Event #112

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TOTAL # PAGES IN DOCUMENT 189

Analytical Data Package Prepared For

Brown and Caldwell

Yerington Air Quality - Event #112

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.: 34217

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
33300	EVENT 112	000579	J6L200275-4	JLWMN1AA	9JLWMN10	6355205
		000579	J6L200275-4	JLWMN1AE	9JLWMN10	6355206
		000579	J6L200275-4	JLWMN1AC	9JLWMN10	6355208
		000579	J6L200275-4	JLWMN1AD	9JLWMN10	6355209
		P-0809	J6L200275-1	JLWMF1AA	9JLWMF10	6355205
		P-0809	J6L200275-1	JLWMF1AE	9JLWMF10	6355206
		P-0809	J6L200275-1	JLWMF1AC	9JLWMF10	6355208
		P-0809	J6L200275-1	JLWMF1AD	9JLWMF10	6355209
		P-0810	J6L200275-2	JLWMK1AA	9JLWMK10	6355205
		P-0810	J6L200275-2	JLWMK1AE	9JLWMK10	6355206
		P-0810	J6L200275-2	JLWMK1AC	9JLWMK10	6355208
		P-0810	J6L200275-2	JLWMK1AD	9JLWMK10	6355209
		P-0811	J6L200275-3	JLWML1AA	9JLWML10	6355205
		P-0811	J6L200275-3	JLWML1AE	9JLWML10	6355206
		P-0811	J6L200275-3	JLWML1AC	9JLWML10	6355208
		P-0811	J6L200275-3	JLWML1AD	9JLWML10	6355209

SEVERN TRENT STL

STL Richland
2800 George Washington Way
Richland, WA 99354

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

Certificate of Analysis

January 17, 2007

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

Attention: Guy Graening

Date Received at Lab	:	December 18, 2006
Project Name	:	Air Quality Monitoring Yerington Mine
Project Number	:	121243
Event Number	:	112
PO Number	:	129682.001
Sample Type	:	Four (4) Filters
SDG Number	:	33300

CASE NARRATIVE

I. Introduction

On December 18, 2006, four 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 J6L200275.

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:

Gas Proportional Counters
Gross Alpha by method STL-RICHRC5016/5014

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 recovery was low at 71%. All of the samples are below detection limit. Data is accepted. Except as noted, 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: 17-Jan-07

Report No. : 34217

SDG No: 33300

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC|MDA	RER2
000579	JLWMN1AA	TH-228	0.0945 +- 0.423	ND	pCi/sample	24%	1.13	
		TH-230	0.547 +- 0.670	ND	pCi/sample	24%	1.09	
		TH-232	0.182 +- 0.410	ND	pCi/sample	24%	1.09	
000579	JLWMN1AE	ALPHA	6.16 +- 4.29	=	pCi/sample	100%	5.92	
000579	JLWMN1AC	RA-226	0.325 +- 0.238	ND	pCi/sample	91%	0.333	
000579	JLWMN1AD	RA-228	2.65 +- 1.04	=	pCi/sample	78%	1.66	
P-0809	JLWMF1AA	TH-228	0.0417 +- 0.187	ND	pCi/sample	45%	0.5	
		TH-230	0.362 +- 0.375	ND	pCi/sample	45%	0.482	
		TH-232	0.0804 +- 0.180	ND	pCi/sample	45%	0.482	
P-0809	JLWMF1AE	ALPHA	4.15 +- 3.82	ND	pCi/sample	100%	5.9	
P-0809	JLWMF1AC	RA-226	0.191 +- 0.244	ND	pCi/sample	97%	0.412	
P-0809	JLWMF1AD	RA-228	1.32 +- 0.842	ND	pCi/sample	86%	1.6	
P-0810	JLWMK1AA	TH-228	0.0372 +- 0.166	ND	pCi/sample	51%	0.446	
		TH-230	0.0000012 +- 0.176	ND	pCi/sample	51%	0.528	
		TH-232	0.00000 +- 0.160	ND	pCi/sample	51%	0.43	
P-0810	JLWMK1AE	ALPHA	6.08 +- 3.81	=	pCi/sample	100%	4.57	
P-0810	JLWMK1AC	RA-226	0.499 +- 0.262	=	pCi/sample	94%	0.258	
P-0810	JLWMK1AD	RA-228	0.841 +- 0.879	ND	pCi/sample	81%	1.9	
P-0811	JLWML1AA	TH-228	0.0950 +- 0.246	ND	pCi/sample	70%	0.533	
		TH-230	0.153 +- 0.222	ND	pCi/sample	70%	0.366	
		TH-232	0.153 +- 0.222	ND	pCi/sample	70%	0.366	
P-0811	JLWML1AE	ALPHA	5.39 +- 3.77	=	pCi/sample	100%	5.05	
P-0811	JLWML1AC	RA-226	0.309 +- 0.274	ND	pCi/sample	93%	0.422	
P-0811	JLWML1AD	RA-228	1.16 +- 0.814	ND	pCi/sample	82%	1.58	

Number of Results: 24

STL Richland

rptSTLRchSaSum
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.

QC Results Summary
STL Richland STLR

Ordered by QC Type, Batch No.

Date: 17-Jan-07

Report No. : 34217

SDG No.: 33300

QC Type	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
BLANK QC	JLXT01AA	TH-228	-0.00571 +- 0.0140	N	pCi/sample	56%			0.0421
		TH-230	0.00000009 +- 0.0135	N	pCi/sample	56%			0.0405
		TH-232	0.00000 +- 0.0123	N	pCi/sample	56%			0.033
BLANK QC	JLXT21AA	ALPHA	-0.00159 +- 0.00379	N	pCi/sample	100%			0.00881
BLANK QC	JLXT41AA	RA-226	0.393 +- 0.124	=	pCi/sample	97%			0.0745
BLANK QC	JLXT61AA	RA-228	0.00122 +- 0.00126	N	pCi/sample	86%			0.00273
LCS	JLXT01AC	TH-230	1.80 +- 0.367	=	pCi/sample	73%	99%	0.0	0.0311
LCS	JLXT21AC	ALPHA	0.326 +- 0.0811	=	pCi/sample	100%	90%	-0.1	0.00807
LCS	JLXT41AC	RA-226	1.35 +- 0.314	=	pCi/sample	111%	98%	0.0	0.0623
LCS	JLXT61AC	RA-228	0.0239 +- 0.00392	=	pCi/sample	96%	71%	-0.3	0.0025

Number of Results: 10

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rptSTLRchQcSum
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 I

SAMPLE RESULTS

Date: 17-Jan-07

Lab Name: STL Richland
Lot-Sample No.: J6L200275-4
Client Sample ID: 000579
Yerington Air Quality - Event #112

SDG: 33300
Report No. : 34217
COC No. :

Collection Date: 11/28/2006 11:45:00 AM
Received Date: 12/18/2006 8:00:00 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: 6355205	**Work Order:** JLWMN1AA			**Report DB ID:** 9JLWMN10								
TH-228	0.0945	ND	0.42	0.42	1.13	pCi/sample	24%	*0.08*	1/4/07 04:47 p	1.0	0.08366	ISOTH
						0.311	1.0	*0.45*		Sample	Sample	ALP174
TH-230	0.547	ND	0.66	0.67	1.09	pCi/sample	24%	*0.5*	1/4/07 04:47 p	1.0	0.08366	ISOTH
						0.3	1.0	*(1.6)*		Sample	Sample	ALP174
TH-232	0.182	ND	0.41	0.41	1.09	pCi/sample	24%	*0.17*	1/4/07 04:47 p	1.0	0.08366	ISOTH
						0.3	1.0	*0.89*		Sample	Sample	ALP174
Batch: 6355206	**Work Order:** JLWMN1AE			**Report DB ID:** 9JLWMN10								
ALPHA	6.16	=	4.0	4.3	5.92	pCi/sample	100%	*(1.)*	1/13/07 11:33 a	1.0	0.02075	E900.0
						2.51	20.0	*(2.9)*		Sample	Sample	GPC10D
Batch: 6355208	**Work Order:** JLWMN1AC			**Report DB ID:** 9JLWMN10								
RA-226	0.325	ND	0.23	0.24	0.333	pCi/sample	91%	*0.98*	1/13/07 02:27 p	1.0	0.24972	E903.1
						0.141	1.0	*(2.7)*		Sample	Sample	ASCASA
Batch: 6355209	**Work Order:** JLWMN1AD			**Report DB ID:** 9JLWMN10								
RA-228	2.65	=	0.98	1.0	1.66	pCi/sample	78%	*(1.6)*	1/16/07 07:09 a	1.0	0.24972	E904.0
						0.701	3.1	*(5.1)*		Sample	Sample	GPC4A

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: 17-Jan-07

Lab Name: STL Richland **SDG:** 33300 **Collection Date:** 11/28/2006 12:20:00 PM

Lot-Sample No.: J6L200275-1 **Report No. :** 34217 **Received Date:** 12/18/2006 8:00:00 AM

Client Sample ID: P-0809 **COC No. :** **Matrix:** FILTER AIR

Yerington Air Quality - Event #112

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: 6355205	**Work Order:** JLWMF1AA			**Report DB ID:** 9JLWMF10								
TH-228	0.0417	ND	0.19	0.19	0.5	pCi/sample	45%	*0.08*	1/4/07 04:47 p	1.0	0.08487	ISOTH
						0.137	1.0	*0.45*		Sample	Sample	ALP171
TH-230	0.362	ND	0.37	0.38	0.482	pCi/sample	45%	*0.75*	1/4/07 04:47 p	1.0	0.08487	ISOTH
						0.132	1.0	*(1.9)*		Sample	Sample	ALP171
TH-232	0.0804	ND	0.18	0.18	0.482	pCi/sample	45%	*0.17*	1/4/07 04:47 p	1.0	0.08487	ISOTH
						0.132	1.0	*0.89*		Sample	Sample	ALP171
Batch: 6355206	**Work Order:** JLWMF1AE			**Report DB ID:** 9JLWMF10								
ALPHA	4.15	ND	3.7	3.8	5.9	pCi/sample	100%	*0.7*	1/13/07 11:33 a	1.0	0.0209	E900.0
						2.5	20.0	*(2.2)*		Sample	Sample	GPC10A
Batch: 6355208	**Work Order:** JLWMF1AC			**Report DB ID:** 9JLWMF10								
RA-226	0.191	ND	0.24	0.24	0.412	pCi/sample	97%	*0.46*	1/13/07 01:54 p	1.0	0.25029	E903.1
						0.184	1.0	*(1.6)*		Sample	Sample	ASC6RA
Batch: 6355209	**Work Order:** JLWMF1AD			**Report DB ID:** 9JLWMF10								
RA-228	1.32	ND	0.77	0.84	1.6	pCi/sample	86%	*0.83*	1/16/07 07:08 a	1.0	0.25029	E904.0
						0.683	3.1	*(3.1)*		Sample	Sample	GPC3B

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: 17-Jan-07

Lab Name:	**STL Richland**	**SDG:**	33300	**Collection Date:**	11/28/2006 12:05:00 PM
Lot-Sample No.:	**J6L200275-2**	**Report No. :**	34217	**Received Date:**	12/18/2006 8:00:00 AM
Client Sample ID:	**P-0810**	**COC No. :**		**Matrix:**	FILTER AIR

Yerington Air Quality - Event #112

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: 6355205	**Work Order:** JLWMK1AA			**Report DB ID:** 9JLWMK10								
TH-228	0.0372	ND	0.17	0.17	0.446	pCi/sample	51%	*0.08*	1/4/07 04:47 p	1.0	0.08293	ISOTH
						0.122	1.0	*0.45*		Sample	Sample	ALP172
TH-230	0.0000012	ND	0.18	0.18	0.528	pCi/sample	51%	*0.*	1/4/07 04:47 p	1.0	0.08293	ISOTH
						0.167	1.0	*0.*		Sample	Sample	ALP172
TH-232	0.00000	ND	0.0000	0.16	0.43	pCi/sample	51%	*0.*	1/4/07 04:47 p	1.0	0.08293	ISOTH
						0.118	1.0	*0.*		Sample	Sample	ALP172
Batch: 6355206	**Work Order:** JLWMK1AE			**Report DB ID:** 9JLWMK10								
ALPHA	6.08	=	3.6	3.8	4.57	pCi/sample	100%	*(1.3)*	1/13/07 11:33 a	1.0	0.02054	E900.0
						1.82	20.0	*(3.2)*		Sample	Sample	GPC10B
Batch: 6355208	**Work Order:** JLWMK1AC			**Report DB ID:** 9JLWMK10								
RA-226	0.499	=	0.24	0.26	0.258	pCi/sample	94%	*(1.9)*	1/13/07 01:55 p	1.0	0.24676	E903.1
						0.0979	1.0	*(3.8)*		Sample	Sample	ASC8RD
Batch: 6355209	**Work Order:** JLWMK1AD			**Report DB ID:** 9JLWMK10								
RA-228	0.841	ND	0.80	0.88	1.9	pCi/sample	81%	*0.44*	1/16/07 07:08 a	1.0	0.24676	E904.0
						0.82	3.1	*(1.9)*		Sample	Sample	GPC3C

Number of Results: 6

Comments:

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
= ERPIMS - Equal To, Analyte Detected
ND Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Jan-07

Lab Name: STL Richland | **SDG:** 33300 | **Collection Date:** 11/28/2006 11:40:00 AM

Lot-Sample No.: J6L200275-3 | **Report No. :** 34217 | **Received Date:** 12/18/2006 8:00:00 AM

Client Sample ID: P-0811 | **COC No. :** | **Matrix:** FILTER AIR

Yerington Air Quality - Event #112

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: 6355205	**Work Order:** JLWML1AA			**Report DB ID:** 9JLWML10								
TH-228	0.0950	ND	0.25	0.25	0.533	pCi/sample	70%	*0.18*	1/4/07 04:47 p	1.0	0.08308	ISOTH
						0.181	1.0	*0.77*		Sample	Sample	ALP173
TH-230	0.153	ND	0.22	0.22	0.366	pCi/sample	70%	*0.42*	1/4/07 04:47 p	1.0	0.08308	ISOTH
						0.1	1.0	*(1.4)*		Sample	Sample	ALP173
TH-232	0.153	ND	0.22	0.22	0.366	pCi/sample	70%	*0.42*	1/4/07 04:47 p	1.0	0.08308	ISOTH
						0.1	1.0	*(1.4)*		Sample	Sample	ALP173
Batch: 6355206	**Work Order:** JLWML1AE			**Report DB ID:** 9JLWML10								
ALPHA	5.39	=	3.6	3.8	5.05	pCi/sample	100%	*(1.1)*	1/13/07 11:33 a	1.0	0.02074	E900.0
						2.08	20.0	*(2.9)*		Sample	Sample	GPC10C
Batch: 6355208	**Work Order:** JLWML1AC			**Report DB ID:** 9JLWML10								
RA-226	0.309	ND	0.27	0.27	0.422	pCi/sample	93%	*0.73*	1/13/07 01:54 p	1.0	0.24816	E903.1
						0.183	1.0	*(2.3)*		Sample	Sample	ASC9RA
Batch: 6355209	**Work Order:** JLWML1AD			**Report DB ID:** 9JLWML10								
RA-228	1.16	ND	0.76	0.81	1.58	pCi/sample	82%	*0.74*	1/16/07 07:08 a	1.0	0.24816	E904.0
						0.668	3.1	*(2.9)*		Sample	Sample	GPC3D

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

BLANK RESULTS

Date: 17-Jan-07

Lab Name: STL Richland **SDG:** 33300

Lot-Sample No.: J6L210000-205 **Report No. :** 34217 **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: 6355205	Work Order: JLXT01AA			Report DB ID: JLXT01AB								
TH-228	-0.00571	ND	0.014	0.014	0.0421	pCi/sample	56%	-0.14	1/4/07 04:47 p	1.0	1.0	ISOTH
					0.0133	1.0		-0.81		Sample	Sample	ALP175
TH-230	0.00000009	ND	0.013	0.013	0.0405	pCi/sample	56%	0.	1/4/07 04:47 p	1.0	1.0	ISOTH
					0.0128	1.0		0.		Sample	Sample	ALP175
TH-232	0.00000	ND	0.0000	0.012	0.033	pCi/sample	56%	0.	1/4/07 04:47 p	1.0	1.0	ISOTH
					0.00906	1.0		0.		Sample	Sample	ALP175

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: 17-Jan-07

Lab Name: STL Richland **SDG:** 33300

Lot-Sample No.: J6L210000-206 **Report No. :** 34217 **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: 6355206	Work Order: JLXT21AA			Report DB ID: JLXT21AB								
ALPHA	-0.00159	ND	0.0038	0.0038	0.00881	pCi/sample	100%	-0.18	1/13/07 11:33 a	1.0	12.74	E900.0
					0.00369	20.0		-0.84		Sample	Sample	GPC10F

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: 17-Jan-07

Lab Name: STL Richland **SDG:** 33300

Lot-Sample No.: J6L210000-208 **Report No. :** 34217 **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: 6355208	**Work Order:** JLXT41AA			**Report DB ID:** JLXT41AB								
RA-226	0.393	=	0.090	0.12	0.0745	pCi/sample	97%	(5.3)	1/13/07 01:52 p	1.0	1.0	E903.1
					0.0315	1.0		(6.4)		Sample	Sample	ASCBMC

Number of Results: 1

Comments:

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

FORM II

BLANK RESULTS

Date: 17-Jan-07

Lab Name: STL Richland **SDG:** 33300

Lot-Sample No.: J6L210000-209 **Report No. :** 34217 **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: 6355209	Work Order: JLXT61AA			Report DB ID: JLXT61AB								
RA-228	0.00122	ND	0.0012	0.0013	0.00273	pCi/sample	86%	0.45	1/16/07 07:09 a	1.0	151.01	E904.0
					0.00117	3.1		(1.9)		Sample	Sample	GPC4B

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: 17-Jan-07

Lab Name: STL Richland

SDG: 33300

Lot-Sample No.: J6L210000-205

Report No. : 34217

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: 6355205	Work Order: JLXT01AC			Report DB ID: JLXT01CS									
TH-230	1.80	=	0.17	0.37	0.0311	pCi/sample	73.23%	1.82	0.06	99%	1/4/07 04:47 p	1.0	ISOTH
							Rec Limits:	70.	130.	0.0		Sample	ALP176

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: 17-Jan-07

Lab Name: STL Richland **SDG:** 33300

Lot-Sample No.: J6L210000-206 **Report No. :** 34217 **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: 6355206	**Work Order:** JLXT21AC			**Report DB ID:** JLXT21CS									
ALPHA	0.326	=	0.027	0.081	0.00807	pCi/sample	100.00%	0.363	0.011	90%	1/14/07 11:55 a	12.64	E900.0
							Rec Limits:			-0.1		Sample	GPC10A

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: 17-Jan-07

Lab Name: STL Richland

SDG: 33300

Lot-Sample No.: J6L210000-208

Report No. : 34217

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: 6355208	Work Order: JLXT41AC			Report DB ID: JLXT41CS									
RA-226	1.35	=	0.15	0.31	0.0623	pCi/sample	110.58%	1.38	0.021	98%	1/13/07 01:57 p	1.0	E903.1
							Rec Limits:	70.	130.	0.0		Sample	ASCPMA

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: 17-Jan-07

Lab Name: STL Richland **SDG:** 33300

Lot-Sample No.: J6L210000-209 **Report No. :** 34217 **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: 6355209	Work Order: JLXT61AC			Report DB ID: JLXT61CS									
RA-228	0.0239	=	0.0028	0.0039	0.0025	pCi/sample	96.11%	0.0337	0.001	71%	1/16/07 07:09 a	150.13	E904.0
							Rec Limits:	70.	130.	-0.3		Sample	GPC4C

Number of Results: 1

Comments:

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

CHAIN OF CUSTODY

BROWN AND CALDWELL J6L200275 33300

CHAIN OF CUSTODY RECORD

COC No._____

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

Due 01.16.07

☐ 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:

PROJECT NUMBER:

LABORATORY NAME & ADDRESS: SACRAMENTO LOT # G6L050146

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

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					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 JLWMF					----	
02					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 JLWMK					----	
03					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 JLWML					----	
04					1	8x10 Filter	NONE	A	TSP, Gross Alpha, Th(228,230), Ra(226,228), Metals (Al, As, Cd, Cr, Co, Cu, Mn, Ni), Sulfate JLWMN					----	
05														----	
06														----	
07														----	
08														----	
09														----	
10														----	

COLLECTED & RELEASED BY:	DATE / /	TIME :	COOLER I.D.:			COMMENTS (see note on back):
RECEIVED BY:	DATE / /	TIME :	RELINQUISHED BY:	DATE / /	TIME :	
			Steve Valmores	12/14/06	1600	
L. Smith	12/18/06	0800				
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: 12-18-06 0800

Client: BRC SDG #: 33300 NA [ ] SAF #: _____ NA [✓]

Work Order Number: U6L200275 Chain of Custody # Event 112

Shipping Container ID: _____ Air Bill # _____

1. Custody Seals on shipping container intact? NA [✓] Yes [ ] No [ ]
2. Custody Seals dated and signed? NA [✓] Yes [ ] No [ ]
3. Chain of Custody record present? NA [✓] Yes [ ] No [ ]
4. Cooler temperature: _____ NA [✓] 5. Vermiculite/packing materials is NA [✓] Wet [ ] Dry [ ] Yes [✓] No [ ]
6. Number of samples in shipping container: 4
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? FLT NA [✓] pH<2 [ ] pH>2 [ ] adjusted pH [ ]
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: 12-18-06 0800

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 12/05, Rev. 6

THORIUM

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

1/9/2007 4:52:17 PM

Lot No., Due Date: J6L200275; 01/16/2007

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6355205; RTHISO Thlso by ALP

SDG, Matrix: 33300; 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** 1-10-07

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 6355205

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: 1-10-07

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

12/22/2006 12:55:55 PM

Sample Preparation/Analysis

Balance Id:1120373922

536403, Brown and Caldwell , Brown & Caldwell

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

Pipet #: _____

AnalyDueDate: 01/15/2007

Sep1 DT/Tm Tech:

Batch: 6355205 FILTER pCi/sampl PM, Quote: SA , 63174

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: WoodT

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 JLWMF-1-AA J6L200275-1-SAMP 11/28/2006 12:20	0.833sa,g	500.08sa,g	50.95g,in AmtRec: FILTER	0.0849g #Containers: 1	THTF0932 12/18/06,pd 10/04/04,r	500		Scr:	Alpha:	Beta:
2 JLWMK-1-AA J6L200275-2-SAMP 11/28/2006 12:05	0.833sa,g	507.04sa,g	50.48g,in AmtRec: FILTER	0.0829g #Containers: 1	THTF0933 12/18/06,pd 10/04/04,r			Scr:	Alpha:	Beta:
3 JLWML-1-AA J6L200275-3-SAMP 11/28/2006 11:40	0.833sa,g	503.74sa,g	50.24g,in AmtRec: FILTER	0.0831g #Containers: 1	THTF0934 12/18/06,pd 10/04/04,r			Scr:	Alpha:	Beta:
4 JLWMN-1-AA J6L200275-4-SAMP 11/28/2006 11:45	0.833sa,g	502.72sa,g	50.49g,in AmtRec: FILTER	0.0837g #Containers: 1	THTF0935 12/18/06,pd 10/04/04,r			Scr:	Alpha:	Beta:
5 JLXT0-1-AA-B J6L210000-205-BLK 11/28/2006 12:20	0.833sa		52.35g,in AmtRec:	52.35g #Containers: 1	THTF0936 12/18/06,pd 10/04/04,r			Scr:	Alpha:	Beta:
6 JLXT0-1-AC-C J6L210000-205-LCS 11/28/2006 12:20	0.833sa		52.58g,in AmtRec:	52.58g #Containers: 1	THSO0101 10/16/06,pd 10/04/04,r			Scr:	Alpha:	Beta:

171 172 173 174 175 176

STL RICHLAND

1/9/2007 4:21:09 PM

ICOC Fraction Transfer/Status Report

ByDate: 1/9/2006, 1/14/2007, Batch: '6355205', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6355205						
AC		CalcC	WoodT	12/22/2006 12:18:26		
SC			wagarr	IsBatched	12/21/2006 10:00:48 AM	ICOC_RADCALC v4.8.26
SC			WoodT	InPrep	12/22/2006 12:18:26 PM	RICH-RC-5017 Revision 4
SC			WoodT	Prep2C	12/26/2006 7:15:10 AM	RICH-RC-5016 REVISION 5
SC			HarveyK	InSep1	12/26/2006 11:16:14 AM	RICH-RC-5087 REV0
SC			HarveyK	Sep1C	1/2/2007 4:29:30 PM	RICH-RC-5087 REV0
SC			FABREM	Sep2C	1/3/2007 7:53:42 PM	RICH-RC-5039 REVISION 4
SC			DAWKINSO	InCnt1	1/3/2007 9:21:06 PM	RICH-RD-0008 REVISION 4
SC			BlackCL	CalcC	1/5/2007 6:53:47 AM	RICH-RD-0008 REVISION 4
AC			WoodT	12/26/2006 7:15:10		
AC			HarveyK	12/26/2006 11:16:14		
AC			HarveyK	12/28/2006 1:44:41		
AC			HarveyK	1/2/2007 4:29:30 PM		
AC			FABREM	1/3/2007 7:53:42 PM		
AC			DAWKINSO	1/3/2007 9:21:06 PM		
AC			BlackCL	1/5/2007 6:53:47 AM		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 8

ICOCFractions v4.8.26

1/9/2007 4:21:09 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	
33300	**9JLWMF10**			**J6L2002751**	P-0809	FILTER	12/18/2006 8:00:00	11/28/2006 12:20:00 PM					
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**4.1715E-02**	9.328E-02	9.336E-02	5.004E-01	PCI/SA		0.454	1.0E+0	3.487E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**3.6184E-01**	1.842E-01	1.875E-01	4.823E-01	PCI/SA		0.454	1.0E+0	3.487E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**8.0408E-02**	8.99E-02	9.023E-02	4.823E-01	PCI/SA		0.454	1.0E+0	3.487E-2
33300	**9JLWMK10**			**J6L2002752**	P-0810	FILTER	12/18/2006 8:00:00	11/28/2006 12:05:00 PM					
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**3.7185E-02**	8.315E-02	8.322E-02	4.461E-01	PCI/SA		0.507	1.0E+0	3.293E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**1.1958E-06**	8.778E-02	8.778E-02	5.275E-01	PCI/SA		0.507	1.0E+0	3.293E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**0.0E+00**	0.0E+00	8.014E-02	4.299E-01	PCI/SA		0.507	1.0E+0	3.293E-2
33300	**9JLWML10**			**J6L2002753**	P-0811	FILTER	12/18/2006 8:00:00	11/28/2006 11:40:00 AM					
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**9.5049E-02**	1.227E-01	1.23E-01	5.326E-01	PCI/SA		0.701	1.0E+0	3.308E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**1.5267E-01**	1.101E-01	1.11E-01	3.663E-01	PCI/SA		0.701	1.0E+0	3.308E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**1.5267E-01**	1.101E-01	1.11E-01	3.663E-01	PCI/SA		0.701	1.0E+0	3.308E-2
33300	**9JLWMN10**			**J6L2002754**	000579	FILTER	12/18/2006 8:00:00	11/28/2006 11:45:00 AM					
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**9.4517E-02**	2.113E-01	2.116E-01	1.134E+00	PCI/SA		0.238	1.0E+0	3.366E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**5.4654E-01**	3.284E-01	3.348E-01	1.093E+00	PCI/SA		0.238	1.0E+0	3.366E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**1.8218E-01**	2.037E-01	2.048E-01	1.093E+00	PCI/SA		0.238	1.0E+0	3.366E-2
33300	**JLXT01AB**			**J6L210000205**	INTRA-LAB BLANK	FILTER	12/18/2006 8:00:00	11/28/2006 12:20:00 PM					
TH-228	9NS1	0	B	1/4/2007 4:47:16 PM	**-5.7134E-03**	6.998E-03	7.018E-03	4.205E-02	PCI/SA		0.558	1.0E+0	1.0E+0
TH-230	9NS1	0	B	1/4/2007 4:47:16 PM	**9.1874E-08**	6.744E-03	6.744E-03	4.053E-02	PCI/SA		0.558	1.0E+0	1.0E+0
TH-232	9NS1	0	B	1/4/2007 4:47:16 PM	**0.0E+00**	0.0E+00	6.157E-03	3.303E-02	PCI/SA		0.558	1.0E+0	1.0E+0
33300	**JLXT01CS**			**J6L210000205**	INTRA-LAB CHECK	FILTER	12/18/2006 8:00:00	11/28/2006 12:20:00 PM					
TH-230	9NS1	0	S	1/4/2007 4:47:16 PM	**1.8042E+00**	8.746E-02	1.834E-01	3.11E-02	PCI/SA	1.8159E+00	0.732	1.0E+0	1.0E+0

6355205, **Samples Inserted | Updated | NotUpdated => 6 | 0 | 0,
**Results Inserted | ReTestInserted | Updated | NotInserted => 16 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

