EVENT #115

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CHAIN OF CUSTODY 21

THORIUM SAMPLE AND QC DATA 24

RADIUM 226 SAMPLE AND QC DATA 475

TOTAL # PAGES IN DOCUMENT 638

Kocsis, Susie

From: Kocsis, Susie
Sent: Wednesday, March 07, 2007 2:50 PM
To: 'Dahl, Karen'; 'Adam, Sherryl'
Cc: Graening, Guy
Subject: Yerington Air sample name changes

Karen and Sherryl,

I just noticed that a few of the samples were named wrong on the chain of custody forms. Would you please update your system with the correct names? I will make the changes on my end - no resubmittals needed.

Even 115:

Sample P-0582 is supposed to be 000582.

Event 116:

Samples P-0583, P-0584, P-0585 are supposed to be 000583, 000584, 000585, respectively.

Thank you and let me know if you have any questions,

susie

Susie Kocsis
Data Manager
Brown and Caldwell
10540 White Rock Road, Suite 180
Rancho Cordova, CA 95670
(916) 853-5350

Analytical Data Package Prepared For

Brown and Caldwell

Yerington Mine - Event #115

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.: 34421

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
33444	EVENT 115	P-0582	J7A100118-5	JMLV91AA	9JMLV910	7011219
		P-0582	J7A100118-5	JMLV91AE	9JMLV910	7011221
		P-0582	J7A100118-5	JMLV91AC	9JMLV910	7011225
		P-0582	J7A100118-5	JMLV92AD	9JMLV920	7029198
		P-0820	J7A100118-1	JMLVW1AA	9JMLVW10	7011219
		P-0820	J7A100118-1	JMLVW1AE	9JMLVW10	7011221
		P-0820	J7A100118-1	JMLVW1AC	9JMLVW10	7011225
		P-0820	J7A100118-1	JMLVW2AD	9JMLVW20	7029198
		P-0821	J7A100118-2	JMLV31AA	9JMLV310	7011219
		P-0821	J7A100118-2	JMLV31AE	9JMLV310	7011221
		P-0821	J7A100118-2	JMLV31AC	9JMLV310	7011225
		P-0821	J7A100118-2	JMLV32AD	9JMLV320	7029198
		P-0822	J7A100118-3	JMLV51AA	9JMLV510	7011219
		P-0822	J7A100118-3	JMLV51AE	9JMLV510	7011221
		P-0822	J7A100118-3	JMLV51AC	9JMLV510	7011225
		P-0822	J7A100118-3	JMLV52AD	9JMLV520	7029198
		P-0824	J7A100118-4	JMLV81AA	9JMLV810	7011219
		P-0824	J7A100118-4	JMLV81AE	9JMLV810	7011221
		P-0824	J7A100118-4	JMLV81AC	9JMLV810	7011225
		P-0824	J7A100118-4	JMLV82AD	9JMLV820	7029198

SEVERN TRENT STL

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Certificate of Analysis

February 6, 2007

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

Attention: Guy Graening

Date Received at Lab	:	January 8, 2006
Project Name	:	Air Quality Monitoring Yerington Mine
Project Number	:	121243
Event Number	:	115
PO Number	:	129682.001
Sample Type	:	Five (5) Filters
SDG Number	:	33442

CASE NARRATIVE

I. Introduction

On January 8, 2006, five filter samples were received at the STL Richland (STLR) laboratory for radiochemical analysis. Upon receipt, the samples were assigned the STLR identification numbers as described on the cover page of the Analytical Data Package report form. The samples were assigned to Lot Number J7A090287.

II. Sample Receipt

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

III. Analytical Results/Methodology

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

The analysis requested was:

Alpha Spectroscopy
Thorium-228, -230, -232 by method RICH-RC-5087
Gas Proportional Counters
Gross Alpha by method STL-RICHRC5016/5014
Radium-228 by method STL RICH-RC-5005
Alpha Scintillation Counter
Radium-226 by method STL RICH-RC-5005

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

V. Comments

Thorium-228, -230, -232:

A tracer was added to the LCS vial instead of a spike therefore there is no LCS in the batch. The process has been shown to be in control. Data is accepted. Except as noted, the LCS, batch blank and sample results are within analytical requirements.

Gross Alpha Analysis:

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

Radium-228 Analysis:

The original analysis had a low LCS recovery of 72%. The batch was reanalyzed with good results. 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: 06-Feb-07

Report No. : 34421

SDG No: 33444

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC|MDA	RER2
P-0582	JMLV91AA	TH-228	0.0807 +- 0.122	ND	pCi/sample	90%	0.242	
		TH-230	0.351 +- 0.245	=	pCi/sample	90%	0.234	
		TH-232	0.00000 +- 0.0872	ND	pCi/sample	90%	0.234	
P-0582	JMLV91AE	ALPHA	4.20 +- 3.11	ND	pCi/sample	100%	4.5	
P-0582	JMLV91AC	RA-226	0.156 +- 0.304	ND	pCi/sample	99%	0.541	
P-0582	JMLV92AD	RA-228	0.263 +- 0.885	ND	pCi/sample	96%	2.06	
P-0820	JMLVW1AA	TH-228	0.0845 +- 0.170	ND	pCi/sample	80%	0.338	
		TH-230	0.245 +- 0.253	ND	pCi/sample	80%	0.326	
		TH-232	0.0544 +- 0.122	ND	pCi/sample	80%	0.326	
P-0820	JMLVW1AE	ALPHA	4.41 +- 3.13	=	pCi/sample	100%	4.31	
P-0820	JMLVW1AC	RA-226	0.215 +- 0.319	ND	pCi/sample	106%	0.549	
P-0820	JMLVW2AD	RA-228	0.292 +- 0.665	ND	pCi/sample	88%	1.59	
P-0821	JMLV31AA	TH-228	0.217 +- 0.203	ND	pCi/sample	88%	0.26	
		TH-230	0.147 +- 0.175	ND	pCi/sample	88%	0.251	
		TH-232	0.126 +- 0.153	ND	pCi/sample	88%	0.251	
P-0821	JMLV31AE	ALPHA	6.71 +- 3.72	=	pCi/sample	100%	3.99	
P-0821	JMLV31AC	RA-226	0.316 +- 0.313	ND	pCi/sample	101%	0.48	
P-0821	JMLV32AD	RA-228	0.881 +- 0.833	ND	pCi/sample	85%	1.78	
P-0822	JMLV51AA	TH-228	-0.0449 +- 0.127	ND	pCi/sample	87%	0.417	
		TH-230	0.347 +- 0.257	=	pCi/sample	87%	0.26	
		TH-232	0.00000 +- 0.0970	ND	pCi/sample	87%	0.26	
P-0822	JMLV51AE	ALPHA	5.61 +- 3.53	=	pCi/sample	100%	4.65	
P-0822	JMLV51AC	RA-226	0.0936 +- 0.328	ND	pCi/sample	94%	0.609	
P-0822	JMLV52AD	RA-228	0.450 +- 0.743	ND	pCi/sample	93%	1.71	
P-0824	JMLV81AA	TH-228	0.00000 +- 0.175	ND	pCi/sample	55%	0.47	
		TH-230	0.114 +- 0.228	ND	pCi/sample	55%	0.454	
		TH-232	0.114 +- 0.228	ND	pCi/sample	55%	0.454	
P-0824	JMLV81AE	ALPHA	0.0333 +- 1.52	ND	pCi/sample	100%	3.96	
P-0824	JMLV81AC	RA-226	0.291 +- 0.389	ND	pCi/sample	90%	0.656	
P-0824	JMLV82AD	RA-228	0.342 +- 0.854	ND	pCi/sample	92%	1.98	

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V5.1 A2002

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

= ERPIMS - Equal To, Analyte Detected

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

Sample Results Summary

STL Richland STLR

Ordered by Client Sample ID, Batch No.

Date: 06-Feb-07

Report No. : 34421

SDG No: 33444

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

Number of Results: 30

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

rptSTLRchSaSum
V5.1 A2002

QC Results Summary
STL Richland STLR

Ordered by QC Type, Batch No.

Date: 06-Feb-07

Report No. : 34421

SDG No.: 33442

QC Type	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
BLANK QC	JMN8F1AA	TH-228	0.00985 +- 0.0173	N	pCi/sample	95%			0.0331
		TH-230	0.00754 +- 0.0114	N	pCi/sample	95%			0.0226
		TH-232	0.00000 +- 0.00843	N	pCi/sample	95%			0.0226
BLANK QC	JMN8V1AA	ALPHA	0.000224 +- 0.00252	N	pCi/sample	100%			0.00646
BLANK QC	JMN851AA	RA-226	0.000186 +- 0.000442	N	pCi/sample	93%			0.000812
BLANK QC	JMN9F2AA	RA-228	0.102 +- 0.216	N	pCi/sample	99%			0.491
LCS	JMN8V1AC	ALPHA	0.167 +- 0.0437	=	pCi/sample	100%	93%	-0.1	0.00711
LCS	JMN851AC	RA-226	0.00728 +- 0.00188	=	pCi/sample	104%	79%	-0.2	0.000524
LCS	JMN9F2AC	RA-228	5.49 +- 0.825	=	pCi/sample	86%	107%	0.1	0.542

Number of Results: 9

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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: 06-Feb-07

Lab Name: STL Richland
SDG: 33444
Collection Date: 12/13/2006 1:21:00 PM
Lot-Sample No.: J7A100118-5
Report No. : 34421
Received Date: 1/8/2007 10:00:00 AM
Client Sample ID: P-0582
COC No. :
Matrix: FILTER AIR

Yerington Mine - Event #115

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: 7011219	**Work Order:** JMLV91AA			**Report DB ID:** 9JMLV910								
TH-228	0.0807	ND	0.12	0.12	0.242	pCi/sample	90%	*0.33*	1/17/07 10:06 p	1.0	0.08161	ISOTH
						0.0664	1.0	*(1.3)*		Sample	Sample	ALP178
TH-230	0.351	=	0.24	0.24	0.234	pCi/sample	90%	*(1.5)*	1/17/07 10:06 p	1.0	0.08161	ISOTH
						0.0641	1.0	*(2.9)*		Sample	Sample	ALP178
TH-232	0.00000	ND	0.0000	0.087	0.234	pCi/sample	90%	*0.*	1/17/07 10:06 p	1.0	0.08161	ISOTH
						0.0641	1.0	*0.*		Sample	Sample	ALP178
Batch: 7011221	**Work Order:** JMLV91AE			**Report DB ID:** 9JMLV910								
ALPHA	4.20	ND	3.0	3.1	4.5	pCi/sample	100%	*0.93*	1/24/07 02:12 p	1.0	0.02041	E900.0
						1.8	20.0	*(2.7)*		Sample	Sample	GPC10F
Batch: 7011225	**Work Order:** JMLV91AC			**Report DB ID:** 9JMLV910								
RA-226	0.156	ND	0.30	0.30	0.541	pCi/sample	99%	*0.29*	1/24/07 04:09 p	1.0	0.24457	E903.1
						0.235	1.0	*(1.)*		Sample	Sample	ASCNMA
Batch: 7029198	**Work Order:** JMLV92AD			**Report DB ID:** 9JMLV920								
RA-228	0.263	ND	0.66	0.88	2.06	pCi/sample	96%	*0.13*	2/2/07 06:06 a	1.0	0.24477	E904.0
						0.94	3.1	*0.59*		Sample	Sample	GPC5B

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: 06-Feb-07

Lab Name: STL Richland | **SDG:** 33444 | **Collection Date:** 12/13/2006 12:10:00 PM

Lot-Sample No.: J7A100118-1 | **Report No. :** 34421 | **Received Date:** 1/8/2007 10:00:00 AM

Client Sample ID: P-0820 | **COC No. :** | **Matrix:** FILTER AIR

Yerington Mine - Event #115

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: 7011219	**Work Order:** JMLVW1AA			**Report DB ID:** 9JMLVW10								
TH-228	**0.0845**	ND	0.17	0.17	0.338	pCi/sample	80%	*0.25*	1/17/07 10:06 p	1.0	0.08348	ISOTH
						0.0926	1.0	*1.*		Sample	Sample	ALP174
TH-230	**0.245**	ND	0.25	0.25	0.326	pCi/sample	80%	*0.75*	1/17/07 10:06 p	1.0	0.08348	ISOTH
						0.0894	1.0	*(1.9)*		Sample	Sample	ALP174
TH-232	**0.0544**	ND	0.12	0.12	0.326	pCi/sample	80%	*0.17*	1/17/07 10:06 p	1.0	0.08348	ISOTH
						0.0894	1.0	*0.89*		Sample	Sample	ALP174
Batch: 7011221	**Work Order:** JMLVW1AE			**Report DB ID:** 9JMLVW10								
ALPHA	**4.41**	=	2.9	3.1	4.31	pCi/sample	100%	*(1.)*	1/24/07 02:12 p	1.0	0.02084	E900.0
						1.7	20.0	*(2.8)*		Sample	Sample	GPC10A
Batch: 7011225	**Work Order:** JMLVW1AC			**Report DB ID:** 9JMLVW10								
RA-226	**0.215**	ND	0.32	0.32	0.549	pCi/sample	106%	*0.39*	1/24/07 02:49 p	1.0	0.24889	E903.1
						0.236	1.0	*(1.3)*		Sample	Sample	ASC4UA
Batch: 7029198	**Work Order:** JMLVW2AD			**Report DB ID:** 9JMLVW20								
RA-228	**0.292**	ND	0.59	0.67	1.59	pCi/sample	88%	*0.18*	2/2/07 06:06 a	1.0	0.24873	E904.0
						0.679	3.1	*0.88*		Sample	Sample	GPC4B

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: 06-Feb-07

Lab Name: STL Richland | **SDG:** 33444 | **Collection Date:** 12/13/2006 12:43:00 PM

Lot-Sample No.: J7A100118-2 | **Report No. :** 34421 | **Received Date:** 1/8/2007 10:00:00 AM

Client Sample ID: P-0821 | **COC No. :** | **Matrix:** FILTER AIR

Yerington Mine - Event #115

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: 7011219	**Work Order:** JMLV31AA			**Report DB ID:** 9JMLV310								
TH-228	**0.217**	ND	0.20	0.20	0.26	pCi/sample	88%	*0.83*	1/17/07 10:06 p	1.0	0.08297	ISOTH
						0.0714	1.0	*(2.1)*		Sample	Sample	ALP175
TH-230	**0.147**	ND	0.17	0.17	0.251	pCi/sample	88%	*0.58*	1/17/07 10:06 p	1.0	0.08297	ISOTH
						0.069	1.0	*(1.7)*		Sample	Sample	ALP175
TH-232	**0.126**	ND	0.15	0.15	0.251	pCi/sample	88%	*0.5*	1/17/07 10:06 p	1.0	0.08297	ISOTH
						0.069	1.0	*(1.6)*		Sample	Sample	ALP175
Batch: 7011221	**Work Order:** JMLV31AE			**Report DB ID:** 9JMLV310								
ALPHA	**6.71**	=	3.4	3.7	3.99	pCi/sample	100%	*(1.7)*	1/24/07 02:12 p	1.0	0.02057	E900.0
						1.53	20.0	*(3.6)*		Sample	Sample	GPC10B
Batch: 7011225	**Work Order:** JMLV31AC			**Report DB ID:** 9JMLV310								
RA-226	**0.316**	ND	0.31	0.31	0.48	pCi/sample	101%	*0.66*	1/24/07 02:54 p	1.0	0.24661	E903.1
						0.193	1.0	*(2.)*		Sample	Sample	ASC8RD
Batch: 7029198	**Work Order:** JMLV32AD			**Report DB ID:** 9JMLV320								
RA-228	**0.881**	ND	0.82	0.83	1.78	pCi/sample	85%	*0.49*	2/2/07 06:06 a	1.0	0.24633	E904.0
						0.769	3.1	*(2.1)*		Sample	Sample	GPC4C

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: 06-Feb-07

Lab Name: STL Richland **SDG:** 33444 **Collection Date:** 12/13/2006 1:15:00 PM

Lot-Sample No.: J7A100118-3 **Report No. :** 34421 **Received Date:** 1/8/2007 10:00:00 AM

