH-232DA	1.116E+02		6.651E+01	2.774E+02	5.548E+00	0.402
TH-234DA	2.310E+02		3.842E+02	2.079E+03	4.314E+01	0.111
U-234DA	-4.201E+01		4.365E+01	1.575E+02	3.155E+00	-0.267
U-235HP	-1.007E+02		1.166E+02	3.951E+02	8.130E+00	-0.255
NP-237DA	-4.456E+00		1.865E+01	7.029E+01	1.407E+00	-0.063
U-238DA	-1.645E+01		2.487E+01	8.635E+01	1.727E+00	-0.190
U-238DHP	-2.708E+02		4.863E+02	1.741E+03	3.862E+01	-0.156
AM-241HP	5.498E+01		4.308E+01	1.628E+02	3.639E+00	0.338

STL Richland WA.

BA133

Sample ID: JK8HR1AC
Detector ID: GER6 1

Batch ID: 6347439



Acquisition Start: 19-DEC-2006 19:51:22.53
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 2.03047E-01
Slope: 2.49368E-01
Quadrature: 2.16222E-08

SAMPLE IDENTIFICATION: JK8HR1AC

CONFIGURATION ID: GER6:JK8HR1AC_191261951
TITLE : BA133
SAMPLE ID : JK8HR1AC

REPORT DATE: 19-DEC-06
ACQUIRE DATE: 19-DEC-06 19:51:22
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 4-DEC-2006 12:00:00.00
CALIB DATE: 19-DEC-2006 05:16:54.48
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 2.0305E-01 keV
ENERGY SLOPE: 2.4937E-01 keV/C
ENERGY Q COEFF: 2.1622E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 2.1376E-01 keV
FWHM SLOPE: 6.3154E-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 19-DEC-2006 20:21:49

Configuration : $DISK1:[GER6.SAMPLE]JK8HR1AC_191261951.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00 Acquisition date : 19-DEC-2006 19:51:22
Sample ID : JK8HR1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Start energy : 20.15 End energy : 2044.48
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.10	303	95	1.05	324.38	319	15	1.68E-01	9.8	
2	0	239.12	22	5	0.52	958.02	953	11	1.25E-02	28.9	
3	0	276.19	50	15	0.53	1106.65	1095	19	2.79E-02	22.9	
4	0	302.80	121	3	1.25	1213.34	1206	14	6.70E-02	9.7	
5	0	356.03	323	15	1.38	1426.72	1418	19	1.79E-01	6.2	
6	0	384.15	54	9	0.79	1539.48	1529	17	2.97E-02	18.6	

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

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 20:21:49

Configuration	: $DISK1:[GER6.SAMPLE]JK8HR1AC_191261951.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: BA133		
Sample date	: 4-DEC-2006 12:00:00	Acquisition date	: 19-DEC-2006 19:51:22
Sample ID	: JK8HR1AC	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	303	33.00	2.167E+00	1.413E+03	1.417E+03	11.18
	276.40	50	6.90	2.333E+00	1.039E+03	1.042E+03	23.57
	302.84	121	17.80	2.337E+00	9.671E+02	9.698E+02	11.07
	356.00	323	62.05*	2.339E+00	7.413E+02	7.433E+02	8.24
	383.85	54	8.70	2.338E+00	8.770E+02	8.795E+02	19.37

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
PB-212	238.63	22	44.60*	2.326E+00	7.212E+01	7.212E+01	29.42
	300.09	------	3.41	2.336E+00	------	Line Not Found	------

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JK8HR1AC

Acquisition date : 19-DEC-2006 19:51:22

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	1.054E+03	23.57	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			
RA-224DA	1.91Y	0.02	238.63*	44.60	7.323E+01	29.42	Abun.
			240.98	3.95	--- Not Found ---		
			583.14	30.25	--- Not Found ---		
			860.37	4.48	--- Not Found ---		
		% Abundances Found =		53.55			
TH-228DA	1.91Y	0.02	238.63	44.60	7.323E+01	29.42	Abun.
			240.98	3.95	--- Not Found ---		
			583.14*	30.25	--- Not Found ---		
			860.37	4.48	--- Not Found ---		
		% Abundances Found =		53.55			
TH-232DA	1.41E+10Y	0.00	238.63	44.60	7.212E+01	29.42	Abun.
			338.32*	12.40	--- Not Found ---		
			583.14	30.25	--- Not Found ---		
			911.07	27.70	--- Not Found ---		
			964.60	5.20	--- Not Found ---		
			969.11	16.60	--- Not Found ---		
		% Abundances Found =		32.61			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 20:21:51

Configuration : $DISK1:[GER6.SAMPLE]JK8HR1AC_191261951.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 : 4-DEC-2006 12:00:00
Sample ID : JK8HR1AC
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 : 19-DEC-2006 19:51:22
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.23 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 ----

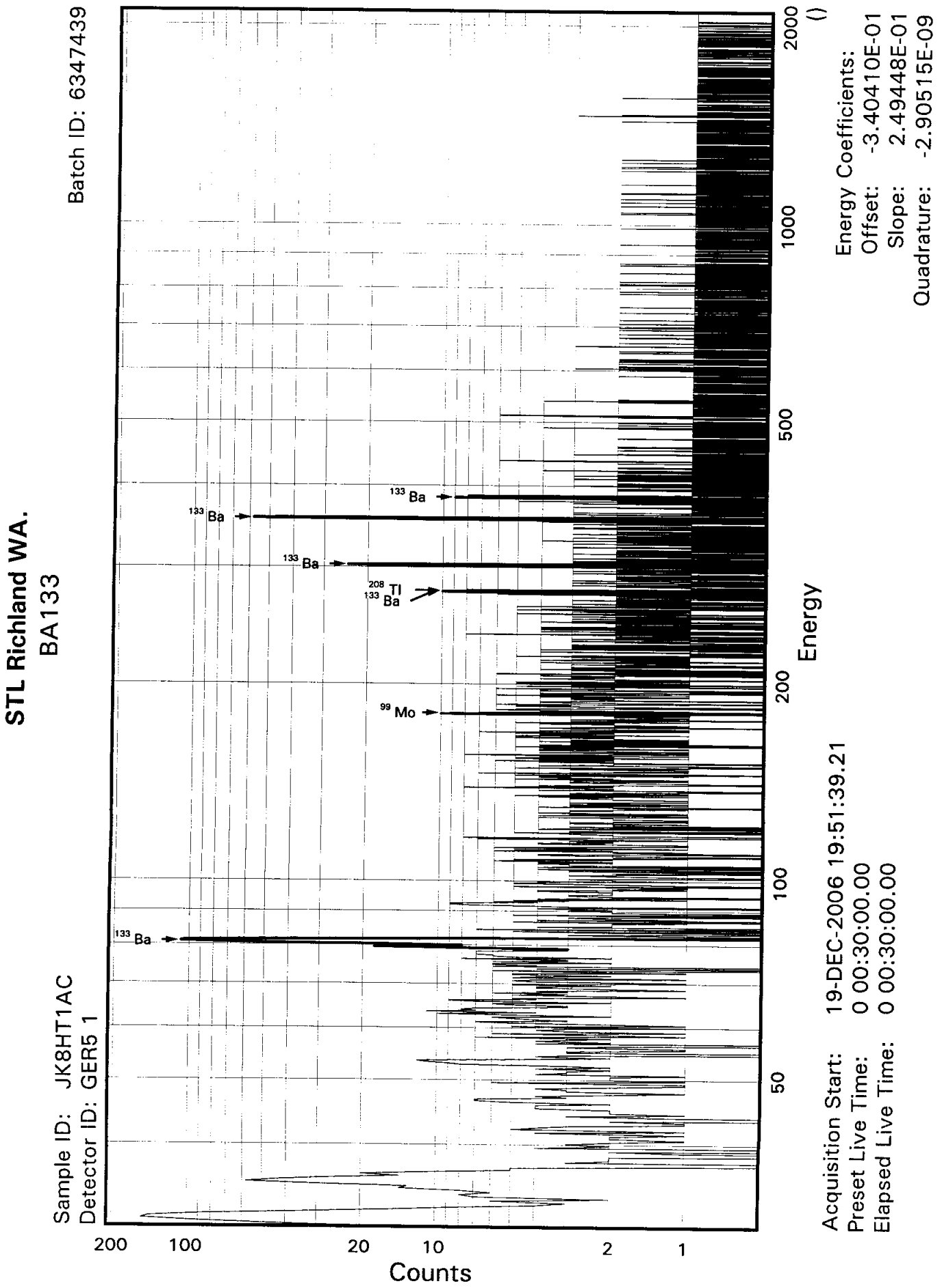
Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.433E+02	6.128E+01	5.787E+01	1.157E+00	12.846
PB-212	7.212E+01	2.121E+01	6.719E+01	1.351E+00	1.073