STL Richland, Wa Calc Review v4.8.26

Batch Nbr: 6355205

Alpha Spec, ThIso by ALP , Results

1/5/2007 6:53:24 AM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
ThIso by ALP				Richland Standard AlpIso Wo Blk Subt.										
Calc	S1	FILTER	**JLWMF1AA**	TH-228	**4.17E-02**	**(9.34E-02)**	**U4**	PCI/SA	R	1.37E-01	5.00E-01		45%	
Calc	S1	FILTER	**JLWMF1AA**	TH-230	**3.62E-01**	**(1.88E-01)**		PCI/SA	R	1.32E-01	4.82E-01		45%	
Calc	S1	FILTER	**JLWMF1AA**	TH-232	**8.04E-02**	**(9.02E-02)**	**U4**	PCI/SA	R	1.32E-01	4.82E-01		45%	
Calc	S1	FILTER	**JLWMK1AA**	TH-228	**3.72E-02**	**(8.32E-02)**	**U4**	PCI/SA	R	1.22E-01	4.46E-01		51%	
Calc	S1	FILTER	**JLWMK1AA**	TH-230	**1.20E-06**	**(8.78E-02)**	**U4**	PCI/SA	R	1.67E-01	5.28E-01		51%	
Calc	S1	FILTER	**JLWMK1AA**	TH-232	**0.00E+00**	**(8.01E-02)**	**U4**	PCI/SA	R	1.18E-01	4.30E-01		51%	
Calc	S1	FILTER	**JLWML1AA**	TH-228	**9.50E-02**	**(1.23E-01)**	**U4**	PCI/SA	R	1.81E-01	5.33E-01		70%	
Calc	S1	FILTER	**JLWML1AA**	TH-230	**1.53E-01**	**(1.11E-01)**	**U4**	PCI/SA	R	1.00E-01	3.66E-01		70%	
Calc	S1	FILTER	**JLWML1AA**	TH-232	**1.53E-01**	**(1.11E-01)**	**U4**	PCI/SA	R	1.00E-01	3.66E-01		70%	
Calc	S1	FILTER	**JLWMN1AA**	TH-228	**9.45E-02**	**(2.12E-01)**	**U4**	PCI/SA	R	3.11E-01	1.13E+00		24%	
Calc	S1	FILTER	**JLWMN1AA**	TH-230	**5.47E-01**	**(3.35E-01)**	**U4**	PCI/SA	R	3.00E-01	1.09E+00		24%	
Calc	S1	FILTER	**JLWMN1AA**	TH-232	**1.82E-01**	**(2.05E-01)**	**U4**	PCI/SA	R	3.00E-01	1.09E+00		24%	
Calc	S1	FILTER	**JLXT01AA**	TH-228	**-5.71E-03**	**(7.02E-03)**	**U4**	PCI/SA	R	1.33E-02	4.21E-02	**B**	56%	
Calc	S1	FILTER	**JLXT01AA**	TH-230	**9.19E-08**	**(6.74E-03)**	**U4**	PCI/SA	R	1.28E-02	4.05E-02	**B**	56%	
Calc	S1	FILTER	**JLXT01AA**	TH-232	**0.00E+00**	**(6.16E-03)**	**U4**	PCI/SA	R	9.06E-03	3.30E-02	**B**	56%	
Calc	S1	FILTER	**JLXT01AC**	TH-230	**1.80E+00**	**(1.83E-01)**		PCI/SA	R	9.83E-03	3.11E-02	**S**	73%	99%

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

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:22
RADCALC v4.8.26
STL Richland

Batch Nbr: 6355205

Alpha Spec, Thlso by ALP , Calculated Results

Detailed Report

1/5/2007 6:53:25 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
1	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JLWMF1AA**	**PCI/SA**		11/28/06 12:20	01/04/07 16:47			1	1.00 SA	
536403,P-0809					,J6L200275-1 v4.8.26		FILTER					THTF0932 Alq		0.084869 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	01/04/07 12:37	TH-228	1	1	ALP171	ED	N	N	2.9087E-01		N	45%	N		1.0000E+00	4.5045E-01	1.0376E+00	
			499.4666666	998.95			Y		(8.726E-03)			3%			(0.000E+00)	11.782849		
1	01/04/07 12:37	TH-229	269	2	ALP171	ED	Y	N	2.9087E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)						(0.000E+00)	11.782849		
2	01/04/07 12:37	TH-230	5	1	ALP171	ED	N	N	2.9087E-01		N	45%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)			3%			(0.000E+00)	11.782849		
3	01/04/07 12:37	TH-232	1	0	ALP171	ED	N	N	2.9087E-01		N	45%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)			3%			(0.000E+00)	11.782849		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BlkLcC/MDC	StdDvMdC/LcC
	01/05/07	TH-228	R	**0.041715**	**U4**	1.00108E-03	0.007575	0.007575	1.00 SA	45%		0.500412		
				(0.093364)		(2.2384E-03)	(0.016949)	(0.016949)	(0.014142)			0.137241		
	01/05/07	TH-229	R	**9.791091**		5.36572E-01	1.844736	1.844736	1.00 SA	45%				
				(0.839538)		(3.2868E-02)	(0.125824)	(0.125824)	(0.014142)					
	01/05/07	TH-230	R	**0.361839**		9.00963E-03	0.068174	0.068174	1.00 SA	45%		0.482291		
				(0.187528)		(4.5875E-03)	(0.035154)	(0.035154)	(0.014142)			0.132271		
	01/05/07	TH-232	R	**0.080408**	**U4**	2.00214E-03	0.01515	0.01515	1.00 SA	45%		0.482291		
				(0.090234)		(2.2384E-03)	(0.016983)	(0.016983)	(0.014142)			0.132271		

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	**JLWMK1AA**	**PCI/SA**		11/28/06 12:05	01/04/07 16:47			1	1.00 SA	
536403,P-0810					,J6L200275-2 v4.8.26		FILTER					THTF0933 Alq		0.082932 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	01/04/07 12:37	TH-228	1	1	ALP172	ED	N	N	2.9949E-01		N	51%	N		1.0000E+00	4.5045E-01	1.0376E+00	
			499.4666666	998.95			Y		(8.985E-03)			4%			(0.000E+00)	12.058072		
1	01/04/07 12:37	TH-229	310	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)	12.058072		
2	01/04/07 12:37	TH-230	1	2	ALP172	ED	N	N	2.9949E-01		N	51%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)			4%			(0.000E+00)	12.058072		
3	01/04/07 12:37	TH-232	0	0	ALP172	ED	N	N	2.9949E-01		N	51%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.985E-03)			4%			(0.000E+00)	12.058072		

() - (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: 6355205 — Alpha Spec, ThIso by ALP , Calculated Results — 1/5/2007 6:53:25 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
	01/05/07	TH-228	R	**0.037185**	U4	1.00108E-03	0.006598	0.006598	1.00 SA	51%		0.446069		
				(0.083221)		(2.2384E-03)	(0.014763)	(0.014763)	(0.014142)			0.122337		
	01/05/07	TH-229	R	**11.18369**		6.16658E-01	2.059021	2.059021	1.00 SA	51%				
				(0.92753)		(3.5308E-02)	(0.133096)	(0.133096)	(0.014142)					
	01/05/07	TH-230	R	**1.1958E-06**	U4	3.34040E-08	2.2017E-07	2.2017E-07	1.00 SA	51%		0.52753		
				(0.087784)		(2.4521E-03)	(0.016162)	(0.016162)	(0.014142)			0.166743		
	01/05/07	TH-232	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 SA	51%		0.429911		
				(0.080135)		(2.2384E-03)	(0.014754)	(0.014754)	(0.014142)			0.117905		

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	**JLWML1AA**	**PCI/SA**		11/28/06 11:40	01/04/07 16:47			1	1.00 SA	
536403,P-0811					,J6L200275-3 v4.8.26		FILTER					THTF0934 Alq		0.083078 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	01/04/07 12:37	TH-228	3	3	ALP173	ED	N	N	2.5374E-01		N	70%	N		1.0000E+00	4.5045E-01	1.0376E+00	
			499.4666666	998.95			Y		(7.612E-03)			5%			(0.000E+00)	12.036821		
1	01/04/07 12:37	TH-229	363	2	ALP173	ED	Y	N	2.5374E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)						(0.000E+00)	12.036821		
2	01/04/07 12:37	TH-230	3	1	ALP173	ED	N	N	2.5374E-01		N	70%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)			5%			(0.000E+00)	12.036821		
3	01/04/07 12:37	TH-232	3	1	ALP173	ED	N	N	2.5374E-01		N	70%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)			5%			(0.000E+00)	12.036821		

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	TH-228	R	**0.095049**	U4	3.00325E-03	0.016895	0.016895	1.00 SA	70%		0.532584		
				(0.123013)		(3.8771E-03)	(0.021848)	(0.021848)	(0.014142)			0.180539		
	01/05/07	TH-229	R	**15.486986**		7.24773E-01	2.856331	2.856331	1.00 SA	70%				
				(1.236428)		(3.8172E-02)	(0.173129)	(0.173129)	(0.014142)					
	01/05/07	TH-230	R	**0.152672**	U4	5.00536E-03	0.028158	0.028158	1.00 SA	70%		0.366291		
				(0.110975)		(3.6094E-03)	(0.020415)	(0.020415)	(0.014142)			0.100457		
	01/05/07	TH-232	R	**0.152672**	U4	5.00536E-03	0.028158	0.028158	1.00 SA	70%		0.366291		
				(0.110975)		(3.6094E-03)	(0.020415)	(0.020415)	(0.014142)			0.100457		

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	**JLWMN1AA**	**PCI/SA**		11/28/06 11:45	01/04/07 16:47			1	1.00 SA	
536403,000579					,J6L200275-4 v4.8.26		FILTER					THTF0935 Alq		0.083661 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	01/04/07 12:37	TH-228	1	1	ALP174	ED	N	N	2.4814E-01		N	24%	N		1.0000E+00	4.5045E-01	1.0376E+00	
			499.4666666	998.95			Y		(7.444E-03)			2%			(0.000E+00)	11.952969		

() - (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: 6355205 — Alpha Spec, ThIso by ALP , Calculated Results — 1/5/2007 6:53:25 AM

1	01/04/07 12:37	TH-229	122	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)	11.952969	
2	01/04/07 12:37	TH-230	3	0	ALP174	ED	N	N	2.4814E-01	N	24%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(7.444E-03)		2%		(0.000E+00)	11.952969	
3	01/04/07 12:37	TH-232	1	0	ALP174	ED	N	N	2.4814E-01	N	24%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(7.444E-03)		2%		(0.000E+00)	11.952969	

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	TH-228	R	**0.094517**	U4	1.00108E-03	0.016918	0.016918	1.00 SA	24%		1.133812		
				(0.211639)		(2.2384E-03)	(0.037873)	(0.037873)	(0.014142)			0.310954		
	01/05/07	TH-229	R	**5.234896**		2.41257E-01	0.972267	0.972267	1.00 SA	24%				
				(0.574736)		(2.2182E-02)	(0.094032)	(0.094032)	(0.014142)					
	01/05/07	TH-230	R	**0.546544**	U4	6.00641E-03	0.101509	0.101509	1.00 SA	24%		1.092728		
				(0.334757)		(3.6094E-03)	(0.06195)	(0.06195)	(0.014142)			0.299686		
	01/05/07	TH-232	R	**0.182181**	U4	2.00214E-03	0.033836	0.033836	1.00 SA	24%		1.092727		
				(0.204825)		(2.2384E-03)	(0.038001)	(0.038001)	(0.014142)			0.299686		

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	**JLXT01AA**	**PCI/SA**	**B**	11/28/06 12:20	01/04/07 16:47			1	1.00 SA	
0,INTRA-LAB BLANK					,J6L210000-205 v4.8.26		FILTER					THTF0936 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	01/04/07 12:37	TH-228	0	2	ALP175	ED	N	N	2.9360E-01		N	56%	N		1.0000E+00	4.5045E-01	1.0376E+00	
			499.4666666	998.95			Y		(8.808E-03)			4%			(0.000E+00)	1.00		
1	01/04/07 12:37	TH-229	335	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)	1.00		
2	01/04/07 12:37	TH-230	1	2	ALP175	ED	N	N	2.9360E-01		N	56%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.808E-03)			4%			(0.000E+00)	1.00		
3	01/04/07 12:37	TH-232	0	0	ALP175	ED	N	N	2.9360E-01		N	56%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.808E-03)			4%			(0.000E+00)	1.00		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	01/05/07	TH-228	R	**-0.005713**	U4	-2.00210E-03	-0.012225	-0.012225	1.00 SA	56%		0.042051		
				(0.007018)		(2.4521E-03)	(0.015002)	(0.015002)	(0.017321)			0.013292		
	01/05/07	TH-229	R	**1.02289**		6.66711E-01	2.270818	2.270818	1.00 SA	56%				
				(0.083915)		(3.6700E-02)	(0.142358)	(0.142358)	(0.017321)					
	01/05/07	TH-230	R	**9.1874E-08**	U4	3.34040E-08	2.0396E-07	2.0396E-07	1.00 SA	56%		0.040529		
				(0.006744)		(2.4521E-03)	(0.014972)	(0.014972)	(0.017321)			0.01281		
	01/05/07	TH-232	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 SA	56%		0.033029		
				(0.006157)		(2.2384E-03)	(0.013668)	(0.013668)	(0.017321)			0.009058		

() - (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: 6355205 — Alpha Spec, ThIso by ALP , Calculated Results — 1/5/2007 6:53:25 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
6	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JLXT01AC**	**PCI/SA**	**S**	11/28/06 12:20	01/04/07 16:47		THSO0101	1	1.00 SA	
0,INTRA-LAB CHECK					,J6L210000-205		FILTER					THSO0101 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	01/04/07 12:37	TH-229	437	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)			5%			(0.000E+00)	1.00		
2	01/04/07 12:37	TH-230	428	2	ALP176	ED	N	N	2.9146E-01		N	73%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.744E-03)			5%			(0.000E+00)	1.00		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	01/05/07	TH-229	R	**1.350657**		8.73932E-01	2.998461	2.998461	1.00 SA	73%				
				(0.104577)		(4.1866E-02)	(0.169483)	(0.169483)	(0.017321)					
	01/05/07	TH-230	R	**1.804185**		8.54912E-01	4.005291	4.005291	1.00 SA	73%	99%	0.031098		
				(0.183407)		(4.1445E-02)	(0.347654)	(0.347654)	(0.017321)			0.009829		

() - (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

SEVERN TRENT **STL**

THORIUM ISOTOPIC COUNTING REQUEST

2057

C.R. Technician: CB
Date Counted: 1/4/07
C.R. Analyst: CB
Date Analyzed: 1/5/07

Counting Time
Sample: 500 Minutes

Background: See Alpha Analysis Report
BRC 11/28/06

SOP's
Operating: RICHRD008
Review: RICHRD0016
6355205

WorkOrder #	Th-229 (4845 KeV) Tracer from Th-234 Beta Count (7)				TOTAL COUNTS			Det #	Comment
					Th-228 (5423 KeV)	Th-230 (4688 KeV)	Th-232 (4010 KeV)		
	ID	Activity	ROI Cts	BKG	(6)	(8)	(9)		
JLWMF1AA		10		0	See Alpha Analysis Report for ROI Information			171	
JLWMK1AA		10		0	See Alpha Analysis Report for ROI Information			172	
JLWML1AA		10		0	See Alpha Analysis Report for ROI Information			173	
JLWMN1AA		10		0	See Alpha Analysis Report for ROI Information			174	
JLXT01AA		10		0	See Alpha Analysis Report for ROI Information			175	
JLXT01AC		10		0	See Alpha Analysis Report for ROI Information			176	
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				

Comments:

Approved by: S

Date: 1/5/07

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

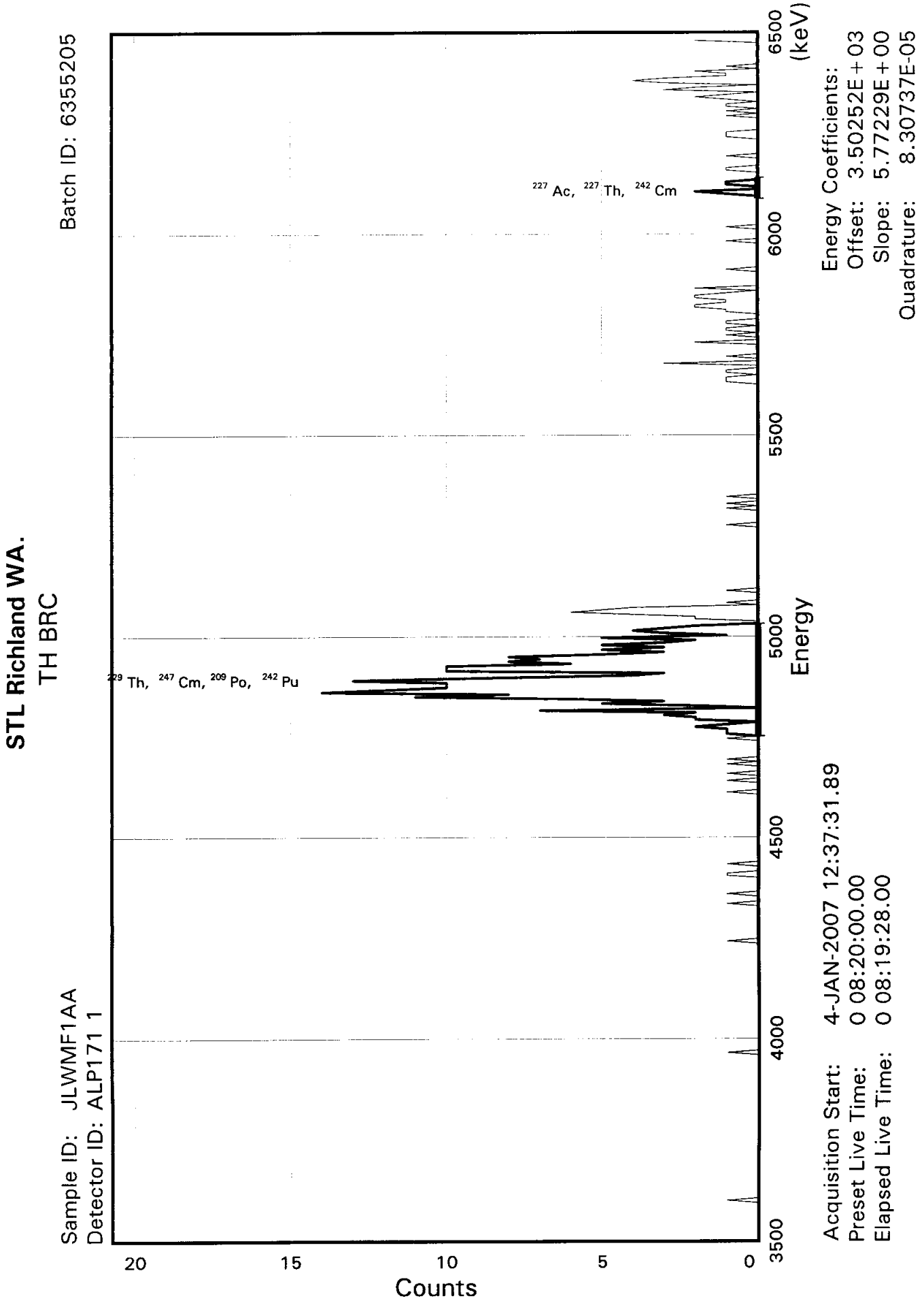
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JLWMF1AA

Detector: ALP171 1
Report Date: 05-Jan-07 05:29 AM
Acquire Date: 4-JAN-2007 12:37:31.89
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	116.5	316	336
TH-229	269	2	0.537	4845.3	331.3	217	274
TH-230	5	1	0.009	4687.7	116.1	190	210
TH-232	1	0	0.002	4013.0	115.7	73	93

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6355205
Sample ID: JLWMF1AA
Detector ID: ALP171 1
229 Th, 247 Cm, 209 Po, 242 Pu
227 Ac, 227 Th, 242 Cm
Counts
20
15
10
5
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 4-JAN-2007 12:37:31.89
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.50252E+03
Slope: 5.77229E+00
Quadrature: 8.30737E-05

SAMPLE IDENTIITY: JLWMF1AA

TITLE : TH BRC

DETECTOR : ALP171 1
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JLWMF1AA_040171237A.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 04-Jan-07 SAMPLE DATE: 28-NOV-2006 12:00:00
ACQUIRE DATE: 04-JAN-2007 12:37:31 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: JLWMF1AA

Detector: ALP171 1
Report Date: 04-Jan-07 09:11 PM
Acquire Date: 4-JAN-2007 12:37:31.89
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	5162.4	279.4	262	310	0.00	0.00	M I
PO-209	247	2	0	0.493	4930.7	279.0	216	264	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5351.9	279.6	295	343	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6085.5	274.8	421	468	0.00	0.00	M I
TH-227	-9999	-9999	0	-10.010	6085.5	274.8	421	468	0.00	0.00	M I
TH-228	-9999	-9999	0	-10.010	5470.7	279.8	315	363	0.00	0.00	M
TH-229	247	2	0	0.493	4892.8	279.0	216	264	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4735.2	278.8	189	237	0.00	0.00	M I
TH-232	1	1	0	0.001	4060.5	283.6	72	121	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5367.7	279.6	298	346	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4822.1	278.9	204	252	0.00	0.00	M I
U-235	4	0	2	0.008	4445.3	278.4	139	187	0.00	0.00	S
PU-236	-9999	-9999	0	-10.010	5815.2	280.2	374	422	0.00	0.00	M
NP-237	-9999	-9999	0	-10.010	4835.5	278.9	206	254	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5546.5	279.9	328	376	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4245.5	283.9	104	153	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5204.1	273.6	270	317	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5533.1	279.9	326	374	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5254.3	279.5	278	326	0.00	0.00	M
CM-242	6	1	0	0.011	6160.2	52.6	445	454	0.00	0.00	P
PU-242	247	2	0	0.493	4948.0	279.0	216	264	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5322.8	279.6	290	338	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5852.3	280.3	381	429	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5434.0	279.7	309	357	0.00	0.00	M
CM-247	247	2	0	0.493	4917.9	279.0	216	264	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5126.1	279.3	256	304	0.00	0.00	M I

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JLWMF1AA
Detector: ALP171 1
Report Date: 04-Jan-07 09:11 PM
Acquire Date: 4-JAN-2007 12:37:31.89

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 4-JAN-2007 21:11:17

Configuration : $DISK1:[ALP171.SAMPLE]JLWMF1AA_040171237A.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 28-NOV-2006 12:00:00 Acquisition date : 4-JAN-2007 12:37:31
Sample ID : JLWMF1AA 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	4892.80	247	0	103.90	240.02	216	48	8.24E-03	6.4	
2	0	6108.10	6	0	34.63	448.50	445	9	2.00E-04	40.8	

VMS Nuclide Identification Report V3.0 Generated 4-JAN-2007 21:11:20

```
Configuration     : $DISK1:[ALP171.SAMPLE]JLWMF1AA_040171237A.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 28-NOV-2006 12:00:00 Acquisition date : 4-JAN-2007 12:37:31
Sample ID         : JLWMF1AA             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	
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]JLWMF1AA_040171237A.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4892.79	216	264	247	245	0.13		
6108.10	445	454	6	5	0.41		

End of Report

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

Sample Identity: JLWMK1AA

Detector: ALP171 2
Report Date: 05-Jan-07 05:31 AM
Acquire Date: 4-JAN-2007 12:37:31.89
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	113.1	320	340
TH-229	310	4	0.617	4845.3	344.0	217	278
TH-230	1	2	0.000	4687.7	112.6	189	209
TH-232	0	0	0.000	4013.0	112.1	69	89

End of Alpha Region Report
(Produced by ANAL Report)

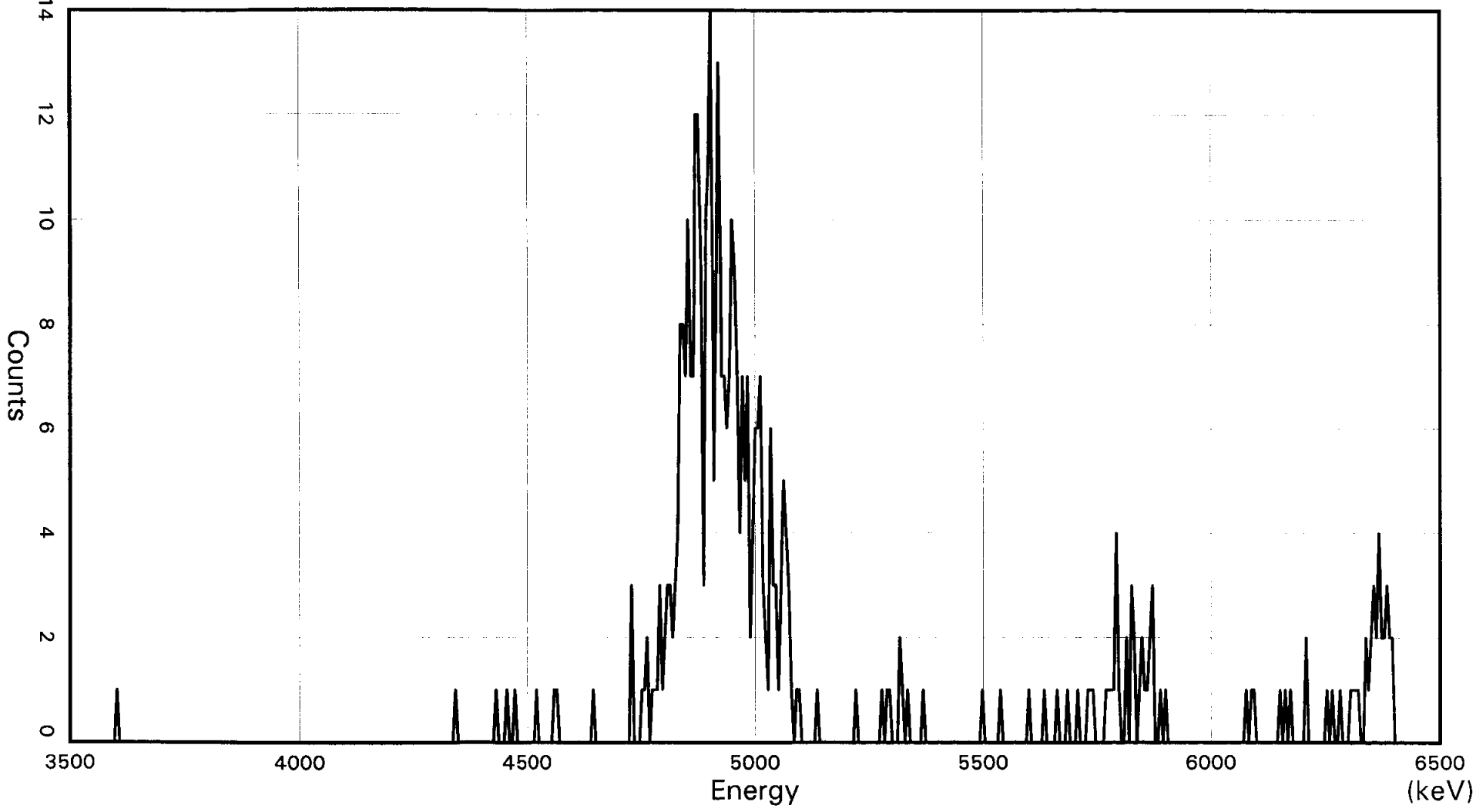
STL Richland WA.

TH BRC

Sample ID: JLWMK1AA

Detector ID: ALP171 2

Batch ID: 6355205



Acquisition Start: 4-JAN-2007 12:37:31.89

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: JLWMK1AA

TITLE : TH BRC

DETECTOR : ALP171 2
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JLWMK1AA_040171237B.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 04-Jan-07 SAMPLE DATE: 28-NOV-2006 12:00:00
ACQUIRE DATE: 04-JAN-2007 12:37:31 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 Spectrum Listing
for Spectra Not Processed by Alp_rgn_cnts
(Version: 29-Jun-92)

Sample Identity: JLWMK1AA
Detector: ALP171 2
Report Date: 04-Jan-07 08:58 PM
Acquire Date: 4-JAN-2007 12:37:31.89

Flags Key

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

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

0	50	0	100	0	150	0	200	7	250	0	300	0	350	4	400	1	450	2	500

```
VMS Peak Search Report V1.9 Generated  4-JAN-2007 20:58:08

Configuration     : $DISK1:[ALP171.SAMPLE]JLWMK1AA_040171237B.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 28-NOV-2006 12:00:00 Acquisition date : 4-JAN-2007 12:37:31
Sample ID         : JLWMK1AA             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
No peaks were found
```

```
VMS Nuclide Identification Report V3.0 Generated  4-JAN-2007 20:58:11

Configuration     : $DISK1:[ALP171.SAMPLE]JLWMK1AA_040171237B.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 28-NOV-2006 12:00:00 Acquisition date : 4-JAN-2007 12:37:31
Sample ID         : JLWMK1AA             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

**** 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: 04-Jan-07  08:58 PM)

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

System Status Message:

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

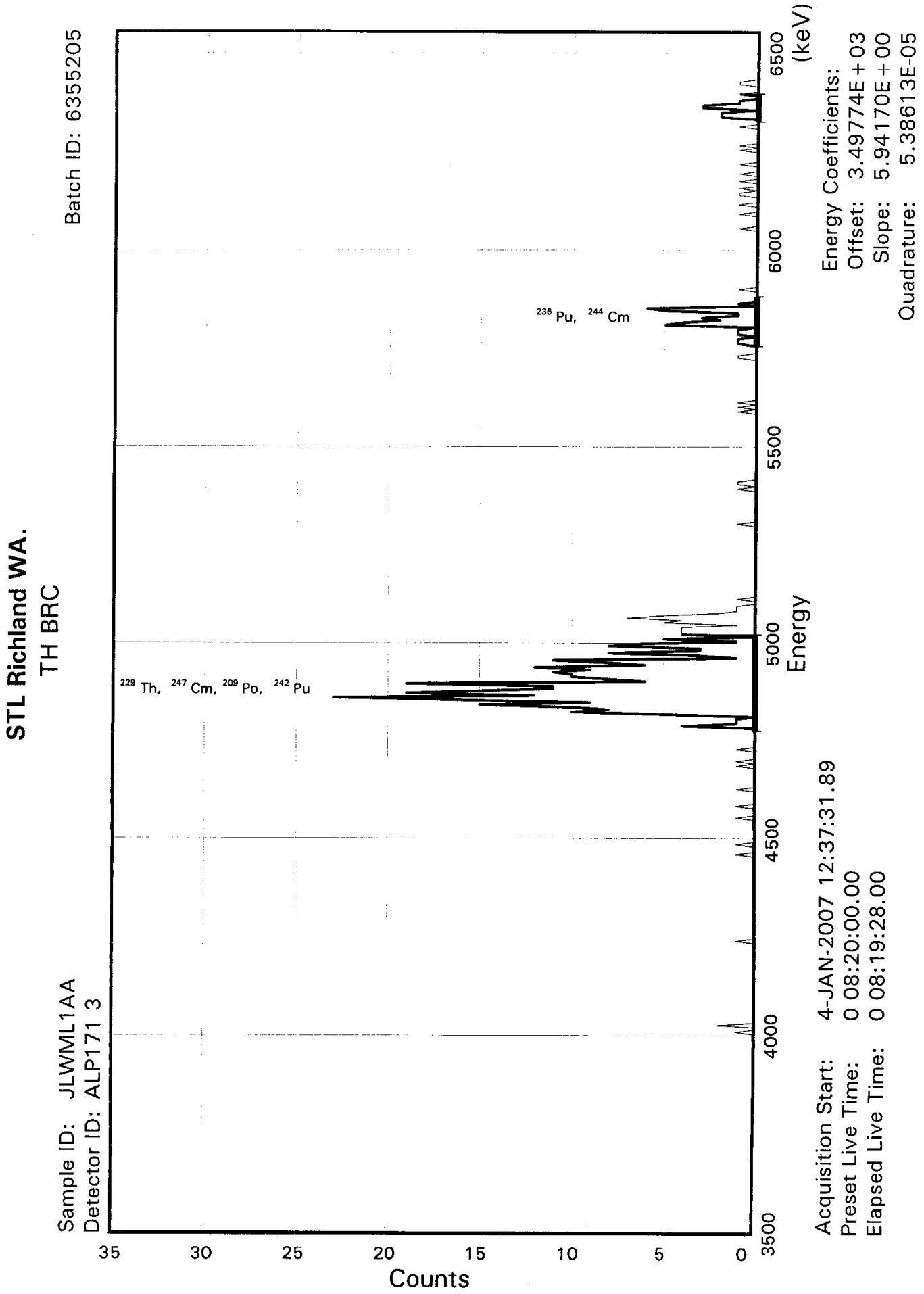
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JLWML1AA

Detector: ALP171 3
Report Date: 05-Jan-07 05:31 AM
Acquire Date: 4-JAN-2007 12:37:31.89
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	3	3	0.003	5423.2	119.5	308	328
TH-229	363	2	0.725	4845.3	370.0	211	273
TH-230	3	1	0.005	4687.7	119.3	185	205
TH-232	3	1	0.005	4013.0	119.0	72	92

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6355205
Sample ID: JLWML1AA
Detector ID: ALP171 3
229 Th, 247 Cm, 209 Po, 242 Pu
236 Pu, 244 Cm
Counts
35
30
25
20
15
10
5
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 4-JAN-2007 12:37:31.89
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: JLWML1AA

TITLE : TH BRC

DETECTOR : ALP171 3
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JLWML1AA_040171237C.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 04-Jan-07 SAMPLE DATE: 28-NOV-2006 12:00:00
ACQUIRE DATE: 04-JAN-2007 12:37:31 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: JLWML1AA

Detector: ALP171 3
Report Date: 04-Jan-07 08:58 PM
Acquire Date: 4-JAN-2007 12:37:31.89
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	5153.7	244.8	260	301	0.00	0.00	M
PO-209	336	1	0	0.672	4922.0	244.6	215	256	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5343.1	245.0	292	333	0.00	0.00	M
AC-227	4	2	8	0.006	6076.8	239.5	415	455	0.00	0.00	S
TH-227	4	2	8	0.006	6076.8	239.5	415	455	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5462.0	245.1	312	353	0.00	0.00	M
TH-229	336	1	0	0.672	4884.1	244.6	215	256	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4726.5	244.5	189	230	0.00	0.00	M I
TH-232	3	1	0	0.005	4051.8	244.0	75	116	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5358.9	239.0	295	335	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4813.4	244.6	203	244	0.00	0.00	M I
U-235	3	1	0	0.005	4436.6	244.3	140	181	0.00	0.00	S
PU-236	21	11	0	0.031	5806.4	125.7	379	400	0.00	0.00	P
NP-237	-9999	-9999	0	-10.010	4826.8	244.6	205	246	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5537.8	245.1	324	365	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4236.8	244.2	106	147	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5195.4	244.9	267	308	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5524.4	245.1	322	363	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5245.6	244.9	276	317	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6151.5	245.6	427	468	0.00	0.00	M
PU-242	336	1	0	0.672	4939.3	244.6	215	256	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5314.1	245.0	287	328	0.00	0.00	M
CM-244	21	11	0	0.031	5843.6	125.7	379	400	0.00	0.00	P
CM-246	-9999	-9999	0	-10.010	5425.3	245.1	306	347	0.00	0.00	M
CM-247	336	1	0	0.672	4909.2	244.6	215	256	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5117.4	244.8	254	295	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: JLWML1AA
Detector: ALP171 3
Report Date: 04-Jan-07 08:58 PM
Acquire Date: 4-JAN-2007 12:37:31.89

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 4-JAN-2007 20:58:14

```
Configuration     : $DISK1:[ALP171.SAMPLE]JLWML1AA_040171237C.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 28-NOV-2006 12:00:00 Acquisition date : 4-JAN-2007 12:37:31
Sample ID         : JLWML1AA             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	4884.07	336	0	118.83	232.83	215	41	1.12E-02	5.5	
2	0	5832.28	21	0	59.42	391.52	379	21	7.01E-04	21.8	
3	0	6353.44	13	0	41.59	478.55	474	12	4.34E-04	27.7	

VMS Nuclide Identification Report V3.0 Generated 4-JAN-2007 20:58:17

```
Configuration     : $DISK1:[ALP171.SAMPLE]JLWML1AA_040171237C.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 28-NOV-2006 12:00:00 Acquisition date : 4-JAN-2007 12:37:31
Sample ID         : JLWML1AA             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	
PU-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-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]JLWML1AA_040171237C.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4884.06	215	256	336	323	0.71		
5832.27	379	400	21	34	-2.84		
6353.44	474	486	13	15	-0.55		

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

End of Report

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

Sample Identity: JLWMN1AA

Detector: ALP171 4
Report Date: 05-Jan-07 05:31 AM
Acquire Date: 4-JAN-2007 12:37:31.89
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	111.0	307	327
TH-229	122	3	0.241	4845.3	349.8	203	266
TH-230	3	0	0.006	4687.7	111.1	174	194
TH-232	1	0	0.002	4013.0	111.1	53	73

End of Alpha Region Report
(Produced by ANAL Report)

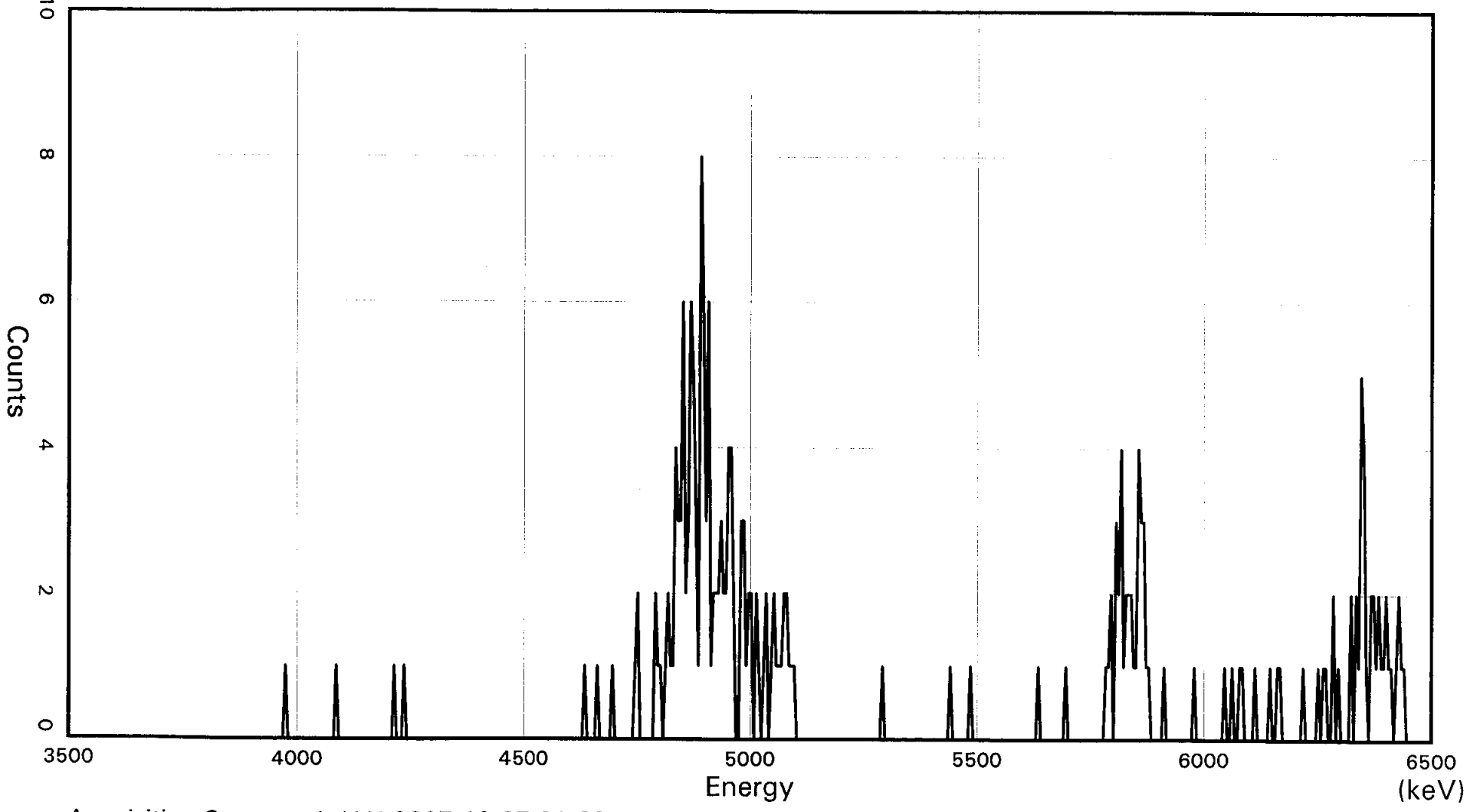
STL Richland WA.

TH BRC

Sample ID: JLWMN1AA

Detector ID: ALP171 4

Batch ID: 6355205



Acquisition Start: 4-JAN-2007 12:37:31.89

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: JLWMN1AA

TITLE : TH BRC

DETECTOR : ALP171 4
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JLWMN1AA_040171237D.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 04-Jan-07 SAMPLE DATE: 28-NOV-2006 12:00:00
ACQUIRE DATE: 04-JAN-2007 12:37:31 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 Spectrum Listing
for Spectra Not Processed by Alp_rgn_cnts
(Version: 29-Jun-92)

Sample Identity: JLWMN1AA
Detector: ALP171 4
Report Date: 04-Jan-07 08:58 PM
Acquire Date: 4-JAN-2007 12:37:31.89

Flags Key

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

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

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

VMS Peak Search Report V1.9 Generated 4-JAN-2007 20:58:20

```
Configuration     : $DISK1:[ALP171.SAMPLE]JLWMN1AA_040171237D.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 28-NOV-2006 12:00:00 Acquisition date : 4-JAN-2007 12:37:31
Sample ID         : JLWMN1AA             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
No peaks were found
```

VMS Nuclide Identification Report V3.0 Generated 4-JAN-2007 20:58:22

```
Configuration     : $DISK1:[ALP171.SAMPLE]JLWMN1AA_040171237D.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 28-NOV-2006 12:00:00 Acquisition date : 4-JAN-2007 12:37:31
Sample ID         : JLWMN1AA             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

**** 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: 04-Jan-07  08:58 PM)

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

System Status Message:

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

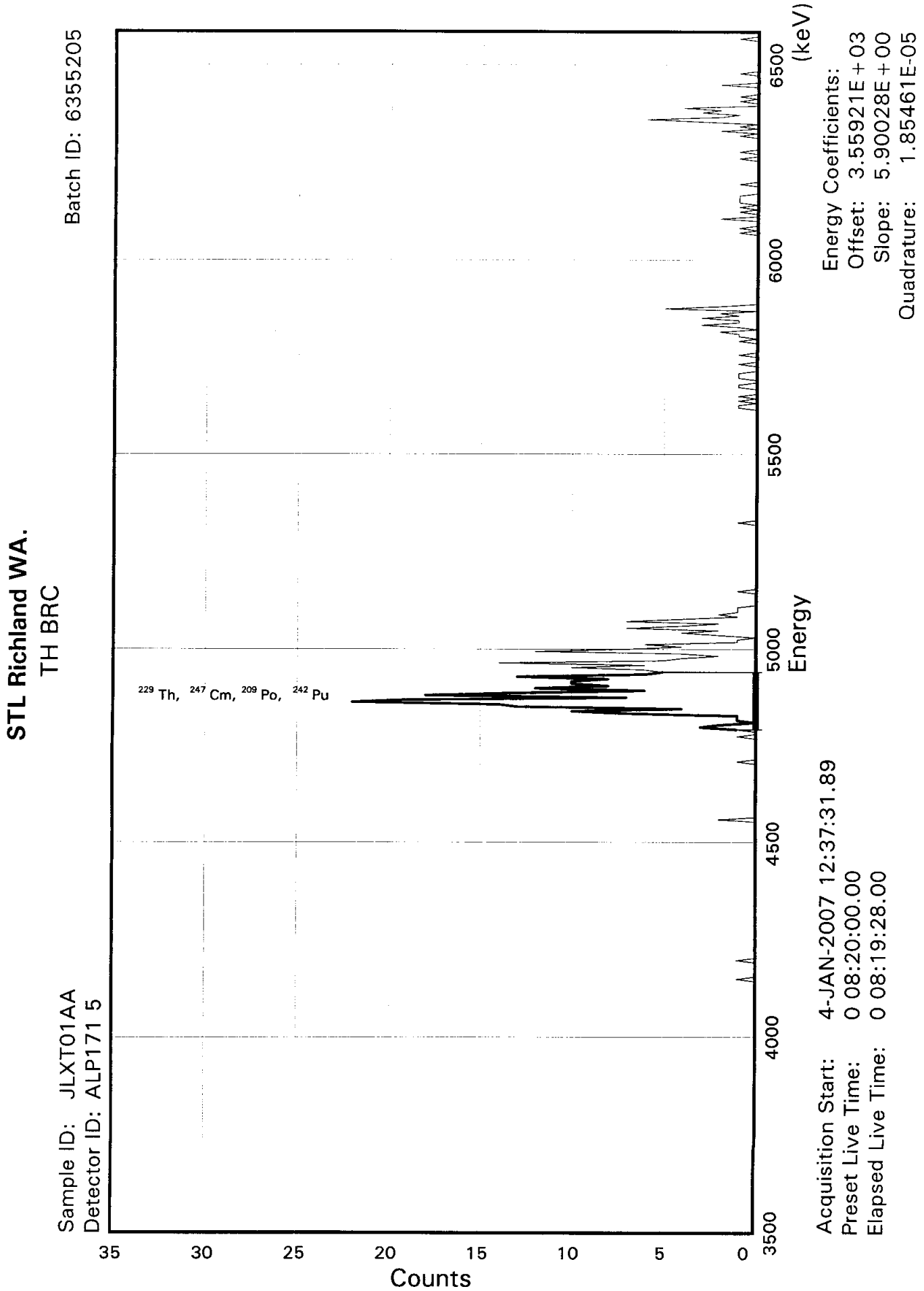
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JLXT01AA

Detector: ALP171 5
Report Date: 05-Jan-07 05:32 AM
Acquire Date: 4-JAN-2007 12:37:31.89
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	0	2	-0.002	5423.2	118.2	301	321
TH-229	335	4	0.667	4845.3	366.4	203	265
TH-230	1	2	0.000	4687.7	118.1	176	196
TH-232	0	0	0.000	4013.0	118.1	62	82

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6355205
Sample ID: JLXT01AA
Detector ID: ALP171 5
229 Th, 247 Cm, 209 Po, 242 Pu
Counts
35
30
25
20
15
10
5
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 4-JAN-2007 12:37:31.89
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: JLXT01AA

TITLE : TH BRC

DETECTOR : ALP171 5
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JLXT01AA_040171237E.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 04-Jan-07 SAMPLE DATE: 28-NOV-2006 12:00:00
ACQUIRE DATE: 04-JAN-2007 12:37:31 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: JLXT01AA

Detector: ALP171 5
Report Date: 04-Jan-07 08:58 PM
Acquire Date: 4-JAN-2007 12:37:31.89
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	5151.2	147.8	255	280	0.00	0.00	M
PO-209	216	1	0	0.431	4919.5	147.7	209	234	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5340.7	147.8	287	312	0.00	0.00	M
AC-227	3	4	6	0.003	6074.3	147.9	411	436	0.00	0.00	S
TH-227	3	4	6	0.003	6074.3	147.9	411	436	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5459.5	147.8	307	332	0.00	0.00	M
TH-229	216	1	0	0.431	4881.6	147.7	209	234	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4724.0	147.7	182	207	0.00	0.00	M
TH-232	0	0	0	0.000	4049.3	147.6	68	93	0.00	0.00	
U-232	-9999	-9999	0	-10.010	5356.5	147.8	289	314	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4810.9	147.7	197	222	0.00	0.00	M I
U-235	0	0	0	0.000	4434.1	147.6	133	158	0.00	0.00	
PU-236	10	9	18	0.012	5804.0	147.9	365	390	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4824.3	147.7	199	224	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5535.3	147.8	320	345	0.00	0.00	M
U-238	2	0	0	0.004	4234.3	147.6	99	124	0.00	0.00	
PU-239	-9999	-9999	0	-10.010	5192.9	147.8	262	287	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5521.9	147.8	317	342	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5243.1	147.8	270	295	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6149.0	147.9	423	448	0.00	0.00	M
PU-242	216	1	0	0.431	4936.8	147.7	209	234	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5311.6	147.8	282	307	0.00	0.00	M
CM-244	16	10	18	0.023	5841.1	147.9	371	396	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5422.8	147.8	301	326	0.00	0.00	M
CM-247	216	1	0	0.431	4906.7	147.7	209	234	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5114.9	147.7	248	273	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JLXT01AA
Detector: ALP171 5
Report Date: 04-Jan-07 08:58 PM
Acquire Date: 4-JAN-2007 12:37:31.89

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 4-JAN-2007 20:58:23

```
Configuration     : $DISK1:[ALP171.SAMPLE]JLXT01AA_040171237E.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 28-NOV-2006 12:00:00 Acquisition date : 4-JAN-2007 12:37:31
Sample ID         : JLXT01AA             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	4881.59	216	0	82.60	223.96	209	25	7.21E-03	6.8	