Client Sample ID: P-0822 **COC No. :** **Matrix:** FILTER AIR

Yerington Mine - Event #115

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: 7011219	**Work Order:** JMLV51AA			**Report DB ID:** 9JMLV510								
TH-228	-0.0449	ND	0.13	0.13	0.417	pCi/sample	87%	*-0.11*	1/17/07 10:06 p	1.0	0.08203	ISOTH
						0.148	1.0	*-0.71*		Sample	Sample	ALP176
TH-230	0.347	=	0.25	0.26	0.26	pCi/sample	87%	*(1.3)*	1/17/07 10:06 p	1.0	0.08203	ISOTH
						0.0714	1.0	*(2.7)*		Sample	Sample	ALP176
TH-232	0.00000	ND	0.0000	0.097	0.26	pCi/sample	87%	*0.*	1/17/07 10:06 p	1.0	0.08203	ISOTH
						0.0714	1.0	*0.*		Sample	Sample	ALP176
Batch: 7011221	**Work Order:** JMLV51AE			**Report DB ID:** 9JMLV510								
ALPHA	5.61	=	3.3	3.5	4.65	pCi/sample	100%	*(1.2)*	1/24/07 02:12 p	1.0	0.02053	E900.0
						1.88	20.0	*(3.2)*		Sample	Sample	GPC10C
Batch: 7011225	**Work Order:** JMLV51AC			**Report DB ID:** 9JMLV510								
RA-226	0.0936	ND	0.33	0.33	0.609	pCi/sample	94%	*0.15*	1/24/07 04:11 p	1.0	0.24477	E903.1
						0.267	1.0	*0.57*		Sample	Sample	ASCLMC
Batch: 7029198	**Work Order:** JMLV52AD			**Report DB ID:** 9JMLV520								
RA-228	0.450	ND	0.73	0.74	1.71	pCi/sample	93%	*0.26*	2/2/07 06:06 a	1.0	0.24477	E904.0
						0.74	3.1	*(1.2)*		Sample	Sample	GPC4D

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: 06-Feb-07

Lab Name: STL Richland | **SDG:** 33444 | **Collection Date:** 12/13/2006 1:18:00 PM

Lot-Sample No.: J7A100118-4 | **Report No. :** 34421 | **Received Date:** 1/8/2007 10:00:00 AM

Client Sample ID: P-0824 | **COC No. :** | **Matrix:** FILTER AIR

Yerington Mine - Event #115

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: 7011219	**Work Order:** JMLV81AA			**Report DB ID:** 9JMLV810								
TH-228	0.00000	ND	0.0000	0.18	0.47	pCi/sample	55%	*0.*	1/17/07 10:06 p	1.0	0.0828	ISOTH
						0.129	1.0	*0.*		Sample	Sample	ALP177
TH-230	0.114	ND	0.23	0.23	0.454	pCi/sample	55%	*0.25*	1/17/07 10:06 p	1.0	0.0828	ISOTH
						0.125	1.0	*1.*		Sample	Sample	ALP177
TH-232	0.114	ND	0.23	0.23	0.454	pCi/sample	55%	*0.25*	1/17/07 10:06 p	1.0	0.0828	ISOTH
						0.125	1.0	*1.*		Sample	Sample	ALP177
Batch: 7011221	**Work Order:** JMLV81AE			**Report DB ID:** 9JMLV810								
ALPHA	0.0333	ND	1.5	1.5	3.96	pCi/sample	100%	*0.01*	1/24/07 02:12 p	1.0	0.02066	E900.0
						1.53	20.0	*0.04*		Sample	Sample	GPC10D
Batch: 7011225	**Work Order:** JMLV81AC			**Report DB ID:** 9JMLV810								
RA-226	0.291	ND	0.38	0.39	0.656	pCi/sample	90%	*0.44*	1/24/07 04:04 p	1.0	0.24783	E903.1
						0.282	1.0	*(1.5)*		Sample	Sample	ASC9RA
Batch: 7029198	**Work Order:** JMLV82AD			**Report DB ID:** 9JMLV820								
RA-228	0.342	ND	0.74	0.85	1.98	pCi/sample	92%	*0.17*	2/2/07 06:06 a	1.0	0.24801	E904.0
						0.899	3.1	*0.8*		Sample	Sample	GPC5A

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: 06-Feb-07

Lab Name: STL Richland

SDG: 33442

Lot-Sample No.: J7A110000-219

Report No. : 34421

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: 7011219	Work Order: JMN8F1AA			Report DB ID: JMN8F1AB								
TH-228	0.00985	ND	0.017	0.017	0.0331	pCi/sample	95%	0.3	1/18/07 09:42 a	1.0	1.0	ISOTH
					0.0112	1.0		(1.1)		Sample	Sample	ALP119
TH-230	0.00754	ND	0.011	0.011	0.0226	pCi/sample	95%	0.33	1/18/07 09:42 a	1.0	1.0	ISOTH
					0.0062	1.0		(1.3)		Sample	Sample	ALP119
TH-232	0.00000	ND	0.0000	0.0084	0.0226	pCi/sample	95%	0.	1/18/07 09:42 a	1.0	1.0	ISOTH
					0.0062	1.0		0.		Sample	Sample	ALP119

Number of Results: 3

Comments:

STL Richland
rptSTLRchBlank
V5.1 A2002

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

FORM II

BLANK RESULTS

Date: 06-Feb-07

Lab Name: STL Richland

SDG: 33442

Lot-Sample No.: J7A110000-221

Report No. : 34421

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: 7011221	Work Order: JMN8V1AA			Report DB ID: JMN8V1AB								
ALPHA	0.000224	ND	0.0025	0.0025	0.00646	pCi/sample	100%	0.03	1/24/07 05:03 p	1.0	12.59	E900.0
					0.00247	20.0		0.18		Sample	Sample	GPC10B

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: 06-Feb-07

Lab Name: STL Richland **SDG:** 33442

Lot-Sample No.: J7A110000-225 **Report No. :** 34421 **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: 7011225	**Work Order:** JMN851AA			**Report DB ID:** JMN851AB								
RA-226	0.000186	ND	0.00044	0.00044	0.000812	pCi/sample	93%	0.23	1/24/07 04:19 p	1.0	152.17	E903.1
					0.000343	1.0		0.84		Sample	Sample	ASCMRA

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.
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: 06-Feb-07

Lab Name: STL Richland **SDG:** 33442

Lot-Sample No.: J7A110000-229 **Report No. :** 34421 **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: 7029198	Work Order: JMN9F2AA			Report DB ID: JMN9F2AB								
RA-228	0.102	ND	0.18	0.22	0.491	pCi/sample	99%	0.21	2/2/07 06:06 a	1.0	1.0	E904.0
					0.224	1.0		0.94		Sample	Sample	GPC5C

Number of Results: 1

Comments:

STL Richland
rptSTLRchBlank
V5.1 A2002

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

FORM II

LCS RESULTS

Date: 06-Feb-07

Lab Name: STL Richland

SDG: 33442

Lot-Sample No.: J7A110000-221

Report No. : 34421

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: 7011221	Work Order: JMN8V1AC			Report DB ID: JMN8V1CS									
ALPHA	0.167	=	0.019	0.044	0.00711	pCi/sample	100.00%	0.179	0.0056	93%	1/24/07 05:03 p	12.55	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: 06-Feb-07

Lab Name: STL Richland

SDG: 33442

Lot-Sample No.: J7A110000-225

Report No. : 34421

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: 7011225	Work Order: JMN851AC			Report DB ID: JMN851CS									
RA-226	0.00728	=	0.0011	0.0019	0.000524	pCi/sample	104.34%	0.00919	0.00014	79%	1/24/07 04:20 p	150.1	E903.1
						Rec Limits:		70.	130.	-0.2		Sample	ASCQMB

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: 06-Feb-07

Lab Name: STL Richland

SDG: 33442

Lot-Sample No.: J7A110000-229

Report No. : 34421

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: 7029198	Work Order: JMN9F2AC			Report DB ID: JMN9F2CS									
RA-228	5.49	=	0.54	0.83	0.542	pCi/sample	86.22%	5.15	0.16	107%	2/2/07 06:06 a	1.0	E904.0
							Rec Limits:	70.	130.	0.1		Sample	GPC5D

Number of Results: 1

Comments:

STL Richland
rptSTLRchLcs
V5.1 A2002

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

CHAIN OF CUSTODY

BROWN AND CALDWELL J7A100118 33444 Due 02 06 07

CHAIN OF CUSTODY RECORD

COC No._____

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

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

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

VER 1000204

PROJECT NAME: [illegible]ington Air Qlty

PROJECT NUMBER: [illegible]

LABORATORY NAME & ADDRESS: SEVERN TRENT LABS, WEST SACRAMENTO, SACRAMENTO LOT H GGL 200146

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

LINE NO.	SAMPLE – I.D.	COLLECTION DATE	COLLECTION TIME	SAMPLER'S INITIALS	NUMBER OF CONTAINERS	CONTAINER SIZE AND TYPE	PRESER-VATIVE	MATRIX CODE	ANALYSES REQUESTED	FIELD FILTERED	QC – REQ	TAT	SAMPLING METHOD	DEPTH (FT.) BEGIN / END	PID READING (ppm)
01	P-0820	12/13/06	12:10	RB	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 JMLVW			0.31		----	
02	P-0821		12:43	RB	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 JMLV3			0.24		----	
03	P-0822		13:15	RB	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 JMLV5			0.20		----	
04	P-0824		13:18	RB	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 JMLV8			0.20		----	
RB 05	~~P-0582~~		~~13:21~~	~~RB~~	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~~			~~0.22~~		~~----~~	
06	P-0582		13:21	RB	1	8x10 Filter	NONE	A	TSP, Gross Alpha, Th(228,230), Ra(226,228), Metals (Al,As,Cd,Cr,Co,Cu,Mn,Ni), Sulfate JMLV9			0.22		----	
07	P of 20	Labeled 110-06-820												----	
08	[illegible]								[illegible]					----	
09	[illegible]													----	
10														----	

COLLECTED & RELEASED BY:	DATE	TIME	COOLER I.D.:	DATE	TIME	COMMENTS (see note on back):
[illegible]	12/13/06	09:37				
RECEIVED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME	[illegible]
[illegible]	[illegible]	[illegible]		/ /	:	
S. Smith	01.08.07	1000	Steve Valmores	1/8/07	1600	[illegible]
RECORD RETURNED BY:	DATE / /	TIME :				
COURIER:			SHIPPING NUMBER: [illegible]			

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.

STL

Sample Check-in List

Date/Time Received: 1/8/07 10:00

Client: BRC SDG #: 33444 NA [ ] SAF # _____ NA X

Work Order Number: J7A100118 Chain of Custody # EVENT 115

Shipping Container ID: _____ Air Bill # _____

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

Sample Custodian: Erin Darby SS Date: 1/8/07 10:00

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023 9/03, Rev. 5

THORIUM

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

1/23/2007 3:39:34 PM

Lot No., Due Date: J7A090287,J7A100115,J7A100118; 02/06/2007

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 7011219; RTHISO Thiso by ALP

SDG, Matrix: 33442,33443,33444; 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 7-09333

First Level Review Pam Robinson **Date** 1-23-07

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 7011219

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: Sherry R Adam Date: 1-25-07

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

1/15/2007 12:30:41 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922

Pipet #: _____

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011219 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: WoodT

STL RICHLAND

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
171 8 JMLT7-1-AA J7A100115-3-SAMP 12/11/2006 12:15	0.833sa,g	527.80sa,g	50.28g,in	0.0794g	THTF0944 12/18/06,pd 10/04/04,r	500				
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
172 9 JMLT8-1-AA J7A100115-4-SAMP 12/11/2006 11:45	0.833sa,g	503.04sa,g	50.21g,in	0.0831g	THTF0945 12/18/06,pd 10/04/04,r					
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
173 10 JMLVA-1-AA J7A100115-5-SAMP 12/11/2006 12:20	0.833g	511.47g	50.36g,in	0.082g	THTF0946 12/18/06,pd 10/04/04,r	1/15/07				
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
174 11 JMLVW-1-AA J7A100118-1-SAMP 12/13/2006 12:10	0.833g	502.79g	50.39g,in	0.0835g	THTF0947 12/18/06,pd 10/04/04,r					
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
175 12 JMLV3-1-AA J7A100118-2-SAMP 12/13/2006 12:43	0.833sa,g	507.51sa,g	50.55g,in	0.083g	THTF0948 12/18/06,pd 10/04/04,r					
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
176 13 JMLV5-1-AA J7A100118-3-SAMP 12/13/2006 13:15	0.833sa,g	510.86sa,g	50.31g,in	0.082g	THTF0949 12/18/06,pd 10/04/04,r					
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
177 14 JMLV8-1-AA J7A100118-4-SAMP 12/13/2006 13:18	0.833sa,g	504.92sa,g	50.19g,in	0.0828g	THTF0950 12/18/06,pd 10/04/04,r					
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:

STL RICHLAND

1/15/2007 12:30:39 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922

Pipet #: _____

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011219 FILTER pCi/sampl PM, Quote: SA , 63174

Sep2 DT/Tm Tech:

SEQ Batch, Test: None All Tests: 7011219 9NS1, 7011221 BAS7, 7011225 BXTE, 7011229 BXTF,

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:
113 **1 JMK81-1-AA** J7A090287-1-SAMP 12/05/2006 12:25	0.833sa,g	531.15sa,g	50.25g,in	0.0788g	THTF0937 12/18/06,pd 10/04/04,r	500				
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
114 **2 JMLA1-1-AA** J7A090287-2-SAMP 12/05/2006 12:10	0.833sa,g	502.71sa,g	50.08g,in	0.083g	THTF0938 12/18/06,pd 10/04/04,r					
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
115 **3 JMLA4-1-AA** J7A090287-3-SAMP 12/05/2006 12:45	0.833sa,g	516.54sa,g	50.32g,in	0.0811g	THTF0939 12/18/06,pd 10/04/04,r					
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
116 **4 JMLA7-1-AA** J7A090287-4-SAMP 12/05/2006 12:30	0.833sa,g	519.32sa,g	50.12g,in	0.0804g	THTF0940 12/18/06,pd 10/04/04,r	1/15/07 800				
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
117 **5 JMLA8-1-AA** J7A090287-5-SAMP 12/05/2006 12:50	0.833sa,g	500.78sa,g	50.17g,in	0.0835g	THTF0941 12/18/06,pd 10/04/04,r					
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
118 **6 JMLT2-1-AA** J7A100115-1-SAMP 12/11/2006 11:40	0.833sa,g	524.49sa,g	50.25g,in	0.0798g	THTF0942 12/18/06,pd 10/04/04,r					
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
119 **7 JMLT6-1-AA** J7A100115-2-SAMP 12/11/2006 12:00	0.833sa,g	532.31sa,g	50.10g,in	0.0784g	THTF0943 12/18/06,pd 10/04/04,r					
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:

STL Richland Richland Wa.

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

Page 1

ISV - Insufficient Volume for Analysis

WO Cnt: 7

Prep_SamplePrep v4.8.26

STL RICHLAND

1/15/2007 12:30:41 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922
Pipet #: _____

AnalyDueDate: 02/05/2007

Batch: 7011219 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: None

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

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
15 JMLV9-1-AA J7A100118-5-SAMP 12/13/2006 13:21	0.833sa,g	511.81sa,g	50.14g,in	0.0816g	THTF0951 12/18/06,pd 10/04/04,r	500				
		AmtRec: FILTER		#Containers: 1				Scr:	Alpha:	Beta:
16 JMN8F-1-AA-B J7A110000-219-BLK 12/05/2006 12:25			50.31g,in	50.31g	THTF0952 12/18/06,pd 10/04/04,r	1/15/07 800				
		AmtRec:		#Containers: 1				Scr:	Alpha:	Beta:
17 JMN8F-1-AC-C J7A110000-219-LCS 12/05/2006 12:25			50.04g,in	50.04g	THTE0183 11/28/06,pd 10/04/04,r					
		AmtRec:		#Containers: 1				Scr:	Alpha:	Beta:

Comments:

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

JMK811AA-SAMP Constituent List:

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

JMN8F1AA-BLK:

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

JMN8F1AC-LCS:

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

JMK811AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JMN8F1AA-BLK:

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #: **10-09333**
NCM Initiated By: Pam Anderson
Date Opened: 01/23/2007
Date Closed:

Classification: **Deficiency**
Status: **GLREVIEW**
Production Area: Environmental - Prep
Tests: Thlso by ALP
Lot #'s (Sample #'s): J7A090287 (1,2,3,4,5), J7A100115 (1,2,3,4,5), J7A100118 (1,2,3,4,5), J7A110000 (219),
QC Batches: 7011219

Nonconformance: Technician Error
Subcategory: Laboratory error: prep error

Problem Description / Root Cause

Name	Date	Description
Pam Anderson	01/23/2007	This Th in filter batch has no LCS in it. A tracer was added to the LCS sample instead of a spike. The process has been shown to be in control. The data will be accepted without the LCS.