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	7.248E+01		7.374E+01	3.149E+02	6.317E+00	0.230
NA-22	-4.502E+00		4.016E+00	1.416E+01	2.998E-01	-0.318
K-40	5.005E+01		7.143E+01	3.510E+02	7.524E+00	0.143
SC-46	-6.214E+00		5.456E+00	1.896E+01	3.969E-01	-0.328
CR-51	1.716E+02		1.138E+02	4.795E+02	9.594E+00	0.358
MN-54	1.210E+01		4.328E+00	2.398E+01	4.920E-01	0.505
CO-57	2.350E+02		1.027E+02	4.273E+02	8.825E+00	0.550
CO-58	1.599E-01		4.884E+00	2.073E+01	4.245E-01	0.008
FE-59	6.749E+00		8.181E+00	4.016E+01	8.396E-01	0.168
CO-60	-1.585E+00		4.053E+00	1.638E+01	3.481E-01	-0.097
ZN-65	2.891E-02		9.698E+00	4.021E+01	8.417E-01	0.001
SE-75	-1.602E+01		1.413E+01	4.723E+01	9.475E-01	-0.339
SR-85	-2.153E+01		1.139E+01	3.624E+01	7.282E-01	-0.594
Y-88	-3.269E+00		4.851E+00	1.872E+01	4.112E-01	-0.175
NB-94	-3.539E+00		6.365E+00	2.324E+01	4.779E-01	-0.152
NB-95	9.951E-02		4.794E+00	2.123E+01	4.334E-01	0.005
TC-95M	-2.033E+01		1.773E+01	6.083E+01	1.230E+00	-0.334
ZR-95	7.012E+00		9.821E+00	4.424E+01	9.025E-01	0.158
ZRNB-95	3.554E+00		7.639E+00	3.698E+01	7.549E-01	0.096
MO-99	-1.071E+02		5.346E+02	1.957E+03	4.034E+01	-0.055
RH-101	-2.561E+01		1.415E+01	4.618E+01	9.347E-01	-0.554
RH-102M	-1.126E+01		6.616E+00	2.139E+01	4.291E-01	-0.527
RU-103	-8.855E+00		1.006E+01	3.581E+01	7.189E-01	-0.247
RU-106DA	4.706E+01		5.416E+01	2.399E+02	4.851E+00	0.196
AG-108M	-5.705E+00		8.319E+00	2.959E+01	5.926E-01	-0.193
AG-110M	-6.360E+00		5.391E+00	1.894E+01	3.899E-01	-0.336

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	1.163E+01		1.186E+01	4.933E+01	9.870E-01	0.236
SB-124	2.188E+00		6.685E+00	2.782E+01	5.617E-01	0.079
SB-125	-3.060E+01		2.335E+01	7.795E+01	1.561E+00	-0.393
SN-126DA	1.361E+00		5.621E+00	2.292E+01	4.647E-01	0.059
I-131	-2.492E+01		2.683E+01	9.679E+01	1.936E+00	-0.257
CS-134	-9.049E+00		6.674E+00	2.227E+01	4.556E-01	-0.406
CS-137DA	-1.028E+01		6.405E+00	2.039E+01	4.134E-01	-0.504
LA-138	-4.391E+00		5.532E+00	2.122E+01	4.541E-01	-0.207
CE-139	-3.775E+00		1.388E+01	4.967E+01	1.014E+00	-0.076
BA-140	6.487E+01		6.065E+01	2.564E+02	5.158E+00	0.253
BALA-140	-2.147E-01		1.064E+01	5.451E+01	1.179E+00	-0.004
CE-141	6.363E+00		2.849E+01	1.070E+02	2.201E+00	0.059
CE-144	-2.320E+02		8.919E+01	2.665E+02	5.512E+00	-0.870
CEPR-144	-4.617E+02		1.785E+02	5.346E+02	1.106E+01	-0.864
PM-144	-7.925E+00		6.666E+00	2.296E+01	4.641E-01	-0.345
PM-146	-1.138E+00		8.961E+00	3.464E+01	6.942E-01	-0.033
EU-152	-2.201E+01		3.155E+01	1.106E+02	2.211E+00	-0.199
EU-154	-1.257E+01		1.122E+01	3.956E+01	8.372E-01	-0.318
EU-155	2.446E+01		4.447E+01	1.712E+02	3.605E+00	0.143
HF-181	-2.554E+00		8.836E+00	3.428E+01	6.878E-01	-0.075
BI-207	-1.250E+01		6.776E+00	2.073E+01	4.178E-01	-0.603
TL-208	6.143E+00		6.166E+00	2.843E+01	5.734E-01	0.216
BI-210M	-2.185E+01		1.626E+01	5.300E+01	1.063E+00	-0.412
BI-212	2.722E+01		7.810E+01	3.309E+02	1.011E+01	0.082
BI-214	2.573E+01		1.575E+01	6.802E+01	1.374E+00	0.378
PB-214	2.216E+01		2.364E+01	8.381E+01	1.676E+00	0.264
RA-223	1.441E+01		5.906E+01	2.267E+02	4.546E+00	0.064
RA-224DA	7.323E+01	+	2.154E+01	9.546E+01	1.920E+00	0.767
RA-226DA	2.573E+01		1.575E+01	6.802E+01	1.374E+00	0.378
AC-227DA	-3.797E+01		9.509E+01	2.865E+02	5.763E+00	-0.133
AC-228	3.244E+01		2.244E+01	9.981E+01	2.059E+00	0.325
RA-228DA	3.261E+01		2.255E+01	1.003E+02	2.069E+00	0.325
TH-228DA	1.736E+01		1.743E+01	8.035E+01	1.621E+00	0.216
TH-232DA	2.904E+01		6.713E+01	2.581E+02	5.162E+00	0.113
TH-234DA	6.721E+02		6.073E+02	2.982E+03	6.189E+01	0.225
U-234DA	5.939E+01		3.896E+01	1.657E+02	3.319E+00	0.358
U-235HP	-1.389E+01		9.382E+01	3.450E+02	7.099E+00	-0.040
NP-237DA	-5.793E+01		2.309E+01	6.708E+01	1.342E+00	-0.864
U-238DA	2.216E+01		2.364E+01	8.381E+01	1.676E+00	0.264
U-238DHP	3.348E+01		3.823E+02	1.370E+03	3.040E+01	0.024
AM-241HP	-1.107E+01		3.054E+01	1.083E+02	2.420E+00	-0.102