VMS Nuclide Identification Report V3.0 Generated 4-JAN-2007 20:58:25

```
Configuration     : $DISK1:[ALP171.SAMPLE]JLXT01AA_040171237E.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 28-NOV-2006 12:00:00 Acquisition date : 4-JAN-2007 12:37:31
Sample ID         : JLXT01AA             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]JLXT01AA_040171237E.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4881.59	209	234	216	214	0.14		

End of Report

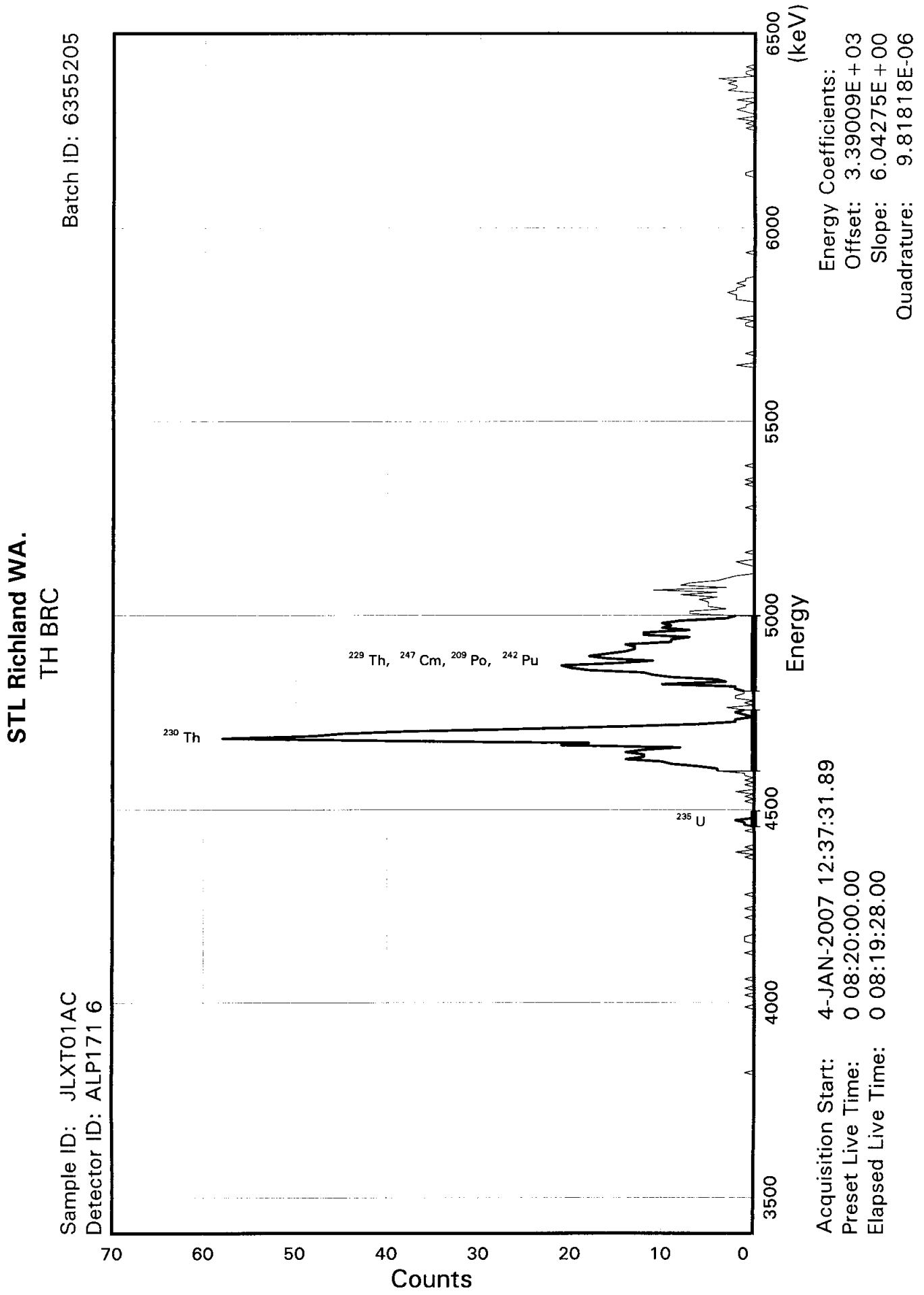
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JLXT01AC

Detector: ALP171 6
Report Date: 05-Jan-07 05:32 AM
Acquire Date: 4-JAN-2007 12:37:31.89
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	121.0	321	341
TH-229	437	1	0.874	4845.3	356.8	233	292
TH-230	428	2	0.855	4687.7	163.3	197	224
TH-232	3	0	0.006	4013.0	120.9	88	108

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 6355205
Sample ID: JLXT01AC
Detector ID: ALP171 6
230 Th
229 Th, 247 Cm, 209 Po, 242 Pu
235 U
Counts
70
60
50
40
30
20
10
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 4-JAN-2007 12:37:31.89
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: JLXT01AC

TITLE : TH BRC

DETECTOR : ALP171 6
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JLXT01AC_040171237F.CN
F;1
ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 04-Jan-07 SAMPLE DATE: 28-NOV-2006 12:00:00
ACQUIRE DATE: 04-JAN-2007 12:37:31 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: JLXT01AC

Detector: ALP171 6
Report Date: 04-Jan-07 08:58 PM
Acquire Date: 4-JAN-2007 12:37:31.89
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	5154.9	193.6	279	311	0.00	0.00	M
PO-209	343	0	0	0.687	4923.2	193.5	234	266	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5344.4	193.6	310	342	0.00	0.00	M
AC-227	1	1	2	0.001	6078.0	193.6	431	463	0.00	0.00	S
TH-227	1	1	2	0.001	6078.0	193.6	431	463	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5463.2	193.6	330	362	0.00	0.00	M
TH-229	343	0	0	0.687	4885.3	193.5	234	266	0.00	0.00	P
TH-230	425	2	0	0.849	4727.7	157.2	200	226	0.00	0.00	P
TH-232	6	0	2	0.012	4053.0	193.4	96	128	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5360.1	193.6	313	345	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4814.6	193.5	222	254	0.00	0.00	S I
U-235	4	1	0	0.007	4437.8	42.3	176	183	0.00	0.00	P
PU-236	12	5	20	0.019	5807.6	193.6	386	418	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4828.0	193.5	225	257	0.00	0.00	S I
PU-238	-9999	-9999	0	-10.010	5539.0	193.6	342	374	0.00	0.00	M
U-238	5	1	2	0.009	4238.0	193.5	127	159	0.00	0.00	S
PU-239	-9999	-9999	0	-10.010	5196.6	193.6	285	317	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5525.6	193.6	340	372	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5246.8	193.6	294	326	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6152.7	187.6	444	475	0.00	0.00	M
PU-242	343	0	0	0.687	4940.5	193.5	234	266	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5315.3	193.6	305	337	0.00	0.00	M
CM-244	11	5	20	0.017	5844.8	193.6	393	425	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5426.5	193.6	323	355	0.00	0.00	M
CM-247	343	0	0	0.687	4910.4	193.5	234	266	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5118.6	193.5	273	305	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JLXT01AC
Detector: ALP171 6
Report Date: 04-Jan-07 08:58 PM
Acquire Date: 4-JAN-2007 12:37:31.89

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 4-JAN-2007 20:58:28

Configuration : $DISK1:[ALP171.SAMPLE]JLXT01AC_040171237F.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 28-NOV-2006 12:00:00 Acquisition date : 4-JAN-2007 12:37:31
Sample ID : JLXT01AC 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	4469.03	4	0	24.17	178.50	176	7	1.33E-04	50.0	
2	0	4687.53	425	0	36.26	214.64	200	26	1.42E-02	4.9	
3	0	4885.27	343	0	84.60	247.33	234	32	1.14E-02	5.4	

VMS Nuclide Identification Report V3.0 Generated 4-JAN-2007 20:58:31

Configuration	: $DISK1:[ALP171.SAMPLE]JLXT01AC_040171237F.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 28-NOV-2006 12:00:00	Acquisition date	: 4-JAN-2007 12:37:31
Sample ID	: JLXT01AC	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-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-235	7.08E+08Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

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

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

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

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

Configuration: $DISK1:[ALP171.SAMPLE]JLXT01AC_040171237F.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4469.03	176	183	4	4	0.00		
4687.53	200	226	425	429	-0.19		
4885.27	234	266	343	341	0.11		

End of Report

ALPHA

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

1/16/2007 8:47:12 AM

Lot No., Due Date: J6L200275; 01/16/2007

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6355206; RALPHA-A Alpha by GPC-Am

SDG, Matrix: 33300; 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 [signature] Pam Anderson 1-16-07 **Date** 1/16/07

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 635206

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

12/22/2006 12:56:00 PM

Sample Preparation/Analysis

536403, Brown and Caldwell
Caldwell

, Brown &

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

Balance Id:1120373922

Pipet #: _____

AnalyDueDate: 01/15/2007

Sep1 DT/Tm Tech:

Batch: 6355206 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 JLWMF-1-AE J6L200275-1-SAMP 11/28/2006 12:20	0.833sa,g	12.55g,in AmtRec: FILTER	#Containers: 1	1.5	0.7	100	1A	1249	1/13/07	Scr: Alpha: Beta:
2 JLWMK-1-AE J6L200275-2-SAMP 11/28/2006 12:05	0.833sa,g	12.50g,in AmtRec: FILTER	#Containers: 1		0.2		1B			Scr: Alpha: Beta:
3 JLWML-1-AE J6L200275-3-SAMP 11/28/2006 11:40	0.833sa,g	12.54g,in AmtRec: FILTER	#Containers: 1		0.7	12/27/06	1C			Scr: Alpha: Beta:
4 JLWMN-1-AE J6L200275-4-SAMP 11/28/2006 11:45	0.833sa,g	12.52g,in AmtRec: FILTER	#Containers: 1		1.0		1D			Scr: Alpha: Beta:
5 JLXT2-1-AA-B J6L210000-206-BLK 11/28/2006 12:20		12.74g,in AmtRec:	#Containers: 1		0.2		1E			Scr: Alpha: Beta:
6 JLXT2-1-AC-C J6L210000-206-LCS 11/28/2006 12:20		12.64g,in AmtRec:	ASD4010 09/06/06,pd 02/09/06,r #Containers: 1		0.9		1A	1310		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: 6
Prep_SamplePrep v4.8.26

STL RICHLAND

86

12/22/2006 12:56:01 PM

Sample Preparation/Analysis

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

Balance Id:1120373922

Pipet #: _____

AnalyDueDate: 01/15/2007

Sep1 DT/Tm Tech:

Batch: 6355206 pCi/sampl
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: ,WoodT

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:

Comments:

1% collodion added to ea. samp. 1/12/07 APA

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

JLWMF1AE-SAMP Constituent List:
ALPHA RDL:20 pCi/sam LCL: UCL: RPD:
JLXT21AA-BLK:
ALPHA RDL:20 pCi/sam LCL: UCL: RPD:
JLXT21AC-LCS:

JLWMF1AE-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JLXT21AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JLXT21AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

1/16/2007 8:46:07 AM

ICOC Fraction Transfer/Status Report

ByDate: 1/16/2006, 1/21/2007, Batch: '6355206', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6355206						
AC		**CalcC**	**WoodT**	12/22/2006 1:09:00		
SC			wagarr	IsBatched	12/21/2006 10:00:48 AM	ICOC_RADCALC v4.8.26
SC			WoodT	Prep2C	12/22/2006 1:09:00 PM	RICH-RC-5016 REVISION 5
SC			AshworthA	InPrep2	1/11/2007 11:56:56 AM	RICH-RC-5014 REVISION 6
SC			AshworthA	Prep2C	1/12/2007 10:53:41 AM	RICH-RC-5014 REVISION 6
SC			BlackCL	InCnt1	1/12/2007 11:06:08 AM	RICH-RD-0003 REVISION 4
SC			DAWKINSO	CalcC	1/14/2007 1:46:08 PM	RICH-RD-0003 REVISION 4
AC			**AshworthA**	1/11/2007 11:56:56		
AC			**AshworthA**	1/12/2007 10:53:41		
AC			**BlackCL**	1/12/2007 11:06:08		
AC			**DAWKINSO**	1/14/2007 1:46:08 PM		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 5

ICOCFractions v4.8.26

1/16/2007 8:46:06 AM

Rpt DB Transfer log (Batch Results)

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Matrix / Cnt Uncert	Received Date / Tot uncert	Sample Date / mda	Units	Expected	Yield	Volumes
33300	**9JLWMF10**			**J6L2002751**	P-0809	FILTER	12/18/2006 8:00:00	11/28/2006 12:20:00 PM				
ALPHA	BAS7	0		1/13/2007 11:33:52	**4.1506E+00**	1.845E+00	1.908E+00	5.903E+00	PCI/SA	1.0	1.0E+0	2.09E-2
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**4.1715E-02**	9.328E-02	9.336E-02	5.004E-01	PCI/SA	0.454	1.0E+0	8.487E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**3.6184E-01**	1.842E-01	1.875E-01	4.823E-01	PCI/SA	0.454	1.0E+0	8.487E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**8.0408E-02**	8.99E-02	9.023E-02	4.823E-01	PCI/SA	0.454	1.0E+0	8.487E-2
33300	**9JLWMK10**			**J6L2002752**	P-0810	FILTER	12/18/2006 8:00:00	11/28/2006 12:05:00 PM				
ALPHA	BAS7	0		1/13/2007 11:33:52	**6.0753E+00**	1.776E+00	1.905E+00	4.574E+00	PCI/SA	1.0	1.0E+0	2.054E-2
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**3.7185E-02**	8.315E-02	8.322E-02	4.461E-01	PCI/SA	0.507	1.0E+0	8.293E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**1.1958E-06**	8.778E-02	8.778E-02	5.275E-01	PCI/SA	0.507	1.0E+0	8.293E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**0.0E+00**	0.0E+00	8.014E-02	4.299E-01	PCI/SA	0.507	1.0E+0	8.293E-2
33300	**9JLWML10**			**J6L2002753**	P-0811	FILTER	12/18/2006 8:00:00	11/28/2006 11:40:00 AM				
ALPHA	BAS7	0		1/13/2007 11:33:52	**5.3908E+00**	1.778E+00	1.884E+00	5.046E+00	PCI/SA	1.0	1.0E+0	2.074E-2
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**9.5049E-02**	1.227E-01	1.23E-01	5.326E-01	PCI/SA	0.701	1.0E+0	8.308E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**1.5267E-01**	1.101E-01	1.11E-01	3.663E-01	PCI/SA	0.701	1.0E+0	8.308E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**1.5267E-01**	1.101E-01	1.11E-01	3.663E-01	PCI/SA	0.701	1.0E+0	8.308E-2
33300	**9JLWMN10**			**J6L2002754**	000579	FILTER	12/18/2006 8:00:00	11/28/2006 11:45:00 AM				
ALPHA	BAS7	0		1/13/2007 11:33:52	**6.1561E+00**	2.021E+00	2.144E+00	5.916E+00	PCI/SA	1.0	1.0E+0	2.075E-2
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**9.4517E-02**	2.113E-01	2.116E-01	1.134E+00	PCI/SA	0.238	1.0E+0	8.366E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**5.4654E-01**	3.284E-01	3.348E-01	1.093E+00	PCI/SA	0.238	1.0E+0	8.366E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**1.8218E-01**	2.037E-01	2.048E-01	1.093E+00	PCI/SA	0.238	1.0E+0	8.366E-2
33300	**JLXT21AB**			**J6L210000206**	INTRA-LAB BLANK	FILTER	12/18/2006 8:00:00	11/28/2006 12:20:00 PM				
ALPHA	BAS7	0	B	1/13/2007 11:33:52	**-1.5866E-03**	1.888E-03	1.897E-03	8.811E-03	PCI/SA	1.0	1.0E+0	1.274E+1
33300	**JLXT21CS**			**J6L210000206**	INTRA-LAB CHECK	FILTER	12/18/2006 8:00:00	11/28/2006 12:20:00 PM				
ALPHA	BAS7	0	S	1/14/2007 11:55:21	**3.2573E-01**	1.349E-02	4.057E-02	8.072E-03	PCI/SA	3.6345E-01 1.0	1.0E+0	1.264E+1

6355206, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 4,
**Results Inserted | ReTestInserted | Updated | NotInserted => 6 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

STL Richland, Wa Calc Review v4.8.26

Page 1

Batch Nbr: 6355206

Alpha Beta, Alpha by GPC-Am , Results

1/14/2007 1:39:32 PM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Alpha by GPC-Am				Richland Standard Gross Alpha/Beta Wo Blk Subt										
Calc	S7	FILTER	**JLWMF1AE**	ALPHA	**4.15E+00**	**(1.91E+00)**		PCI/SA	R	2.50E+00	5.90E+00		100%	
Calc	S7	FILTER	**JLWMK1AE**	ALPHA	**6.08E+00**	**(1.91E+00)**		PCI/SA	R	1.82E+00	4.57E+00		100%	
Calc	S7	FILTER	**JLWML1AE**	ALPHA	**5.39E+00**	**(1.88E+00)**		PCI/SA	R	2.08E+00	5.05E+00		100%	
Calc	S7	FILTER	**JLWMN1AE**	ALPHA	**6.16E+00**	**(2.14E+00)**		PCI/SA	R	2.51E+00	5.92E+00		100%	
Calc	S7	FILTER	**JLXT21AA**	ALPHA	**-1.59E-03**	**(1.90E-03)**	**U4**	PCI/SA	R	3.69E-03	8.81E-03	**B**	100%	
Calc	S7	FILTER	**JLXT21AC**	ALPHA	**3.26E-01**	**(4.06E-02)**		PCI/SA	R	3.29E-03	8.07E-03	**S**	100%	90%

P Anderson
1-15-07

LMA
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

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:6
RADCALC v4.8.26
STL Richland

Batch Nbr: 6355206

Alpha Beta, Alpha by GPC-Am , Calculated Results

Detailed Report

1/14/2007 1:39:32 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	JLWMF1AE	PCI/SA		11/28/06 12:20	01/13/07 11:33	01/05/07 16:28		1	1.00 Sa	
536403,P-0809					,J6L200275-1 v4.8.26		FILTER			00.7	01/12/07 07:24			0.020905 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	01/13/07 12:48	ALPHA	23	14	GPC10A	1.5	N	N	4.3262E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	200			Y		(2.964E-02)	(0.000E+00)		8%			(0.000E+00)	47.835549		

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
	01/14/07	ALPHA	R	**4.150581**		8.33333E-02	0.192624	0.192624	1.00 Sa	100%		5.90303		
				(1.908336)		(3.7044E-02)	(0.087997)	(0.087997)	(0.014142)			2.503078		

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	JLWMK1AE	PCI/SA		11/28/06 12:05	01/13/07 11:33	01/05/07 16:28		1	1.00 Sa	
536403,P-0810					,J6L200275-2 v4.8.26		FILTER			00.2	01/12/07 07:24			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	01/13/07 12:48	ALPHA	23	7	GPC10B	1.5	N	N	4.2724E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	200			Y		(2.620E-02)	(0.000E+00)		8%			(0.000E+00)	48.695318		

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
	01/14/07	ALPHA	R	**6.075258**		1.18333E-01	0.276969	0.276969	1.00 Sa	100%		4.574238		
				(1.905338)		(3.4601E-02)	(0.085663)	(0.085663)	(0.014142)			1.824429		

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	JLWML1AE	PCI/SA		11/28/06 11:40	01/13/07 11:33	01/05/07 16:28		1	1.00 Sa	
536403,P-0811					,J6L200275-3 v4.8.26		FILTER			00.7	01/12/07 07:24			0.020737 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	01/13/07 12:48	ALPHA	24	10	GPC10C	1.5	N	N	4.4325E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	200			Y		(2.861E-02)	(0.000E+00)		8%			(0.000E+00)	48.224074		

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
	01/14/07	ALPHA	R	**5.39081**		1.10000E-01	0.248167	0.248167	1.00 Sa	100%		5.045978		
				(1.883553)		(3.6286E-02)	(0.085745)	(0.085745)	(0.014142)			2.081525		

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	JLWMN1AE	PCI/SA		11/28/06 11:45	01/13/07 11:33	01/05/07 16:28		1	1.00 Sa	
536403,000579					,J6L200275-4 v4.8.26		FILTER			01.0	01/12/07 07:24			0.020745 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	01/13/07 12:48	ALPHA	29	14	GPC10D	1.5	N	N	4.3501E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	200			Y		(2.919E-02)	(0.000E+00)		8%			(0.000E+00)	48.203307		

() - (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: 6355206

Alpha Beta, Alpha by GPC-Am , Calculated Results

1/14/2007 1:39:33 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
	01/14/07	ALPHA	R	**6.156105**		1.23333E-01	0.283519	0.283519	1.00 Sa	100%		5.915758		
				(2.144458)		(4.0483E-02)	(0.097658)	(0.097658)	(0.014142)			2.508475		

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	**JLXT21AA**	**PCI/SA**	**B**	11/28/06 12:20	01/13/07 11:33	01/05/07 16:28		1	1.00 Sa	
0,INTRA-LAB BLANK					,J6L210000-206 v4.8.26		FILTER			00.2	01/12/07 07:24			12.74 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	01/13/07 12:48	ALPHA	6	12	GPC10F	1.5	N	N	4.4569E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	200			Y		(2.966E-02)	(0.000E+00)		8%			(0.000E+00)	0.078493		

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
	01/14/07	ALPHA	R	**-0.001587**	**U4**	-2.00000E-02	-0.044874	-0.044874	1.00 Sa	100%		0.008811		
				(0.001897)		(2.3805E-02)	(0.053614)	(0.053614)	(0.014142)			0.003691		

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	**JLXT21AC**	**PCI/SA**	**S**	11/28/06 12:20	01/14/07 11:55	01/05/07 16:28	ASD4010	1	1.00 Sa	
0,INTRA-LAB CHECK					,J6L210000-206		FILTER			00.9	01/12/07 07:24	ASD4010 Alq		12.64 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	01/14/07 13:10	ALPHA	598	22	GPC10A	1.5	N	N	4.3135E-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)	0.079114		

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
	01/14/07	ALPHA	R	**0.325734**		3.94267E+00	9.14036	9.14036	1.00 Sa	100%	90%	0.008072		
				(0.040565)		(1.6330E-01)	(1.034479)	(1.034479)	(0.014142)			0.003292		

() - (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

UST Number: JLWMF1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JLWMF1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4450

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00023	00000	0150	00000	1000	13-JAN-2007 12:48:52.78

Bkg File: [quad10.bkgrnd]2007-01-13_1006.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00014	0200	0.07	00000	1000	13-JAN-2007 10:06:19.28

UST Number: JLWMK1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JLWMK1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4445

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00023	00000	0150	00000	1000	13-JAN-2007 12:48:52.78

Bkg File: [quad10.bkgrnd]2007-01-13_1006.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00007	0200	0.04	00000	1000	13-JAN-2007 10:06:19.28

UST Number: JLWML1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C File: [quad10.sample.C]JLWML1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.C_15;4456

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00024	00000	0150	00000	1000	13-JAN-2007 12:48:52.78

Bkg File: [quad10.bkgrnd]2007-01-13_1006.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00010	0200	0.05	00000	1000	13-JAN-2007 10:06:19.28

UST Number: JLWMN1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-D File: [quad10.sample.D]JLWMN1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.D_15;4449

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00029	00000	0150	00000	1000	13-JAN-2007 12:48:52.78

Bkg File: [quad10.bkgrnd]2007-01-13_1006.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00014	0200	0.07	00000	1000	13-JAN-2007 10:06:19.28

UST Number: JLXT21AA Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-F File: [quad10.sample.F]JLXT21AA.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.F_15;4441

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00006	00000	0150	00000	1000	13-JAN-2007 12:48:52.78

Bkg File: [quad10.bkgrnd]2007-01-13_1006.F_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00012	0200	0.06	00000	1000	13-JAN-2007 10:06:19.28

UST Number: JLXT21AC Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JLXT21AC.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4451

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00598	00000	0150	00000	1000	14-JAN-2007 13:10:21.44

Bkg File: [quad10.bkgrnd]2007-01-13_2122.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00022	0500	0.04	00000	1000	13-JAN-2007 21:22:37.02

RADIUM 228

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

1/16/2007 2:45:01 PM

Lot No., Due Date: J6L200275; 01/16/2007

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6355209; RRA228 Ra-228 by GPC

SDG, Matrix: 33300; FILTER

1.0 COC

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

2.0 QC Batch

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? Yes ✓ No N/A

2.2 Are the QC appropriate for the analysis included in the batch? Yes ✓ No N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? Yes ✓ No N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample? Yes ✓ No N/A

3.0 QC & Samples

3.1 Is the blank results, yield, and MDA within contract limits? Yes ✓ No N/A

3.2 Is the LCS result, yield, and MDA within contract limits? Yes ✓ No N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits? Yes No ✓ N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits? Yes No ✓ N/A

3.5 Are the sample yields and MDAs within contract limits? Yes No ✓ N/A

4.0 Raw Data

4.1 Were results calculated in the correct units? Yes ✓ No N/A

4.2 Were analysis volumes entered correctly? Yes ✓ No N/A

4.3 Were Yields entered correctly? Yes ✓ No N/A

4.4 Were spectra reviewed/meet contractual requirements? Yes ✓ No N/A

4.5 Were raw counts reviewed for anomalies? Yes ✓ No N/A

5.0 Other

5.1 Are all nonconformances included and noted? Yes ✓ No N/A

5.2 Are all required forms filled out? Yes ✓ No N/A

5.3 Was the correct methodology used? Yes ✓ No N/A

5.4 Was transcription checked? Yes ✓ No N/A

5.5 Were all calculations checked at a minimum frequency? Yes ✓ No N/A

5.6 Are worksheet entries complete and correct? Yes ✓ No N/A

6.0 Comments on any No response:

See NCM 10-09284

First Level Review Angela Long Pam Anderson **Date** 1-16-07

1/16/07

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 6355209

Review Item	Yes (√)	No (√)	N/A (√)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	/		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	/		
3. Are the correct isotopes reported?	/		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	/		
2. Does the blank result meet the Contract criteria?	/		
3. Is the blank result < the Contract Detection Limit?	/		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			/
5. Is the LCS recovery with contract acceptance criteria?		/	
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	/		
8. Do the MS/MSD results and yields meet acceptance criteria?			/
9. Do the duplicate sample results and yields meet acceptance criteria?			/
C. Other			
1. Are all Nonconformances included and noted?	/		
2. Are all required forms filled out?	/		
3. Was the correct methodology used?	/		
4. Was transcription checked?	/		
5. Were all calculations checked at a minimum frequency?	/		
6. Were units checked?	/		

Comments on any "No" response: See NCM

Second Level Review: Sheryl A Adam Date: 1-17-07

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

STL RICHLAND

12/26/2006 3:46:37 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 01/15/2007

Sep1 DT/Tm Tech: AL 12/27/06 12:45

Batch: 6355209 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6355208, BXTE

Sep2 DT/Tm Tech: 1/15/07 1307

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 JLWMF-1-AD J6L200275-1-SAMP	0.833sa,g	500.08sa,g	150.26g,in	0.2503g 0.9733	RATA25135 12/13/06	1/ 150	3B	1158	1/15/07 MR	
						30.3	3B	0703	1/16/07	
11/28/2006 12:20		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
2 JLWMK-1-AD J6L200275-2-SAMP	0.833sa,g	507.04sa,g	150.20g,in	0.2468g 0.9360	RATA25136 12/13/06		3C	1858	1/15/07 MR	
						29.8	3C	0703	1/16/07	
11/28/2006 12:05		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
3 JLWML-1-AD J6L200275-3-SAMP	0.833sa,g	503.74sa,g	150.07g,in	0.2482g 0.9306	RATA25137 12/13/06		3D	1858	1/15/07 MR	
						30.3	3D	0703	1/16/07	
11/28/2006 11:40		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
4 JLWMN-1-AD J6L200275-4-SAMP	0.833sa,g	502.72sa,g	150.71g,in	0.2497g 0.9077	RATA25138 12/13/06	29.4	4A	1858	1/15/07 MR	
							4A	0703	1/16/07	
11/28/2006 11:45		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:

102

STL RICHLAND

12/26/2006 3:46:38 PM

Sample Preparation/Analysis

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

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 01/15/2007

Sep1 DT/Tm Tech:

Batch: 6355209 pCi/sampl
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: ,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 JLXT6-1-AA-B J6L210000-209-BLK			151.01g,in	151.01g 0.9730	RATA25139 12/13/06	150 30.3	43 43	1858 0903	1/15/07 GD 1/16/07	
11/28/2006 12:20		AmtRec:		#Containers: 1			Scr:	Alpha:		Beta:
6 JLXT6-1-AC-C J6L210000-209-LCS			150.13g,in	150.13g 1.1058	RASC4307 11/22/06	29.9	4C 4C	1858 0903	1/15/07 GD 1/16/07	
11/28/2006 12:20		AmtRec:		#Containers: 1			Scr:	Alpha:		Beta:

Comments:

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

JLWMF1AD-SAMP Constituent List:

Ba-133	RDL:	pCi/sam	LCL:70	UCL:130	RPD:20	RA-228	RDL:3.10E+00	pCi/sam	LCL:	UCL:	RPD:
RA-228DA	RDL:3.10E+00	pCi/sam	LCL:	UCL:	RPD:						
JLXT61AA-BLK:											
Ba-133	RDL:	pCi/sam	LCL:70	UCL:130	RPD:20	RA-228	RDL:3.10E+00	pCi/sam	LCL:	UCL:	RPD:
RA-228DA	RDL:3.10E+00	pCi/sam	LCL:	UCL:	RPD:						
JLXT61AC-LCS:											
Ba-133	RDL:	pCi/sam	LCL:70	UCL:130	RPD:20	Ra-226	RDL:	pCi/sam	LCL:70	UCL:130	RPD:20
RA-228	RDL:1	pCi/sam	LCL:70	UCL:130	RPD:20	RA-228DA	RDL:1	pCi/sam	LCL:70	UCL:130	RPD:20

JLWMF1AD-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #: **10-09284**
NCM Initiated By: angela long
Date Opened: 01/16/2007
Date Closed:

Classification: **Anomaly**
Status: **GLREVIEW**
Production Area: Environmental - Sep
Tests: Ra-228 by GPC
Lot #'s (Sample #'s): J6L200275 (1,2,3,4), J6L210000 (209),
QC Batches: 6355209

Nonconformance: LCS result out of limits
Subcategory: Analyte was recovered low in the LCS

Problem Description / Root Cause

Name	Date	Description
angela long	01/16/2007	The LCS recovery was low at 71%, but all of the samples were below detection limit so batch was accepted.

Corrective Action

Name	Date	Corrective Action
angela long	01/16/2007	Note case narrative.

Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note	Response	Response Note

Quality Assurance Verification

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

Approval History

Date Approved	Approved By	Position

Date Printed: 1/16/2007

1/16/2007 2:46:21 PM

ICOC Fraction Transfer/Status Report

ByDate: 1/16/2006, 1/21/2007, Batch: '6355209', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6355209						
AC		**CalcC**	**LongA**	12/27/2006 1:07:39		
SC			wagarr	IsBatched	12/21/2006 10:00:48 AM	ICOC_RADCALC v4.8.26
SC			LongA	Sep1C	12/27/2006 1:07:39 PM	RICH-RC-5005 REVISION 5
SC			HarrisonJ	Sep2C	1/15/2007 2:53:26 PM	RICH-RC-5005 REVISION 4
SC			DAWKINSO	InCnt1	1/15/2007 4:24:55 PM	RICH-RD-0003 REVISION 4
SC			BlackCL	CalcC	1/16/2007 7:51:09 AM	RICH-RD-0003 REVISION 4
AC			**HarrisonJ**	1/15/2007 2:53:26 PM		
AC			**DAWKINSO**	1/15/2007 4:24:55 PM		
AC			**BlackCL**	1/16/2007 7:51:09		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 4

ICOCFractions v4.8.26

1/16/2007 2:46:20 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
33300	**9JLWMF10**			**J6L2002751**	P-0809	FILTER	12/18/2006 8:00:00	11/28/2006 12:20:00 PM				
ALPHA	BAS7	0		1/13/2007 11:33:52	**4.1506E+00**	1.845E+00	1.908E+00	5.903E+00	PCI/SA	1.0	1.0E+0	2.09E-2
RA-228	BXTF	0		1/16/2007 7:08:52 AM	**1.3216E+00**	3.853E-01	4.211E-01	1.597E+00	PCI/SA	0.857	1.0E+0	2.503E-1
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**4.1715E-02**	9.328E-02	9.336E-02	5.004E-01	PCI/SA	0.454	1.0E+0	8.487E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**3.6184E-01**	1.842E-01	1.875E-01	4.823E-01	PCI/SA	0.454	1.0E+0	8.487E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**8.0408E-02**	8.99E-02	9.023E-02	4.823E-01	PCI/SA	0.454	1.0E+0	8.487E-2
33300	**9JLWMK10**			**J6L2002752**	P-0810	FILTER	12/18/2006 8:00:00	11/28/2006 12:05:00 PM				
ALPHA	BAS7	0		1/13/2007 11:33:52	**6.0753E+00**	1.776E+00	1.905E+00	4.574E+00	PCI/SA	1.0	1.0E+0	2.054E-2
RA-228	BXTF	0		1/16/2007 7:08:52 AM	**8.4103E-01**	3.99E-01	4.395E-01	1.897E+00	PCI/SA	0.811	1.0E+0	2.468E-1
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**3.7185E-02**	8.315E-02	8.322E-02	4.461E-01	PCI/SA	0.507	1.0E+0	8.293E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**1.1958E-06**	8.778E-02	8.778E-02	5.275E-01	PCI/SA	0.507	1.0E+0	8.293E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**0.0E+00**	0.0E+00	8.014E-02	4.299E-01	PCI/SA	0.507	1.0E+0	8.293E-2
33300	**9JLWML10**			**J6L2002753**	P-0811	FILTER	12/18/2006 8:00:00	11/28/2006 11:40:00 AM				
ALPHA	BAS7	0		1/13/2007 11:33:52	**5.3908E+00**	1.778E+00	1.884E+00	5.046E+00	PCI/SA	1.0	1.0E+0	2.074E-2
RA-228	BXTF	0		1/16/2007 7:08:52 AM	**1.1625E+00**	3.808E-01	4.072E-01	1.581E+00	PCI/SA	0.82	1.0E+0	2.482E-1
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**9.5049E-02**	1.227E-01	1.23E-01	5.326E-01	PCI/SA	0.701	1.0E+0	8.308E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**1.5267E-01**	1.101E-01	1.11E-01	3.663E-01	PCI/SA	0.701	1.0E+0	8.308E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**1.5267E-01**	1.101E-01	1.11E-01	3.663E-01	PCI/SA	0.701	1.0E+0	8.308E-2
33300	**9JLWMN10**			**J6L2002754**	000579	FILTER	12/18/2006 8:00:00	11/28/2006 11:45:00 AM				
ALPHA	BAS7	0		1/13/2007 11:33:52	**6.1561E+00**	2.021E+00	2.144E+00	5.916E+00	PCI/SA	1.0	1.0E+0	2.075E-2
RA-228	BXTF	0		1/16/2007 7:09:01 AM	**2.6483E+00**	4.924E-01	5.223E-01	1.657E+00	PCI/SA	0.776	1.0E+0	2.497E-1
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**9.4517E-02**	2.113E-01	2.116E-01	1.134E+00	PCI/SA	0.238	1.0E+0	8.366E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**5.4654E-01**	3.284E-01	3.348E-01	1.093E+00	PCI/SA	0.238	1.0E+0	8.366E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**1.8218E-01**	2.037E-01	2.048E-01	1.093E+00	PCI/SA	0.238	1.0E+0	8.366E-2
33300	**JLXT61AB**			**J6L210000209**	INTRA-LAB BLANK	FILTER	12/18/2006 8:00:00	11/28/2006 12:20:00 PM				
RA-228	BXTF	0	B	1/16/2007 7:09:01 AM	**1.2197E-03**	6.216E-04	6.277E-04	2.732E-03	PCI/SA	0.857	1.0E+0	1.51E+2
33300	**JLXT61CS**			**J6L210000209**	INTRA-LAB CHECK	FILTER	12/18/2006 8:00:00	11/28/2006 12:20:00 PM				
RA-228	BXTF	0	S	1/16/2007 7:09:01 AM	**2.3871E-02**	1.407E-03	1.962E-03	2.498E-03	PCI/SA	3.3662E-02	0.961	1.0E+0	1.501E+2

6355209, **Samples Inserted | Updated | NotUpdated => 0 | 0 | 6,
**Results Inserted | ReTestInserted | Updated | NotInserted => 0 | 0 | 0 | 6.
**Diff RptDb | Qtims => *wo:JLXT61AA=> , mat:FILTER | Air *wo:JLXT61AA=> , mat:FILTER | Air *wo:JLXT61AA=> , mat:FILTER | Air *wo:JLXT61AA=> , mat:FILTER | Air *wo:JLXT61AA=> , mat:FILTER | Air *wo:JLXT61AC=> , mat:FILTER | Air *wo:JLXT61AC=> , mat:FILTER

STL Richland, Wa Calc Review v4.8.26

Batch Nbr: 6355209

Alpha Beta, Ra-228 by GPC , Results

1/16/2007 7:42:21 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	JLWMF1AD	RA-228	2.29E+00	(8.12E-01)		PCI/SA	R	1.07E+00	2.51E+00		86%	
Calc	TF	FILTER	JLWMF1AD	RA-228	1.49E+00	(7.46E-01)		PCI/SA	R	1.18E+00	2.76E+00		86%	
Calc	TF	FILTER	JLWMF1AD	RA-228	1.82E-01	(6.16E-01)	U4	PCI/SA	R	1.30E+00	3.03E+00		86%	
Calc	TF	FILTER	JLWMF1AD	RA-228	1.32E+00	(4.21E-01)		PCI/SA	A	6.83E-01	1.60E+00	✓	86%	
Calc	TF	FILTER	JLWMF1AD	RA-228	-3.46E+00	(2.66E+00)	U4	PCI/SA	R	6.59E+00	1.49E+01		86%	
Calc	TF	FILTER	JLWMK1AD	RA-228	1.83E+00	(8.25E-01)		PCI/SA	R	1.29E+00	2.98E+00		81%	
Calc	TF	FILTER	JLWMK1AD	RA-228	1.19E+00	(7.99E-01)	U4	PCI/SA	R	1.42E+00	3.28E+00		81%	
Calc	TF	FILTER	JLWMK1AD	RA-228	-4.96E-01	(6.47E-01)	U4	PCI/SA	R	1.56E+00	3.60E+00		81%	
Calc	TF	FILTER	JLWMK1AD	RA-228	8.41E-01	(4.40E-01)		PCI/SA	A	8.20E-01	1.90E+00	✓	81%	
Calc	TF	FILTER	JLWMK1AD	RA-228	-2.78E+00	(3.01E+00)	U4	PCI/SA	R	7.25E+00	1.64E+01		81%	
Calc	TF	FILTER	JLWML1AD	RA-228	2.28E+00	(8.05E-01)		PCI/SA	R	1.05E+00	2.48E+00		82%	
Calc	TF	FILTER	JLWML1AD	RA-228	0.00E+00	(5.26E-01)	U4	PCI/SA	R	1.15E+00	2.73E+00		82%	
Calc	TF	FILTER	JLWML1AD	RA-228	1.21E+00	(7.54E-01)	U4	PCI/SA	R	1.27E+00	3.00E+00		82%	
Calc	TF	FILTER	JLWML1AD	RA-228	1.16E+00	(4.07E-01)		PCI/SA	A	6.68E-01	1.58E+00	✓	82%	
Calc	TF	FILTER	JLWML1AD	RA-228	-2.83E+00	(2.59E+00)	U4	PCI/SA	R	6.40E+00	1.46E+01		82%	
Calc	TF	FILTER	JLWMN1AD	RA-228	3.22E+00	(9.17E-01)		PCI/SA	R	1.10E+00	2.60E+00		78%	
Calc	TF	FILTER	JLWMN1AD	RA-228	1.91E+00	(8.10E-01)		PCI/SA	R	1.21E+00	2.86E+00		78%	
Calc	TF	FILTER	JLWMN1AD	RA-228	2.82E+00	(9.79E-01)		PCI/SA	R	1.33E+00	3.15E+00		78%	
Calc	TF	FILTER	JLWMN1AD	RA-228	2.65E+00	(5.22E-01)		PCI/SA	A	7.01E-01	1.66E+00	✓	78%	
Calc	TF	FILTER	JLWMN1AD	RA-228	-3.29E+00	(2.47E+00)	U4	PCI/SA	R	6.32E+00	1.46E+01		78%	
Calc	TF	FILTER	JLXT61AA	RA-228	8.80E-04	(9.54E-04)	U4	PCI/SA	R	1.84E-03	4.29E-03	B	86%	
Calc	TF	FILTER	JLXT61AA	RA-228	1.72E-03	(1.14E-03)	U4	PCI/SA	R	2.02E-03	4.72E-03	B	86%	
Calc	TF	FILTER	JLXT61AA	RA-228	1.06E-03	(1.15E-03)	U4	PCI/SA	R	2.22E-03	5.19E-03	B	86%	
Calc	TF	FILTER	JLXT61AA	RA-228	1.22E-03	(6.28E-04)		PCI/SA	A	1.17E-03	2.73E-03	B ✓	86%	
Calc	TF	FILTER	JLXT61AA	RA-228	1.77E-03	(5.02E-03)	U4	PCI/SA	R	1.06E-02	2.41E-02	B	86%	
Calc	TF	FILTER	JLXT61AC	RA-228	2.39E-02	(3.31E-03)		PCI/SA	R	1.69E-03	3.92E-03	S	96%	71%
Calc	TF	FILTER	JLXT61AC	RA-228	2.43E-02	(3.44E-03)		PCI/SA	R	1.86E-03	4.31E-03	S	96%	72%
Calc	TF	FILTER	JLXT61AC	RA-228	2.34E-02	(3.44E-03)		PCI/SA	R	2.04E-03	4.74E-03	S	96%	69%
Calc	TF	FILTER	JLXT61AC	RA-228	2.39E-02	(1.96E-03)		PCI/SA	A	1.08E-03	2.50E-03	S ✓	96%	71% N
Calc	TF	FILTER	JLXT61AC	RA-228	2.35E-02	(6.79E-03)		PCI/SA	R	9.34E-03	2.13E-02	S	96%	70%

Angela Long
1/16/07