Corrective Action

Name	Date	Corrective Action
Pam Anderson	01/23/2007	Note in 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: 1/23/2007

1/23/2007 3:32:08 PM

ICOC Fraction Transfer/Status Report

ByDate: 1/23/2006, 1/28/2007, Batch: '7011219', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
7011219						
AC		**CalcC**	**WoodT**	1/15/2007 3:28:33 PM		
SC			wagarr	IsBatched	1/11/2007 11:25:28 AM	ICOC_RADCALC v4.8.26
SC			WoodT	Prep1C	1/15/2007 3:28:33 PM	RICH-RC-5016 REVISION 5
SC			HarveyK	Sep1C	1/16/2007 5:39:41 PM	RICH-RC-5087 REV0
SC			FABREM	Sep2C	1/17/2007 4:14:19 PM	RICH-RC-5039 REVISION 5
SC			FABREM	Sep2C	1/17/2007 4:14:19 PM	RICH-RC-5039 REVISION 5
SC			DAWKINSO	InCnt1	1/17/2007 4:28:31 PM	RICH-RD-0008 REVISION 4
SC			BlackCL	CalcC	1/19/2007 5:27:44 AM	RICH-RD-0008 REVISION 4
AC			**HarveyK**	1/16/2007 5:39:41 PM		
AC			**FABREM**	1/17/2007 4:14:19 PM		
AC			**DAWKINSO**	1/17/2007 4:28:31 PM		
AC			**BlackCL**	1/19/2007 5:27:44		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 5

ICOCFractions v4.8.26

1/23/2007 3:32:07 PM

Rpt DB Transfer log (Batch Results)

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Matrix / Cnt Uncert	Received Date / Tot Uncert	Mda	Sample Date / Units	Expected	Yield	Volumes
33442	**9JMK8110**			**J7A0902871**	P-0812	FILTER	1/8/2007 10:00:00		12/5/2006 12:25:00 PM			
TH-228	9NS1	0		1/17/2007 10:03:53 PM	**3.9481E-06**	8.376E-02	8.376E-02	4.25E-01	PCI/SA	0.953	1.0E+0	7.881E-2
TH-230	9NS1	0		1/17/2007 10:03:53 PM	**3.0258E-01**	1.086E-01	1.116E-01	2.269E-01	PCI/SA	0.953	1.0E+0	7.881E-2
TH-232	9NS1	0		1/17/2007 10:03:53 PM	**-3.7821E-02**	4.632E-02	4.643E-02	2.784E-01	PCI/SA	0.953	1.0E+0	7.881E-2
33442	**9JMLA110**			**J7A0902872**	P-0813	FILTER	1/8/2007 10:00:00		12/5/2006 12:10:00 PM			
TH-228	9NS1	0		1/17/2007 10:04:06 PM	**7.7868E-02**	1.828E-01	1.829E-01	8.388E-01	PCI/SA	0.438	1.0E+0	3.298E-2
TH-230	9NS1	0		1/17/2007 10:04:06 PM	**2.2391E-01**	1.346E-01	1.362E-01	4.477E-01	PCI/SA	0.438	1.0E+0	3.298E-2
TH-232	9NS1	0		1/17/2007 10:04:06 PM	**0.0E+00**	0.0E+00	8.345E-02	4.477E-01	PCI/SA	0.438	1.0E+0	3.298E-2
33442	**9JMLA410**			**J7A0902873**	P-0814	FILTER	1/8/2007 10:00:00		12/5/2006 12:45:00 PM			
TH-228	9NS1	0		1/17/2007 10:04:25 PM	**1.8576E-01**	1.273E-01	1.283E-01	4.461E-01	PCI/SA	0.833	1.0E+0	3.115E-2
TH-230	9NS1	0		1/17/2007 10:04:25 PM	**1.271E-01**	9.165E-02	9.234E-02	3.05E-01	PCI/SA	0.833	1.0E+0	3.115E-2
TH-232	9NS1	0		1/17/2007 10:04:25 PM	**-2.5423E-02**	5.684E-02	5.689E-02	3.05E-01	PCI/SA	0.833	1.0E+0	3.115E-2
33442	**9JMLA710**			**J7A0902874**	P-0815	FILTER	1/8/2007 10:00:00		12/5/2006 12:30:00 PM			
TH-228	9NS1	0		1/17/2007 10:04:10 PM	**1.636E-01**	8.016E-02	8.133E-02	2.01E-01	PCI/SA	0.996	1.0E+0	3.039E-2
TH-230	9NS1	0		1/17/2007 10:04:10 PM	**9.5387E-02**	5.94E-02	5.994E-02	1.632E-01	PCI/SA	0.996	1.0E+0	3.039E-2
TH-232	9NS1	0		1/17/2007 10:04:10 PM	**2.044E-02**	3.54E-02	3.544E-02	1.925E-01	PCI/SA	0.996	1.0E+0	3.039E-2
33442	**9JMLA810**			**J7A0902875**	000580	FILTER	1/8/2007 10:00:00		12/5/2006 12:50:00 PM			
TH-228	9NS1	0		1/17/2007 10:04:38 PM	**1.1513E-01**	7.339E-02	7.403E-02	2.472E-01	PCI/SA	0.893	1.0E+0	3.345E-2
TH-230	9NS1	0		1/17/2007 10:04:38 PM	**3.6534E-01**	1.147E-01	1.188E-01	1.948E-01	PCI/SA	0.893	1.0E+0	3.345E-2
TH-232	9NS1	0		1/17/2007 10:04:38 PM	**2.757E-02**	3.515E-02	3.523E-02	1.651E-01	PCI/SA	0.893	1.0E+0	3.345E-2
33443	**9JMLT210**			**J7A1001151**	P-0816	FILTER	1/8/2007 10:00:00		12/11/2006 11:40:00 AM			
TH-228	9NS1	0		1/17/2007 10:04:53 PM	**6.9525E-02**	8.978E-02	8.998E-02	3.897E-01	PCI/SA	1.034	1.0E+0	7.981E-2
TH-230	9NS1	0		1/17/2007 10:04:53 PM	**1.7867E-01**	9.209E-02	9.337E-02	2.679E-01	PCI/SA	1.034	1.0E+0	7.981E-2
TH-232	9NS1	0		1/17/2007 10:04:53 PM	**4.4668E-02**	4.994E-02	5.009E-02	2.679E-01	PCI/SA	1.034	1.0E+0	7.981E-2
33443	**9JMLT610**			**J7A1001152**	P-0817	FILTER	1/8/2007 10:00:00		12/11/2006 12:00:00 PM			
TH-228	9NS1	0		1/17/2007 10:05:00 PM	**3.2653E-01**	1.361E-01	1.391E-01	3.264E-01	PCI/SA	0.925	1.0E+0	7.84E-2
TH-230	9NS1	0		1/17/2007 10:05:00 PM	**3.1463E-01**	1.311E-01	1.34E-01	3.145E-01	PCI/SA	0.925	1.0E+0	7.84E-2
TH-232	9NS1	0		1/17/2007 10:05:00 PM	**0.0E+00**	0.0E+00	5.863E-02	3.145E-01	PCI/SA	0.925	1.0E+0	7.84E-2
33443	**9JMLT710**			**J7A1001153**	P-0818	FILTER	1/8/2007 10:00:00		12/11/2006 12:15:00 PM			
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**1.0138E-01**	8.838E-02	8.88E-02	3.408E-01	PCI/SA	1.003	1.0E+0	7.935E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**1.9537E-02**	4.368E-02	4.372E-02	2.344E-01	PCI/SA	1.003	1.0E+0	7.935E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**-1.9536E-02**	4.368E-02	4.372E-02	2.344E-01	PCI/SA	1.003	1.0E+0	7.935E-2
33443	**9JMLT810**			**J7A1001154**	P-0819	FILTER	1/8/2007 10:00:00		12/11/2006 11:45:00 AM			
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**5.0395E-02**	7.968E-02	7.98E-02	3.709E-01	PCI/SA	0.746	1.0E+0	3.314E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**9.7115E-02**	9.084E-02	9.125E-02	3.574E-01	PCI/SA	0.746	1.0E+0	3.314E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**-2.4278E-02**	5.429E-02	5.433E-02	2.912E-01	PCI/SA	0.746	1.0E+0	3.314E-2
33444	**9JMLV310**			**J7A1001182**	P-0821	FILTER	1/8/2007 10:00:00		12/13/2006 12:43:00 PM			
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**2.1713E-01**	9.95E-02	1.013E-01	2.605E-01	PCI/SA	0.883	1.0E+0	3.297E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**1.4675E-01**	8.644E-02	8.737E-02	2.515E-01	PCI/SA	0.883	1.0E+0	3.297E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**1.2578E-01**	7.559E-02	7.637E-02	2.515E-01	PCI/SA	0.883	1.0E+0	3.297E-2
33444	**9JMLV510**			**J7A1001183**	P-0822	FILTER	1/8/2007 10:00:00		12/13/2006 1:15:00 PM			
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**-4.4948E-02**	6.357E-02	6.369E-02	4.174E-01	PCI/SA	0.869	1.0E+0	3.203E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**3.472E-01**	1.247E-01	1.283E-01	2.603E-01	PCI/SA	0.869	1.0E+0	3.203E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**0.0E+00**	0.0E+00	4.852E-02	2.603E-01	PCI/SA	0.869	1.0E+0	3.203E-2
33444	**9JMLV810**			**J7A1001184**	P-0824	FILTER	1/8/2007 10:00:00		12/13/2006 1:18:00 PM			
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**0.0E+00**	0.0E+00	8.769E-02	4.705E-01	PCI/SA	0.55	1.0E+0	3.28E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**1.136E-01**	1.136E-01	1.141E-01	4.542E-01	PCI/SA	0.55	1.0E+0	3.28E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**1.136E-01**	1.136E-01	1.141E-01	4.542E-01	PCI/SA	0.55	1.0E+0	3.28E-2
33444	**9JMLV910**			**J7A1001185**	P-0582	FILTER	1/8/2007 10:00:00		12/13/2006 1:21:00 PM			
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**8.0735E-02**	6.055E-02	6.094E-02	2.421E-01	PCI/SA	0.905	1.0E+0	3.161E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**3.5078E-01**	1.185E-01	1.223E-01	2.338E-01	PCI/SA	0.905	1.0E+0	3.161E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**0.0E+00**	0.0E+00	4.358E-02	2.338E-01	PCI/SA	0.905	1.0E+0	3.161E-2

7011219, **Samples Inserted | Updated | NotUpdated => 16 | 0 | 0,
**Results Inserted | ReTestInserted | Updated | NotInserted => 48 | 0 | 0 | 0.
**Diff RptDb | Qtims => *wo:JMN8F1AA=> , mat:FILTER | Air *wo:JMN8F1AA=> , mat:FILTER | Air *wo:JMN8F1AA=> , mat:FILTER | Air.

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Matrix / Cnt Uncert	Received Date / Tot Uncert	Sample Date / MDA	Units	Expected	Yield	Volumes	
33443	**9JMLVA10**			**J7A1001155**	000581	FILTER	1/8/2007 10:00:00	12/11/2006 12:20:00 PM					
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**2.3414E-01**	1.352E-01	1.369E-01	4.373E-01	PCI/SA		0.864	1.0E+0	3.202E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**2.5068E-01**	1.149E-01	1.171E-01	3.007E-01	PCI/SA		0.864	1.0E+0	3.202E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**1.5041E-01**	9.038E-02	9.143E-02	3.007E-01	PCI/SA		0.864	1.0E+0	3.202E-2
33444	**9JMLVW10**			**J7A1001181**	P-0820	FILTER	1/8/2007 10:00:00	12/13/2006 12:10:00 PM					
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**8.4482E-02**	8.448E-02	8.484E-02	3.378E-01	PCI/SA		0.801	1.0E+0	3.348E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**2.447E-01**	1.246E-01	1.266E-01	3.262E-01	PCI/SA		0.801	1.0E+0	3.348E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**5.4377E-02**	6.079E-02	6.1E-02	3.262E-01	PCI/SA		0.801	1.0E+0	3.348E-2
33442	**JMN8F1AB**			**J7A110000219**	INTRA-LAB BLANK	FILTER	1/8/2007 10:00:00	12/5/2006 12:25:00 PM					
TH-228	9NS1	0	B	1/18/2007 9:42:22 AM	**9.8479E-03**	8.584E-03	8.627E-03	3.31E-02	PCI/SA		0.946	1.0E+0	1.0E+0
TH-230	9NS1	0	B	1/18/2007 9:42:22 AM	**7.5416E-03**	5.656E-03	5.695E-03	2.262E-02	PCI/SA		0.946	1.0E+0	1.0E+0
TH-232	9NS1	0	B	1/18/2007 9:42:22 AM	**0.0E+00**	0.0E+00	4.216E-03	2.262E-02	PCI/SA		0.946	1.0E+0	1.0E+0

7011219, **Samples Inserted | Updated | NotUpdated => 16 | 0 | 0,
**Results Inserted | ReTestInserted | Updated | NotInserted => 48 | 0 | 0 | 0.
**Diff RptDb | Qtims => *wo:JMN8F1AA=> , mat:FILTER | Air *wo:JMN8F1AA=> , mat:FILTER | Air *wo:JMN8F1AA=> , mat:FILTER | Air.