STL Richland WA.
BA133
Batch ID: 6347439
Sample ID: JK8HT1AC
Detector ID: GER5 1
133 Ba
133 Ba
133 Ba
208 Tl
133 Ba
99 Mo
133 Ba
200
100
20
10
2
1
Counts
50
100
200
500
1000
2000
()
Energy
Acquisition Start: 19-DEC-2006 19:51:39.21
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00
Energy Coefficients:
Offset: -3.40410E-01
Slope: 2.49448E-01
Quadrature: -2.90515E-09

SAMPLE IDENTIFICATION: JK8HT1AC

CONFIGURATION ID: GER5:JK8HT1AC_191261951
TITLE : BA133
SAMPLE ID : JK8HT1AC

REPORT DATE: 19-DEC-06
ACQUIRE DATE: 19-DEC-06 19:51:39
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 4-DEC-2006 12:00:00.00
CALIB DATE: 19-DEC-2006 05:17:09.30
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.3404E+00 keV
ENERGY SLOPE: 2.4945E-01 keV/C
ENERGY Q COEFF: -.2905E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 7.0685E-01 keV
FWHM SLOPE: 3.0233E-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 19-DEC-2006 20:21:54

Configuration : RDND06$DKA100:[GER5.SAMPLE]JK8HT1AC_191261951.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00 Acquisition date : 19-DEC-2006 19:51:39
Sample ID : JK8HT1AC 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 : 19.62 End energy : 2042.94
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	5	30.96	547	89	0.89	125.47	119	32	3.04E-01	5.3	1.42E+00
2	5	35.29	206	38	1.43	142.82	119	32	1.14E-01	13.3	
3	0	53.50	36	31	0.90	215.82	208	14	2.02E-02	36.6	
4	0	80.93	433	37	0.87	325.79	317	15	2.41E-01	5.6	
5	0	116.42	11	13	0.68	468.09	463	8	6.22E-03	64.5	
6	0	180.87	13	18	0.67	726.46	720	9	7.22E-03	65.0	
7	1	275.79	33	3	1.21	1107.00	1100	16	1.84E-02	26.9	3.90E+00
8	1	277.04	37	3	1.21	1112.00	1100	16	2.06E-02	15.8	
9	0	302.80	115	4	1.12	1215.28	1207	17	6.39E-02	10.2	
10	0	355.99	301	3	1.22	1428.49	1422	15	1.67E-01	5.9	
11	0	384.12	42	8	1.42	1541.29	1532	14	2.32E-02	20.7	
12	0	386.97	21	5	0.36	1552.71	1547	12	1.16E-02	31.7	

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

VMS Nuclide Identification Report V3.1 Generated 19-DEC-2006 20:21:54

Configuration : RDND06$DKA100:[GER5.SAMPLE]JK8HT1AC_191261951.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BA133
Sample date : 4-DEC-2006 12:00:00
Sample ID : JK8HT1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Energy tolerance : 1.50
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 19-DEC-2006 19:51:39
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.23 0.0%
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	433	33.00	1.924E+00	2.273E+03	2.279E+03	7.84
	276.40	33	6.90	2.077E+00	7.692E+02	7.713E+02	27.42
	302.84	115	17.80	2.080E+00	1.035E+03	1.038E+03	11.52
	356.00	301	62.05*	2.082E+00	7.762E+02	7.783E+02	8.01
	383.85	42	8.70	2.081E+00	7.677E+02	7.698E+02	21.39

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JK8HT1AC

Acquisition date : 19-DEC-2006 19:51:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
5	30.96	547	89	0.89	125.47	119	32	3.04E-01	5.3	1.68E+00	
5	35.29	206	38	1.43	142.82	119	32	1.14E-01	13.3	1.72E+00	
0	53.50	36	31	0.90	215.82	208	14	2.02E-02	36.6	1.83E+00	
0	116.42	11	13	0.68	468.09	463	8	6.22E-03	64.5	1.99E+00	
0	180.87	13	18	0.67	726.46	720	9	7.22E-03	65.0	2.05E+00	T
1	277.04	37	3	1.21	1112.00	1100	16	2.06E-02	15.8	2.08E+00	T
0	386.97	21	5	0.36	1552.71	1547	12	1.16E-02	31.7	2.08E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JK8HT1AC

Acquisition date : 19-DEC-2006 19:51:39

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
MO-99	66.02H	5.58	140.50*	90.70	--- Not Found ---		Abun.
			181.07	6.20	1.628E+04	65.27	
			739.58	12.80	--- Not Found ---		
		% Abundances Found =		5.65	(Abn. Limit = 94.00%)		
TL-208	1.41E+10Y	0.00	277.35	6.80	8.738E+02	16.66	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 19-DEC-2006 20:21:55

Configuration : RDND06$DKA100:[GER5.SAMPLE]JK8HT1AC_191261951.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 : 4-DEC-2006 12:00:00 Acquisition date : 19-DEC-2006 19:51:39
Sample ID : JK8HT1AC 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	7.783E+02	6.234E+01	5.972E+01	1.194E+00	13.032