P Anderson
1-16-07

() - (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:30
RADCALC v4.8.26
STL Richland

Batch Nbr: 6355209

Alpha Beta, Ra-228 by GPC , Calculated Results

1/16/2007 7:42:22 AM

Detailed Report

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
1	Calc	TF	FILTER	*STLE	Ra228WoBS	**JLWMF1AD**	**PCI/SA**		11/28/06 12:20	01/16/07 07:08	12/27/06 12:45	RATA25135	1	1.00 SA	
536403,P-0809					,J6L200275-1 v4.8.26		FILTER			30.3	01/15/07 13:07	RATA25135 Alq	97%	0.250293 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	01/15/07 17:16	RA-228	29	95	GPC3B	1	N	N	4.8281E-01	1.0000E+00	N	86%	N		1.5249E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(5.393E-02)	(0.000E+00)		7%			(0.000E+00)	3.995316		
1	01/15/07 18:06	RA-228	22	95	GPC3B	1	N	N	4.8281E-01	1.0000E+00	N	86%	N		1.6763E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(5.393E-02)	(0.000E+00)		7%			(0.000E+00)	3.995316		
2	01/15/07 18:56	RA-228	13	95	GPC3B	1	N	N	4.8281E-01	1.0000E+00	N	86%	N		1.8428E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(5.393E-02)	(0.000E+00)		7%			(0.000E+00)	3.995316		
3	01/16/07 07:08	RA-228	14	155	GPC3B	1	N	N	4.8281E-01	1.0000E+00	N	86%	N		7.3256E+00	4.5045E-01	1.0096E+00	
			50	400			N		(5.393E-02)	(0.000E+00)		7%			(0.000E+00)	3.995316		

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
	01/16/07	RA-228	R	**2.292637**		3.42500E-01	1.261765	1.261765	1.00 SA	86%		2.508038		
				(0.812269)		(1.1043E-01)	(0.442203)	(0.442203)	(0.014142)			1.073254		
	01/16/07	RA-228	R	**1.490094**		2.02500E-01	0.820081	0.820081	1.00 SA	86%		2.757072		
				(0.746027)		(9.6921E-02)	(0.408362)	(0.408362)	(0.014142)			1.179822		
	01/16/07	RA-228	R	**0.182012**	**U4**	2.25000E-02	0.100171	0.100171	1.00 SA	86%		3.03093		
				(0.616319)		(7.6117E-02)	(0.339154)	(0.339154)	(0.014142)			1.297012		
	01/16/07	RA-228	A	**1.321581**		1.89167E-01	0.727339	0.727339	1.00 SA	86%		1.596574		
				(0.421134)		(5.5158E-02)	(0.230297)	(0.230297)	(0.008165)			0.683215		
	01/16/07	RA-228	R	**-3.456985**	**U4**	-1.07500E-01	-1.90257	-1.90257	1.00 SA	86%		14.907115		
				(2.655343)		(8.1048E-02)	(1.458034)	(1.458034)	(0.014142)			6.585986		

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	**JLWMK1AD**	**PCI/SA**		11/28/06 12:05	01/16/07 07:08	12/27/06 12:45	RATA25136	1	1.00 SA	
536403,P-0810					,J6L200275-2 v4.8.26		FILTER			29.8	01/15/07 13:07	RATA25136 Alq	94%	0.246759 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	01/15/07 17:16	RA-228	26	110	GPC3C	1	N	N	4.6422E-01	1.0000E+00	N	81%	N		1.5249E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(4.565E-02)	(0.000E+00)		6%			(0.000E+00)	4.05254		
1	01/15/07 18:06	RA-228	21	110	GPC3C	1	N	N	4.6422E-01	1.0000E+00	N	81%	N		1.6763E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(4.565E-02)	(0.000E+00)		6%			(0.000E+00)	4.05254		
2	01/15/07 18:56	RA-228	11	110	GPC3C	1	N	N	4.6422E-01	1.0000E+00	N	81%	N		1.8428E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(4.565E-02)	(0.000E+00)		6%			(0.000E+00)	4.05254		

() - (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: 6355209

Alpha Beta, Ra-228 by GPC , Calculated Results

1/16/2007 7:42:22 AM

3	01/16/07 07:08	RA-228	15	151	GPC3C	1	N	N	4.6422E-01	1.0000E+00	N	81%	N		7.3256E+00	4.5045E-01	1.0096E+00
			50	400			N		(4.565E-02)	(0.000E+00)		6%			(0.000E+00)	4.05254	

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
	01/16/07	RA-228	R	**1.829232**		2.45000E-01	0.992508	0.992508	1.00 SA	81%		2.979432		
				(0.825155)		(1.0530E-01)	(0.444734)	(0.444734)	(0.014142)			1.288145		
	01/16/07	RA-228	R	**1.190103**	U4	1.45000E-01	0.645729	0.645729	1.00 SA	81%		3.275273		
				(0.799227)		(9.5328E-02)	(0.432346)	(0.432346)	(0.014142)			1.416051		
	01/16/07	RA-228	R	**-0.496257**	U4	-5.50000E-02	-0.26926	-0.26926	1.00 SA	81%		3.600603		
				(0.647153)		(7.1327E-02)	(0.350855)	(0.350855)	(0.014142)			1.556706		
	01/16/07	RA-228	A	**0.841026**		1.11667E-01	0.456326	0.456326	1.00 SA	81%		1.896655		
				(0.439501)		(5.2981E-02)	(0.237536)	(0.237536)	(0.008165)			0.820011		
	01/16/07	RA-228	R	**-2.779833**	U4	-7.75000E-02	-1.508288	-1.508288	1.00 SA	81%		16.436596		
				(3.013086)		(8.3329E-02)	(1.632967)	(1.632967)	(0.014142)			7.250558		

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	**JLWML1AD**	**PCI/SA**		11/28/06 11:40	01/16/07 07:08	12/27/06 12:45	RATA25137	1	1.00 SA	
536403,P-0811					,J6L200275-3 v4.8.26		FILTER			30.3	01/15/07 13:07	RATA25137 Alq	93%	0.24816 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	01/15/07 17:16	RA-228	26	80	GPC3D	1	N	N	4.7820E-01	1.0000E+00	N	82%	N		1.5249E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(4.522E-02)	(0.000E+00)		7%			(0.000E+00)	4.029652		
1	01/15/07 18:06	RA-228	10	80	GPC3D	1	N	N	4.7820E-01	1.0000E+00	N	82%	N		1.6763E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(4.522E-02)	(0.000E+00)		7%			(0.000E+00)	4.029652		
2	01/15/07 18:56	RA-228	17	80	GPC3D	1	N	N	4.7820E-01	1.0000E+00	N	82%	N		1.8428E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(4.522E-02)	(0.000E+00)		7%			(0.000E+00)	4.029652		
3	01/16/07 07:08	RA-228	12	129	GPC3D	1	N	N	4.7820E-01	1.0000E+00	N	82%	N		7.3256E+00	4.5045E-01	1.0096E+00	
			50	400			N		(4.522E-02)	(0.000E+00)		7%			(0.000E+00)	4.029652		

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
	01/16/07	RA-228	R	**2.281372**		3.20000E-01	1.244855	1.244855	1.00 SA	82%		2.483072		
				(0.80493)		(1.0440E-01)	(0.434429)	(0.434429)	(0.014142)			1.048955		
	01/16/07	RA-228	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 SA	82%		2.729627		
				(0.525734)		(6.7082E-02)	(0.286873)	(0.286873)	(0.014142)			1.153111		
	01/16/07	RA-228	R	**1.20619**	U4	1.40000E-01	0.658171	0.658171	1.00 SA	82%		3.000759		
				(0.753739)		(8.5440E-02)	(0.409861)	(0.409861)	(0.014142)			1.267648		
	01/16/07	RA-228	A	**1.162521**		1.53333E-01	0.634342	0.634342	1.00 SA	82%		1.580681		
				(0.407217)		(5.0222E-02)	(0.22086)	(0.22086)	(0.008165)			0.667747		
	01/16/07	RA-228	R	**-2.825624**	U4	-8.25000E-02	-1.541832	-1.541832	1.00 SA	82%		14.64702		
				(2.592398)		(7.4875E-02)	(1.412299)	(1.412299)	(0.014142)			6.399135		

() - (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: 6355209

Alpha Beta, Ra-228 by GPC , Calculated Results

1/16/2007 7:42:22 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	**JLWMN1AD**	**PCI/SA**		11/28/06 11:45	01/16/07 07:09	12/27/06 12:45	RATA25138	1	1.00 SA	
536403,000579					,J6L200275-4 v4.8.26		FILTER			29.4	01/15/07 13:07	RATA25138 Alq	91%	0.249724 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	01/15/07 17:16	RA-228	32	82	GPC4A	1	N	N	4.8436E-01	1.0000E+00	N	78%	N		1.5262E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(2.054E-02)	(0.000E+00)		6%			(0.000E+00)	4.004415		
1	01/15/07 18:06	RA-228	22	82	GPC4A	1	N	N	4.8436E-01	1.0000E+00	N	78%	N		1.6778E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(2.054E-02)	(0.000E+00)		6%			(0.000E+00)	4.004415		
2	01/15/07 18:57	RA-228	26	82	GPC4A	1	N	N	4.8436E-01	1.0000E+00	N	78%	N		1.8444E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(2.054E-02)	(0.000E+00)		6%			(0.000E+00)	4.004415		
3	01/16/07 07:09	RA-228	10	117	GPC4A	1	N	N	4.8436E-01	1.0000E+00	N	78%	N		7.3277E+00	4.5045E-01	1.0096E+00	
			50	400			N		(2.054E-02)	(0.000E+00)		6%			(0.000E+00)	4.004415		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BlkLcC/MDC	StdDvMdC/LcC
	01/16/07	RA-228	R	**3.217826**		4.35000E-01	1.766909	1.766909	1.00 SA	78%		2.603445		
				(0.917229)		(1.1538E-01)	(0.495212)	(0.495212)	(0.014142)			1.10191		
	01/16/07	RA-228	R	**1.910976**		2.35000E-01	1.049317	1.049317	1.00 SA	78%		2.861953		
				(0.809692)		(9.6501E-02)	(0.441246)	(0.441246)	(0.014142)			1.211323		
	01/16/07	RA-228	R	**2.815954**		3.15000E-01	1.546241	1.546241	1.00 SA	78%		3.146227		
				(0.979029)		(1.0446E-01)	(0.531547)	(0.531547)	(0.014142)			1.331643		
	01/16/07	RA-228	A	**2.648252**		3.28333E-01	1.454156	1.454156	1.00 SA	78%		1.657308		
				(0.522325)		(6.1044E-02)	(0.283328)	(0.283328)	(0.008165)			0.701457		
	01/16/07	RA-228	R	**-3.285161**	**U4**	-9.25000E-02	-1.803882	-1.803882	1.00 SA	78%		14.55616		
				(2.466841)		(6.8784E-02)	(1.351296)	(1.351296)	(0.014142)			6.319369		

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	**JLXT61AA**	**PCI/SA**	**B**	11/28/06 12:20	01/16/07 07:09	12/27/06 12:45	RATA25139	1	1.00 SA	
0,INTRA-LAB BLANK					,J6L210000-209 v4.8.26		FILTER			30.3	01/15/07 13:07	RATA25139 Alq	97%	151.01 SA	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	01/15/07 17:16	RA-228	16	97	GPC4B	1	N	N	4.7243E-01	1.0000E+00	N	86%	N		1.5262E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(9.014E-03)	(0.000E+00)		7%			(0.000E+00)	0.006622		
1	01/15/07 18:06	RA-228	19	97	GPC4B	1	N	N	4.7243E-01	1.0000E+00	N	86%	N		1.6778E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(9.014E-03)	(0.000E+00)		7%			(0.000E+00)	0.006622		
2	01/15/07 18:57	RA-228	16	97	GPC4B	1	N	N	4.7243E-01	1.0000E+00	N	86%	N		1.8444E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(9.014E-03)	(0.000E+00)		7%			(0.000E+00)	0.006622		
3	01/16/07 07:09	RA-228	19	139	GPC4B	1	N	N	4.7243E-01	1.0000E+00	N	86%	N		7.3277E+00	4.5045E-01	1.0096E+00	
			50	400			N		(9.014E-03)	(0.000E+00)		7%			(0.000E+00)	0.006622		

() - (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: 6355209

Alpha Beta, Ra-228 by GPC , Calculated Results

1/16/2007 7:42:23 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
	01/16/07	RA-228	R	**0.00088**	U4	7.75000E-02	0.292142	0.292142	1.00 SA	86%		0.004292		
				(0.000954)		(8.3703E-02)	(0.31644)	(0.31644)	(0.014142)			0.001839		
	01/16/07	RA-228	R	**0.001716**	U4	1.37500E-01	0.569783	0.569783	1.00 SA	86%		0.004718		
				(0.001143)		(9.0588E-02)	(0.3783)	(0.3783)	(0.014142)			0.002022		
	01/16/07	RA-228	R	**0.001063**	U4	7.75000E-02	0.35305	0.35305	1.00 SA	86%		0.005186		
				(0.001153)		(8.3703E-02)	(0.382413)	(0.382413)	(0.014142)			0.002223		
	01/16/07	RA-228	A	**0.00122**		9.75000E-02	0.404992	0.404992	1.00 SA	86%		0.002732		
				(0.000628)		(4.9687E-02)	(0.208029)	(0.208029)	(0.008165)			0.001171		
	01/16/07	RA-228	R	**0.001771**	U4	3.25000E-02	0.58819	0.58819	1.00 SA	86%		0.024083		
				(0.005019)		(9.2026E-02)	(1.666199)	(1.666199)	(0.014142)			0.010571		

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	**JLXT61AC**	**PCI/SA**	**S**	11/28/06 12:20	01/16/07 07:09	12/27/06 12:45	RASC4307	1	1.00 SA	
0,INTRA-LAB CHECK					,J6L210000-209		FILTER			29.9	01/15/07 13:07	RASC4307 Alq	111%	150.13 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	01/15/07 17:16	RA-228	133	106	GPC4C	1	N	N	4.8151E-01	1.0000E+00	N	96%	N		1.5262E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(1.240E-02)	(0.000E+00)		8%			(0.000E+00)	0.006661		
1	01/15/07 18:06	RA-228	124	106	GPC4C	1	N	N	4.8151E-01	1.0000E+00	N	96%	N		1.6778E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(1.240E-02)	(0.000E+00)		8%			(0.000E+00)	0.006661		
2	01/15/07 18:57	RA-228	110	106	GPC4C	1	N	N	4.8151E-01	1.0000E+00	N	96%	N		1.8444E+00	4.5045E-01	1.0096E+00	
			50	400			Y		(1.240E-02)	(0.000E+00)		8%			(0.000E+00)	0.006661		
3	01/16/07 07:09	RA-228	42	140	GPC4C	1	N	N	4.8151E-01	1.0000E+00	N	96%	N		7.3277E+00	4.5045E-01	1.0096E+00	
			50	400			N		(1.240E-02)	(0.000E+00)		8%			(0.000E+00)	0.006661		

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
	01/16/07	RA-228	R	**0.023926**		2.39500E+00	7.898276	7.898276	1.00 SA	96%	71%	0.003923		
				(0.003311)		(2.3208E-01)	(1.01313)	(1.01313)	(0.014142)			0.001692		
	01/16/07	RA-228	R	**0.024325**		2.21500E+00	8.029981	8.029981	1.00 SA	96%	72%	0.004313		
				(0.003441)		(2.2419E-01)	(1.05643)	(1.05643)	(0.014142)			0.00186		
	01/16/07	RA-228	R	**0.023361**		1.93500E+00	7.711688	7.711688	1.00 SA	96%	69%	0.004741		
				(0.003441)		(2.1134E-01)	(1.062758)	(1.062758)	(0.014142)			0.002045		
	01/16/07	RA-228	A	**0.023871**		2.18167E+00	7.879982	7.879982	1.00 SA	96%	71%	0.002498		
				(0.001962)		(1.2858E-01)	(0.602949)	(0.602949)	(0.008165)			0.001077		
	01/16/07	RA-228	R	**0.023502**		4.90000E-01	7.758262	7.758262	1.00 SA	96%	70%	0.021259		
				(0.006786)		(1.3295E-01)	(2.203657)	(2.203657)	(0.014142)			0.009335		

() - (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

UST Number: JLWMF1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JLWMF1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.B_1;5649

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00029	0050	01220	1920	15-JAN-2007 17:16:04.03
2	00000	00022	0050	01210	1920	15-JAN-2007 18:06:18.89
3	00000	00013	0050	01220	1920	15-JAN-2007 18:56:33.53

Bkg File: [quad3.bkgrnd]2007-01-14_2101.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00095	0400	0.24	09785	1920	14-JAN-2007 21:01:02.18

UST Number: JLWMF1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JLWMF1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.B_1;5650

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00014	0050	01220	1920	16-JAN-2007 07:08:52.37

Bkg File: [quad3.bkgrnd]2007-01-16_0242.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00155	0400	0.39	09732	1920	16-JAN-2007 02:42:30.47

UST Number: JLWMK1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JLWMK1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.C_1;5654

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00026	0050	01220	1920	15-JAN-2007 17:16:04.03
2	00000	00021	0050	01210	1920	15-JAN-2007 18:06:18.89
3	00000	00011	0050	01220	1920	15-JAN-2007 18:56:33.53

Bkg File: [quad3.bkgrnd]2007-01-14_2101.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00110	0400	0.28	09785	1920	14-JAN-2007 21:01:02.18

UST Number: JLWMK1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JLWMK1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.C_1;5655

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01220	1920	16-JAN-2007 07:08:52.37

Bkg File: [quad3.bkgrnd]2007-01-16_0242.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00151	0400	0.38	09732	1920	16-JAN-2007 02:42:30.47

UST Number: JLWML1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JLWML1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.D_1;5639

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00026	0050	01220	1920	15-JAN-2007 17:16:04.03
2	00000	00010	0050	01210	1920	15-JAN-2007 18:06:18.89
3	00000	00017	0050	01220	1920	15-JAN-2007 18:56:33.53

Bkg File: [quad3.bkgrnd]2007-01-14_2101.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00080	0400	0.20	09785	1920	14-JAN-2007 21:01:02.18

UST Number: JLWML1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JLWML1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.D_1;5640

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00012	0050	01220	1920	16-JAN-2007 07:08:52.37

Bkg File: [quad3.bkgrnd]2007-01-16_0242.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00129	0400	0.32	09732	1920	16-JAN-2007 02:42:30.47

UST Number: JLWMN1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JLWMN1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.A_1;5658

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00032	0050	01173	1850	15-JAN-2007 17:16:33.01
2	00000	00022	0050	01179	1850	15-JAN-2007 18:06:47.78
3	00000	00026	0050	01175	1850	15-JAN-2007 18:57:02.62

Bkg File: [quad4.bkgrnd]2007-01-14_2102.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00082	0400	0.21	09452	1850	14-JAN-2007 21:02:28.15

UST Number: JLWMN1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JLWMN1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.A_1;5659

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00010	0050	01170	1850	16-JAN-2007 07:09:01.11

Bkg File: [quad4.bkgrnd]2007-01-16_0242.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00117	0400	0.29	09430	1850	16-JAN-2007 02:42:35.71

UST Number: JLXT61AA Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JLXT61AA.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.B_1;5657

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00016	0050	01173	1850	15-JAN-2007 17:16:33.01
2	00000	00019	0050	01179	1850	15-JAN-2007 18:06:47.78
3	00000	00016	0050	01175	1850	15-JAN-2007 18:57:02.62

Bkg File: [quad4.bkgrnd]2007-01-14_2102.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00097	0400	0.24	09452	1850	14-JAN-2007 21:02:28.15

UST Number: JLXT61AA Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JLXT61AA.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.B_1;5658

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01170	1850	16-JAN-2007 07:09:01.11

Bkg File: [quad4.bkgrnd]2007-01-16_0242.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00139	0400	0.35	09430	1850	16-JAN-2007 02:42:35.71

UST Number: JLXT61AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JLXT61AC.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.C_1;5660

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00133	0050	01173	1850	15-JAN-2007 17:16:33.01
2	00000	00124	0050	01179	1850	15-JAN-2007 18:06:47.78
3	00000	00110	0050	01175	1850	15-JAN-2007 18:57:02.62

Bkg File: [quad4.bkgrnd]2007-01-14_2102.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00106	0400	0.27	09452	1850	14-JAN-2007 21:02:28.15

UST Number: JLXT61AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JLXT61AC.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.C_1;5661

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00042	0050	01170	1850	16-JAN-2007 07:09:01.11

Bkg File: [quad4.bkgrnd]2007-01-16_0242.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00140	0400	0.35	09430	1850	16-JAN-2007 02:42:35.71

Sample Preparation/Analysis

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

Balance Id:1120373922,1120373922,1120 124

Pipet #: _____

AnalyDueDate: 01/15/2007

Sep1 DT/Tm Tech:

Batch: 6355209 pCi/sampl
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: ,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:

JLXT61AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JLXT61AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

RADIUM 226

SAMPLE AND QC DATA

SEVERN TRENT **STL**

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

1/16/2007 2:56:57 PM

Lot No., Due Date: J6L200275; 01/16/2007

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 6355208; RRA2267 Ra-226 by ASC-7

SDG, Matrix: 33300; 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 Angela Long Pam Anderson **Date** 1-16-07

1/16/07

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 6355208

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: 1-17-07

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

STL RICHLAND

12/26/2006 3:46:36 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 01/15/2007

Sep1 DT/Tm Tech: AL 12/27/06 12:45

Batch: 6355208 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 6355209, 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 JLWMF-1-AC J6L200275-1-SAMP	0.833sa,g	500.08sa,g	150.26g,in	0.2503g 7.5473 7.346 1.0274	RATA25135 12/13/06	100	G6	1907	12/27/06 ORD 12/29/06 1335 P GRA 1/13/07 1054 R	
11/28/2006 12:20		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
2 JLWMK-1-AC J6L200275-2-SAMP	0.833sa,g	507.04sa,g	150.20g,in	0.2468g 7.5856 7.100 1.0684	RATA25136 12/13/06		G6	1947	12/27/06 ORD 12/29/06 1335 P 8RD 1/13/07 1055 R	
11/28/2006 12:05		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
3 JLWML-1-AC J6L200275-3-SAMP	0.833sa,g	503.74sa,g	150.07g,in	0.2482g 7.5760 7.051 ~~1.0746~~ AL 1.0745 1/15/07	RATA25137 12/13/06		G7	1948	12/27/06 ORD 12/29/06 1335 P 9RA 1/13/07 1054 R	
11/28/2006 11:40		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
4 JLWMN-1-AC J6L200275-4-SAMP	0.833sa,g	502.72sa,g	150.71g,in	0.2497g 7.6335 6.929 1.1017	RATA25138 12/13/06		G4	1948	12/27/06 ORD 12/29/06 1335 P ASA 1/13/07 1127 R	
11/28/2006 11:45		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:

STL RICHLAND

12/26/2006 3:46:37 PM

Sample Preparation/Analysis

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

Balance Id:1120373922,1120373922,1120

Pipet #: _____

AnalyDueDate: 01/15/2007

Sep1 DT/Tm Tech:

Batch: 6355208 pCi/sampl

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: ,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 JLXT4-1-AA-B J6L210000-208-BLK			151.01g,in	151.01g 7.5952 ~~7.39~~ 7.37 ~~1.0278~~ 1.0306	RATA25139 12/13/06	100	911	1948	12/27/06 [illegible] 12/29/06 1335 [illegible] BMC 1/13/07 1052 R	
11/28/2006 12:20		AmtRec:		#Containers: 1			Scr:	Alpha:	Beta:	
6 JLXT4-1-AC-C J6L210000-208-LCS			150.13g,in	150.13g 7.4606 8.25 0.9043	RASC4307 11/22/06		911	0549	12/28/06 R ~~12/29/06 1335~~ [illegible] PMA 1/13/07 1057 R	
11/28/2006 12:20		AmtRec:		#Containers: 1			Scr:	Alpha:	Beta:	

Comments:

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

JLWMF1AC-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:

JLXT41AA-BLK:
Ba-133 RDL: pCi/sam LCL:20 UCL:115 RPD:20 Ra-226 RDL:1.00E+00 pCi/sam LCL: UCL: RPD:

JLXT41AC-LCS:
Ba-133 RDL: pCi/sam LCL:20 UCL:115 RPD:20 Ra-226 RDL:1 pCi/sam LCL:70 UCL:130 RPD:20

JLWMF1AC-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JLXT41AA-BLK:

12/26/2006 3:46:37 PM

Sample Preparation/Analysis

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

Balance Id:1120373922,1120403183

Pipet #: _____

AnalyDueDate: 01/15/2007

Sep1 DT/Tm Tech:

Batch: 6355208 pCi/sampl
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: ,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:

Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JLXT41AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

1/16/2007 2:56:07 PM

ICOC Fraction Transfer/Status Report

ByDate: 1/16/2006, 1/21/2007, Batch: '6355208', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
6355208						
AC		CalcC	HarrisonJ	12/26/2006 3:36:08		
SC			wagarr	IsBatched	12/21/2006 10:00:48 AM	ICOC_RADCALC v4.8.26
SC			HarrisonJ	InPrep	12/26/2006 3:36:08 PM	RICH-RC-5005 Revision 5
SC			LongA	Sep1C	12/27/2006 1:07:30 PM	RICH-RC-5005 REVISION 5
SC			DAWKINSO	InCnt1	12/27/2006 2:44:07 PM	RICH-RD-0007 REVISION 5
SC			StringerR	Cnt1C	12/28/2006 5:58:49 AM	RICH-RD-0007 REVISION 5
SC			PetersonJ	InSep2	12/29/2006 1:34:35 PM	RICH-RC-5005 REVISION 5
SC			StringerR	CalcC	1/13/2007 3:33:50 PM	RICH-RC-5005 REVISION 5
AC			LongA	12/27/2006 1:07:30		
AC			DAWKINSO	12/27/2006 2:44:07		
AC			StringerR	12/28/2006 5:58:49		
AC			PetersonJ	12/29/2006 1:34:35		
AC			StringerR	1/13/2007 3:33:50 PM		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 6

ICOCFractions v4.8.26

1/16/2007 2:56:05 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
33300	**9JLWMF10**			**J6L2002751**	P-0809	FILTER	12/18/2006 8:00:00	11/28/2006 12:20:00 PM				
ALPHA	BAS7	0		1/13/2007 11:33:52	**4.1506E+00**	1.845E+00	1.908E+00	5.903E+00	PCI/SA	1.0	1.0E+0	2.09E-2
RA-226	BXTE	0		1/13/2007 1:54:00 PM	**1.9063E-01**	1.207E-01	1.222E-01	4.119E-01	PCI/SA	0.973	1.0E+0	2.503E-1
RA-228	BXTF	0		1/16/2007 7:08:52 AM	**1.3216E+00**	3.853E-01	4.211E-01	1.597E+00	PCI/SA	0.857	1.0E+0	2.503E-1
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**4.1715E-02**	9.328E-02	9.336E-02	5.004E-01	PCI/SA	0.454	1.0E+0	8.487E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**3.6184E-01**	1.842E-01	1.875E-01	4.823E-01	PCI/SA	0.454	1.0E+0	8.487E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**8.0408E-02**	8.99E-02	9.023E-02	4.823E-01	PCI/SA	0.454	1.0E+0	8.487E-2
33300	**9JLWMK10**			**J6L2002752**	P-0810	FILTER	12/18/2006 8:00:00	11/28/2006 12:05:00 PM				
ALPHA	BAS7	0		1/13/2007 11:33:52	**6.0753E+00**	1.776E+00	1.905E+00	4.574E+00	PCI/SA	1.0	1.0E+0	2.054E-2
RA-226	BXTE	0		1/13/2007 1:55:00 PM	**4.9943E-01**	1.215E-01	1.311E-01	2.582E-01	PCI/SA	0.936	1.0E+0	2.468E-1
RA-228	BXTF	0		1/16/2007 7:08:52 AM	**8.4103E-01**	3.99E-01	4.395E-01	1.897E+00	PCI/SA	0.811	1.0E+0	2.468E-1
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**3.7185E-02**	8.315E-02	8.322E-02	4.461E-01	PCI/SA	0.507	1.0E+0	8.293E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**1.1958E-06**	8.778E-02	8.778E-02	5.275E-01	PCI/SA	0.507	1.0E+0	8.293E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**0.0E+00**	0.0E+00	8.014E-02	4.299E-01	PCI/SA	0.507	1.0E+0	8.293E-2
33300	**9JLWML10**			**J6L2002753**	P-0811	FILTER	12/18/2006 8:00:00	11/28/2006 11:40:00 AM				
ALPHA	BAS7	0		1/13/2007 11:33:52	**5.3908E+00**	1.778E+00	1.884E+00	5.046E+00	PCI/SA	1.0	1.0E+0	2.074E-2
RA-226	BXTE	0		1/13/2007 1:54:00 PM	**3.0948E-01**	1.333E-01	1.372E-01	4.217E-01	PCI/SA	0.931	1.0E+0	2.482E-1
RA-228	BXTF	0		1/16/2007 7:08:52 AM	**1.1625E+00**	3.808E-01	4.072E-01	1.581E+00	PCI/SA	0.82	1.0E+0	2.482E-1
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**9.5049E-02**	1.227E-01	1.23E-01	5.326E-01	PCI/SA	0.701	1.0E+0	8.308E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**1.5267E-01**	1.101E-01	1.11E-01	3.663E-01	PCI/SA	0.701	1.0E+0	8.308E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**1.5267E-01**	1.101E-01	1.11E-01	3.663E-01	PCI/SA	0.701	1.0E+0	8.308E-2
33300	**9JLWMN10**			**J6L2002754**	000579	FILTER	12/18/2006 8:00:00	11/28/2006 11:45:00 AM				
ALPHA	BAS7	0		1/13/2007 11:33:52	**6.1561E+00**	2.021E+00	2.144E+00	5.916E+00	PCI/SA	1.0	1.0E+0	2.075E-2
RA-226	BXTE	0		1/13/2007 2:27:00 PM	**3.2539E-01**	1.138E-01	1.189E-01	3.333E-01	PCI/SA	0.908	1.0E+0	2.497E-1
RA-228	BXTF	0		1/16/2007 7:09:01 AM	**2.6483E+00**	4.924E-01	5.223E-01	1.657E+00	PCI/SA	0.776	1.0E+0	2.497E-1
TH-228	9NS1	0		1/4/2007 4:47:16 PM	**9.4517E-02**	2.113E-01	2.116E-01	1.134E+00	PCI/SA	0.238	1.0E+0	8.366E-2
TH-230	9NS1	0		1/4/2007 4:47:16 PM	**5.4654E-01**	3.284E-01	3.348E-01	1.093E+00	PCI/SA	0.238	1.0E+0	8.366E-2
TH-232	9NS1	0		1/4/2007 4:47:16 PM	**1.8218E-01**	2.037E-01	2.048E-01	1.093E+00	PCI/SA	0.238	1.0E+0	8.366E-2
33300	**JLXT41AB**			**J6L210000208**	INTRA-LAB BLANK	FILTER	12/18/2006 8:00:00	11/28/2006 12:20:00 PM				
RA-226	BXTE	0	B	1/13/2007 1:52:00 PM	**3.9347E-01**	4.492E-02	6.196E-02	7.448E-02	PCI/SA	0.97	1.0E+0	1.0E+0
33300	**JLXT41CS**			**J6L210000208**	INTRA-LAB CHECK	FILTER	12/18/2006 8:00:00	11/28/2006 12:20:00 PM				
RA-226	BXTE	0	S	1/13/2007 1:57:00 PM	**1.3537E+00**	7.54E-02	1.569E-01	6.232E-02	PCI/SA	1.3782E+00	1.106	1.0E+0	1.0E+0

6355208, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 4,
**Results Inserted | ReTestInserted | Updated | NotInserted => 6 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

STL Richland, Wa Calc Review v4.8.26

Batch Nbr: 6355208

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

1/16/2007 11:29:26 AM

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	**JLWMF1AC**	RA-226	**1.91E-01**	**(1.22E-01)**	**U4**	PCI/SA	R	1.84E-01	4.12E-01		97%	
Calc	TE	FILTER	**JLWMK1AC**	RA-226	**4.99E-01**	**(1.31E-01)**		PCI/SA	R	9.79E-02	2.58E-01		94%	
Calc	TE	FILTER	**JLWML1AC**	RA-226	**3.09E-01**	**(1.37E-01)**		PCI/SA	R	1.83E-01	4.22E-01		93%	
Calc	TE	FILTER	**JLWMN1AC**	RA-226	**3.25E-01**	**(1.19E-01)**		PCI/SA	R	1.41E-01	3.33E-01		91%	
Calc	TE	FILTER	**JLXT41AA**	RA-226	**3.93E-01**	**(6.20E-02)**		PCI/SA	R	3.15E-02	7.45E-02	**B**	97%	
Calc	TE	FILTER	**JLXT41AC**	RA-226	**1.35E+00**	**(1.57E-01)**		PCI/SA	R	2.57E-02	6.23E-02	**S**	111%	98%

Angela Long
1/16/07

Pam Anderson
1-16-07

() - (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:6
RADCALC v4.8.26
STL Richland

Batch Nbr: 6355208

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

Detailed Report

1/16/2007 11:29:26 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
1	Calc	TE	FILTER	*STLE	Ra226WoBS	JLWMF1AC	PCI/SA		11/28/06 12:20	01/13/07 13:54	12/29/06 13:35	RATA25135	1	1.00 Sa	
CID:P-0809LOT:J6L2002751 v4.8.26							FILTER				01/13/07 10:54	RATA25135 Alq	97%	0.250293 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	01/13/07 13:54	RA-226	36	29	ASC6RA	ASC		N	2.5216E+00	1.0000E+00	N	97%	N		1.0984E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(8.674E-02)	(0.000E+00)		8%			(0.000E+00)	3.995316		

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
	01/16/07	RA-226	R	**0.190629**	U4	2.36667E-01	0.105919	0.105919	1.00 Sa	97%		0.411906		
				(0.12224)		(1.4985E-01)	(0.067697)	(0.067697)	(0.014142)			0.184234		

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	JLWMK1AC	PCI/SA		11/28/06 12:05	01/13/07 13:55	12/29/06 13:35	RATA25136	1	1.00 Sa	
CID:P-0810LOT:J6L2002752 v4.8.26							FILTER				01/13/07 10:55	RATA25136 Alq	94%	0.246759 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	01/13/07 13:55	RA-226	25	4	ASC8RD	ASC		N	1.8588E+00	1.0000E+00	N	94%	N		1.0984E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(4.851E-02)	(0.000E+00)		7%			(0.000E+00)	4.05254		

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
	01/16/07	RA-226	R	**0.49943**		4.33333E-01	0.27358	0.27358	1.00 Sa	94%		0.25816		
				(0.131145)		(1.0541E-01)	(0.070419)	(0.070419)	(0.014142)			0.097905		

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	JLWML1AC	PCI/SA		11/28/06 11:40	01/13/07 13:54	12/29/06 13:35	RATA25137	1	1.00 Sa	
CID:P-0811LOT:J6L2002753 v4.8.26							FILTER				01/13/07 10:54	RATA25137 Alq	93%	0.24816 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	01/13/07 13:54	RA-226	29	17	ASC9RA	ASC		N	2.0536E+00	1.0000E+00	N	93%	N		1.0984E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(8.974E-02)	(0.000E+00)		7%			(0.000E+00)	4.029652		

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
	01/16/07	RA-226	R	**0.309479**		2.96667E-01	0.170491	0.170491	1.00 Sa	93%		0.421698		
				(0.137175)		(1.2776E-01)	(0.075048)	(0.075048)	(0.014142)			0.182687		

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	JLWMN1AC	PCI/SA		11/28/06 11:45	01/13/07 14:27	12/29/06 13:35	RATA25138	1	1.00 Sa	
CID:000579LOT:J6L2002754 v4.8.26							FILTER				01/13/07 11:27	RATA25138 Alq	91%	0.249724 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	01/13/07 14:27	RA-226	27	12	ASCASA	ASC		N	2.2802E+00	1.0000E+00	N	91%	N		1.0981E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.047E-01)	(0.000E+00)		7%			(0.000E+00)	4.004415		

() - (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: 6355208

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

1/16/2007 11:29:27 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
	01/16/07	RA-226	R	**0.325394**		3.40000E-01	0.180388	0.180388	1.00 Sa	91%		0.33333		
				(0.118877)		(1.1888E-01)	(0.065232)	(0.065232)	(0.014142)			0.140813		

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	**JLXT41AA**	**PCI/SA**	**B**	11/28/06 12:20	01/13/07 13:52	12/29/06 13:35	RATA25139	1	1.00 Sa	
CID:INTRA-LAB BLANKLOT:J6L210000208 v4.8.26							FILTER				01/13/07 10:52	RATA25139 Alq	97%	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	01/13/07 13:52	RA-226	102	12	ASCBMC	ASC		N	2.3847E+00	1.0000E+00	N	97%	N		1.0984E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.207E-01)	(0.000E+00)		8%			(0.000E+00)	1.00		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	01/15/07	RA-226	R	**0.393473**		1.84000E+00	0.87348	0.87348	1.00 Sa	97%		0.07448		
				(0.061959)		(2.1008E-01)	(0.129546)	(0.129546)	(0.017321)			0.031464		

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	**JLXT41AC**	**PCI/SA**	**S**	11/28/06 12:20	01/13/07 13:57	12/29/06 13:35	RASC4307	1	1.00 Sa	
CID:INTRA-LAB CHECKLOT:J6L210000208 v4.8.26							FILTER				01/13/07 10:57	RASC4307 Alq	111%	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	01/13/07 13:57	RA-226	343	9	ASCPMA	ASC		N	2.4525E+00	1.0000E+00	N	111%	N		1.0984E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(8.241E-02)	(0.000E+00)		9%			(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-226	R	**1.353703**		6.71000E+00	3.005112	3.005112	1.00 Sa	111%	98%	0.062317		
				(0.156888)		(3.7376E-01)	(0.309858)	(0.309858)	(0.017321)			0.025706		

() - (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

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

Sample ID: JLWMF1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6355208 Activity Unit: PCI/SA Multiplier: 1.0274
Technician: RS

Analysis Size: 0.2503 Analysis Unit: SA

Report Date: 13-JAN-2007 14:44:00.91
First Separation Date: 29-DEC-2006 13:35:00.00
Second Separation Date: 13-JAN-2007 10:54:00.00

Detector ID: 6 Cell ID: 6RA

Bkg Date: 13-JAN-2007 08:15:50.63
Bkg Counts: 000029 Bkg Duration: 000060.0

Count Date: 13-JAN-2007 13:54:00.41
Counts: 000036 Count Duration: 000050.0

End of Report

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

Sample ID: JLWMK1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6355208 Activity Unit: PCI/SA Multiplier: 1.0684
Technician: RS