Batch Nbr: 7011219

Alpha Spec, ThIso by ALP , Results Summary Report

1/19/2007 5:30:16 AM

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	JMK811AA	TH-228	3.95E-06	(8.38E-02)	U4	PCI/SA	R	1.59E-01	4.25E-01		95%	
Calc	S1	FILTER	JMK811AA	TH-230	3.03E-01	(1.12E-01)		PCI/SA	R	6.22E-02	2.27E-01		95%	
Calc	S1	FILTER	JMK811AA	TH-232	-3.78E-02	(4.64E-02)	U4	PCI/SA	R	8.80E-02	2.78E-01		95%	
Calc	S1	FILTER	JMLA11AA	TH-228	7.79E-02	(1.83E-01)	U4	PCI/SA	R	3.14E-01	8.39E-01		44%	
Calc	S1	FILTER	JMLA11AA	TH-230	2.24E-01	(1.36E-01)	U4	PCI/SA	R	1.23E-01	4.48E-01		44%	
Calc	S1	FILTER	JMLA11AA	TH-232	0.00E+00	(8.35E-02)	U4	PCI/SA	R	1.23E-01	4.48E-01		44%	
Calc	S1	FILTER	JMLA41AA	TH-228	1.86E-01	(1.28E-01)	U4	PCI/SA	R	1.51E-01	4.46E-01		83%	
Calc	S1	FILTER	JMLA41AA	TH-230	1.27E-01	(9.23E-02)	U4	PCI/SA	R	8.36E-02	3.05E-01		83%	
Calc	S1	FILTER	JMLA41AA	TH-232	-2.54E-02	(5.69E-02)	U4	PCI/SA	R	8.36E-02	3.05E-01		83%	
Calc	S1	FILTER	JMLA71AA	TH-228	1.64E-01	(8.13E-02)		PCI/SA	R	5.23E-02	2.01E-01		100%	
Calc	S1	FILTER	JMLA71AA	TH-230	9.54E-02	(5.99E-02)	U4	PCI/SA	R	3.54E-02	1.63E-01		100%	
Calc	S1	FILTER	JMLA71AA	TH-232	2.04E-02	(3.54E-02)	U4	PCI/SA	R	5.01E-02	1.93E-01		100%	
Calc	S1	FILTER	JMLA81AA	TH-228	1.15E-01	(7.40E-02)	U4	PCI/SA	R	7.49E-02	2.47E-01		89%	
Calc	S1	FILTER	JMLA81AA	TH-230	3.65E-01	(1.19E-01)		PCI/SA	R	5.07E-02	1.95E-01		89%	
Calc	S1	FILTER	JMLA81AA	TH-232	2.76E-02	(3.52E-02)	U4	PCI/SA	R	3.59E-02	1.65E-01		89%	
Calc	S1	FILTER	JMLT21AA	TH-228	6.95E-02	(9.00E-02)	U4	PCI/SA	R	1.32E-01	3.90E-01		103%	
Calc	S1	FILTER	JMLT21AA	TH-230	1.79E-01	(9.34E-02)		PCI/SA	R	7.35E-02	2.68E-01		103%	
Calc	S1	FILTER	JMLT21AA	TH-232	4.47E-02	(5.01E-02)	U4	PCI/SA	R	7.35E-02	2.68E-01		103%	
Calc	S1	FILTER	JMLT61AA	TH-228	3.27E-01	(1.39E-01)		PCI/SA	R	8.95E-02	3.26E-01		93%	
Calc	S1	FILTER	JMLT61AA	TH-230	3.15E-01	(1.34E-01)		PCI/SA	R	8.63E-02	3.15E-01		93%	
Calc	S1	FILTER	JMLT61AA	TH-232	0.00E+00	(5.86E-02)	U4	PCI/SA	R	8.63E-02	3.15E-01		93%	
Calc	S1	FILTER	JMLT71AA	TH-228	1.01E-01	(8.88E-02)	U4	PCI/SA	R	1.16E-01	3.41E-01		100%	
Calc	S1	FILTER	JMLT71AA	TH-230	1.95E-02	(4.37E-02)	U4	PCI/SA	R	6.43E-02	2.34E-01		100%	
Calc	S1	FILTER	JMLT71AA	TH-232	-1.95E-02	(4.37E-02)	U4	PCI/SA	R	6.43E-02	2.34E-01		100%	
Calc	S1	FILTER	JMLT81AA	TH-228	5.04E-02	(7.98E-02)	U4	PCI/SA	R	1.17E-01	3.71E-01		75%	
Calc	S1	FILTER	JMLT81AA	TH-230	9.71E-02	(9.12E-02)	U4	PCI/SA	R	1.13E-01	3.57E-01		75%	
Calc	S1	FILTER	JMLT81AA	TH-232	-2.43E-02	(5.43E-02)	U4	PCI/SA	R	7.99E-02	2.91E-01		75%	
Calc	S1	FILTER	JMLVA1AA	TH-228	2.34E-01	(1.37E-01)		PCI/SA	R	1.48E-01	4.37E-01		86%	
Calc	S1	FILTER	JMLVA1AA	TH-230	2.51E-01	(1.17E-01)		PCI/SA	R	8.25E-02	3.01E-01		86%	
Calc	S1	FILTER	JMLVA1AA	TH-232	1.50E-01	(9.14E-02)		PCI/SA	R	8.25E-02	3.01E-01		86%	
Calc	S1	FILTER	JMLVW1AA	TH-228	8.45E-02	(8.48E-02)	U4	PCI/SA	R	9.26E-02	3.38E-01		80%	
Calc	S1	FILTER	JMLVW1AA	TH-230	2.45E-01	(1.27E-01)		PCI/SA	R	8.94E-02	3.26E-01		80%	
Calc	S1	FILTER	JMLVW1AA	TH-232	5.44E-02	(6.10E-02)	U4	PCI/SA	R	8.94E-02	3.26E-01		80%	
Calc	S1	FILTER	JMLV31AA	TH-228	2.17E-01	(1.01E-01)		PCI/SA	R	7.14E-02	2.60E-01		88%	
Calc	S1	FILTER	JMLV31AA	TH-230	1.47E-01	(8.74E-02)		PCI/SA	R	6.90E-02	2.51E-01		88%	
Calc	S1	FILTER	JMLV31AA	TH-232	1.26E-01	(7.64E-02)		PCI/SA	R	6.90E-02	2.51E-01		88%	
Calc	S1	FILTER	JMLV51AA	TH-228	-4.49E-02	(6.37E-02)	U4	PCI/SA	R	1.48E-01	4.17E-01		87%	

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

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

RecCnt:51
RADCALC v4.8.26
STL Richland

Batch Nbr: 7011219

Alpha Spec, ThIso by ALP , Results

1/19/2007 5:30:16 AM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	S1	FILTER	**JMLV51AA**	TH-230	**3.47E-01**	**(1.28E-01)**		PCI/SA	R	7.14E-02	2.60E-01		87%	
Calc	S1	FILTER	**JMLV51AA**	TH-232	**0.00E+00**	**(4.85E-02)**	**U4**	PCI/SA	R	7.14E-02	2.60E-01		87%	
Calc	S1	FILTER	**JMLV81AA**	TH-228	**0.00E+00**	**(8.77E-02)**	**U4**	PCI/SA	R	1.29E-01	4.70E-01		55%	
Calc	S1	FILTER	**JMLV81AA**	TH-230	**1.14E-01**	**(1.14E-01)**	**U4**	PCI/SA	R	1.25E-01	4.54E-01		55%	
Calc	S1	FILTER	**JMLV81AA**	TH-232	**1.14E-01**	**(1.14E-01)**	**U4**	PCI/SA	R	1.25E-01	4.54E-01		55%	
Calc	S1	FILTER	**JMLV91AA**	TH-228	**8.07E-02**	**(6.09E-02)**	**U4**	PCI/SA	R	6.64E-02	2.42E-01		90%	
Calc	S1	FILTER	**JMLV91AA**	TH-230	**3.51E-01**	**(1.22E-01)**		PCI/SA	R	6.41E-02	2.34E-01		90%	
Calc	S1	FILTER	**JMLV91AA**	TH-232	**0.00E+00**	**(4.36E-02)**	**U4**	PCI/SA	R	6.41E-02	2.34E-01		90%	
Calc	S1	FILTER	**JMN8F1AA**	TH-228	**9.85E-03**	**(8.63E-03)**	**U4**	PCI/SA	R	1.12E-02	3.31E-02	**B**	95%	
Calc	S1	FILTER	**JMN8F1AA**	TH-230	**7.54E-03**	**(5.69E-03)**	**U4**	PCI/SA	R	6.20E-03	2.26E-02	**B**	95%	
Calc	S1	FILTER	**JMN8F1AA**	TH-232	**0.00E+00**	**(4.22E-03)**	**U4**	PCI/SA	R	6.20E-03	2.26E-02	**B**	95%	

NO LCS
tracer vial used

P Anderson
1-23-07

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

Page 2

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

RecCnt:65
RADCALC v4.8.26
STL Richland

1/18/2007 5:15:14 PM

Standard Material Fractions (Vials)

Vial Prep: 1/17/06 to 1/19/07,SMFractionIdentifier Like: THTE0183%, Order by SMIdentifier,ConstituentCode,SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration			Std Wt Used		Prep,Decayed To Date		Prep by	Std Decayed Activity/Concentration		
	Parent Standard:	TH22906A100			Ref: 10/4/2004		2.1430E+01	± 7.070E-01		DPM/G		
THTE0183	TH-229	**1.0109E+01**	**± 3.335E-01**	DPM	0.4718	g	11/28/2006	11/28/2006	Armstron	2.1426E+01	± 7.069E-01	DPM/G
		1.0109E+001	± 1.011E+001	(1)			1.0109E+001 , 1.0109E+001					

STL Richland, SMFractions v4.8.12

Page 1

Record Count: 1

* - Isotope is an Impurity

Batch Nbr: 7011219

Alpha Spec, ThIso by ALP , Calculated Results

1/19/2007 5:30:17 AM

Detailed Report

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
1	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JMK811AA**	**PCI/SA**		12/05/06 12:25	01/17/07 22:03			1	1.00 Sa	
536403,P-0812					,J7A090287-1 v4.8.26		FILTER					THTF0937 Alq		0.078807 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	01/17/07 17:53	TH-228	3	6	ALP113	ED	N	N	3.1726E-01		N	95%	N		1.0000E+00	4.5045E-01	1.0440E+00	
			500.05	1000.1333			Y		(9.518E-03)			6%			(0.000E+00)	12.689255		
1	01/17/07 17:53	TH-229	618	3	ALP113	ED	Y	N	3.1726E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.05	1000.1333			Y		(9.518E-03)						(0.000E+00)	12.689255		
2	01/17/07 17:53	TH-230	8	0	ALP113	ED	N	N	3.1726E-01		N	95%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.05	1000.1333			Y		(9.518E-03)			6%			(0.000E+00)	12.689255		
3	01/17/07 17:53	TH-232	0	2	ALP113	ED	N	N	3.1726E-01		N	95%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.05	1000.1333			Y		(9.518E-03)			6%			(0.000E+00)	12.689255		

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
	01/18/07	TH-228	R	**3.9481E-06**	**U4**	1.99953E-07	6.6161E-07	6.6161E-07	1.00 Sa	95%		0.425022		
				(0.083761)		(4.2422E-03)	(0.014037)	(0.014037)	(0.014142)			0.159102		
	01/18/07	TH-229	R	**22.212048**		1.23288E+00	3.886028	3.886028	1.00 Sa	95%				
				(1.606037)		(4.9744E-02)	(0.195386)	(0.195386)	(0.014142)					
	01/18/07	TH-230	R	**0.302577**		1.59984E-02	0.052936	0.052936	1.00 Sa	95%		0.226856		
				(0.111635)		(5.7440E-03)	(0.019336)	(0.019336)	(0.014142)			0.062216		
	01/18/07	TH-232	R	**-0.037821**	**U4**	-1.99973E-03	-0.006617	-0.006617	1.00 Sa	95%		0.278367		
				(0.046433)		(2.4492E-03)	(0.008116)	(0.008116)	(0.014142)			0.087987		

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	**JMLA11AA**	**PCI/SA**		12/05/06 12:10	01/17/07 22:04			1	1.00 Sa	
536403,P-0813					,J7A090287-2 v4.8.26		FILTER					THTF0938 Alq		0.082984 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	01/17/07 17:54	TH-228	4	6	ALP114	ED	N	N	3.3167E-01		N	44%	N		1.0000E+00	4.5045E-01	1.0440E+00	
			500.15	1000.0666			Y		(9.950E-03)			3%			(0.000E+00)	12.050587		
1	01/17/07 17:54	TH-229	295	1	ALP114	ED	Y	N	3.3167E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.15	1000.0666			Y		(9.950E-03)						(0.000E+00)	12.050587		
2	01/17/07 17:54	TH-230	3	0	ALP114	ED	N	N	3.3167E-01		N	44%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.15	1000.0666			Y		(9.950E-03)			3%			(0.000E+00)	12.050587		
3	01/17/07 17:54	TH-232	0	0	ALP114	ED	N	N	3.3167E-01		N	44%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.15	1000.0666			Y		(9.950E-03)			3%			(0.000E+00)	12.050587		

() - (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: 7011219 — Alpha Spec, ThIso by ALP , Calculated Results — 1/19/2007 5:30:17 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
	01/18/07	TH-228	R	**0.077868**	U4	1.99800E-03	0.01374	0.01374	1.00 Sa	44%		0.838831		
				(0.182905)		(4.6893E-03)	(0.032267)	(0.032267)	(0.014142)			0.314017		
	01/18/07	TH-229	R	**9.636669**		5.88823E-01	1.775302	1.775302	1.00 Sa	44%				
				(0.806506)		(3.4355E-02)	(0.116472)	(0.116472)	(0.014142)					
	01/18/07	TH-230	R	**0.223914**	U4	5.99820E-03	0.04125	0.04125	1.00 Sa	44%		0.447711		
				(0.136223)		(3.6045E-03)	(0.025004)	(0.025004)	(0.014142)			0.122794		
	01/18/07	TH-232	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 Sa	44%		0.447711		
				(0.083452)		(2.2355E-03)	(0.015374)	(0.015374)	(0.014142)			0.122794		

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	**JMLA41AA**	**PCI/SA**		12/05/06 12:45	01/17/07 22:04			1	1.00 Sa	
536403,P-0814					,J7A090287-3 v4.8.26		FILTER					THTF0939 Alq		0.081149 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	01/17/07 17:54	TH-228	5	3	ALP116	ED	N	N	2.6199E-01		N	83%	N		1.0000E+00	4.5045E-01	1.0440E+00	
			500.0833333	1000.05			Y		(7.860E-03)			5%			(0.000E+00)	12.323053		
1	01/17/07 17:54	TH-229	445	2	ALP116	ED	Y	N	2.6199E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0833333	1000.05			Y		(7.860E-03)						(0.000E+00)	12.323053		
2	01/17/07 17:54	TH-230	3	1	ALP116	ED	N	N	2.6199E-01		N	83%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0833333	1000.05			Y		(7.860E-03)			5%			(0.000E+00)	12.323053		
3	01/17/07 17:54	TH-232	0	1	ALP116	ED	N	N	2.6199E-01		N	83%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0833333	1000.05			Y		(7.860E-03)			5%			(0.000E+00)	12.323053		

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
	01/18/07	TH-228	R	**0.185756**	U4	6.99848E-03	0.032054	0.032054	1.00 Sa	83%		0.446124		
				(0.128333)		(4.7951E-03)	(0.022083)	(0.022083)	(0.014142)			0.151234		
	01/18/07	TH-229	R	**18.811679**		8.87852E-01	3.38893	3.38893	1.00 Sa	83%				
				(1.440029)		(4.2207E-02)	(0.190501)	(0.190501)	(0.014142)					
	01/18/07	TH-230	R	**0.127097**	U4	4.99905E-03	0.022897	0.022897	1.00 Sa	83%		0.304951		
				(0.092343)		(3.6050E-03)	(0.016593)	(0.016593)	(0.014142)			0.083637		
	01/18/07	TH-232	R	**-0.025423**	U4	-9.99950E-04	-0.00458	-0.00458	1.00 Sa	83%		0.304951		
				(0.056887)		(2.2357E-03)	(0.010245)	(0.010245)	(0.014142)			0.083637		

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	**JMLA71AA**	**PCI/SA**		12/05/06 12:30	01/17/07 22:04			1	1.00 Sa	
536403,P-0815					,J7A090287-4 v4.8.26		FILTER					THTF0940 Alq		0.080394 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	01/17/07 17:54	TH-228	5	2	ALP117	ED	N	N	3.3025E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0440E+00	
			500	2500.05			Y		(9.908E-03)			6%			(0.000E+00)	12.438814		

() - (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: 7011219

Alpha Spec, ThIso by ALP , Calculated Results

1/19/2007 5:30:17 AM

1	01/17/07 17:54	TH-229	671	2	ALP117	ED	Y	N	3.3025E-01	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00
			500	2500.05			Y		(9.908E-03)					(0.000E+00)	12.438814	
2	01/17/07 17:54	TH-230	3	1	ALP117	ED	N	N	3.3025E-01	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00
			500	2500.05			Y		(9.908E-03)		6%			(0.000E+00)	12.438814	
3	01/17/07 17:54	TH-232	1	2	ALP117	ED	N	N	3.3025E-01	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00
			500	2500.05			Y		(9.908E-03)		6%			(0.000E+00)	12.438814	

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
	01/18/07	TH-228	R	**0.1636**		9.20002E-03	0.027968	0.027968	1.00 Sa	100%		0.200975		
				(0.081333)		(4.5078E-03)	(0.013828)	(0.013828)	(0.014142)			0.052328		
	01/18/07	TH-229	R	**22.754903**		1.34120E+00	4.061154	4.061154	1.00 Sa	100%				
				(1.623793)		(5.1810E-02)	(0.198634)	(0.198634)	(0.014142)					
	01/18/07	TH-230	R	**0.095387**	U4	5.60001E-03	0.017024	0.017024	1.00 Sa	100%		0.163163		
				(0.059937)		(3.4871E-03)	(0.010661)	(0.010661)	(0.014142)			0.035442		
	01/18/07	TH-232	R	**0.02044**	U4	1.20002E-03	0.003648	0.003648	1.00 Sa	100%		0.192507		
				(0.035445)		(2.0785E-03)	(0.006323)	(0.006323)	(0.014142)			0.050123		