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.776E+01		4.254E+01	2.023E+02	4.059E+00	0.088
NA-22	8.098E-02		3.395E+00	1.594E+01	3.380E-01	0.005
NA-24	-1.871E+01		3.251E+01	Half-Life too short		
K-40	-1.172E+02		5.549E+01	2.685E+02	5.768E+00	-0.437
SC-46	-1.169E+00		5.996E+00	2.406E+01	5.046E-01	-0.049
CR-51	-1.954E+02		1.353E+02	4.574E+02	9.151E+00	-0.427
MN-54	3.571E+00		4.103E+00	2.041E+01	4.191E-01	0.175
CO-57	-1.097E+02		1.294E+02	4.380E+02	9.054E+00	-0.251
CO-58	3.290E+00		7.327E+00	3.041E+01	6.232E-01	0.108
FE-59	-4.184E-01		1.080E+01	4.518E+01	9.459E-01	-0.009
CO-60	3.446E+00		3.425E+00	1.844E+01	3.926E-01	0.187
ZN-65	1.693E+01		1.159E+01	5.476E+01	1.148E+00	0.309
SE-75	-2.108E+01		1.782E+01	5.981E+01	1.200E+00	-0.352
SR-85	-1.208E+01		1.253E+01	4.257E+01	8.555E-01	-0.284
Y-88	-1.325E-02		3.928E+00	1.819E+01	4.008E-01	-0.001
NB-94	1.964E+00		5.373E+00	2.323E+01	4.781E-01	0.085
NB-95	-2.776E-01		6.375E+00	2.663E+01	5.440E-01	-0.010
TC-95M	1.054E+00		2.225E+01	8.167E+01	1.652E+00	0.013
ZR-95	1.037E+01		7.866E+00	4.188E+01	8.549E-01	0.248
ZRNB-95	-4.836E-01		1.110E+01	4.639E+01	9.476E-01	-0.010
MO-99	7.398E+02		6.823E+02	2.595E+03	5.353E+01	0.285
RH-101	1.860E+01		1.684E+01	6.556E+01	1.327E+00	0.284
RH-102M	-7.615E+00		4.855E+00	1.497E+01	3.003E-01	-0.509
RU-103	-1.519E+01		9.750E+00	3.101E+01	6.226E-01	-0.490
RU-106DA	-1.435E+01		6.496E+01	2.547E+02	5.151E+00	-0.056
AG-108M	-2.233E+01		9.478E+00	2.766E+01	5.539E-01	-0.807
AG-110M	2.774E+00		4.156E+00	2.252E+01	4.640E-01	0.123

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

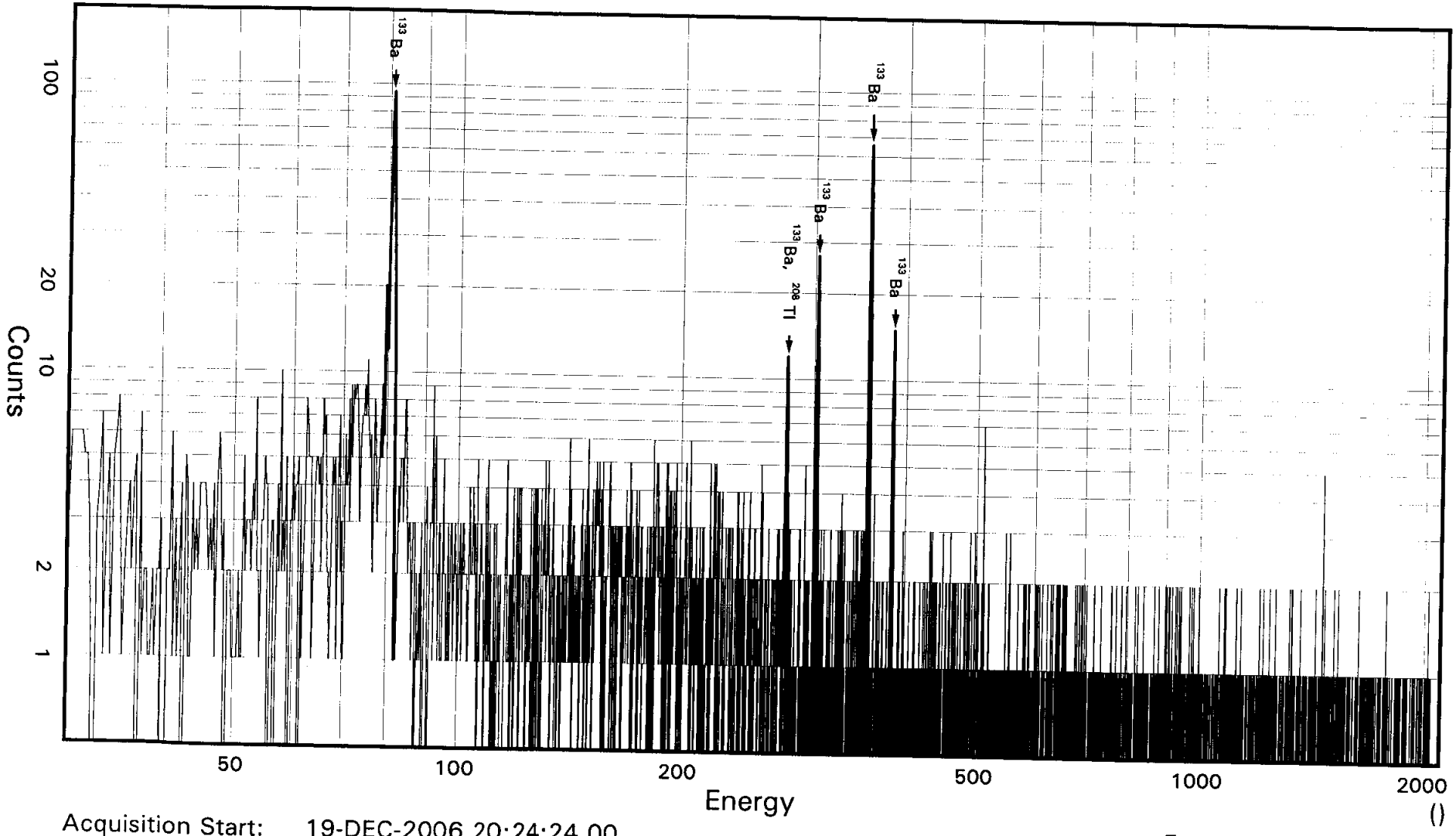
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	-1.626E+01		1.250E+01	4.231E+01	8.464E-01	-0.384
SB-124	-4.166E-01		7.144E+00	2.882E+01	5.822E-01	-0.014
SB-125	2.858E+00		2.247E+01	8.994E+01	1.801E+00	0.032
SN-126DA	2.190E-01		4.613E+00	1.971E+01	3.998E-01	0.011
I-131	3.140E+01		3.102E+01	1.341E+02	2.682E+00	0.234
CS-134	3.811E+00		3.940E+00	2.094E+01	4.286E-01	0.182
CS-137DA	4.512E+00		6.123E+00	2.750E+01	5.577E-01	0.164
LA-138	1.027E+01		6.344E+00	3.373E+01	7.233E-01	0.304
CE-139	-8.176E+00		1.857E+01	6.635E+01	1.355E+00	-0.123
BA-140	4.716E+01		5.110E+01	2.274E+02	4.576E+00	0.207
BALA-140	2.699E+00		1.687E+01	8.070E+01	1.750E+00	0.033
LA-140	-4.095E-04		1.017E-03	Half-Life too short		
CE-141	6.593E+01		3.829E+01	1.493E+02	3.073E+00	0.442
CE-144	-1.184E+02		1.237E+02	4.164E+02	8.620E+00	-0.284
CEPR-144	-2.405E+02		2.472E+02	8.309E+02	1.720E+01	-0.289
PM-144	6.943E+00		6.248E+00	2.801E+01	5.664E-01	0.248
PM-146	1.387E+01		8.522E+00	4.057E+01	8.132E-01	0.342
EU-152	2.684E+01		3.026E+01	1.251E+02	2.502E+00	0.215
EU-154	2.262E-01		9.483E+00	4.452E+01	9.439E-01	0.005
EU-155	-8.041E+00		6.506E+01	2.334E+02	4.923E+00	-0.034
HF-181	-3.003E+00		7.587E+00	2.977E+01	5.974E-01	-0.101
BI-207	-7.345E+00		4.868E+00	1.597E+01	3.219E-01	-0.460
TL-208	4.297E+00		7.061E+00	3.042E+01	6.137E-01	0.141
BI-210M	-1.345E+01		1.973E+01	6.923E+01	1.389E+00	-0.194
BI-212	3.463E+01		5.816E+01	2.805E+02	8.575E+00	0.123
PB-212	-1.706E+01		2.557E+01	9.701E+01	1.951E+00	-0.176
BI-214	1.208E+01		1.167E+01	5.347E+01	1.081E+00	0.226
PB-214	4.998E+01		2.707E+01	1.096E+02	2.192E+00	0.456
RA-223	-1.076E+01		6.542E+01	2.420E+02	4.853E+00	-0.044
RA-224DA	-1.732E+01		2.596E+01	9.850E+01	1.981E+00	-0.176
RA-226DA	1.180E+01		1.162E+01	5.323E+01	1.076E+00	0.222
AC-227DA	-1.433E+02		9.513E+01	3.119E+02	6.276E+00	-0.459
AC-228	-9.151E+00		1.095E+01	5.537E+01	1.143E+00	-0.165
RA-228DA	-9.197E+00		1.100E+01	5.565E+01	1.149E+00	-0.165
TH-228DA	1.214E+01		1.995E+01	8.597E+01	1.734E+00	0.141
TH-232DA	-1.851E+01		6.856E+01	2.576E+02	5.153E+00	-0.072
TH-234DA	-5.122E+02		6.278E+02	2.375E+03	4.937E+01	-0.216
U-234DA	4.635E+01		4.852E+01	1.929E+02	3.863E+00	0.240
U-235HP	4.199E+01		1.281E+02	4.706E+02	9.694E+00	0.089
NP-237DA	2.754E+01		2.369E+01	9.698E+01	1.941E+00	0.284
U-238DA	4.998E+01		2.707E+01	1.096E+02	2.192E+00	0.456
U-238DHP	-2.190E+02		5.203E+02	1.943E+03	4.325E+01	-0.113
AM-241HP	-4.422E+01		4.134E+01	1.425E+02	3.197E+00	-0.310