Analysis Size: 0.2468 Analysis Unit: SA

Report Date: 13-JAN-2007 14:45:00.87
First Separation Date: 29-DEC-2006 13:35:00.00
Second Separation Date: 13-JAN-2007 10:55:00.00

Detector ID: 8 Cell ID: 8RD

Bkg Date: 13-JAN-2007 08:16:00.53
Bkg Counts: 000004 Bkg Duration: 000060.0

Count Date: 13-JAN-2007 13:55:00.39
Counts: 000025 Count Duration: 000050.0

End of Report

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

Sample ID: JLWML1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6355208 Activity Unit: PCI/SA Multiplier: 1.0746
Technician: RS

Analysis Size: 0.2482 Analysis Unit: SA

Report Date: 13-JAN-2007 14:44:00.99
First Separation Date: 29-DEC-2006 13:35:00.00
Second Separation Date: 13-JAN-2007 10:54:00.00

Detector ID: 9 Cell ID: 9RA

Bkg Date: 13-JAN-2007 08:16:13.89
Bkg Counts: 000017 Bkg Duration: 000060.0

Count Date: 13-JAN-2007 13:54:00.48
Counts: 000029 Count Duration: 000050.0

End of Report

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

Sample ID: JLWMN1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6355208 Activity Unit: PCI/SA Multiplier: 1.1017
Technician: RS

Analysis Size: 0.2497 Analysis Unit: SA

Report Date: 13-JAN-2007 15:17:00.60
First Separation Date: 29-DEC-2006 13:35:00.00
Second Separation Date: 13-JAN-2007 11:27:00.00

Detector ID: 10 Cell ID: ASA

Bkg Date: 13-JAN-2007 08:16:29.68
Bkg Counts: 000012 Bkg Duration: 000060.0

Count Date: 13-JAN-2007 14:27:00.29
Counts: 000027 Count Duration: 000050.0

End of Report

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

Sample ID: JLXT41AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6355208 Activity Unit: PCI/SA Multiplier: 1.02781 corrected 1-15-07
Technician: RS

Analysis Size: 1.0 Analysis Unit: SA

Report Date: 13-JAN-2007 14:42:00.68
First Separation Date: 29-DEC-2006 13:35:00.00
Second Separation Date: 13-JAN-2007 10:52:00.00

Detector ID: 11 Cell ID: BMC

Bkg Date: 13-JAN-2007 08:16:44.12
Bkg Counts: 000012 Bkg Duration: 000060.0

Count Date: 13-JAN-2007 13:52:00.35
Counts: 000102 Count Duration: 000050.0

End of Report

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

Sample ID: JLXT41AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 6355208 Activity Unit: PCI/SA Multiplier: 0.9043
Technician: RS

Analysis Size: 1.0 Analysis Unit: SA

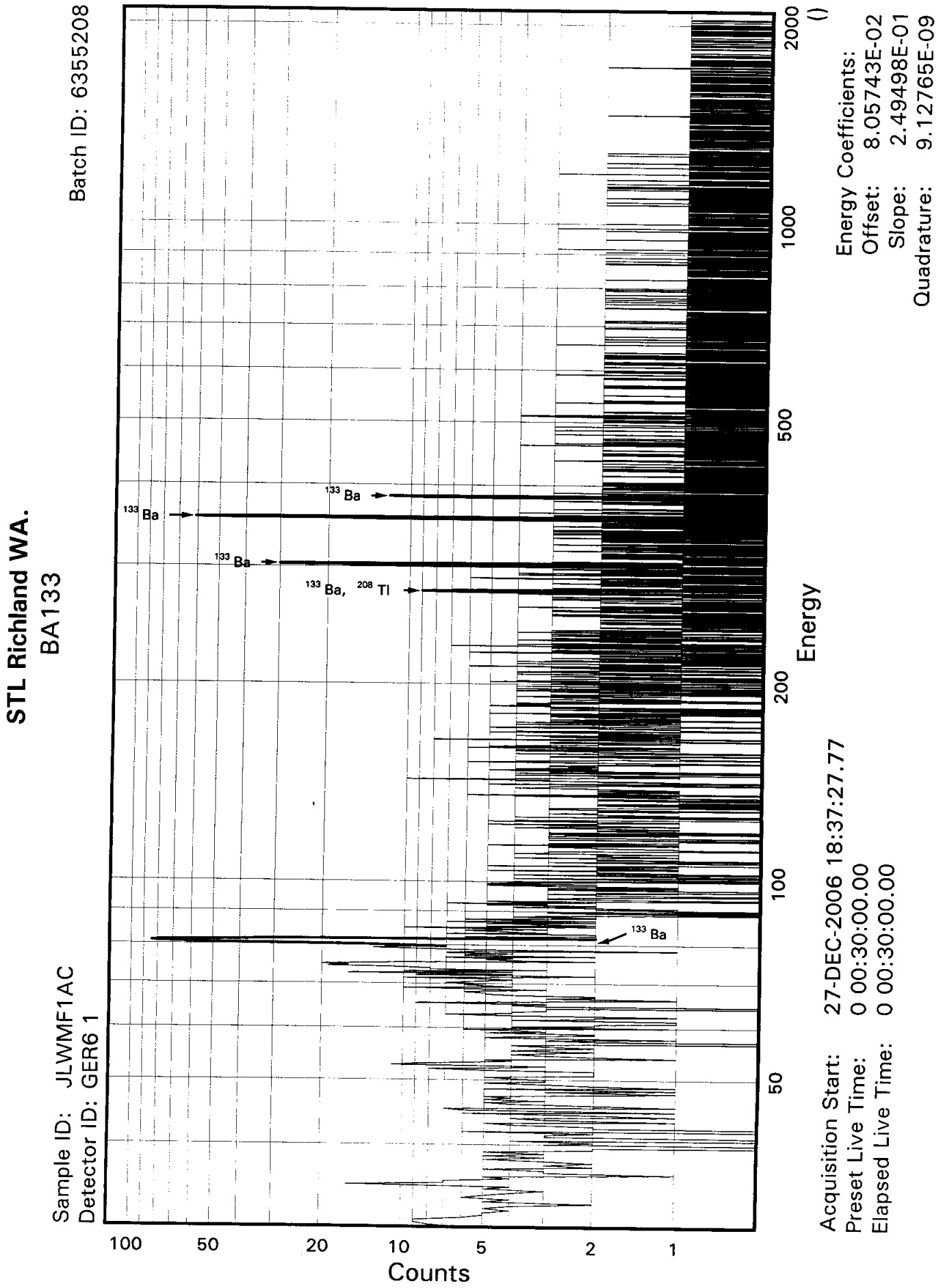
Report Date: 13-JAN-2007 14:47:00.57
First Separation Date: 29-DEC-2006 13:35:00.00
Second Separation Date: 13-JAN-2007 10:57:00.00

Detector ID: 23 Cell ID: PMA

Bkg Date: 13-JAN-2007 08:17:24.44
Bkg Counts: 000009 Bkg Duration: 000060.0

Count Date: 13-JAN-2007 13:57:00.27
Counts: 000343 Count Duration: 000050.0

End of Report


STL Richland WA.
BA133
Batch ID: 6355208
Sample ID: JLWMF1AC
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
()
Acquisition Start: 27-DEC-2006 18:37:27.77
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00
Energy Coefficients:
Offset: 8.05743E-02
Slope: 2.49498E-01
Quadrature: 9.12765E-09

SAMPLE IDENTIFICATION: JLWMF1AC

CONFIGURATION ID: GER6:JLWMF1AC_271261837
TITLE : BA133
SAMPLE ID : JLWMF1AC

REPORT DATE: 27-DEC-06
ACQUIRE DATE: 27-DEC-06 18:37:27
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 13-DEC-2006 12:00:00.00
CALIB DATE: 27-DEC-2006 05:12:01.02
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 8.0574E-02 keV
ENERGY SLOPE: 2.4950E-01 keV/C
ENERGY Q COEFF: 9.1276E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 2.5017E-01 keV
FWHM SLOPE: 5.9612E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 1.500 keV
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 27-DEC-2006 19:07:43

Configuration	: $DISK1:[GER6.SAMPLE]JLWMF1AC_271261837.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	: 27-DEC-2006 18:37:27
Sample ID	: JLWMF1AC	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	: 20.04	End energy	: 2044.58
Sensitivity	: 5.00	Gaussian	: 10.00
Critical level	: No		

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	35.22	21	42	0.30	140.83	136	12	1.17E-02	65.5	
2	0	75.37*	6	106	0.91	301.75	294	18	3.33E-03	421.2	
3	0	80.97	329	54	1.00	324.21	319	10	1.83E-01	6.9	
4	0	223.97	26	11	2.13	897.32	884	21	1.46E-02	36.6	
5	0	276.16	59	4	1.56	1106.51	1099	16	3.27E-02	15.1	
6	0	302.95	152	5	1.03	1213.86	1206	19	8.42E-02	8.8	
7	0	356.03	319	8	1.25	1426.60	1418	16	1.77E-01	5.9	
8	0	383.80	67	3	1.55	1537.86	1530	14	3.72E-02	13.6	

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

VMS Nuclide Identification Report V3.0 Generated 27-DEC-2006 19:07:43

Configuration : $DISK1:[GER6.SAMPLE]JLWMF1AC_271261837.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
Sample ID : JLWMF1AC
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 : 27-DEC-2006 18:37:27
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	329	33.00	2.167E+00	1.532E+03	1.536E+03	8.82
	276.40	59	6.90	2.333E+00	1.217E+03	1.220E+03	16.05
	302.84	152	17.80	2.337E+00	1.214E+03	1.217E+03	10.36
	356.00	319	62.05*	2.339E+00	7.327E+02	7.346E+02	8.02
	383.85	67	8.70	2.338E+00	1.097E+03	1.100E+03	14.58

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JLWMF1AC

Acquisition date : 27-DEC-2006 18:37:27

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	35.22	21	42	0.30	140.83	136	12	1.17E-02	65.5	1.94E+00	
0	75.37	6	106	0.91	301.75	294	18	3.33E-03	****	2.15E+00	
0	223.97	26	11	2.13	897.32	884	21	1.46E-02	36.6	2.32E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JLWMF1AC

Acquisition date : 27-DEC-2006 18:37:27

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	1.235E+03	16.05	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 27-DEC-2006 19:07:46

Configuration : $DISK1:[GER6.SAMPLE]JLWMF1AC_271261837.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
Sample ID : JLWMF1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Peak Width (FWHM): 3.00
Energy tolerance : 1.50
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 27-DEC-2006 18:37:27
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 ----

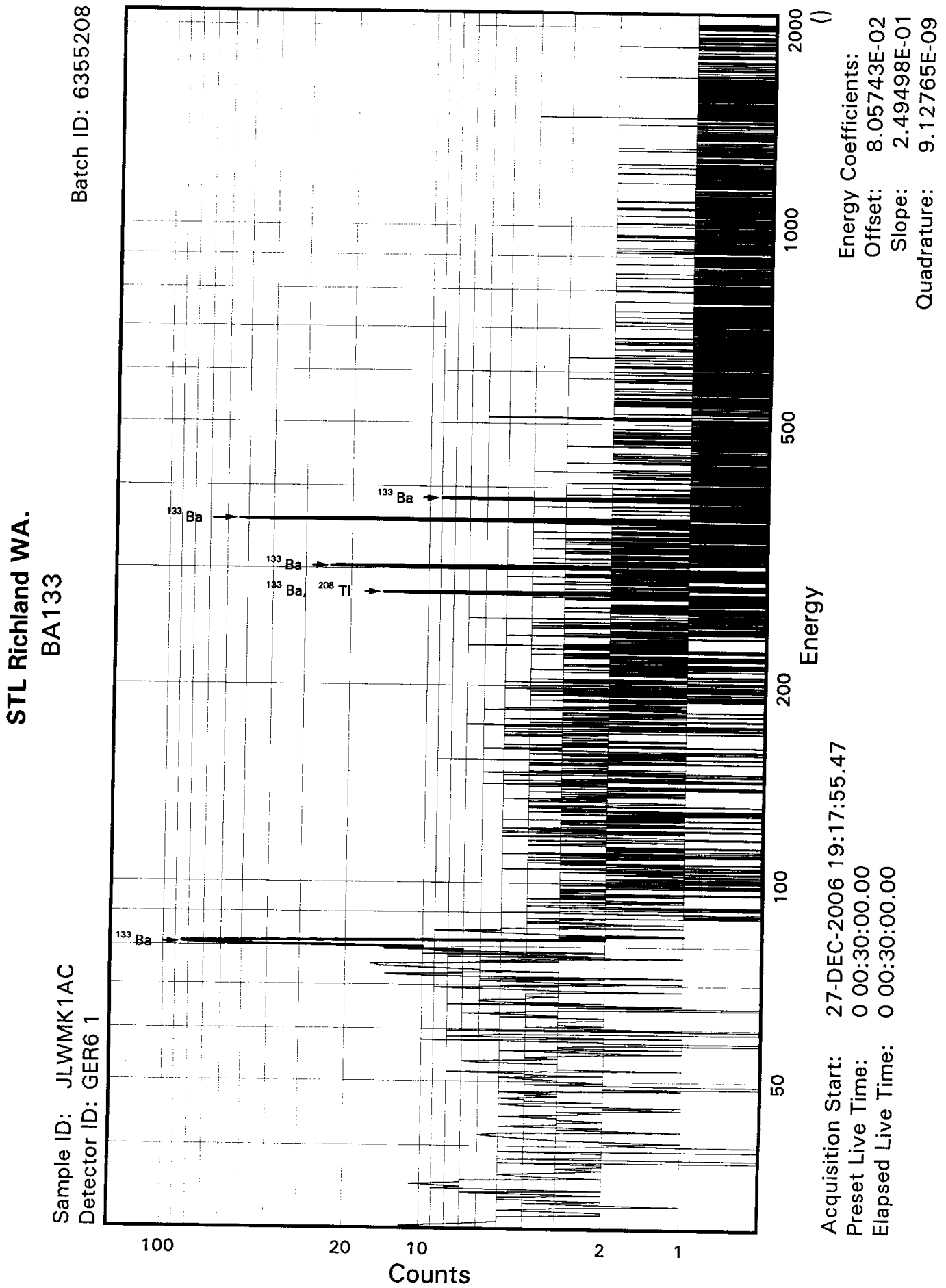
Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.346E+02	5.890E+01	4.547E+01	9.094E-01	16.156

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	6.448E+01		6.291E+01	2.761E+02	5.540E+00	0.233
NA-22	-1.405E+01		5.212E+00	1.121E+01	2.373E-01	-1.253
K-40	-1.745E+01		5.922E+01	2.990E+02	6.410E+00	-0.058
SC-46	3.132E-01		5.219E+00	2.201E+01	4.609E-01	0.014
CR-51	1.412E+02		1.030E+02	4.383E+02	8.770E+00	0.322
MN-54	-2.965E+00		2.996E+00	1.110E+01	2.276E-01	-0.267
CO-57	9.635E+01		9.118E+01	3.653E+02	7.545E+00	0.264
CO-58	-8.197E-01		4.539E+00	1.908E+01	3.907E-01	-0.043
FE-59	-1.196E+01		1.094E+01	3.784E+01	7.911E-01	-0.316
CO-60	1.690E+00		4.512E+00	1.994E+01	4.238E-01	0.085
ZN-65	5.786E+00		8.782E+00	4.009E+01	8.392E-01	0.144
SE-75	-4.243E+00		1.275E+01	4.696E+01	9.420E-01	-0.090
SR-85	-3.183E+01		1.144E+01	3.357E+01	6.745E-01	-0.948
Y-88	-1.714E+00		1.717E+00	4.672E+00	1.026E-01	-0.367
NB-94	1.016E+01		4.885E+00	2.434E+01	5.006E-01	0.417
NB-95	-3.493E+00		8.029E+00	2.990E+01	6.104E-01	-0.117
TC-95M	-8.982E+00		1.706E+01	6.159E+01	1.245E+00	-0.146
ZR-95	-3.676E+00		1.036E+01	4.020E+01	8.201E-01	-0.091
ZRNB-95	-6.958E+00		1.402E+01	5.189E+01	1.059E+00	-0.134
MO-99	-4.548E+02		4.448E+02	1.536E+03	3.166E+01	-0.296
RH-101	-9.701E+00		1.376E+01	4.909E+01	9.936E-01	-0.198
RH-102M	-1.013E+01		5.788E+00	1.765E+01	3.541E-01	-0.574
RU-103	3.752E+00		7.963E+00	3.303E+01	6.631E-01	0.114
RU-106DA	-6.814E+01		4.365E+01	1.338E+02	2.705E+00	-0.509
AG-108M	-1.103E+01		7.622E+00	2.518E+01	5.042E-01	-0.438
AG-110M	-7.933E-01		5.867E+00	2.443E+01	5.029E-01	-0.032
SN-113DA	-1.574E+01		1.063E+01	3.550E+01	7.102E-01	-0.443

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-1.455E+01		7.556E+00	2.271E+01	4.586E-01	-0.641
SB-125	-9.330E+00		2.187E+01	8.182E+01	1.638E+00	-0.114
SN-126DA	-3.684E+00		4.355E+00	1.615E+01	3.275E-01	-0.228
I-131	-1.931E+01		3.106E+01	1.107E+02	2.214E+00	-0.174
CS-134	2.201E+00		6.611E+00	2.749E+01	5.623E-01	0.080
CS-137DA	-3.055E+00		6.268E+00	2.394E+01	4.853E-01	-0.128
LA-138	9.121E+00		6.496E+00	3.222E+01	6.897E-01	0.283
CE-139	2.109E+01		1.408E+01	5.583E+01	1.139E+00	0.378
BA-140	8.628E+01		5.098E+01	2.327E+02	4.681E+00	0.371
BALA-140	2.327E-01		1.706E+01	7.533E+01	1.629E+00	0.003
CE-141	-1.001E+02		3.172E+01	9.072E+01	1.866E+00	-1.103
CE-144	-1.888E+02		7.388E+01	2.162E+02	4.471E+00	-0.873
CEPR-144	-3.788E+02		1.477E+02	4.314E+02	8.921E+00	-0.878
PM-144	-6.469E+00		5.330E+00	1.793E+01	3.624E-01	-0.361
PM-146	1.085E+01		8.603E+00	3.838E+01	7.691E-01	0.283
EU-152	0.000E+00		0.000E+00	1.158E+02	2.315E+00	0.000
EU-154	-3.916E+01		1.458E+01	3.157E+01	6.683E-01	-1.240
EU-155	-4.231E+01		4.405E+01	1.507E+02	3.173E+00	-0.281
HF-181	-1.344E+01		9.622E+00	3.142E+01	6.305E-01	-0.428
BI-207	-2.993E+00		4.671E+00	1.766E+01	3.558E-01	-0.170
TL-208	1.523E+01		7.517E+00	3.432E+01	6.922E-01	0.444
BI-210M	-3.152E+01		1.572E+01	4.745E+01	9.518E-01	-0.664
BI-212	8.853E-01		7.739E+01	3.135E+02	9.582E+00	0.003
PB-212	-1.612E+01		2.098E+01	7.550E+01	1.519E+00	-0.213
BI-214	-2.977E+00		1.465E+01	5.625E+01	1.136E+00	-0.053
PB-214	-3.057E+00		2.280E+01	7.207E+01	1.441E+00	-0.042
RA-223	1.577E+02		6.428E+01	2.757E+02	5.528E+00	0.572
RA-224DA	-1.635E+01		2.128E+01	7.658E+01	1.540E+00	-0.213
RA-226DA	-3.102E+00		1.464E+01	5.617E+01	1.135E+00	-0.055
AC-227DA	-3.815E+01		8.501E+01	3.041E+02	6.117E+00	-0.125
AC-228	-1.175E+01		2.017E+01	7.478E+01	1.542E+00	-0.157
RA-228DA	-1.181E+01		2.026E+01	7.513E+01	1.550E+00	-0.157
TH-228DA	4.300E+01		2.122E+01	9.688E+01	1.954E+00	0.444
TH-232DA	3.210E+01		6.839E+01	2.640E+02	5.280E+00	0.122
TH-234DA	2.358E+02		5.992E+02	2.732E+03	5.671E+01	0.086
U-234DA	-1.146E+00		4.308E+01	1.629E+02	3.263E+00	-0.007
U-235HP	2.277E+02		1.055E+02	4.307E+02	8.865E+00	0.529
NP-237DA	6.549E+00		2.053E+01	8.057E+01	1.612E+00	0.081
U-238DA	-3.057E+00		2.280E+01	7.207E+01	1.441E+00	-0.042
U-238DHP	-1.832E+02		3.324E+02	1.174E+03	2.606E+01	-0.156
AM-241HP	2.987E+01		3.170E+01	1.214E+02	2.713E+00	0.246


STL Richland WA.
BA133
Batch ID: 6355208
Sample ID: JLWMK1AC
Detector ID: GER6 1
133 Ba
133 Ba
133 Ba
133 Ba, 208 Tl
133 Ba
Counts
100
20
10
2
1
Energy
50
100
200
500
1000
2000
()
Energy Coefficients:
Offset: 8.05743E-02
Slope: 2.49498E-01
Quadrature: 9.12765E-09
Acquisition Start: 27-DEC-2006 19:17:55.47
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JLWMK1AC

CONFIGURATION ID: GER6:JLWMK1AC_271261917
TITLE : BA133
SAMPLE ID : JLWMK1AC

REPORT DATE: 27-DEC-06
ACQUIRE DATE: 27-DEC-06 19:17:55
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 13-DEC-2006 12:00:00.00
CALIB DATE: 27-DEC-2006 05:12:01.02
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 8.0574E-02 keV
ENERGY SLOPE: 2.4950E-01 keV/C
ENERGY Q COEFF: 9.1276E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 2.5017E-01 keV
FWHM SLOPE: 5.9612E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 1.500 keV
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 27-DEC-2006 19:48:12

Configuration : $DISK1:[GER6.SAMPLE]JLWMK1AC_271261917.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 : 27-DEC-2006 19:17:55
Sample ID : JLWMK1AC 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 : 20.04 End energy : 2044.58
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.06*	9	63	0.95	300.52	295	14	5.02E-03	201.4	
2	0	80.84	380	54	0.97	323.69	315	19	2.11E-01	7.0	
3	0	276.57	49	32	1.24	1108.13	1100	18	2.72E-02	30.5	
4	0	302.76	124	25	1.24	1213.09	1202	21	6.88E-02	13.7	
5	0	356.11	308	12	1.44	1426.92	1415	22	1.71E-01	6.3	
6	0	383.93	36	11	0.84	1538.42	1530	15	2.00E-02	26.2	

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

VMS Nuclide Identification Report V3.0 Generated 27-DEC-2006 19:48:12

Configuration	: $DISK1:[GER6.SAMPLE]JLWMK1AC_271261917.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	: 27-DEC-2006 19:17:55
Sample ID	: JLWMK1AC	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	380	33.00	2.166E+00	1.773E+03	1.777E+03	8.86
	276.40	49	6.90	2.334E+00	1.013E+03	1.016E+03	30.97
	302.84	124	17.80	2.337E+00	9.931E+02	9.957E+02	14.69
	356.00	308	62.05*	2.339E+00	7.082E+02	7.100E+02	8.31
	383.85	36	8.70	2.338E+00	5.902E+02	5.918E+02	26.76

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JLWMK1AC

Acquisition date : 27-DEC-2006 19:17:55

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.06	9	63	0.95	300.52	295	14	5.02E-03	****	2.15E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JLWMK1AC

Acquisition date : 27-DEC-2006 19:17:55

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	1.028E+03	30.97	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 27-DEC-2006 19:48:14

Configuration : $DISK1:[GER6.SAMPLE]JLWMK1AC_271261917.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
Sample ID : JLWMK1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Peak Width (FWHM): 3.00
Energy tolerance : 1.50
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 27-DEC-2006 19:17:55
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 ----

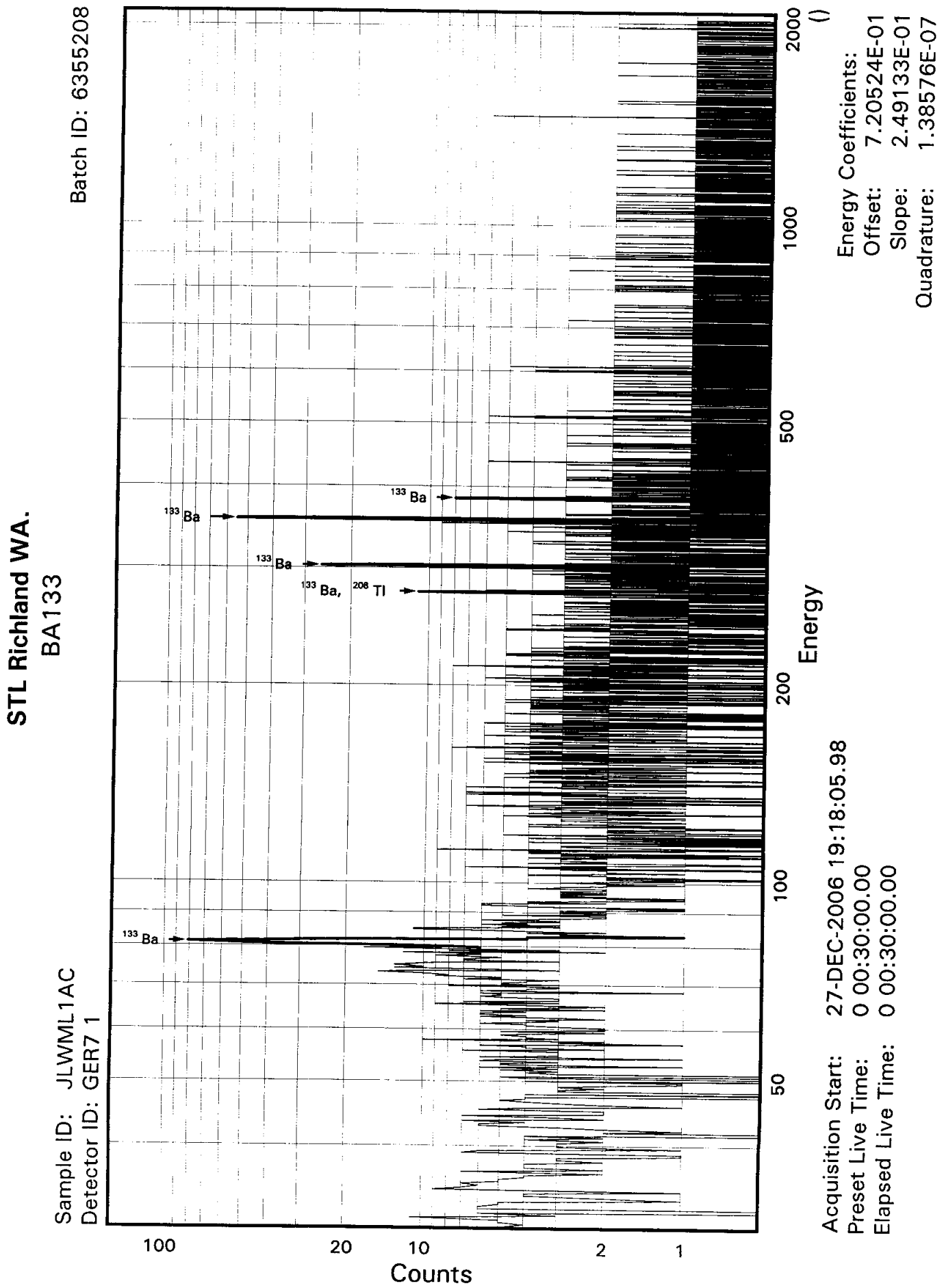
Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.100E+02	5.899E+01	4.393E+01	8.786E-01	16.162

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.364E+01		7.359E+01	2.895E+02	5.807E+00	0.047
NA-22	-3.148E+00		3.104E+00	1.121E+01	2.374E-01	-0.281
K-40	-6.528E+01		6.713E+01	3.050E+02	6.539E+00	-0.214
SC-46	1.729E+00		2.874E+00	1.557E+01	3.259E-01	0.111
CR-51	1.862E+02		1.153E+02	4.861E+02	9.726E+00	0.383
MN-54	4.634E+00		5.823E+00	2.513E+01	5.155E-01	0.184
CO-57	-3.347E+01		9.935E+01	3.621E+02	7.477E+00	-0.092
CO-58	5.335E+00		5.576E+00	2.543E+01	5.208E-01	0.210
FE-59	2.804E+00		1.107E+01	4.641E+01	9.703E-01	0.060
CO-60	4.197E-02		2.123E+00	1.119E+01	2.379E-01	0.004
ZN-65	-1.116E-01		4.408E+00	2.250E+01	4.710E-01	-0.005
SE-75	1.449E+01		1.505E+01	5.994E+01	1.202E+00	0.242
SR-85	-8.524E+00		1.043E+01	3.685E+01	7.404E-01	-0.231
Y-88	1.729E+00		1.731E+00	1.271E+01	2.792E-01	0.136
NB-94	-2.991E+00		4.656E+00	1.759E+01	3.618E-01	-0.170
NB-95	-4.165E+00		4.865E+00	1.795E+01	3.664E-01	-0.232
TC-95M	3.403E+01		1.495E+01	6.489E+01	1.312E+00	0.524
ZR-95	3.289E+00		8.336E+00	3.745E+01	7.639E-01	0.088
ZRNB-95	-7.323E+00		8.553E+00	3.155E+01	6.441E-01	-0.232
MO-99	-1.055E+02		4.012E+02	1.469E+03	3.028E+01	-0.072
RH-101	3.408E+00		1.391E+01	5.265E+01	1.066E+00	0.065
RH-102M	-1.674E+00		6.419E+00	2.435E+01	4.883E-01	-0.069
RU-103	-2.978E+00		8.251E+00	3.104E+01	6.233E-01	-0.096
RU-106DA	2.688E+01		5.331E+01	2.266E+02	4.582E+00	0.119
AG-108M	-7.194E+00		6.627E+00	2.302E+01	4.610E-01	-0.313
AG-110M	-1.722E-01		7.333E+00	2.963E+01	6.100E-01	-0.006
SN-113DA	7.178E+00		1.066E+01	4.439E+01	8.880E-01	0.162

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-2.049E+00		5.847E+00	2.271E+01	4.587E-01	-0.090
SB-125	1.350E+01		1.878E+01	8.063E+01	1.615E+00	0.167
SN-126DA	3.052E+00		4.964E+00	2.169E+01	4.398E-01	0.141
I-131	4.203E+00		2.383E+01	9.560E+01	1.912E+00	0.044
CS-134	-6.474E+00		5.874E+00	2.076E+01	4.247E-01	-0.312
CS-137DA	-3.141E+00		5.294E+00	2.039E+01	4.133E-01	-0.154
LA-138	6.847E+00		5.132E+00	2.745E+01	5.874E-01	0.249
CE-139	-2.927E+01		1.556E+01	4.933E+01	1.007E+00	-0.593
BA-140	-2.976E+01		5.431E+01	2.016E+02	4.056E+00	-0.148
BALA-140	1.511E+01		1.426E+01	7.677E+01	1.661E+00	0.197
CE-141	-4.196E+01		2.832E+01	9.422E+01	1.938E+00	-0.445
CE-144	-6.452E+01		9.837E+01	3.514E+02	7.268E+00	-0.184
CEPR-144	-1.324E+02		1.965E+02	7.012E+02	1.450E+01	-0.189
PM-144	-1.988E+00		5.915E+00	2.242E+01	4.531E-01	-0.089
PM-146	-6.819E+00		6.693E+00	2.372E+01	4.753E-01	-0.288
EU-152	-4.918E-01		2.990E+01	1.123E+02	2.245E+00	-0.004
EU-154	-8.796E+00		8.674E+00	3.134E+01	6.633E-01	-0.281
EU-155	-3.208E+01		4.609E+01	1.610E+02	3.390E+00	-0.199
HF-181	6.713E+00		1.077E+01	4.317E+01	8.662E-01	0.156
BI-207	4.379E+00		4.895E+00	2.207E+01	4.449E-01	0.198
TL-208	-1.399E+00		8.672E+00	3.255E+01	6.566E-01	-0.043
BI-210M	-1.237E+01		1.570E+01	5.468E+01	1.097E+00	-0.226
BI-212	-2.443E+01		8.017E+01	3.107E+02	9.497E+00	-0.079
PB-212	1.936E+01		2.073E+01	8.340E+01	1.677E+00	0.232
BI-214	6.938E+00		1.282E+01	5.413E+01	1.093E+00	0.128
PB-214	2.047E+01		2.472E+01	8.623E+01	1.725E+00	0.237
RA-223	-1.268E+02		5.722E+01	1.668E+02	3.345E+00	-0.760
RA-224DA	1.964E+01		2.103E+01	8.459E+01	1.701E+00	0.232
RA-226DA	6.938E+00		1.282E+01	5.413E+01	1.094E+00	0.128
AC-227DA	-1.132E+02		8.143E+01	2.703E+02	5.438E+00	-0.419
AC-228	1.563E+01		1.417E+01	6.951E+01	1.434E+00	0.225
RA-228DA	1.571E+01		1.424E+01	6.984E+01	1.440E+00	0.225
TH-228DA	-3.950E+00		2.448E+01	9.191E+01	1.854E+00	-0.043
TH-232DA	-1.160E+02		6.801E+01	2.176E+02	4.352E+00	-0.533
TH-234DA	2.331E+02		5.066E+02	2.448E+03	5.082E+01	0.095
U-234DA	1.936E+01		4.483E+01	1.740E+02	3.485E+00	0.111
U-235HP	-5.310E+01		1.020E+02	3.638E+02	7.488E+00	-0.146
NP-237DA	1.028E+01		2.230E+01	8.729E+01	1.747E+00	0.118
U-238DA	2.047E+01		2.472E+01	8.623E+01	1.725E+00	0.237
U-238DHP	-9.362E+00		3.313E+02	1.209E+03	2.683E+01	-0.008
AM-241HP	-5.071E+00		3.519E+01	1.247E+02	2.787E+00	-0.041


STL Richland WA.
BA133
Batch ID: 6355208
Sample ID: JLWML1AC
Detector ID: GER7 1
133 Ba
133 Ba
133 Ba
133 Ba
133 Ba, 208 Tl
Counts
100
20
10
2
1
Energy
50
100
200
500
1000
2000
()
Energy Coefficients:
Offset: 7.20524E-01
Slope: 2.49133E-01
Quadrature: 1.38576E-07
Acquisition Start: 27-DEC-2006 19:18:05.98
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JLWML1AC

CONFIGURATION ID: GER7:JLWML1AC_271261918
TITLE : BA133
SAMPLE ID : JLWML1AC

REPORT DATE: 27-DEC-06
ACQUIRE DATE: 27-DEC-06 19:18:05
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 13-DEC-2006 12:00:00.00
CALIB DATE: 27-DEC-2006 05:09:32.86
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 7.2052E-01 keV
ENERGY SLOPE: 2.4913E-01 keV/C
ENERGY Q COEFF: 1.3858E-07 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.4525E-01 keV
FWHM SLOPE: 3.5189E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 1.500 keV
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 27-DEC-2006 19:48:27

Configuration	: $DISK1:[GER7.SAMPLE]JLWML1AC_271261918.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	: 27-DEC-2006 19:18:05
Sample ID	: JLWML1AC	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	: 20.65	End energy	: 2050.92
Sensitivity	: 5.00	Gaussian	: 10.00
Critical level	: No		

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.20	264	80	0.75	322.99	317	14	1.47E-01	9.8	
2	0	276.56	43	20	0.87	1106.51	1099	16	2.37E-02	28.0	
3	0	302.80	115	22	0.96	1211.69	1202	21	6.40E-02	13.6	
4	0	355.99	272	26	1.21	1424.89	1416	17	1.51E-01	7.4	
5	0	384.10	38	14	1.45	1537.54	1526	19	2.10E-02	29.0	

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

VMS Nuclide Identification Report V3.0 Generated 27-DEC-2006 19:48:27

Configuration	: $DISK1:[GER7.SAMPLE]JLWML1AC_271261918.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	: 27-DEC-2006 19:18:05
Sample ID	: JLWML1AC	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	264	33.00	1.923E+00	1.385E+03	1.389E+03	11.25
	276.40	43	6.90	2.076E+00	9.934E+02	9.960E+02	28.53
	302.84	115	17.80	2.078E+00	1.038E+03	1.041E+03	14.67
	356.00	272	62.05*	2.080E+00	7.033E+02	7.051E+02	9.15
	383.85	38	8.70	2.080E+00	6.954E+02	6.972E+02	29.48

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JLWML1AC

Acquisition date : 27-DEC-2006 19:18:05

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.008E+03	28.53	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 27-DEC-2006 19:48:29

Configuration : $DISK1:[GER7.SAMPLE]JLWML1AC_271261918.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
Sample ID : JLWML1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Peak Width (FWHM): 3.00
Energy tolerance : 1.50
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 27-DEC-2006 19:18:05
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 ----

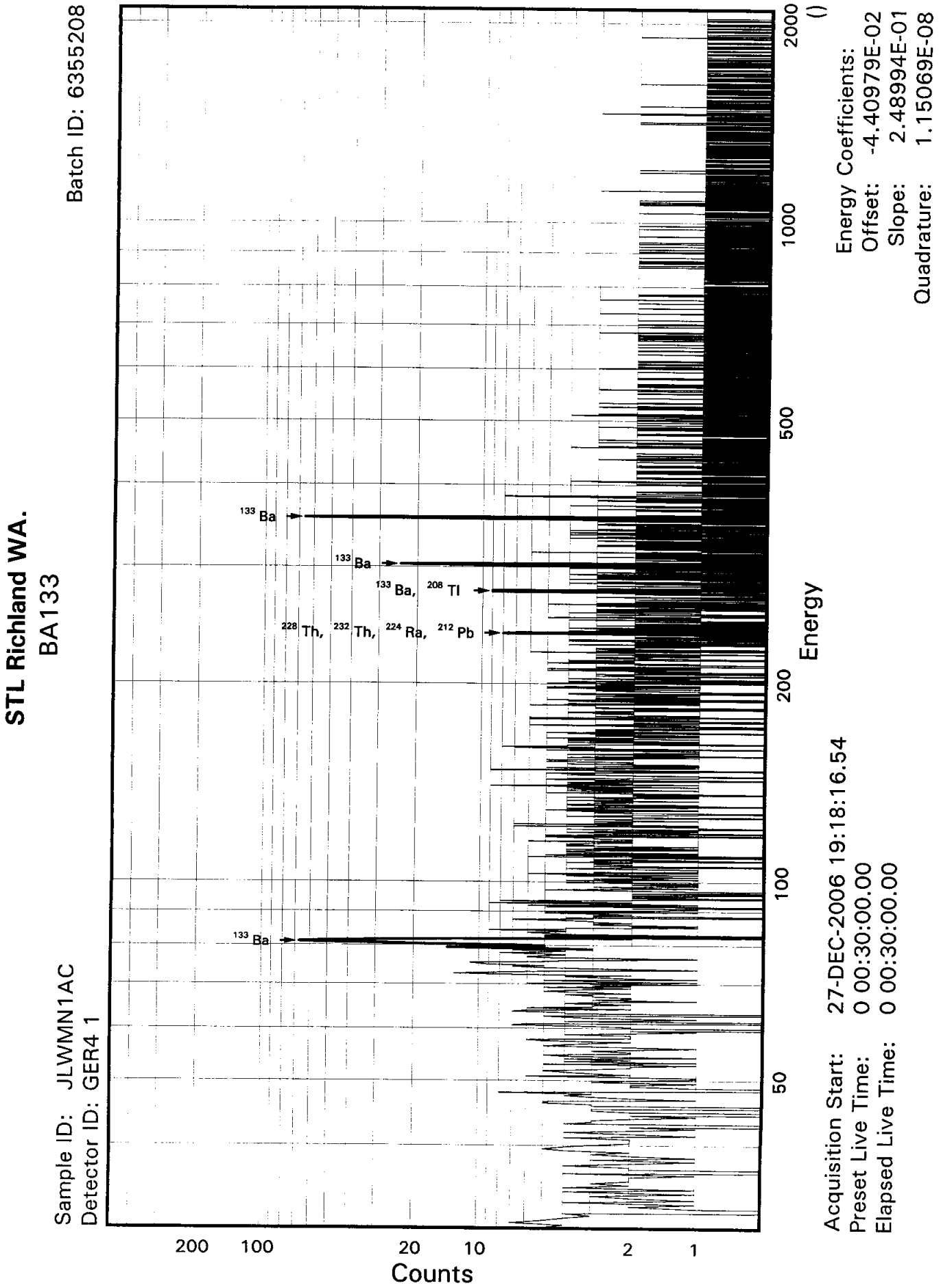
Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.051E+02	6.454E+01	5.206E+01	1.041E+00	13.543

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-6.104E+01		6.291E+01	2.289E+02	4.592E+00	-0.267
NA-22	4.942E+00		5.230E+00	2.421E+01	5.132E-01	0.204
K-40	1.115E+02		7.503E+01	3.790E+02	8.144E+00	0.294
SC-46	1.324E+01		5.717E+00	2.998E+01	6.286E-01	0.442
CR-51	-2.782E+02		1.314E+02	4.086E+02	8.175E+00	-0.681
MN-54	-5.099E+00		4.503E+00	1.576E+01	3.234E-01	-0.324
CO-57	3.179E+02		1.301E+02	5.253E+02	1.086E+01	0.605
CO-58	7.817E-02		5.984E+00	2.489E+01	5.101E-01	0.003
FE-59	-2.855E-01		1.037E+01	4.402E+01	9.216E-01	-0.006
CO-60	1.769E+00		2.940E+00	1.591E+01	3.387E-01	0.111
ZN-65	-6.819E+00		1.088E+01	4.136E+01	8.668E-01	-0.165
SE-75	-1.852E+01		1.964E+01	6.675E+01	1.339E+00	-0.277
SR-85	-4.097E+01		1.385E+01	4.024E+01	8.086E-01	-1.018
Y-88	4.242E-01		2.897E+00	1.526E+01	3.361E-01	0.028
NB-94	3.207E+00		5.246E+00	2.324E+01	4.783E-01	0.138
NB-95	-2.027E+00		6.416E+00	2.597E+01	5.305E-01	-0.078
TC-95M	4.746E+01		2.310E+01	9.266E+01	1.874E+00	0.512
ZR-95	1.152E+01		1.042E+01	4.947E+01	1.010E+00	0.233
ZRNB-95	-3.344E+00		1.132E+01	4.591E+01	9.378E-01	-0.073
MO-99	-6.056E+02		5.639E+02	1.874E+03	3.865E+01	-0.323
RH-101	1.411E+01		1.632E+01	6.297E+01	1.275E+00	0.224
RH-102M	4.684E-01		4.108E+00	1.861E+01	3.734E-01	0.025
RU-103	-2.987E+00		6.611E+00	2.652E+01	5.324E-01	-0.113
RU-106DA	1.438E+01		7.065E+01	2.828E+02	5.720E+00	0.051
AG-108M	-4.530E+00		9.288E+00	3.356E+01	6.722E-01	-0.135
AG-110M	-1.326E-01		5.849E+00	2.545E+01	5.243E-01	-0.005
SN-113DA	1.314E-01		1.273E+01	4.909E+01	9.820E-01	0.003

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	3.168E+00		9.129E+00	3.631E+01	7.335E-01	0.087
SB-125	-1.509E+01		2.074E+01	7.535E+01	1.509E+00	-0.200
SN-126DA	3.060E+00		4.670E+00	2.130E+01	4.320E-01	0.144
I-131	6.319E+01		3.670E+01	1.566E+02	3.131E+00	0.404
CS-134	-1.785E+00		6.406E+00	2.549E+01	5.218E-01	-0.070
CS-137DA	-1.203E+01		6.256E+00	1.773E+01	3.595E-01	-0.679
LA-138	5.189E+00		6.301E+00	3.092E+01	6.631E-01	0.168
CE-139	-1.288E+01		1.801E+01	6.342E+01	1.295E+00	-0.203
BA-140	8.499E+01		4.847E+01	2.333E+02	4.694E+00	0.364
BALA-140	1.581E+01		1.121E+01	7.334E+01	1.590E+00	0.216
CE-141	-2.371E+01		3.761E+01	1.287E+02	2.649E+00	-0.184
CE-144	-2.510E+02		1.284E+02	3.997E+02	8.275E+00	-0.628
CEPR-144	-5.046E+02		2.567E+02	7.981E+02	1.652E+01	-0.632
PM-144	9.734E-02		6.817E+00	2.690E+01	5.439E-01	0.004
PM-146	6.930E+00		9.133E+00	3.939E+01	7.895E-01	0.176
EU-152	-4.122E+01		3.527E+01	1.207E+02	2.414E+00	-0.342
EU-154	1.381E+01		1.462E+01	6.764E+01	1.434E+00	0.204
EU-155	-2.149E+01		6.376E+01	2.266E+02	4.781E+00	-0.095
HF-181	9.272E+00		8.867E+00	3.994E+01	8.014E-01	0.232
BI-207	2.119E+00		4.447E+00	2.035E+01	4.102E-01	0.104
TL-208	-1.031E+00		8.419E+00	3.342E+01	6.743E-01	-0.031
BI-210M	-1.992E+01		2.116E+01	7.197E+01	1.444E+00	-0.277
BI-212	1.034E+02		9.770E+01	4.304E+02	1.316E+01	0.240
PB-212	-1.730E+01		2.027E+01	7.531E+01	1.515E+00	-0.230
BI-214	5.371E+01		1.914E+01	9.112E+01	1.841E+00	0.589
PB-214	3.980E+01		4.080E+01	1.414E+02	2.829E+00	0.281
RA-223	4.749E+00		7.411E+01	2.738E+02	5.492E+00	0.017
RA-224DA	-1.754E+01		2.056E+01	7.638E+01	1.536E+00	-0.230
RA-226DA	5.371E+01		1.914E+01	9.112E+01	1.841E+00	0.589
AC-227DA	3.990E+01		7.185E+01	2.863E+02	5.761E+00	0.139
AC-228	4.713E+01		2.369E+01	1.162E+02	2.400E+00	0.405
RA-228DA	4.735E+01		2.380E+01	1.168E+02	2.411E+00	0.405
TH-228DA	-2.911E+00		2.377E+01	9.435E+01	1.904E+00	-0.031
TH-232DA	-5.384E+01		8.175E+01	2.913E+02	5.827E+00	-0.185
TH-234DA	5.411E+02		7.151E+02	3.356E+03	6.974E+01	0.161
U-234DA	-2.112E+01		5.841E+01	2.157E+02	4.320E+00	-0.098
U-235HP	1.308E+02		1.167E+02	4.482E+02	9.232E+00	0.292
NP-237DA	3.387E+01		2.519E+01	1.046E+02	2.094E+00	0.324
U-238DA	3.980E+01		4.080E+01	1.414E+02	2.829E+00	0.281
U-238DHP	-2.609E+02		4.576E+02	1.646E+03	3.663E+01	-0.159
AM-241HP	-3.044E+01		4.395E+01	1.554E+02	3.487E+00	-0.196


STL Richland WA.
BA133
Batch ID: 6355208
Sample ID: JLWMN1AC
Detector ID: GER4 1
133 Ba
133 Ba
133 Ba, 208 Tl
228 Th, 232 Th, 224 Ra, 212 Pb
133 Ba
Counts
200
100
20
10
2
1
Energy
50
100
200
500
1000
2000
()
Energy Coefficients:
Offset: -4.40979E-02
Slope: 2.48994E-01
Quadrature: 1.15069E-08
Acquisition Start: 27-DEC-2006 19:18:16.54
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JLWMN1AC

CONFIGURATION ID: GER4:JLWMN1AC_271261918
TITLE : BA133
SAMPLE ID : JLWMN1AC

REPORT DATE: 27-DEC-06
ACQUIRE DATE: 27-DEC-06 19:18:16
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 13-DEC-2006 12:00:00.00
CALIB DATE: 27-DEC-2006 05:33:27.53
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.4410E-01 keV
ENERGY SLOPE: 2.4899E-01 keV/C
ENERGY Q COEFF: 1.1507E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.5125E-01 keV
FWHM SLOPE: 3.9325E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 1.500 keV
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 27-DEC-2006 19:48:41

Configuration	: $DISK1:[GER4.SAMPLE]JLWMN1AC_271261918.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	: 27-DEC-2006 19:18:16
Sample ID	: JLWMN1AC	Sample quantity	: 1.0000 SAMPL
Sample type	:	Sample geometry	: BA133T15
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.42 0.0%
Start energy	: 19.88	End energy	: 2040.49
Sensitivity	: 5.00	Gaussian	: 10.00
Critical level	: No		

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	72.77*	12	20	0.59	292.42	288	9	6.43E-03	84.7	
2	0	81.08	244	60	0.83	325.80	317	16	1.35E-01	9.6	
3	0	238.56*	24	0	0.54	958.23	949	16	1.34E-02	23.9	
4	0	276.33	41	8	1.33	1109.89	1102	15	2.25E-02	21.5	
5	0	302.92	108	4	0.89	1216.69	1209	14	6.01E-02	10.3	
6	0	356.08	284	13	1.05	1430.14	1421	17	1.58E-01	6.6	

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

VMS Nuclide Identification Report V3.0 Generated 27-DEC-2006 19:48:42

Configuration	: $DISK1:[GER4.SAMPLE]JLWMN1AC_271261918.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	: 27-DEC-2006 19:18:16
Sample ID	: JLWMN1AC	Sample quantity	: 1.0000 SAMPL
Sample type	:	Sample geometry	: BA133T15
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.42 0.0%
Energy tolerance	: 1.50	Half life ratio	: 8.00
Errors propagated	: Yes	Systematic Error	: 5.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 80.00		

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	244	33.00	2.043E+00	1.204E+03	1.208E+03	11.09
	276.40	41	6.90	2.202E+00	8.883E+02	8.906E+02	22.24
	302.84	108	17.80	2.205E+00	9.190E+02	9.213E+02	11.68
	356.00	284	62.05*	2.207E+00	6.911E+02	6.929E+02	9.51
	383.85	------	8.70	2.207E+00	------	Line Not Found	------

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
PB-212	238.63	24	44.60*	2.195E+00	8.222E+01	8.222E+01	24.56
	300.09	------	3.41	2.205E+00	------	Line Not Found	------

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JLWMN1AC

Acquisition date : 27-DEC-2006 19:18:16

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	72.77	12	20	0.59	292.42	288	9	6.43E-03	84.7	2.02E+00	

Flags: "T" = Tentatively associated

Sample ID : JLWMN1AC
Acquisition date : 27-DEC-2006 19:18:16

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	9.014E+02	22.24	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	8.340E+01	24.56	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	8.340E+01	24.56	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	8.222E+01	24.56	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 27-DEC-2006 19:48:44

Configuration : $DISK1:[GER4.SAMPLE]JLWMN1AC_271261918.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
Sample ID : JLWMN1AC
Sample type :
Elapsed live time: 0 00:30:00.00
Peak Width (FWHM): 3.00
Energy tolerance : 1.50
Errors propagated: Yes
Efficiency type : Empirical
Abundance limit : 80.00

Acquisition date : 27-DEC-2006 19:18:16
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.42 0.0%
Confidence level : 5.00 %
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy
WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.929E+02	6.587E+01	4.805E+01	2.252E+00	14.422
PB-212	8.222E+01	2.019E+01	6.966E+01	1.625E+00	1.180

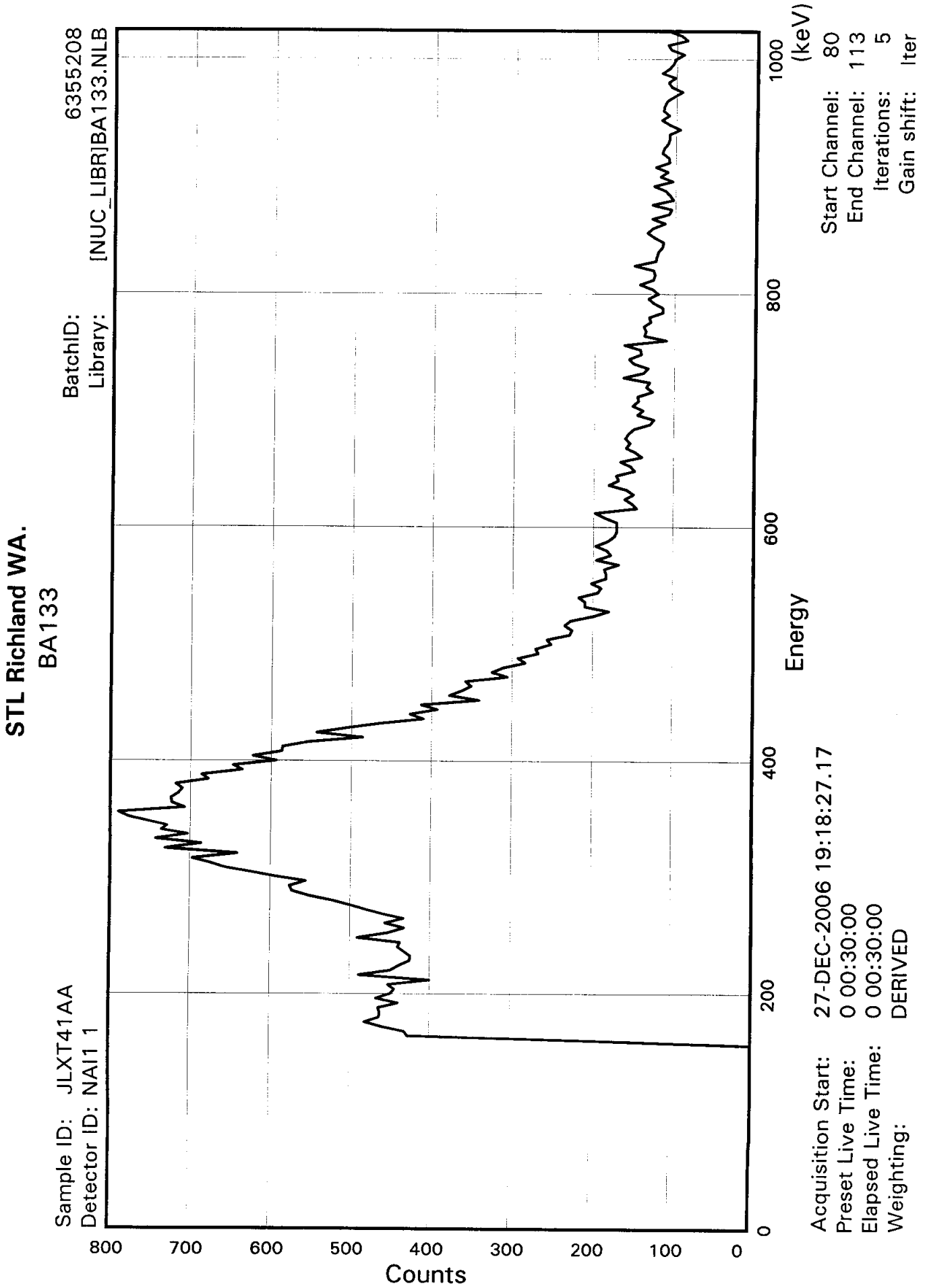
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	2.066E+02		6.618E+01	3.384E+02	1.235E+01	0.611
NA-22	-4.981E+00		4.339E+00	1.501E+01	5.786E-01	-0.332
K-40	9.790E+00		8.651E+01	4.011E+02	1.567E+01	0.024
SC-46	-4.944E+00		5.795E+00	2.137E+01	8.150E-01	-0.231
CR-51	-2.212E+01		1.094E+02	4.123E+02	9.571E+00	-0.054
MN-54	3.542E+00		3.910E+00	1.943E+01	7.258E-01	0.182
CO-57	-6.926E+01		1.088E+02	3.727E+02	8.933E+00	-0.186
CO-58	-2.067E+00		4.130E+00	1.661E+01	6.192E-01	-0.124
FE-59	-6.441E+00		8.342E+00	3.240E+01	1.233E+00	-0.199
CO-60	-3.390E+00		3.316E+00	1.187E+01	4.595E-01	-0.286
ZN-65	1.331E+01		1.019E+01	4.869E+01	1.856E+00	0.273
SE-75	1.932E+01		1.482E+01	6.216E+01	1.447E+00	0.311
SR-85	-6.790E+00		8.855E+00	3.145E+01	1.150E+00	-0.216
Y-88	1.839E-02		2.581E+00	1.349E+01	5.399E-01	0.001
NB-94	1.778E+00		5.086E+00	2.189E+01	8.197E-01	0.081
NB-95	4.876E+00		6.727E+00	2.984E+01	1.109E+00	0.163
TC-95M	-1.577E+01		1.748E+01	6.024E+01	1.413E+00	-0.262
ZR-95	1.021E+00		1.163E+01	4.727E+01	1.756E+00	0.022
ZRNB-95	8.138E+00		1.176E+01	5.207E+01	1.935E+00	0.156
MO-99	6.900E+02		5.005E+02	1.975E+03	4.726E+01	0.349
RH-101	6.777E+00		1.635E+01	6.076E+01	1.427E+00	0.112
RH-102M	1.659E-01		5.977E+00	2.415E+01	8.815E-01	0.007
RU-103	1.315E+01		7.636E+00	3.650E+01	1.334E+00	0.360
RU-106DA	3.991E+00		5.430E+01	2.255E+02	8.301E+00	0.018
AG-108M	-1.039E+01		6.820E+00	2.257E+01	8.226E-01	-0.460
AG-110M	-1.914E+00		7.298E+00	2.920E+01	1.094E+00	-0.066

Sample ID : JLWMN1AC
Acquisition date : 27-DEC-2006 19:18:16

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	6.875E+00		1.009E+01	4.236E+01	1.542E+00	0.162
SB-124	1.110E+01		8.412E+00	3.650E+01	1.342E+00	0.304
SB-125	1.338E+01		2.057E+01	8.764E+01	3.194E+00	0.153
SN-126DA	-4.341E+00		5.874E+00	2.159E+01	7.968E-01	-0.201
I-131	-1.096E+01		2.810E+01	1.045E+02	3.805E+00	-0.105
CS-134	5.336E+00		4.924E+00	2.401E+01	8.944E-01	0.222
CS-137DA	3.751E+00		5.651E+00	2.537E+01	9.361E-01	0.148
LA-138	1.231E-01		4.789E+00	2.250E+01	8.774E-01	0.005
CE-139	-2.551E+00		1.560E+01	5.684E+01	1.346E+00	-0.045
BA-140	-1.493E+01		4.019E+01	1.584E+02	5.802E+00	-0.094
BALA-140	-2.266E+01		1.316E+01	2.011E+01	7.926E-01	-1.127
CE-141	-4.274E+01		3.334E+01	1.140E+02	2.722E+00	-0.375
CE-144	5.018E+01		1.049E+02	3.900E+02	9.361E+00	0.129
CEPR-144	9.914E+01		2.097E+02	7.794E+02	1.871E+01	0.127
PM-144	1.927E+00		5.149E+00	2.231E+01	8.208E-01	0.086
PM-146	-1.546E+01		1.002E+01	3.292E+01	1.201E+00	-0.470
EU-152	-1.646E+01		2.902E+01	1.049E+02	2.433E+00	-0.157
EU-154	-7.898E+00		1.148E+01	4.420E+01	1.704E+00	-0.179
EU-155	-1.468E+01		5.372E+01	1.926E+02	4.710E+00	-0.076
HF-181	-1.290E+01		8.100E+00	2.588E+01	9.449E-01	-0.498
BI-207	5.393E+00		5.877E+00	2.558E+01	9.385E-01	0.211
TL-208	-5.132E+00		7.166E+00	2.714E+01	9.965E-01	-0.189
BI-210M	-1.445E-01		1.635E+01	6.274E+01	1.460E+00	-0.002
BI-212	1.032E+02		8.309E+01	3.792E+02	1.650E+01	0.272
BI-214	-1.569E+00		1.527E+01	6.198E+01	2.279E+00	-0.025
PB-214	-8.389E+01		2.975E+01	6.831E+01	1.585E+00	-1.228
RA-223	4.959E+01		4.883E+01	2.097E+02	4.879E+00	0.237
RA-224DA	8.340E+01	+	2.048E+01	9.487E+01	2.214E+00	0.879
RA-226DA	-1.570E+00		1.527E+01	6.198E+01	2.279E+00	-0.025
AC-227DA	-3.886E+01		7.697E+01	2.317E+02	5.407E+00	-0.168
AC-228	2.272E+01		1.777E+01	8.440E+01	3.169E+00	0.269
RA-228DA	2.283E+01		1.786E+01	8.479E+01	3.184E+00	0.269
TH-228DA	-1.449E+01		2.023E+01	7.663E+01	2.814E+00	-0.189
TH-232DA	7.648E+01		7.985E+01	3.131E+02	7.265E+00	0.244
TH-234DA	-2.580E+01		7.711E+02	3.161E+03	1.195E+02	-0.008
U-234DA	-4.297E+01		4.242E+01	1.481E+02	3.441E+00	-0.290
U-235HP	-1.577E+02		1.087E+02	3.680E+02	8.792E+00	-0.429
NP-237DA	8.977E+00		1.957E+01	7.895E+01	1.833E+00	0.114
U-238DA	-8.389E+01		2.975E+01	6.831E+01	1.585E+00	-1.228
U-238DHP	2.925E+02		3.478E+02	1.366E+03	3.523E+01	0.214
AM-241HP	-3.475E+01		3.155E+01	1.104E+02	2.869E+00	-0.315


STL Richland WA.
BA133
Sample ID: JLXT41AA
Detector ID: NAI1 1
BatchID: 6355208
Library: [NUC_LIBR]BA133.NLB
Counts
800
700
600
500
400
300
200
100
0
Energy
0
200
400
600
800
1000
(keV)
Acquisition Start: 27-DEC-2006 19:18:27.17
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: JLXT41AA

CONFIGURATION ID: NAI1:JLXT41AA_271261918
TITLE : BA133
SAMPLE ID : JLXT41AA

REPORT DATE: 27-DEC-06
ACQUIRE DATE: 27-DEC-06 19:18:27
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 13-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 27-DEC-2006 19:48:32