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	**JMLA81AA**	**PCI/SA**		12/05/06 12:50	01/17/07 22:04			1	1.00 Sa	
536403,000580					,J7A090287-5 v4.8.26		FILTER					THTF0941 Alq		0.083453 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	01/17/07 17:54	TH-228	4	4	ALP118	ED	N	N	3.5075E-01		N	89%	N		1.0000E+00	4.5045E-01	1.0440E+00	
			500.1833333	2500.0166			Y		(1.052E-02)			5%			(0.000E+00)	11.982788		
1	01/17/07 17:54	TH-229	641	9	ALP118	ED	Y	N	3.5075E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.1833333	2500.0166			Y		(1.052E-02)						(0.000E+00)	11.982788		
2	01/17/07 17:54	TH-230	11	2	ALP118	ED	N	N	3.5075E-01		N	89%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.1833333	2500.0166			Y		(1.052E-02)			5%			(0.000E+00)	11.982788		
3	01/17/07 17:54	TH-232	1	1	ALP118	ED	N	N	3.5075E-01		N	89%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.1833333	2500.0166			Y		(1.052E-02)			5%			(0.000E+00)	11.982788		

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
	01/18/07	TH-228	R	**0.115131**	U4	6.39708E-03	0.020431	0.020431	1.00 Sa	89%		0.247188		
				(0.074033)		(4.0778E-03)	(0.013095)	(0.013095)	(0.014142)			0.074883		
	01/18/07	TH-229	R	**19.665672**		1.27793E+00	3.643379	3.643379	1.00 Sa	89%				
				(1.41398)		(5.0632E-02)	(0.181063)	(0.181063)	(0.014142)					
	01/18/07	TH-230	R	**0.365335**		2.11919E-02	0.067684	0.067684	1.00 Sa	89%		0.194783		
				(0.118817)		(6.6549E-03)	(0.02173)	(0.02173)	(0.014142)			0.05072		
	01/18/07	TH-232	R	**0.02757**	U4	1.59927E-03	0.005108	0.005108	1.00 Sa	89%		0.16509		
				(0.035226)		(2.0389E-03)	(0.006521)	(0.006521)	(0.014142)			0.035865		

() - (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: 7011219 — Alpha Spec, ThIso by ALP , Calculated Results — 1/19/2007 5:30:17 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	JMLT21AA	PCI/SA		12/11/06 11:40	01/17/07 22:04			1	1.00 Sa	
536403,P-0816					,J7A100115-1 v4.8.26		FILTER					THTF0942 Alq		0.079808 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	01/17/07 17:54	TH-228	3	3	ALP119	ED	N	N	2.5259E-01		N	103%	N		1.0000E+00	4.5045E-01	1.0378E+00	
			500.25	1000.3166			Y		(7.578E-03)			6%			(0.000E+00)	12.530146		
1	01/17/07 17:54	TH-229	532	1	ALP119	ED	Y	N	2.5259E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.25	1000.3166			Y		(7.578E-03)						(0.000E+00)	12.530146		
2	01/17/07 17:54	TH-230	4	0	ALP119	ED	N	N	2.5259E-01		N	103%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.25	1000.3166			Y		(7.578E-03)			6%			(0.000E+00)	12.530146		
3	01/17/07 17:54	TH-232	1	0	ALP119	ED	N	N	2.5259E-01		N	103%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.25	1000.3166			Y		(7.578E-03)			6%			(0.000E+00)	12.530146		

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
	01/18/07	TH-228	R	**0.069525**	U4	2.99795E-03	0.011869	0.011869	1.00 Sa	103%		0.389668		
				(0.089977)		(3.8712E-03)	(0.015348)	(0.015348)	(0.014142)			0.132097		
	01/18/07	TH-229	R	**23.741291**		1.06247E+00	4.206313	4.206313	1.00 Sa	103%				
				(1.758158)		(4.6118E-02)	(0.221945)	(0.221945)	(0.014142)					
	01/18/07	TH-230	R	**0.178674**		7.99600E-03	0.031656	0.031656	1.00 Sa	103%		0.267937		
				(0.093374)		(4.1211E-03)	(0.016461)	(0.016461)	(0.014142)			0.073486		
	01/18/07	TH-232	R	**0.044668**	U4	1.99900E-03	0.007914	0.007914	1.00 Sa	103%		0.267937		
				(0.050092)		(2.2350E-03)	(0.008865)	(0.008865)	(0.014142)			0.073486		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
7	Calc	S1	FILTER	*STLE	AlpIsoWoBS	JMLT61AA	PCI/SA		12/11/06 12:00	01/17/07 22:04			1	1.00 Sa	
536403,P-0817					,J7A100115-2 v4.8.26		FILTER					THTF0943 Alq		0.0784 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	01/17/07 17:54	TH-228	6	0	ALP120	ED	N	N	2.3685E-01		N	93%	N		1.0000E+00	4.5045E-01	1.0378E+00	
			500.0333333	1000.2666			Y		(7.106E-03)			6%			(0.000E+00)	12.755042		
1	01/17/07 17:54	TH-229	449	5	ALP120	ED	Y	N	2.3685E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	1000.2666			Y		(7.106E-03)						(0.000E+00)	12.755042		
2	01/17/07 17:54	TH-230	6	0	ALP120	ED	N	N	2.3685E-01		N	93%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	1000.2666			Y		(7.106E-03)			6%			(0.000E+00)	12.755042		
3	01/17/07 17:54	TH-232	0	0	ALP120	ED	N	N	2.3685E-01		N	93%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	1000.2666			Y		(7.106E-03)			6%			(0.000E+00)	12.755042		

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

RecCnt:7 — RADCALC v4.8.26 — STL Richland

Batch Nbr: 7011219 — Alpha Spec, ThIso by ALP , Calculated Results — 1/19/2007 5:30:18 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
	01/18/07	TH-228	R	**0.326525**		1.19992E-02	0.054761	0.054761	1.00 Sa	93%		0.326401		
				(0.139092)		(4.9996E-03)	(0.023153)	(0.023153)	(0.014142)			0.089513		
	01/18/07	TH-229	R	**21.660562**		8.92941E-01	3.769999	3.769999	1.00 Sa	93%				
				(1.65791)		(4.2435E-02)	(0.211874)	(0.211874)	(0.014142)					
	01/18/07	TH-230	R	**0.314628**		1.19992E-02	0.054761	0.054761	1.00 Sa	93%		0.314508		
				(0.134024)		(4.9996E-03)	(0.023153)	(0.023153)	(0.014142)			0.086252		
	01/18/07	TH-232	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 Sa	93%		0.314508		
				(0.058625)		(2.2358E-03)	(0.010204)	(0.010204)	(0.014142)			0.086252		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JMLT71AA**	**PCI/SA**		12/11/06 12:15	01/17/07 22:06			1	1.00 Sa	
536403,P-0818					,J7A100115-3 v4.8.26		FILTER					THTF0944 Alq		0.079354 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	01/17/07 17:57	TH-228	4	3	ALP171	ED	N	N	2.9087E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0378E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	12.601699		
1	01/17/07 17:57	TH-229	593	2	ALP171	ED	Y	N	2.9087E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)						(0.000E+00)	12.601699		
2	01/17/07 17:57	TH-230	1	1	ALP171	ED	N	N	2.9087E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	12.601699		
3	01/17/07 17:57	TH-232	0	1	ALP171	ED	N	N	2.9087E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.726E-03)			6%			(0.000E+00)	12.601699		

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
	01/18/07	TH-228	R	**0.101376**	U4	5.00539E-03	0.017209	0.017209	1.00 Sa	100%		0.340824		
				(0.088799)		(4.3635E-03)	(0.015047)	(0.015047)	(0.014142)			0.115535		
	01/18/07	TH-229	R	**23.131127**		1.18526E+00	4.074939	4.074939	1.00 Sa	100%				
				(1.682934)		(4.8776E-02)	(0.207521)	(0.207521)	(0.014142)					
	01/18/07	TH-230	R	**0.019537**	U4	1.00108E-03	0.003442	0.003442	1.00 Sa	100%		0.23436		
				(0.043716)		(2.2384E-03)	(0.007699)	(0.007699)	(0.014142)			0.064274		
	01/18/07	TH-232	R	**-0.019536**	U4	-1.00105E-03	-0.003442	-0.003442	1.00 Sa	100%		0.23436		
				(0.043716)		(2.2384E-03)	(0.007699)	(0.007699)	(0.014142)			0.064274		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
9	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JMLT81AA**	**PCI/SA**		12/11/06 11:45	01/17/07 22:06			1	1.00 Sa	
536403,P-0819					,J7A100115-4 v4.8.26		FILTER					THTF0945 Alq		0.083144 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	01/17/07 17:57	TH-228	2	2	ALP172	ED	N	N	2.9949E-01		N	75%	N		1.0000E+00	4.5045E-01	1.0378E+00	
			499.4666666	998.95			Y		(8.985E-03)			5%			(0.000E+00)	12.027277		

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

RecCnt:9 RADCALC v4.8.26 STL Richland

Batch Nbr: 7011219 Alpha Spec, ThIso by ALP , Calculated Results 1/19/2007 5:30:18 AM

1	01/17/07 17:57	TH-229	454	2	ALP172	ED	Y	N	2.9949E-01	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(8.985E-03)				(0.000E+00)	12.027277	
2	01/17/07 17:57	TH-230	3	2	ALP172	ED	N	N	2.9949E-01	N	75%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(8.985E-03)		5%		(0.000E+00)	12.027277	
3	01/17/07 17:57	TH-232	0	1	ALP172	ED	N	N	2.9949E-01	N	75%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(8.985E-03)		5%		(0.000E+00)	12.027277	

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
	01/18/07	TH-228	R	**0.050395**	U4	2.00217E-03	0.008963	0.008963	1.00 Sa	75%		0.370897		
				(0.079804)		(3.1656E-03)	(0.014186)	(0.014186)	(0.014142)			0.117235		
	01/18/07	TH-229	R	**16.406729**		9.06967E-01	3.028364	3.028364	1.00 Sa	75%				
				(1.251094)		(4.2684E-02)	(0.169015)	(0.169015)	(0.014142)					
	01/18/07	TH-230	R	**0.097115**	U4	4.00430E-03	0.017926	0.017926	1.00 Sa	75%		0.357379		
				(0.091246)		(3.7456E-03)	(0.016816)	(0.016816)	(0.014142)			0.112962		
	01/18/07	TH-232	R	**-0.024278**	U4	-1.00105E-03	-0.004481	-0.004481	1.00 Sa	75%		0.291247		
				(0.054331)		(2.2384E-03)	(0.010026)	(0.010026)	(0.014142)			0.079876		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JMLVA1AA**	**PCI/SA**		12/11/06 12:20	01/17/07 22:06			1	1.00 Sa	
536403,000581					,J7A100115-5 v4.8.26		FILTER					THTF0946 Alq		0.082018 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	01/17/07 17:57	TH-228	6	3	ALP173	ED	N	N	2.5374E-01		N	86%	N		1.0000E+00	4.5045E-01	1.0378E+00	
			499.4666666	998.95			Y		(7.612E-03)			6%			(0.000E+00)	12.192407		
1	01/17/07 17:57	TH-229	447	4	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)	12.192407		
2	01/17/07 17:57	TH-230	5	0	ALP173	ED	N	N	2.5374E-01		N	86%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)			6%			(0.000E+00)	12.192407		
3	01/17/07 17:57	TH-232	3	0	ALP173	ED	N	N	2.5374E-01		N	86%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.612E-03)			6%			(0.000E+00)	12.192407		

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
	01/18/07	TH-228	R	**0.234138**		9.00966E-03	0.041079	0.041079	1.00 Sa	86%		0.437316		
				(0.136868)		(5.2017E-03)	(0.023899)	(0.023899)	(0.027064)			0.148245		
	01/18/07	TH-229	R	**19.28395**		8.90950E-01	3.511236	3.511236	1.00 Sa	86%				
				(1.54209)		(4.2377E-02)	(0.197453)	(0.197453)	(0.027064)					
	01/18/07	TH-230	R	**0.250676**		1.00107E-02	0.045643	0.045643	1.00 Sa	86%		0.300712		
				(0.117145)		(4.5875E-03)	(0.021171)	(0.021171)	(0.027064)			0.082472		
	01/18/07	TH-232	R	**0.150406**		6.00641E-03	0.027386	0.027386	1.00 Sa	86%		0.300712		
				(0.091426)		(3.6094E-03)	(0.016574)	(0.016574)	(0.027064)			0.082472		

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

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

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

RecCnt:11 RADCALC v4.8.26 STL Richland

Batch Nbr: 7011219 — Alpha Spec, ThIso by ALP , Calculated Results — 1/19/2007 5:30:18 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
11	Calc	S1	FILTER	*STLE	AlpIsoWoBS	JMLVW1AA	PCI/SA		12/13/06 12:10	01/17/07 22:06			1	1.00 Sa	
536403,P-0820					,J7A100118-1 v4.8.26		FILTER					THTF0947 Alq		0.083484 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	01/17/07 17:57	TH-228	2	1	ALP174	ED	N	N	2.4814E-01		N	80%	N		1.0000E+00	4.5045E-01	1.0358E+00	
			499.4666666	998.95			Y		(7.444E-03)			5%			(0.000E+00)	11.978358		
1	01/17/07 17:57	TH-229	405	0	ALP174	ED	Y	N	2.4814E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.444E-03)						(0.000E+00)	11.978358		
2	01/17/07 17:57	TH-230	5	1	ALP174	ED	N	N	2.4814E-01		N	80%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.444E-03)			5%			(0.000E+00)	11.978358		
3	01/17/07 17:57	TH-232	1	0	ALP174	ED	N	N	2.4814E-01		N	80%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(7.444E-03)			5%			(0.000E+00)	11.978358		

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
	01/18/07	TH-228	R	**0.084482**	U4	3.00322E-03	0.015117	0.015117	1.00 Sa	80%		0.337813		
				(0.084843)		(3.0032E-03)	(0.015157)	(0.015157)	(0.027064)			0.092647		
	01/18/07	TH-229	R	**17.631831**		8.10865E-01	3.267786	3.267786	1.00 Sa	80%				
				(1.432756)		(4.0305E-02)	(0.189719)	(0.189719)	(0.027064)					
	01/18/07	TH-230	R	**0.244695**		9.00963E-03	0.04535	0.04535	1.00 Sa	80%		0.326152		
				(0.12664)		(4.5875E-03)	(0.023329)	(0.023329)	(0.027064)			0.089449		
	01/18/07	TH-232	R	**0.054377**	U4	2.00214E-03	0.010078	0.010078	1.00 Sa	80%		0.326152		
				(0.061003)		(2.2384E-03)	(0.011291)	(0.011291)	(0.027064)			0.089449		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
12	Calc	S1	FILTER	*STLE	AlpIsoWoBS	JMLV31AA	PCI/SA		12/13/06 12:43	01/17/07 22:06			1	1.00 Sa	
536403,P-0821					,J7A100118-2 v4.8.26		FILTER					THTF0948 Alq		0.08297 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	01/17/07 17:57	TH-228	5	0	ALP175	ED	N	N	2.9360E-01		N	88%	N		1.0000E+00	4.5045E-01	1.0357E+00	
			499.4666666	998.95			Y		(8.808E-03)			6%			(0.000E+00)	12.052536		
1	01/17/07 17:57	TH-229	528	4	ALP175	ED	Y	N	2.9360E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.808E-03)						(0.000E+00)	12.052536		
2	01/17/07 17:57	TH-230	4	1	ALP175	ED	N	N	2.9360E-01		N	88%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.808E-03)			6%			(0.000E+00)	12.052536		
3	01/17/07 17:57	TH-232	3	0	ALP175	ED	N	N	2.9360E-01		N	88%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.808E-03)			6%			(0.000E+00)	12.052536		