STL Richland WA.

BA133

Sample ID: JLD0Q1AA
Detector ID: GER6 1

Batch ID: 6347439



Acquisition Start: 19-DEC-2006 20:24:24.00
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 2.03047E-01
Slope: 2.49368E-01
Quadrature: 2.16222E-08

SAMPLE IDENTIFICATION: JLD0Q1AA

CONFIGURATION ID: GER6:JLD0Q1AA_191262024
TITLE : BA133
SAMPLE ID : JLD0Q1AA

REPORT DATE: 19-DEC-06
ACQUIRE DATE: 19-DEC-06 20:24:24
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 13-DEC-2006 12:00:00.00
CALIB DATE: 19-DEC-2006 05:16:54.48
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 2.0305E-01 keV
ENERGY SLOPE: 2.4937E-01 keV/C
ENERGY Q COEFF: 2.1622E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 2.1376E-01 keV
FWHM SLOPE: 6.3154E-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 19-DEC-2006 20:54:40

Configuration	: $DISK1:[GER6.SAMPLE]JLD0Q1AA_191262024.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6		
Sample title	: BA133		
Sample date	: 13-DEC-2006 12:00:00	Acquisition date	: 19-DEC-2006 20:24:24
Sample ID	: JLD0Q1AA	Sample quantity	: 1.0000 SAMPL
Sample type	:	Sample geometry	: BA133T15
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.23 0.0%
Start energy	: 20.15	End energy	: 2044.48
Sensitivity	: 5.00	Gaussian	: 10.00
Critical level	: No		

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.89	386	59	0.83	323.55	315	15	2.15E-01	6.6	
2	0	276.64	44	19	0.81	1108.46	1100	15	2.46E-02	26.1	
3	0	302.93	117	12	0.86	1213.86	1206	16	6.50E-02	11.4	
4	0	356.15	342	19	1.23	1427.20	1416	19	1.90E-01	6.2	
5	0	384.11	53	11	0.99	1539.33	1531	14	2.93E-02	19.0	

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

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 20:54:40

Configuration	: $DISK1:[GER6.SAMPLE]JLD0Q1AA_191262024.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3		
Sample title	: BA133		
Sample date	: 13-DEC-2006 12:00:00	Acquisition date	: 19-DEC-2006 20:24:24
Sample ID	: JLD0Q1AA	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	386	33.00	2.167E+00	1.800E+03	1.802E+03	8.58
	276.40	44	6.90	2.334E+00	9.152E+02	9.162E+02	26.67
	302.84	117	17.80	2.337E+00	9.370E+02	9.381E+02	12.59
	356.00	342	62.05*	2.339E+00	7.856E+02	7.865E+02	8.22
	383.85	53	8.70	2.338E+00	8.655E+02	8.665E+02	19.75

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JLD0Q1AA

Acquisition date : 19-DEC-2006 20:24:24

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	9.286E+02	26.67	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 20:54:43

Configuration : $DISK1:[GER6.SAMPLE]JLD0Q1AA_191262024.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 : 13-DEC-2006 12:00:00 Acquisition date : 19-DEC-2006 20:24:24
Sample ID : JLD0Q1AA 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	7.865E+02	6.465E+01	5.018E+01	1.004E+00	15.672