```
Configuration     : RDND06$DKA100:[NAI1.SAMPLE]JLXT41AA_271261918.CNF;1
Analyses by       : NAI V3.0
Sample title      : BA133
Sample date       : 13-DEC-2006 12:00:00 Acquisition date : 27-DEC-2006 19:18:27
Sample ID         : JLXT41AA             Sample quantity  : 1.0000 sampl
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.67   0.0%
Sample Multiplier:     1.00              Rejection Coeff. :     0.00
Gain shift type   : ITER                 Threshold Shift  : No
Weighting type    : DERIVED              Calculated counts: No
Iterations        :  5
```

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	3.0	5.8	3.0	4.5	3.4	2.7	2.8	2.7
88:	3.2	2.9	-1.0	-0.6	0.1	-1.2	0.9	1.6
96:	-1.1	-1.3	-2.4	-1.8	-5.0	-1.0	-2.1	-1.4
104:	-3.4	-5.9	-2.9	-3.1	-4.3	-6.0	-4.4	-5.9
112:	-4.1	-6.1						

List of Suspicious Channels

81	82	83	84	85	86	87	88

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	9.59E+00	0.00E+00	1.02E+00
2	3.87E+00	0.00E+00	1.04E+00
3	1.34E+00	0.00E+00	1.06E+00
4	8.79E-01	0.00E+00	1.06E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	737.	8.50

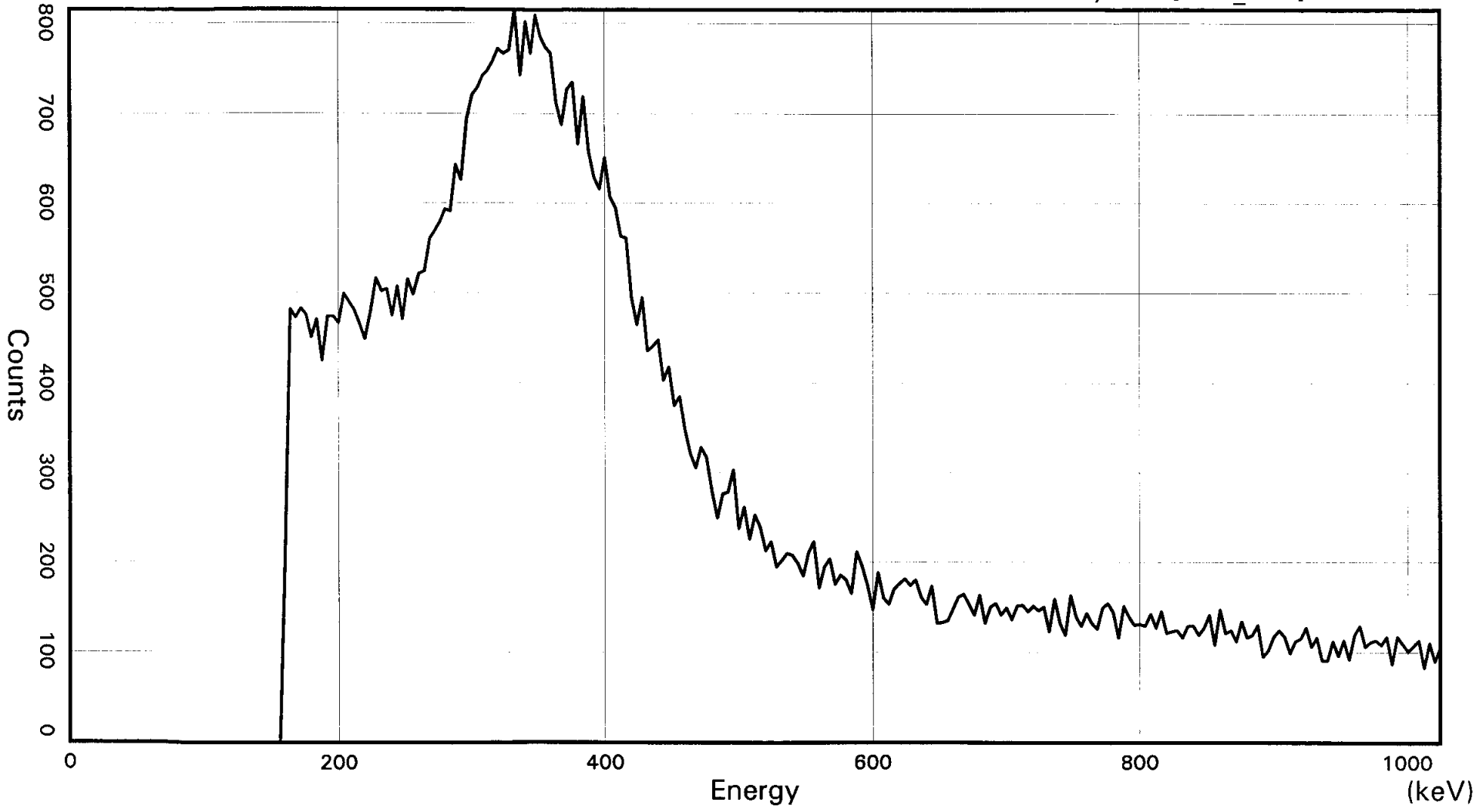
Total Activity :	737.	

STL Richland WA.

BA133

Sample ID: JLXT41AC
Detector ID: NAI1 1

BatchID: 6355208
Library: [NUC_LIBR]BA133.NLB



Acquisition Start:	28-DEC-2006 05:19:14.98	Start Channel:	80
Preset Live Time:	0 00:30:00	End Channel:	113
Elapsed Live Time:	0 00:30:00	Iterations:	5
Weighting:	DERIVED	Gain shift:	Iter

SAMPLE IDENTIFICATION: JLXT41AC

CONFIGURATION ID: NAI1:JLXT41AC_281260519
TITLE : BA133
SAMPLE ID : JLXT41AC

REPORT DATE: 28-DEC-06
ACQUIRE DATE: 28-DEC-06 05:19:14
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: -.2302E+02 keV
FWHM SLOPE: 5.7163E+00 sqr keV
ITERATIONS: 5
GAUSSIAN SENSITIVITY: 35.00 %

ABUNDANCE LIMIT: 75.00 %
ENERGY TOLERANCE: 20.000 keV
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]BA133.NLB

VMS NAI Report V1.2 Generated 28-DEC-2006 05:49:20