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

RecCnt:12 RADCALC v4.8.26 STL Richland

Batch Nbr: 7011219 Alpha Spec, ThIso by ALP , Calculated Results 1/19/2007 5:30:18 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
	01/18/07	TH-228	R	**0.217131**		1.00107E-02	0.038615	0.038615	1.00 Sa	88%		0.260471		
				(0.101263)		(4.5875E-03)	(0.017897)	(0.017897)	(0.014142)			0.071436		
	01/18/07	TH-229	R	**19.473721**		1.05312E+00	3.586938	3.586938	1.00 Sa	88%				
				(1.445782)		(4.6049E-02)	(0.190209)	(0.190209)	(0.014142)					
	01/18/07	TH-230	R	**0.146749**		7.00749E-03	0.02703	0.02703	1.00 Sa	88%		0.251486		
				(0.087367)		(4.1275E-03)	(0.016031)	(0.016031)	(0.014142)			0.068971		
	01/18/07	TH-232	R	**0.125785**		6.00641E-03	0.023169	0.023169	1.00 Sa	88%		0.251486		
				(0.076368)		(3.6094E-03)	(0.014015)	(0.014015)	(0.014142)			0.068971		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
13	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JMLV51AA**	**PCI/SA**		12/13/06 13:15	01/17/07 22:06			1	1.00 Sa	
536403,P-0822					,J7A100118-3 v4.8.26		FILTER					THTF0949 Alq		0.082035 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	01/17/07 17:57	TH-228	1	4	ALP176	ED	N	N	2.9146E-01		N	87%	N		1.0000E+00	4.5045E-01	1.0357E+00	
			499.4666666	998.95			Y		(8.744E-03)			5%			(0.000E+00)	12.189968		
1	01/17/07 17:57	TH-229	516	3	ALP176	ED	Y	N	2.9146E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.744E-03)						(0.000E+00)	12.189968		
2	01/17/07 17:57	TH-230	8	0	ALP176	ED	N	N	2.9146E-01		N	87%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.744E-03)			5%			(0.000E+00)	12.189968		
3	01/17/07 17:57	TH-232	0	0	ALP176	ED	N	N	2.9146E-01		N	87%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(8.744E-03)			5%			(0.000E+00)	12.189968		

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
	01/18/07	TH-228	R	**-0.044948**	U4	-2.00207E-03	-0.007904	-0.007904	1.00 Sa	87%		0.417403		
				(0.063687)		(2.8314E-03)	(0.011191)	(0.011191)	(0.014142)			0.147883		
	01/18/07	TH-229	R	**19.40657**		1.03010E+00	3.534269	3.534269	1.00 Sa	87%				
				(1.446035)		(4.5513E-02)	(0.188749)	(0.188749)	(0.014142)					
	01/18/07	TH-230	R	**0.347199**		1.60171E-02	0.063231	0.063231	1.00 Sa	87%		0.260313		
				(0.128251)		(5.7507E-03)	(0.023124)	(0.023124)	(0.014142)			0.071392		
	01/18/07	TH-232	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 Sa	87%		0.260313		
				(0.048522)		(2.2384E-03)	(0.008837)	(0.008837)	(0.014142)			0.071392		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
14	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JMLV81AA**	**PCI/SA**		12/13/06 13:18	01/17/07 22:06			1	1.00 Sa	
536403,P-0824					,J7A100118-4 v4.8.26		FILTER					THTF0950 Alq		0.082802 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	01/17/07 17:57	TH-228	0	0	ALP177	ED	N	N	2.6130E-01		N	55%	N		1.0000E+00	4.5045E-01	1.0357E+00	
			499.4666666	998.95			Y		(7.839E-03)			4%			(0.000E+00)	12.077036		

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

RecCnt:14 RADCALC v4.8.26

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

STL Richland

Batch Nbr: 7011219 Alpha Spec, ThIso by ALP , Calculated Results 1/19/2007 5:30:18 AM

1	01/17/07 17:57	TH-229	292	1	ALP177	ED	Y	N	2.6130E-01	N	100%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(7.839E-03)				(0.000E+00)	12.077036	
2	01/17/07 17:57	TH-230	2	1	ALP177	ED	N	N	2.6130E-01	N	55%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(7.839E-03)		4%		(0.000E+00)	12.077036	
3	01/17/07 17:57	TH-232	2	1	ALP177	ED	N	N	2.6130E-01	N	55%	N	1.0000E+00	4.5045E-01	1.0000E+00
			499.4666666	998.95			Y		(7.839E-03)		4%		(0.000E+00)	12.077036	

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
	01/18/07	TH-228	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 Sa	55%		0.470457		
				(0.087693)		(2.2384E-03)	(0.015564)	(0.015564)	(0.014142)			0.129025		
	01/18/07	TH-229	R	**12.150594**		5.83623E-01	2.233523	2.233523	1.00 Sa	55%				
				(1.019446)		(3.4227E-02)	(0.147131)	(0.147131)	(0.014142)					
	01/18/07	TH-230	R	**0.113598**	U4	3.00322E-03	0.020882	0.020882	1.00 Sa	55%		0.45424		
				(0.114109)		(3.0032E-03)	(0.020947)	(0.020947)	(0.014142)			0.124577		
	01/18/07	TH-232	R	**0.113598**	U4	3.00322E-03	0.020882	0.020882	1.00 Sa	55%		0.454239		
				(0.114109)		(3.0032E-03)	(0.020947)	(0.020947)	(0.014142)			0.124577		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
15	Calc	S1	FILTER	*STLE	AlpIsoWoBS	**JMLV91AA**	**PCI/SA**		12/13/06 13:21	01/17/07 22:06			1	1.00 Sa	
536403,P-0582					,J7A100118-5 v4.8.26		FILTER					THTF0951 Alq		0.081606 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	01/17/07 17:57	TH-228	2	0	ALP178	ED	N	N	3.1338E-01		N	90%	N		1.0000E+00	4.5045E-01	1.0357E+00	
			499.4666666	998.95			Y		(9.401E-03)			6%			(0.000E+00)	12.254044		
1	01/17/07 17:57	TH-229	575	0	ALP178	ED	Y	N	3.1338E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(9.401E-03)						(0.000E+00)	12.254044		
2	01/17/07 17:57	TH-230	9	0	ALP178	ED	N	N	3.1338E-01		N	90%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(9.401E-03)			6%			(0.000E+00)	12.254044		
3	01/17/07 17:57	TH-232	0	0	ALP178	ED	N	N	3.1338E-01		N	90%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			499.4666666	998.95			Y		(9.401E-03)			6%			(0.000E+00)	12.254044		

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
	01/18/07	TH-228	R	**0.080735**	U4	4.00427E-03	0.014122	0.014122	1.00 Sa	90%		0.242124		
				(0.060944)		(3.0032E-03)	(0.010635)	(0.010635)	(0.014142)			0.066404		
	01/18/07	TH-229	R	**20.277489**		1.15123E+00	3.673568	3.673568	1.00 Sa	90%				
				(1.481768)		(4.8020E-02)	(0.188747)	(0.188747)	(0.014142)					
	01/18/07	TH-230	R	**0.350783**		1.80192E-02	0.06355	0.06355	1.00 Sa	90%		0.233778		
				(0.122285)		(6.0893E-03)	(0.021906)	(0.021906)	(0.014142)			0.064115		
	01/18/07	TH-232	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 Sa	90%		0.233778		
				(0.043576)		(2.2384E-03)	(0.007894)	(0.007894)	(0.014142)			0.064115		

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

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

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

RecCnt:16 RADCALC v4.8.26 STL Richland

Batch Nbr: 7011219 — Alpha Spec, Thlso by ALP , Calculated Results — 1/19/2007 5:30:19 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
16	Calc	S1	FILTER	*STLE	AlpIsoWoBS	JMN8F1AA	PCI/SA	B	12/05/06 12:25	01/18/07 09:42			1	1.00 Sa	
0,INTRA-LAB BLANK					,J7A110000-219		FILTER					THTF0952 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	01/18/07 05:32	TH-228	4	3	ALP119	ED	N	N	2.5259E-01		N	95%	N		1.0000E+00	4.5045E-01	1.0445E+00	
			500.0333333	1000.3166			Y		(7.578E-03)			6%			(0.000E+00)	1.00		
1	01/18/07 05:32	TH-229	485	1	ALP119	ED	Y	N	2.5259E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	1000.3166			Y		(7.578E-03)						(0.000E+00)	1.00		
2	01/18/07 05:32	TH-230	2	0	ALP119	ED	N	N	2.5259E-01		N	95%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	1000.3166			Y		(7.578E-03)			6%			(0.000E+00)	1.00		
3	01/18/07 05:32	TH-232	0	0	ALP119	ED	N	N	2.5259E-01		N	95%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.0333333	1000.3166			Y		(7.578E-03)			6%			(0.000E+00)	1.00		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	01/19/07	TH-228	R	**0.009848**	U4	5.00042E-03	0.020931	0.020931	1.00 Sa	95%		0.033101		
				(0.008627)		(4.3584E-03)	(0.018303)	(0.018303)	(0.017321)			0.01122		
	01/19/07	TH-229	R	**1.727934**		9.68936E-01	3.836016	3.836016	1.00 Sa	95%				
				(0.131223)		(4.4054E-02)	(0.208955)	(0.208955)	(0.017321)					
	01/19/07	TH-230	R	**0.007542**	U4	3.99973E-03	0.016742	0.016742	1.00 Sa	95%		0.022616		
				(0.005695)		(2.9997E-03)	(0.012612)	(0.012612)	(0.017321)			0.006202		
	01/19/07	TH-232	R	**0.00E00**	U4	0.00000E+00	0.00E00	0.00E00	1.00 Sa	95%		0.022616		
				(0.004216)		(2.2358E-03)	(0.009359)	(0.009359)	(0.017321)			0.006202		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
17	Err	S1	FILTER	*STLE	AlpIsoWoBS	JMN8F1AC	PCI/SA	S	12/05/06 12:25	01/18/07 09:42		THTE0183	1	1.00 Sa	
0,INTRA-LAB CHECK					,J7A110000-219		FILTER					THTE0183 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	01/18/07 05:32	TH-229	1045	6	ALP120	ED	Y	N	2.3685E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			500.2	1000.2666			Y		(7.106E-03)						(0.000E+00)	1.00		
2	01/18/07 05:32	TH-230	5	0	ALP120	ED	N	N			N		N					
			500.2	1000.2666			Y									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
	01/19/07	TH-229	R	**3.961765**		2.08317E+00	8.795127	8.795127	1.00 SA	87%				
				(0.270558)		(6.4673E-02)	(0.379705)	(0.379705)	(0.017321)					

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

RecCnt:17 RADCALC v4.8.26 STL Richland

SEVERN TRENT STL

THORIUM ISOTOPIC COUNTING REQUEST

1/18
0217

C.R. Technician: OP
Date Counted: 1/17/07
C.R. Analyst: CO
Date Analyzed: 1/18/07

Counting Time
Sample: 500 Minutes
Background: See Alpha Analysis Report
BRC 12/5/06

SOP's
Operating: RICHRD008
Review: RICHRD0016
7011219

WorkOrder #	Th-229 (4845 KeV) Tracer from Th-234 Beta Count (7)				TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV) (6)	Th-230 (4688 KeV) (8)	Th-232 (4010 KeV) (9)		
JMK811AA		10		0	See Alpha Analysis Report for ROI Information			113	
JMLA11AA		10		0	See Alpha Analysis Report for ROI Information			114	
JMLA41AA		10		0	See Alpha Analysis Report for ROI Information			116	
JMLA71AA		10		0	See Alpha Analysis Report for ROI Information			117	
JMLA81AA		10		0	See Alpha Analysis Report for ROI Information			118	
JMLT21AA		10		0	See Alpha Analysis Report for ROI Information			119	
JMLT61AA		10		0	See Alpha Analysis Report for ROI Information			120	
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				

Comments:

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

Approved by: S

Date: 1/18/07

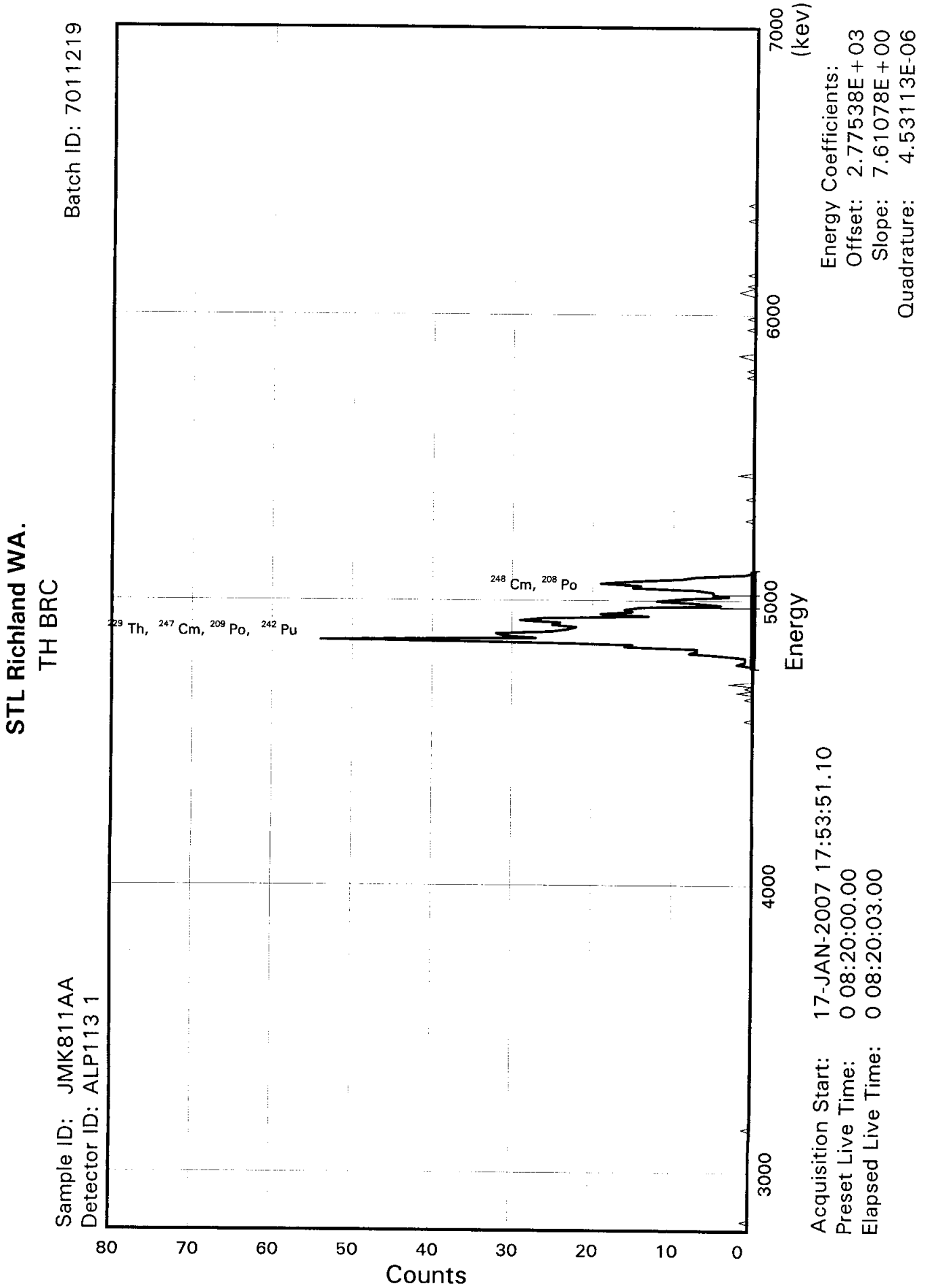
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMK811AA

Detector: ALP113 1
Report Date: 18-Jan-07 05:22 AM
Acquire Date: 17-JAN-2007 17:53:51.10
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	3	6	0.000	5423.2	152.3	333	353
TH-229	618	3	1.233	4845.3	373.1	257	306
TH-230	8	0	0.016	4687.7	152.3	236	256
TH-232	0	2	-0.002	4013.0	152.2	148	168

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMK811AA
Detector ID: ALP113 1
229 Th, 247 Cm, 209 Po, 242 Pu
248 Cm, 208 Po
Counts
80
70
60
50
40
30
20
10
0
3000
4000
5000
6000
7000
(kev)
Energy
Energy Coefficients:
Offset: 2.77538E+03
Slope: 7.61078E+00
Quadrature: 4.53113E-06
Acquisition Start: 17-JAN-2007 17:53:51.10
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:03.00

SAMPLE IDENTIITY: JMK811AA

TITLE : TH BRC

DETECTOR : ALP113 1
CONFIGURATION NAME : RDND06$DKA100:[ALP113.SAMPLE]JMK811AA_170171
753.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:11