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-2.335E+01		6.183E+01	2.365E+02	4.744E+00	-0.099
NA-22	1.532E+00		2.619E+00	1.407E+01	2.978E-01	0.109
K-40	3.556E+01		6.699E+01	3.364E+02	7.213E+00	0.106
SC-46	4.200E+00		5.603E+00	2.451E+01	5.131E-01	0.171
CR-51	-5.388E+01		8.554E+01	3.080E+02	6.162E+00	-0.175
MN-54	-5.239E-01		4.684E+00	1.904E+01	3.907E-01	-0.028
CO-57	-3.444E+01		7.873E+01	2.900E+02	5.988E+00	-0.119
CO-58	3.085E+00		4.437E+00	2.047E+01	4.191E-01	0.151
FE-59	-2.811E+00		7.665E+00	3.131E+01	6.545E-01	-0.090
CO-60	-7.733E-02		4.825E+00	1.989E+01	4.226E-01	-0.004
ZN-65	-1.001E+01		1.145E+01	4.113E+01	8.608E-01	-0.243
SE-75	1.497E+00		1.236E+01	4.721E+01	9.471E-01	0.032
SR-85	-1.447E+01		8.767E+00	2.843E+01	5.712E-01	-0.509
Y-88	3.403E+00		4.605E+00	2.151E+01	4.724E-01	0.158
NB-94	6.992E-01		4.392E+00	1.865E+01	3.835E-01	0.037
NB-95	6.778E+00		6.580E+00	2.877E+01	5.873E-01	0.236
TC-95M	1.015E+01		1.677E+01	6.421E+01	1.298E+00	0.158
ZR-95	-2.444E+00		9.230E+00	3.690E+01	7.527E-01	-0.066
ZRNB-95	1.246E+01		1.238E+01	5.408E+01	1.104E+00	0.230
MO-99	1.864E+01		5.221E+01	1.995E+02	4.111E+00	0.093
RH-101	2.091E+01		1.371E+01	5.544E+01	1.122E+00	0.377
RH-102M	2.133E+00		5.373E+00	2.287E+01	4.588E-01	0.093
RU-103	-4.911E+00		7.733E+00	2.851E+01	5.724E-01	-0.172
RU-106DA	3.001E+01		4.164E+01	1.942E+02	3.926E+00	0.155
AG-108M	5.551E+00		8.137E+00	3.264E+01	6.536E-01	0.170
AG-110M	-1.303E+01		7.368E+00	2.305E+01	4.745E-01	-0.565
SN-113DA	-1.786E+00		9.837E+00	3.801E+01	7.605E-01	-0.047

Sample ID : JLD0Q1AA Acquisition date : 19-DEC-2006 20:24:24

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

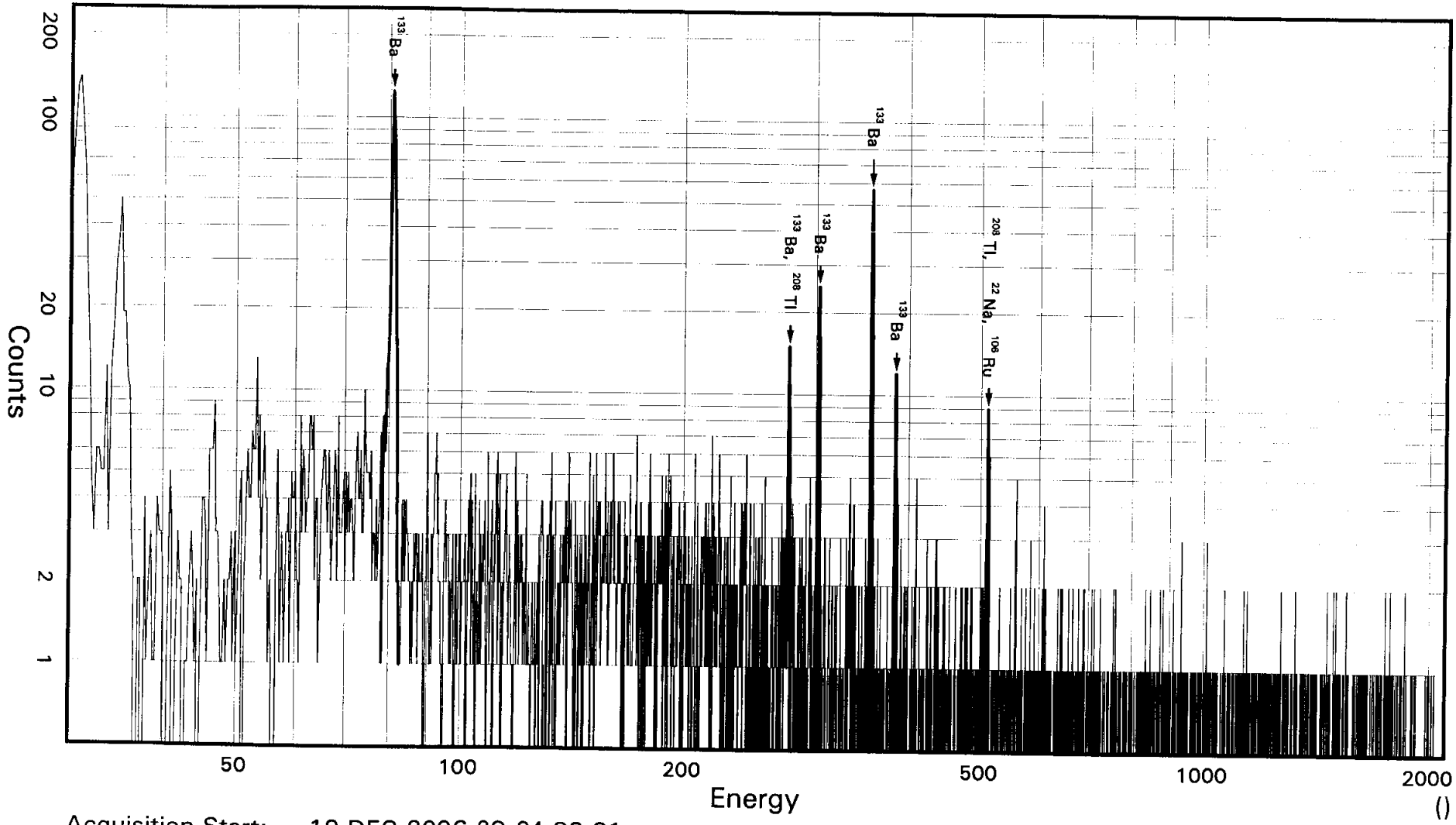
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	6.775E+00		6.986E+00	2.976E+01	6.010E-01	0.228
SB-125	9.148E+00		2.089E+01	8.506E+01	1.703E+00	0.108
SN-126DA	-7.361E+00		6.006E+00	2.037E+01	4.131E-01	-0.361
I-131	-3.893E+00		1.507E+01	5.714E+01	1.143E+00	-0.068
CS-134	6.867E+00		4.871E+00	2.420E+01	4.950E-01	0.284
CS-137DA	3.927E+00		7.294E+00	3.000E+01	6.080E-01	0.131
LA-138	9.127E-02		4.528E+00	2.122E+01	4.541E-01	0.004
CE-139	1.065E+01		1.261E+01	4.874E+01	9.949E-01	0.219
BA-140	-1.589E+01		2.316E+01	8.798E+01	1.770E+00	-0.181
BALA-140	-5.086E+00		1.226E+01	4.903E+01	1.060E+00	-0.104
LA-140	-2.502E+01		6.032E+01	2.411E+02	5.216E+00	-0.104
CE-141	-2.606E+01		2.168E+01	7.379E+01	1.518E+00	-0.353
CE-144	1.178E+01		9.301E+01	3.502E+02	7.243E+00	0.034
CEPR-144	2.244E+01		1.859E+02	6.999E+02	1.448E+01	0.032
PM-144	1.083E-01		3.560E+00	1.583E+01	3.199E-01	0.007
PM-146	-5.557E-01		7.778E+00	3.099E+01	6.210E-01	-0.018
EU-152	-1.564E+01		3.203E+01	1.142E+02	2.284E+00	-0.137
EU-154	4.298E+00		7.348E+00	3.948E+01	8.356E-01	0.109
EU-155	5.558E+00		4.995E+01	1.837E+02	3.870E+00	0.030
HF-181	1.241E+01		8.115E+00	3.637E+01	7.297E-01	0.341
BI-207	2.686E+00		5.595E+00	2.336E+01	4.708E-01	0.115
TL-208	-2.546E+00		7.367E+00	2.861E+01	5.771E-01	-0.089
BI-210M	-6.113E+00		1.649E+01	5.916E+01	1.187E+00	-0.103
BI-212	-3.756E+01		6.836E+01	2.662E+02	8.137E+00	-0.141
PB-212	1.377E+01		1.910E+01	7.487E+01	1.506E+00	0.184
BI-214	-2.348E+00		1.185E+01	4.666E+01	9.426E-01	-0.050
PB-214	-1.332E+01		3.119E+01	9.166E+01	1.833E+00	-0.145
RA-223	1.240E+01		6.295E+01	2.418E+02	4.848E+00	0.051
RA-224DA	1.386E+01		1.922E+01	7.534E+01	1.515E+00	0.184
RA-226DA	-2.348E+00		1.185E+01	4.666E+01	9.426E-01	-0.050
AC-227DA	-2.218E+02		8.670E+01	2.543E+02	5.115E+00	-0.873
AC-228	5.913E+00		1.897E+01	7.962E+01	1.642E+00	0.074
RA-228DA	5.925E+00		1.901E+01	7.979E+01	1.646E+00	0.074
TH-228DA	-7.130E+00		2.064E+01	8.015E+01	1.617E+00	-0.089
TH-232DA	-2.765E+01		5.743E+01	2.087E+02	4.174E+00	-0.133
TH-234DA	-2.973E+02		8.267E+02	3.177E+03	6.594E+01	-0.094
U-234DA	-3.829E+01		3.632E+01	1.266E+02	2.535E+00	-0.302
U-235HP	-3.697E+01		9.005E+01	3.264E+02	6.717E+00	-0.113
NP-237DA	-2.374E+01		1.944E+01	6.597E+01	1.320E+00	-0.360
U-238DA	-1.332E+01		3.119E+01	9.166E+01	1.833E+00	-0.145
U-238DHP	2.862E+02		3.494E+02	1.315E+03	2.917E+01	0.218
AM-241HP	-2.857E+01		3.399E+01	1.156E+02	2.584E+00	-0.247