```
Configuration     : RDND06$DKA100:[NAI1.SAMPLE]JLXT41AC_281260519.CNF;1
Analyses by       : NAI V3.0
Sample title      : BA133
Sample date       : 22-NOV-2006 12:00:00 Acquisition date : 28-DEC-2006 05:19:14
Sample ID         : JLXT41AC             Sample quantity  : 1.0000 sampl
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.69   0.0%
Sample Multiplier:     1.00              Rejection Coeff. :     0.00
Gain shift type   : ITER                 Threshold Shift  : No
Weighting type    : DERIVED              Calculated counts: No
Iterations        :  5
```

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	7.6	7.0	5.9	6.5	3.6	4.7	3.0	3.9
88:	2.3	1.1	0.1	-1.5	-2.3	-2.5	0.2	-2.2
96:	-0.3	-3.0	-3.3	-3.5	-3.7	-3.2	-3.2	-3.9
104:	-4.7	-6.3	-6.4	-4.3	-6.6	-5.4	-5.0	-5.9
112:	-4.2	-5.2						

List of Suspicious Channels

81	82	83	84	85	86	87

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.60E+01	0.00E+00	1.03E+00
2	6.05E+00	0.00E+00	1.06E+00
3	2.86E+00	0.00E+00	1.08E+00
4	1.78E+00	0.00E+00	1.09E+00
5	1.40E+00	0.00E+00	1.09E+00

Sample ID : JLXT41AC
Acquisition date : 28-DEC-2006 05:19:14

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	825.	11.0

Total Activity :	825.	

Vial Identifier	Constituent	Prep Activity/Concentration			Std Wt Used		Prep,Decayed To Date		Prep by	Std Decayed Activity/Concentration		
	Parent Standard:	BA13306A000		Ref:	10/4/2004		1.1069E+04	±		DPM/G		
RATA25135	BA-133	**7.5473E+02**	**± 1.355E+00**	DPM	0.0788	g	12/13/2006	12/13/2006	Armstron	9.5778E+03	± 0.000E+00	DPM/G
RATA25136	BA-133	**7.5856E+02**	**± 1.355E+00**	DPM	0.0792	g	12/13/2006	12/13/2006	Armstron	9.5778E+03	± 0.000E+00	DPM/G
RATA25137	BA-133	**7.5760E+02**	**± 1.355E+00**	DPM	0.0791	g	12/13/2006	12/13/2006	Armstron	9.5778E+03	± 0.000E+00	DPM/G
RATA25138	BA-133	**7.6335E+02**	**± 1.355E+00**	DPM	0.0797	g	12/13/2006	12/13/2006	Armstron	9.5778E+03	± 0.000E+00	DPM/G
RATA25139	BA-133	**7.5952E+02**	**± 1.355E+00**	DPM	0.0793	g	12/13/2006	12/13/2006	Armstron	9.5778E+03	± 0.000E+00	DPM/G
		7.5875E+002	± 3.133E+000	(5)		0.413%	7.5473E+002 , 7.6335E+002					

* - Isotope is an Impurity

Vial Identifier	Constituent	Prep Activity/Concentration			Std Wt Used		Prep,Decayed To Date		Prep by	Std Decayed Activity/Concentration		
	Parent Standard:	BA13306A000		Ref:	10/4/2004		1.1069E+04	±		DPM/G		
RASC4307	BA-133	**7.4606E+02**	**± 1.360E+00**	DPM	0.0776	g	11/22/2006	11/22/2006	Armstron	9.6142E+03	± 0.000E+00	DPM/G
		7.4606E+002	± 7.461E+002	(1)			7.4606E+002 , 7.4606E+002					

* - Isotope is an Impurity

12/27/2006 2:57:15 PM

Standard Material Fractions (Vials)

Vial Prep:12/26/05 to 12/28/06,SMFractionIdentifier Between RATA25135 and RATA25139, Order by

Vial Identifier	Constituent	Prep Activity/Concentration			Std Wt Used		Prep,Decayed To Date		Prep by	Std Decayed Activity/Concentration		
	Parent Standard:	BA-30-6118		Ref:			2.9295E+01	± 3.460E-01	mg/g			
RATA25135	BA	**3.0244E+01**	± **3.572E-01**	mg	1.0324	g	12/13/2006	12/13/2006	Armstron		±	mg/g
RATA25136	BA	**3.0212E+01**	± **3.569E-01**	mg	1.0313	g	12/13/2006	12/13/2006	Armstron		±	mg/g
RATA25137	BA	**3.0224E+01**	± **3.570E-01**	mg	1.0317	g	12/13/2006	12/13/2006	Armstron		±	mg/g
RATA25138	BA	**3.0335E+01**	± **3.583E-01**	mg	1.0355	g	12/13/2006	12/13/2006	Armstron		±	mg/g
RATA25139	BA	**3.0186E+01**	± **3.565E-01**	mg	1.0304	g	12/13/2006	12/13/2006	Armstron		±	mg/g
		3.0240E+001	± 5.713E-002	(5)		0.189%	3.0186E+001 , 3.0335E+001					

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Standard Material Fractions (Vials)

Vial Prep:12/26/05 to 12/28/06,SMFractionIdentifier Like: RASC4307%, Order by SMIdentifier,ConstituentCode,SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration			Std Wt Used		Prep,Decayed To Date		Prep by	Std Decayed Activity/Concentration		
	Parent Standard:	BA-30-6118		Ref:			2.9295E+01	± 3.460E-01	mg/g			
RASC4307	BA	**3.0022E+01**	**± 3.546E-01**	mg	1.0248	g	11/22/2006	11/22/2006	Armstron		±	mg/g
		3.0022E+001	± 3.002E+001	(1)			3.0022E+001 , 3.0022E+001					

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Vial Identifier	Constituent	Prep Activity/Concentration			Std Wt Used		Prep,Decayed To Date		Prep by	Std Decayed Activity/Concentration		
	Parent Standard:	Ra22606A100		Ref:	11/1/2001		2.1060E+01	± 3.234E-01	DPM/G			
RASC4307	RA-226	**3.0596E+00**	**± 4.708E-02**	DPM	0.1456	g	11/22/2006	11/22/2006	Armstron	2.1014E+01	± 3.227E-01	DPM/G
		3.0596E+000	± 3.060E+000	(1)			3.0596E+000 , 3.0596E+000					

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Vial Identifier	Constituent	Prep Activity/Concentration			Std Wt Used		Prep,Decayed To Date		Prep by	Std Decayed Activity/Concentration		
	Parent Standard:	RA22804A110		Ref: 7/19/2004			1.0994E+02	± 3.355E+00	DPM/G			
RASC4307	RA-228	**1.1313E+01**	**± 3.454E-01**	DPM	0.1365	g	11/22/2006	11/22/2006	Armstron	8.2877E+01	± 2.529E+00	DPM/G
		1.1313E+001	± 1.131E+001	(1)			1.1313E+001 , 1.1313E+001					

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* - Isotope is an Impurity