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:53:51 CALIB DATE : 15-DEC-2006 00:28:22

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

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

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

Sample Identity: JMK811AA

Detector: ALP113 1
Report Date: 18-Jan-07 02:13 AM
Acquire Date: 17-JAN-2007 17:53:51.10
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	100	2	0	0.198	5160.8	129.4	289	306	0.00	0.00	P
PO-209	516	1	0	1.031	4929.1	258.9	261	295	0.00	0.00	P
PO-210	-9999	-9999	0	-9.998	5350.3	258.9	321	355	0.00	0.00	M
AC-227	-9999	-9999	0	-9.998	6083.9	258.9	418	452	0.00	0.00	M
TH-227	-9999	-9999	0	-9.998	6083.9	258.9	418	452	0.00	0.00	M
TH-228	-9999	-9999	0	-9.998	5469.1	258.9	337	371	0.00	0.00	M
TH-229	516	1	0	1.031	4891.2	258.9	261	295	0.00	0.00	P
TH-230	-9999	-9999	0	-9.998	4733.6	258.8	240	274	0.00	0.00	M I
TH-232	0	2	0	-0.002	4058.9	258.8	152	186	0.00	0.00	S
U-232	-9999	-9999	0	-9.998	5366.1	258.9	323	357	0.00	0.00	M
U-234	-9999	-9999	0	-9.998	4820.5	258.8	252	286	0.00	0.00	M I
U-235	0	0	0	0.000	4443.7	258.8	202	236	0.00	0.00	S
PU-236	3	2	5	0.003	5813.6	258.9	382	416	0.00	0.00	S
NP-237	-9999	-9999	0	-9.998	4833.9	258.8	253	287	0.00	0.00	M I
PU-238	-9999	-9999	0	-9.998	5544.9	258.9	347	381	0.00	0.00	M
U-238	-9999	-9999	0	-9.998	4243.9	258.8	176	210	0.00	0.00	M
PU-239	-9999	-9999	0	-9.998	5202.5	258.9	302	336	0.00	0.00	M I
AM-241	-9999	-9999	0	-9.998	5531.5	258.9	345	379	0.00	0.00	M
AM-242M	-9999	-9999	0	-9.998	5252.7	258.9	308	342	0.00	0.00	M
CM-242	-9999	-9999	0	-9.998	6158.6	258.9	427	461	0.00	0.00	M
PU-242	516	1	0	1.031	4946.4	258.9	261	295	0.00	0.00	P
AM-243	-9999	-9999	0	-9.998	5321.2	258.9	317	351	0.00	0.00	M
CM-244	-9999	-9999	0	-9.998	5850.7	258.9	387	421	0.00	0.00	M
CM-246	-9999	-9999	0	-9.998	5432.4	258.9	332	366	0.00	0.00	M
CM-247	516	1	0	1.031	4916.3	258.9	261	295	0.00	0.00	P
CM-248	100	2	0	0.198	5124.5	129.4	289	306	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JMK811AA
Detector: ALP113 1
Report Date: 18-Jan-07 02:13 AM
Acquire Date: 17-JAN-2007 17:53:51.10

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 02:13:56

Configuration	: RDND06$DKA100:[ALP113.SAMPLE]JMK811AA_170171753.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:53:51
Sample ID	: JMK811AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP113	Detector geometry	:
Elapsed live time	: 0 08:20:03.00	Elapsed real time	: 0 08:20:03.00 0.0%
Start energy	: 2798.21 kev	End energy	: 6673.29 kev
Sensitivity	: 6.00	Sum Sensitivity	: 0.10

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4891.22	516	0	91.33	277.96	261	34	1.72E-02	4.4	
2	0	5055.88	100	0	45.66	299.59	289	17	3.33E-03	10.0	

VMS Nuclide Identification Report V3.1 Generated 18-JAN-2007 02:13:57

Configuration : RDND06$DKA100:[ALP113.SAMPLE]JMK811AA_170171753.CNF;1
Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title : TH BRC
Sample date : 5-DEC-2006 12:00:00 Acquisition date : 17-JAN-2007 17:53:51
Sample ID : JMK811AA Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP113 Detector geometry:
Elapsed live time: 0 08:20:03.00 Elapsed real time: 0 08:20:03.00 0.0%
Energy tolerance : 80.00 kev Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Spline Efficiencies at : Peak Energy
Abundance limit : 0.00

Summary of Nuclide Activity

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

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

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

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

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

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

Configuration: RDND06$DKA100:[ALP113.SAMPLE]JMK811AA_170171753.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4891.21	261	295	516	526	-0.44		
5055.88	289	306	100	146	-4.60	54	-0.08

End of Report

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

Sample Identity: JMLA11AA

Detector: ALP114 1
Report Date: 18-Jan-07 05:23 AM
Acquire Date: 17-JAN-2007 17:54:01.19
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	4	6	0.002	5423.2	149.3	328	348
TH-229	295	1	0.589	4845.3	364.7	250	299
TH-230	3	0	0.006	4687.7	148.6	229	249
TH-232	0	0	0.000	4013.0	147.9	138	158

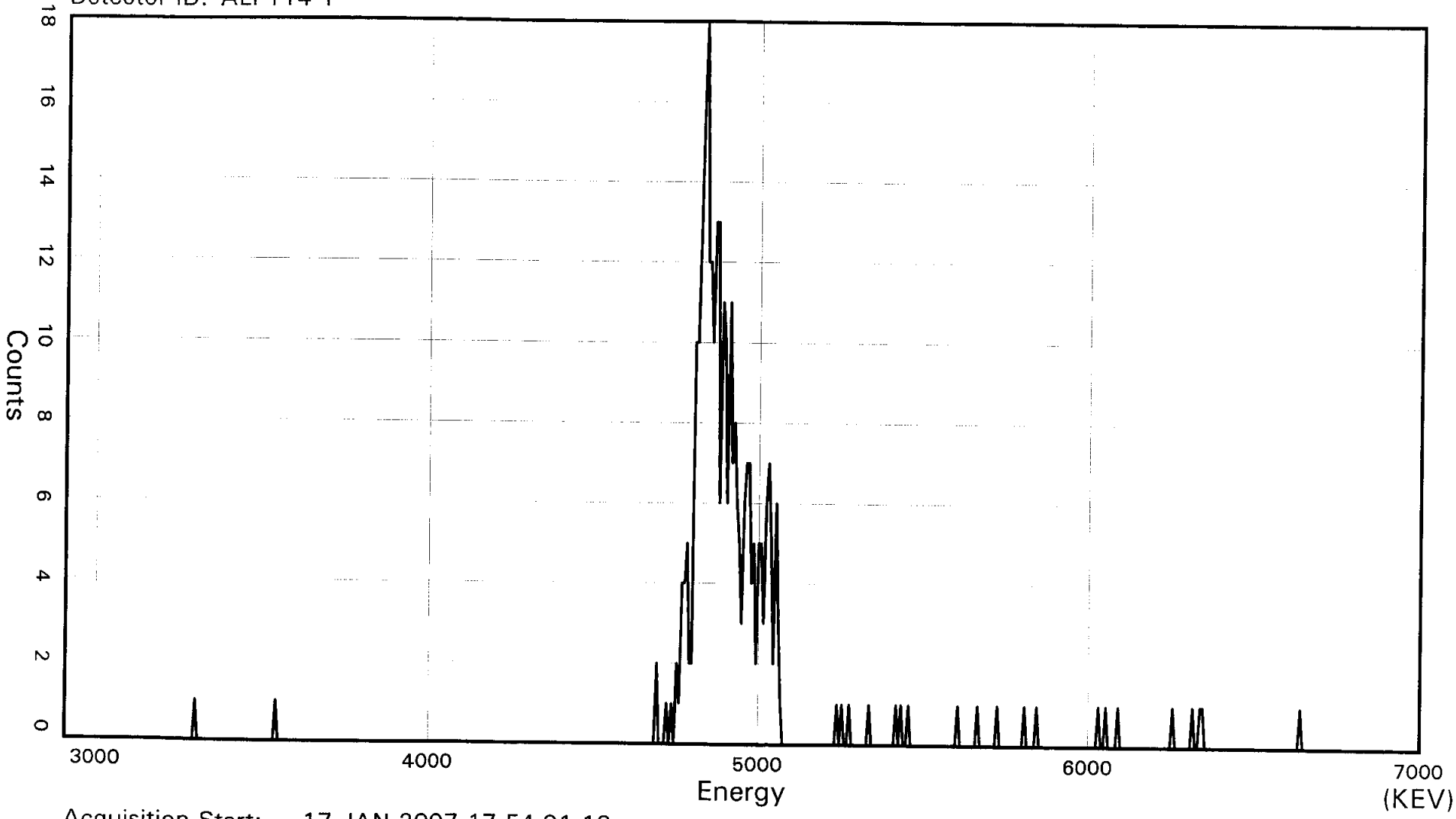
End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.

TH BRC

Sample ID: JMLA11AA
Detector ID: ALP114 1

Batch ID: 7011219



Acquisition Start: 17-JAN-2007 17:54:01.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:09.00

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

SAMPLE IDENTIITY: JMLA11AA

TITLE : TH BRC

DETECTOR : ALP114 1
CONFIGURATION NAME : RDND06$DKA100:[ALP114.SAMPLE]JMLA11AA_170171
754.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:16

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:54:01 CALIB DATE : 15-DEC-2006 00:28:13

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:09

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

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

Sample Identity: JMLA11AA
Detector: ALP114 1
Report Date: 18-Jan-07 02:14 AM
Acquire Date: 17-JAN 2007 17:54:01.19

Flags Key

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

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 02:14:13

Configuration	: RDND06$DKA100:[ALP114.SAMPLE]JMLA11AA_170171754.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:54:01
Sample ID	: JMLA11AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP114	Detector geometry	:
Elapsed live time	: 0 08:20:09.00	Elapsed real time	: 0 08:20:09.00 0.0%
Start energy	: 2907.54 KEV	End energy	: 6692.44 KEV
Sensitivity	: 6.00	Sum Sensitivity	: 0.10

No peaks were found

VMS Nuclide Identification Report V3.1 Generated 18-JAN-2007 02:14:14

```
Configuration     : RDND06$DKA100:[ALP114.SAMPLE]JMLA11AA_170171754.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title      : TH BRC
Sample date       : 5-DEC-2006 12:00:00  Acquisition date : 17-JAN-2007 17:54:01
Sample ID         : JMLA11AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP114               Detector geometry:
Elapsed live time: 0 08:20:09.00         Elapsed real time: 0 08:20:09.00   0.0%
Energy tolerance :    80.00 KEV          Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :     0.00
```

Summary of Nuclide Activity

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

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

```
  Error Report  (Date: 18-Jan-07  02:14 AM)

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

System Status Message:

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

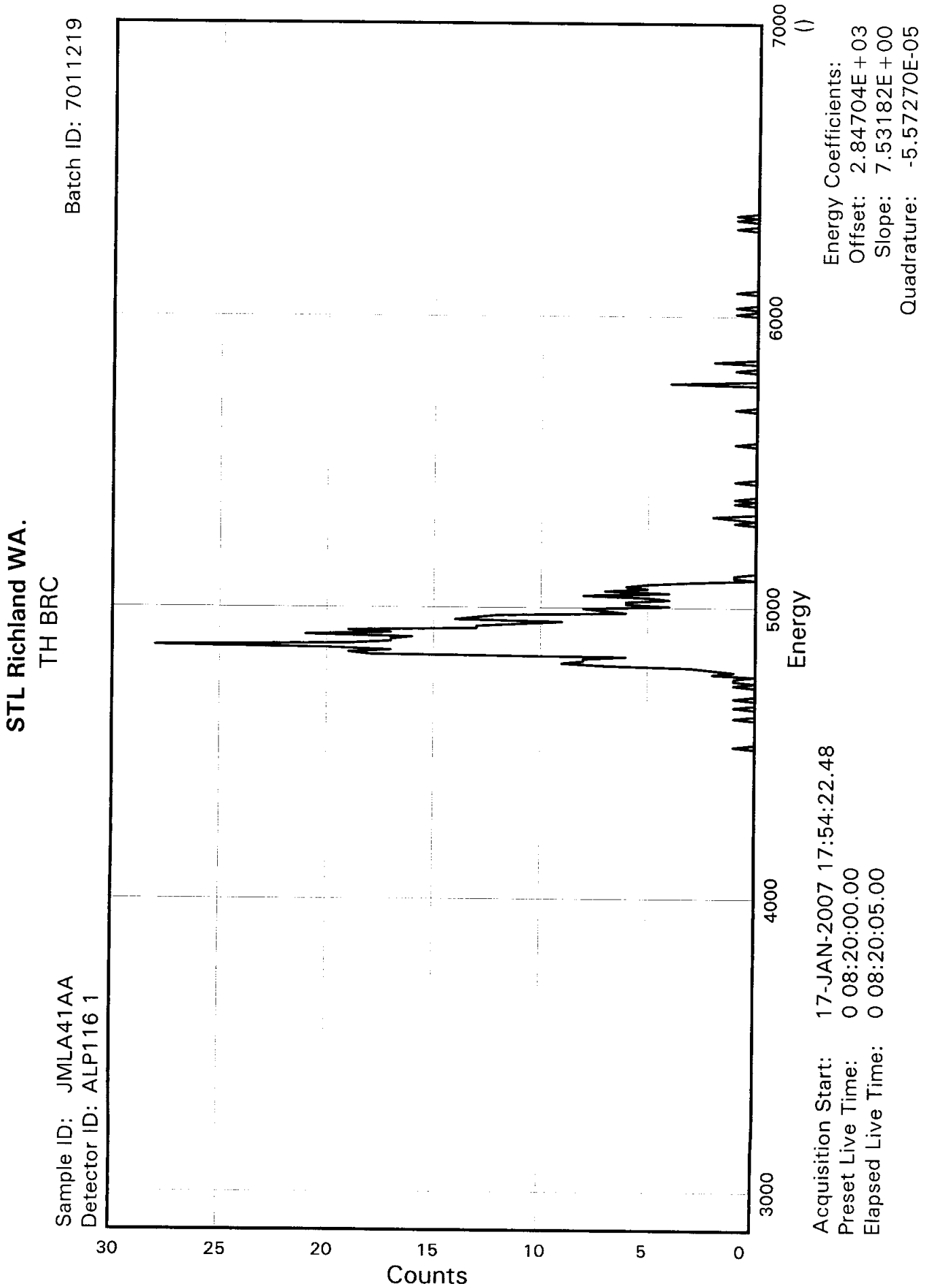
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMLA41AA

Detector: ALP116 1
Report Date: 18-Jan-07 05:23 AM
Acquire Date: 17-JAN-2007 17:54:22.48
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	5	3	0.007	5423.2	149.9	328	348
TH-229	445	2	0.888	4845.3	352.5	255	302
TH-230	3	1	0.005	4687.7	150.1	230	250
TH-232	0	1	-0.001	4013.0	150.3	140	160

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMLA41AA
Detector ID: ALP116 1
Counts
30
25
20
15
10
5
0
3000
4000
5000
6000
7000
()
Energy
Acquisition Start: 17-JAN-2007 17:54:22.48
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:05.00
Energy Coefficients:
Offset: 2.84704E+03
Slope: 7.53182E+00
Quadrature: -5.57270E-05

SAMPLE IDENTIITY: JMLA41AA

TITLE : TH BRC

DETECTOR : ALP116 1
CONFIGURATION NAME : RDND06$DKA100:[ALP116.SAMPLE]JMLA41AA_170171754.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:17

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:54:22 CALIB DATE : 15-DEC-2006 00:28:08

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

OFFSET : 2847.04 keV CONSTANT FWHM : 9.00000 Channels
SLOPE : 7.53182 keV/C SENSITIVITY : 6.00000 Std Dev's
QUAD COEFF : -.557270E-04 keV/C^2 SUM SENSITIVITY: 0.10000 %

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

Sample Identity: JMLA41AA
Detector: ALP116 1
Report Date: 18-Jan-07 02:14 AM
Acquire Date: 17-JAN-2007 17:54:22.48

Flags Key

Intersect Region: @
Non-Intersect Region: +,

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 02:14:30