STL Richland WA.

BA133

Sample ID: JLD0Q1AC
Detector ID: GER8 1

Batch ID: 6347439



Acquisition Start: 19-DEC-2006 20:24:38.31
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 3.66137E-01
Slope: 2.49855E-01
Quadrature: 9.45922E-09

SAMPLE IDENTIFICATION: JLD0Q1AC

CONFIGURATION ID: GER8:JLD0Q1AC_191262024
TITLE : BA133
SAMPLE ID : JLD0Q1AC

REPORT DATE: 19-DEC-06
ACQUIRE DATE: 19-DEC-06 20:24:38
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 19-DEC-2006 05:17:47.72
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 3.6614E-01 keV
ENERGY SLOPE: 2.4986E-01 keV/C
ENERGY Q COEFF: 9.4592E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.7708E-01 keV
FWHM SLOPE: 2.0132E-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 19-DEC-2006 20:54:56

Configuration : $DISK1:[GER8.SAMPLE]JLD0Q1AC_191262024.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 : 19-DEC-2006 20:24:38
Sample ID : JLD0Q1AC 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 : 20.35 End energy : 2047.81
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	30.76	589	111	1.10	121.65	113	34	3.27E-01	5.4	1.28E+00
2	2	35.00	171	37	1.33	138.61	113	34	9.50E-02	15.4	
3	0	80.91	502	49	0.89	322.37	312	19	2.79E-01	5.6	
4	0	276.43	67	10	1.04	1104.84	1099	15	3.70E-02	16.4	
5	0	302.80	111	19	1.22	1210.40	1202	15	6.17E-02	12.7	
6	0	355.98	302	18	1.27	1423.19	1414	18	1.68E-01	6.6	
7	0	383.87	51	22	1.13	1534.82	1525	18	2.83E-02	25.9	
8	0	510.94*	11	9	1.96	2043.33	2034	18	6.00E-03	92.6	

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

VMS Nuclide Identification Report V3.0 Generated 19-DEC-2006 20:54:57

Configuration	: $DISK1:[GER8.SAMPLE]JLD0Q1AC_191262024.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	: 19-DEC-2006 20:24:38
Sample ID	: JLD0Q1AC	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	502	33.00	2.202E+00	2.303E+03	2.314E+03	7.78
	276.40	67	6.90	2.371E+00	1.358E+03	1.364E+03	17.25
	302.84	111	17.80	2.374E+00	8.758E+02	8.802E+02	13.84
	356.00	302	62.05*	2.376E+00	6.829E+02	6.862E+02	8.54
	383.85	51	8.70	2.375E+00	8.209E+02	8.249E+02	26.49

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JLD0Q1AC

Acquisition date : 19-DEC-2006 20:24:38

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	30.76	589	111	1.10	121.65	113	34	3.27E-01	5.4	1.93E+00	
2	35.00	171	37	1.33	138.61	113	34	9.50E-02	15.4	1.97E+00	
0	510.94	11	9	1.96	2043.33	2034	18	6.00E-03	92.6	2.37E+00	T

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JLD0Q1AC

Acquisition date : 19-DEC-2006 20:24:38

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
NA-22	2.60Y	0.03	511.00	179.68	8.643E+00	92.76	Abun.
			1274.54*	99.94	--- Not Found ---		
		% Abundances Found =		64.26			
RU-106DA	368.20D	0.07	511.85	20.60	7.780E+01	92.76	Abun.
			621.84*	9.80	--- Not Found ---		
		% Abundances Found =		67.76			
TL-208	1.41E+10Y	0.00	277.35	6.80	1.378E+03	17.25	Abun.
			510.84	21.60	7.048E+01	92.76	
			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 19-DEC-2006 20:54:59

Configuration : $DISK1:[GER8.SAMPLE]JLD0Q1AC_191262024.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 : 19-DEC-2006 20:24:38
Sample ID : JLD0Q1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.862E+02	5.862E+01	4.308E+01	8.616E-01	15.930

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	9.491E+00		7.950E+01	3.207E+02	6.433E+00	0.030
NA-22	-3.085E+00		2.188E+00	4.096E+00	8.667E-02	-0.753
K-40	2.300E+01		3.552E+01	1.986E+02	4.256E+00	0.116
SC-46	3.255E-02		3.667E+00	1.709E+01	3.577E-01	0.002
CR-51	1.125E+02		1.270E+02	5.326E+02	1.066E+01	0.211
MN-54	5.934E+00		4.904E+00	2.295E+01	4.706E-01	0.259
CO-57	-6.652E+01		1.107E+02	3.845E+02	7.939E+00	-0.173
CO-58	-6.451E-02		2.717E+00	1.389E+01	2.844E-01	-0.005
FE-59	8.507E+00		5.829E+00	3.775E+01	7.890E-01	0.225
CO-60	-1.255E-01		3.739E+00	1.619E+01	3.440E-01	-0.008
ZN-65	-6.237E+00		8.770E+00	3.344E+01	6.998E-01	-0.187
SE-75	2.258E+01		1.598E+01	6.609E+01	1.326E+00	0.342
SR-85	3.862E+01		1.057E+01	4.824E+01	9.694E-01	0.800
Y-88	-1.867E+00		3.217E+00	1.361E+01	2.989E-01	-0.137
NB-94	-1.928E+00		5.338E+00	2.033E+01	4.180E-01	-0.095
NB-95	-8.675E+00		6.458E+00	2.114E+01	4.314E-01	-0.410
TC-95M	-2.108E+01		2.035E+01	7.058E+01	1.427E+00	-0.299
ZR-95	-2.949E-01		9.947E+00	4.177E+01	8.520E-01	-0.007
ZRNB-95	-1.402E+01		1.001E+01	3.217E+01	6.567E-01	-0.436
RH-101	-1.436E-01		1.417E+01	5.256E+01	1.064E+00	-0.003
RH-102M	-5.414E+00		6.153E+00	2.236E+01	4.485E-01	-0.242
RU-103	-1.937E+00		7.482E+00	3.076E+01	6.175E-01	-0.063
RU-106DA	4.673E+01		5.471E+01	2.416E+02	4.884E+00	0.193
AG-108M	-1.029E+01		7.593E+00	2.490E+01	4.987E-01	-0.413
AG-110M	-1.746E+00		5.103E+00	2.106E+01	4.335E-01	-0.083
SN-113DA	-6.168E+00		1.272E+01	4.622E+01	9.246E-01	-0.133
SB-124	1.655E+00		6.445E+00	2.746E+01	5.545E-01	0.060

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	1.802E+00		2.162E+01	8.416E+01	1.685E+00	0.021
SN-126DA	-5.676E+00		4.505E+00	1.531E+01	3.103E-01	-0.371
I-131	-2.145E+01		7.163E+01	2.743E+02	5.486E+00	-0.078
CS-134	6.731E-02		4.331E+00	1.883E+01	3.852E-01	0.004
CS-137DA	-5.068E+00		6.019E+00	2.184E+01	4.426E-01	-0.232
LA-138	2.151E-01		3.361E+00	1.726E+01	3.692E-01	0.012
CE-139	-6.048E+00		1.647E+01	5.757E+01	1.175E+00	-0.105
BA-140	3.557E+01		7.460E+01	3.330E+02	6.699E+00	0.107
BALA-140	1.400E+01		1.402E+01	1.029E+02	2.226E+00	0.136
CE-141	-3.461E+01		3.832E+01	1.303E+02	2.680E+00	-0.266
CE-144	1.819E+02		1.006E+02	4.064E+02	8.403E+00	0.448
CEPR-144	3.673E+02		2.014E+02	8.142E+02	1.684E+01	0.451
PM-144	-1.768E+00		4.902E+00	1.934E+01	3.909E-01	-0.091
PM-146	1.820E+00		5.907E+00	2.617E+01	5.244E-01	0.070
EU-152	-6.378E+00		2.450E+01	9.232E+01	1.846E+00	-0.069
EU-154	-8.565E+00		6.074E+00	1.137E+01	2.406E-01	-0.753
EU-155	-3.513E+01		5.616E+01	1.957E+02	4.121E+00	-0.180
HF-181	-6.415E+00		1.124E+01	4.216E+01	8.459E-01	-0.152
BI-207	3.059E+00		4.535E+00	2.042E+01	4.116E-01	0.150
TL-208	5.283E+00		6.453E+00	2.798E+01	5.644E-01	0.189
BI-210M	-2.081E+01		1.720E+01	5.852E+01	1.174E+00	-0.356
BI-212	-2.291E+01		5.790E+01	2.335E+02	7.135E+00	-0.098
PB-212	-4.174E+01		2.599E+01	8.813E+01	1.772E+00	-0.474
BI-214	-9.594E+00		1.328E+01	5.328E+01	1.076E+00	-0.180
PB-214	-5.762E+00		2.101E+01	8.093E+01	1.619E+00	-0.071
RA-223	-3.992E+01		6.788E+01	2.420E+02	4.854E+00	-0.165
RA-224DA	-4.289E+01		2.671E+01	9.056E+01	1.821E+00	-0.474
RA-226DA	-9.595E+00		1.328E+01	5.328E+01	1.076E+00	-0.180
AC-227DA	-1.299E+02		8.706E+01	2.899E+02	5.832E+00	-0.448
AC-228	2.140E+01		1.464E+01	7.360E+01	1.518E+00	0.291
RA-228DA	2.159E+01		1.477E+01	7.427E+01	1.532E+00	0.291
TH-228DA	1.511E+01		1.846E+01	8.004E+01	1.614E+00	0.189
TH-232DA	3.449E+01		6.943E+01	2.673E+02	5.346E+00	0.129
TH-234DA	2.310E+02		3.842E+02	2.079E+03	4.314E+01	0.111
U-234DA	3.530E+01		4.752E+01	1.898E+02	3.801E+00	0.186
U-235HP	-1.503E+02		1.064E+02	3.474E+02	7.149E+00	-0.433
NP-237DA	-2.006E+01		2.169E+01	7.556E+01	1.512E+00	-0.265
U-238DA	-5.762E+00		2.101E+01	8.093E+01	1.619E+00	-0.071
U-238DHP	-3.467E+02		4.522E+02	1.618E+03	3.589E+01	-0.214
AM-241HP	-3.123E+01		4.245E+01	1.470E+02	3.285E+00	-0.212

12/16/2006 11:55:45 AM

Sample Preparation/Analysis

BX Ra-226/228 PrpRC5016, SepRC5005
TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow
01 STANDARD TEST SET

Balance Id:1120373922,1120403183
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech: ,HarrisonJ

AnalyDueDate: 01/03/2007

Batch: 6347439 pCi/sampl
SEQ Batch, Test: None

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

Comments: Sample 7 (JK8HP-1-AC) was counted 3 times (2 recounts) for Ba-133 because the first two times the counts were too high, so the chemical yield was out of range but the third time was good. AL 12/22/06

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

JK8G81AC-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:
JLD0Q1AA-BLK:											
Ba-133	RDL:	pCi/sam	LCL:20	UCL:115	RPD:20	Ra-226	RDL:1.00E+00	pCi/sam	LCL:	UCL:	RPD:
JLD0Q1AC-LCS:											
Ba-133	RDL:	pCi/sam	LCL:20	UCL:115	RPD:20	Ra-226	RDL:1	pCi/sam	LCL:70	UCL:130	RPD:20

JK8G81AC-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JLD0Q1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JLD0Q1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____