```
Configuration     : RDND06$DKA100:[ALP116.SAMPLE]JMLA41AA_170171754.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 5-DEC-2006 12:00:00  Acquisition date : 17-JAN-2007 17:54:22
Sample ID         : JMLA41AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP116               Detector geometry:
Elapsed live time: 0 08:20:05.00         Elapsed real time: 0 08:20:05.00   0.0%
Start energy      :  2869.64             End energy       :  6688.72
Sensitivity       :     6.00             Sum Sensitivity  :     0.10
No peaks were found
```

VMS Nuclide Identification Report V3.1 Generated 18-JAN-2007 02:14:31

Configuration	: RDND06$DKA100:[ALP116.SAMPLE]JMLA41AA_170171754.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.4		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:54:22
Sample ID	: JMLA41AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP116	Detector geometry	:
Elapsed live time	: 0 08:20:05.00	Elapsed real time	: 0 08:20:05.00 0.0%
Energy tolerance	: 80.00	Half life ratio	: 1.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Spline	Efficiencies at	: Peak Energy
Abundance limit	: 0.00		

Summary of Nuclide Activity

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

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

```
  Error Report  (Date: 18-Jan-07  02:14 AM)

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

System Status Message:

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

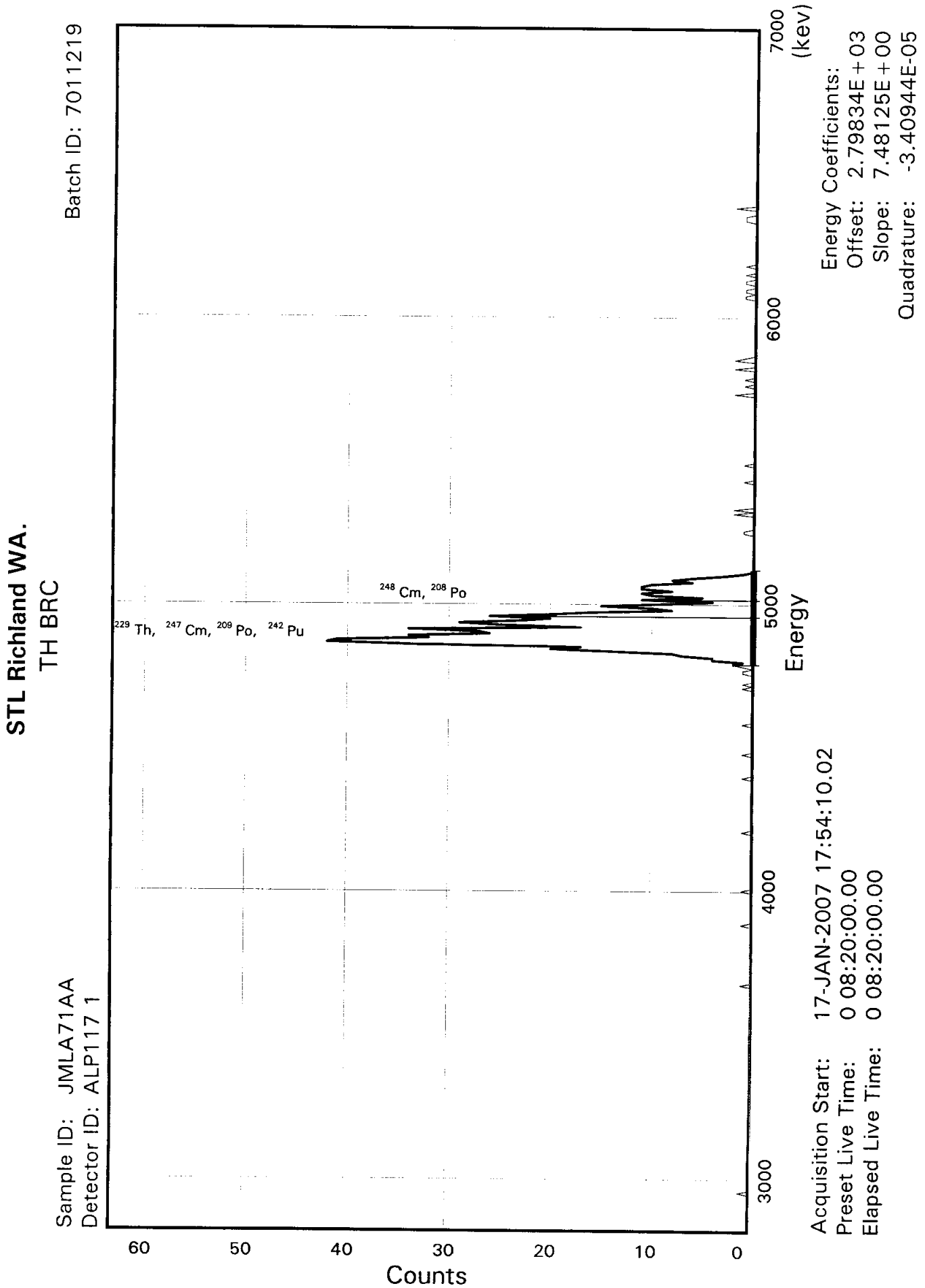
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMLA71AA

Detector: ALP117 1
Report Date: 18-Jan-07 05:23 AM
Acquire Date: 17-JAN-2007 17:54:10.02
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 2500 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	5	2	0.009	5423.2	149.2	336	356
TH-229	671	2	1.341	4845.3	335.8	266	311
TH-230	3	1	0.006	4687.7	149.3	238	258
TH-232	1	2	0.001	4013.0	149.4	147	167

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMLA71AA
Detector ID: ALP117 1
229 Th, 247 Cm, 209 Po, 242 Pu
248 Cm, 208 Po
Counts
60
50
40
30
20
10
0
3000
4000
5000
6000
7000
(kev)
Energy
Energy Coefficients:
Offset: 2.79834E+03
Slope: 7.48125E+00
Quadrature: -3.40944E-05
Acquisition Start: 17-JAN-2007 17:54:10.02
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:00.00

SAMPLE IDENTIITY: JMLA71AA

TITLE : TH BRC

DETECTOR : ALP117 1
CONFIGURATION NAME : RDND06$DKA100:[ALP117.SAMPLE]JMLA71AA_170171
754.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:19

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:54:10 CALIB DATE : 15-DEC-2006 00:28:03

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

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

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

Sample Identity: JMLA71AA

Detector: ALP117 1
Report Date: 18-Jan-07 02:14 AM
Acquire Date: 17-JAN-2007 17:54:10.02
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 2500 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	103	0	0	0.206	5170.6	164.1	289	311	0.00	0.00	P
PO-209	565	2	0	1.129	4938.9	223.9	267	297	0.00	0.00	P
PO-210	-9999	-9999	0	-15.998	5360.1	223.7	329	359	0.00	0.00	M
AC-227	4	6	8	0.006	6093.7	223.5	427	457	0.00	0.00	S
TH-227	4	6	8	0.006	6093.7	223.5	427	457	0.00	0.00	S
TH-228	-9999	-9999	0	-15.998	5478.9	223.7	344	374	0.00	0.00	M
TH-229	565	2	0	1.129	4901.0	223.9	267	297	0.00	0.00	P
TH-230	-9999	-9999	0	-15.998	4743.4	223.9	246	276	0.00	0.00	M I
TH-232	1	1	0	0.002	4068.7	224.1	156	186	0.00	0.00	S
U-232	-9999	-9999	0	-15.998	5375.9	223.7	331	361	0.00	0.00	M
U-234	-9999	-9999	0	-15.998	4830.3	223.9	258	288	0.00	0.00	M I
U-235	2	0	0	0.004	4453.5	224.0	207	237	0.00	0.00	S
PU-236	6	34	7	-0.003	5823.3	223.6	391	421	0.00	0.00	S
NP-237	-9999	-9999	0	-15.998	4843.7	223.9	259	289	0.00	0.00	M I
PU-238	-9999	-9999	0	-15.998	5554.7	223.7	355	385	0.00	0.00	M
U-238	-9999	-9999	0	-15.998	4253.7	224.0	180	210	0.00	0.00	M
PU-239	-9999	-9999	0	-15.998	5212.3	223.8	309	339	0.00	0.00	M I
AM-241	-9999	-9999	0	-15.998	5541.3	223.7	353	383	0.00	0.00	M
AM-242M	-9999	-9999	0	-15.998	5262.5	223.8	315	345	0.00	0.00	M
CM-242	-9999	-9999	0	-15.998	6168.4	223.5	437	467	0.00	0.00	M
PU-242	565	2	0	1.129	4956.2	223.9	267	297	0.00	0.00	P
AM-243	-9999	-9999	0	-15.998	5331.0	223.7	325	355	0.00	0.00	M
CM-244	4	27	7	-0.004	5860.5	223.6	396	426	0.00	0.00	S
CM-246	-9999	-9999	0	-15.998	5442.2	223.7	340	370	0.00	0.00	M
CM-247	565	2	0	1.129	4926.1	223.9	267	297	0.00	0.00	P
CM-248	103	0	0	0.206	5134.3	164.1	289	311	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JMLA71AA
Detector: ALP117 1
Report Date: 18-Jan-07 02:14 AM
Acquire Date: 17-JAN-2007 17:54:10.02

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 02:14:15

Configuration : RDND06$DKA100:[ALP117.SAMPLE]JMLA71AA_170171754.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 5-DEC-2006 12:00:00 Acquisition date : 17-JAN-2007 17:54:10
Sample ID : JMLA71AA Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP117 Detector geometry:
Elapsed live time: 0 08:20:00.00 Elapsed real time: 0 08:20:00.00 0.0%
Start energy : 2820.78 kev End energy : 6619.80 kev
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4900.99	565	0	112.22	281.42	267	30	1.88E-02	4.2	
2	0	5038.47	103	0	74.81	299.84	289	22	3.43E-03	9.9	

VMS Nuclide Identification Report V3.1 Generated 18-JAN-2007 02:14:17

Configuration	: RDND06$DKA100:[ALP117.SAMPLE]JMLA71AA_170171754.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.4		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:54:10
Sample ID	: JMLA71AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP117	Detector geometry	:
Elapsed live time	: 0 08:20:00.00	Elapsed real time	: 0 08:20:00.00 0.0%
Energy tolerance	: 100.00 kev	Half life ratio	: 1.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Spline	Efficiencies at	: Peak Energy
Abundance limit	: 0.00		

Summary of Nuclide Activity

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

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

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

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

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

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

Configuration: RDND06$DKA100:[ALP117.SAMPLE]JMLA71AA_170171754.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4900.98	267	297	565	580	-0.63		
5038.47	289	311	103	209	-10.44	119	-0.08

End of Report

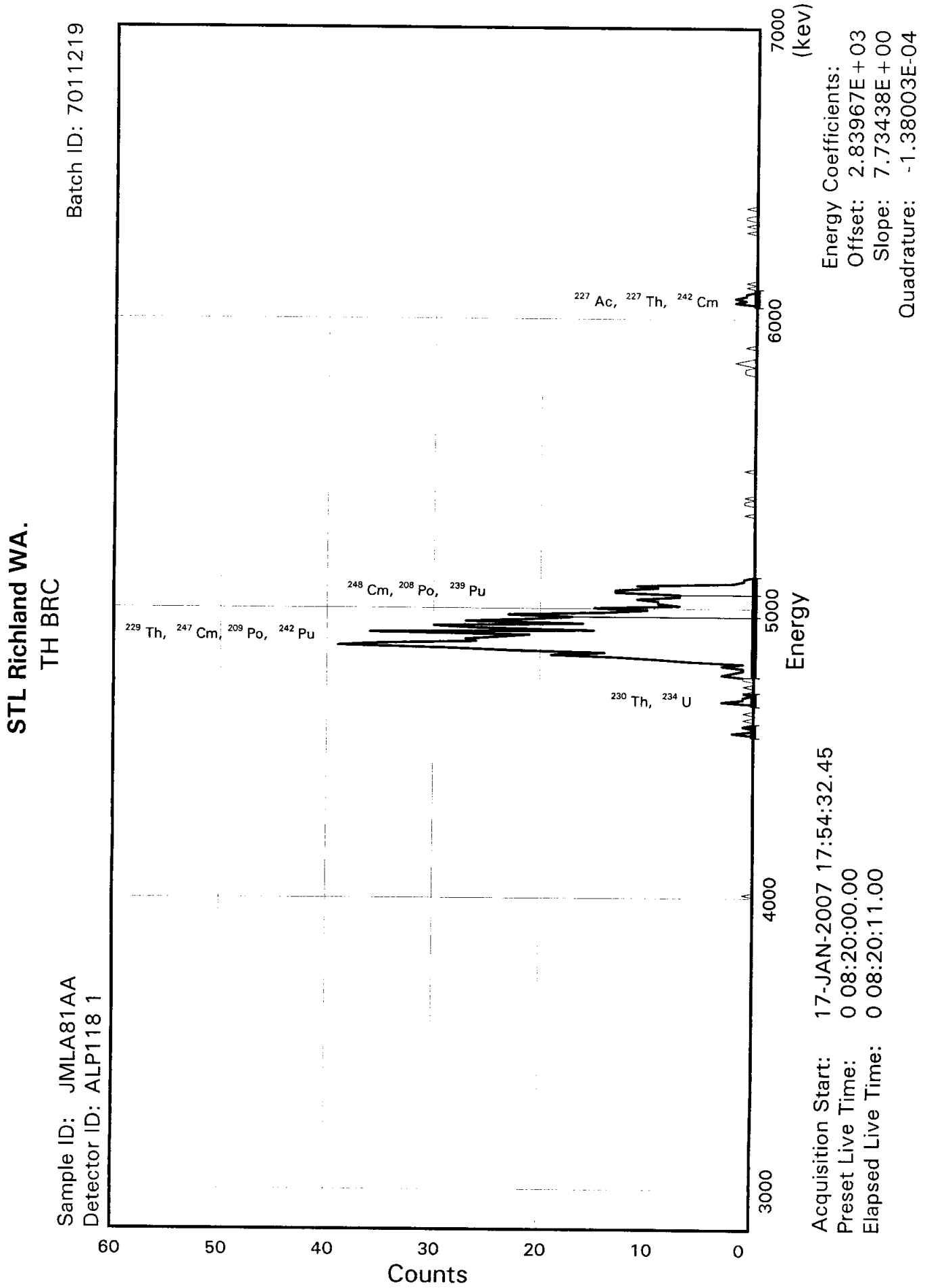
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMLA81AA

Detector: ALP118 1
Report Date: 18-Jan-07 05:23 AM
Acquire Date: 17-JAN-2007 17:54:32.45
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 2500 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	4	4	0.006	5423.2	152.9	321	341
TH-229	641	9	1.278	4845.3	344.6	253	298
TH-230	11	2	0.021	4687.7	153.4	225	245
TH-232	1	1	0.002	4013.0	153.9	137	157

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMLA81AA
Detector ID: ALP118 1
227 Ac, 227 Th, 242 Cm
248 Cm, 208 Po, 239 Pu
229 Th, 247 Cm, 209 Po, 242 Pu
230 Th, 234 U
Energy
(kev)
3000
4000
5000
6000
7000
Counts
60
50
40
30
20
10
0
Energy Coefficients:
Offset: 2.83967E+03
Slope: 7.73438E+00
Quadrature: -1.38003E-04
Acquisition Start: 17-JAN-2007 17:54:32.45
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:11.00

SAMPLE IDENTIITY: JMLA81AA

TITLE : TH BRC

DETECTOR : ALP118 1
CONFIGURATION NAME : RDND06$DKA100:[ALP118.SAMPLE]JMLA81AA_170171754.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:22

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:54:32 CALIB DATE : 15-DEC-2006 00:28:26

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:11

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

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

Sample Identity: JMLA81AA

Detector: ALP118 1
Report Date: 18-Jan-07 02:14 AM
Acquire Date: 17-JAN-2007 17:54:32.45
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 2500 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	72	2	0	0.143	5177.1	137.8	277	295	0.00	0.00	P
PO-209	577	8	0	1.150	4945.4	283.4	250	287	0.00	0.00	P
PO-210	-9999	-9999	0	-15.991	5366.6	282.8	310	347	0.00	0.00	M
AC-227	-9999	-9999	0	-15.991	6100.2	281.8	406	443	0.00	0.00	M I
TH-227	-9999	-9999	0	-15.991	6100.2	281.8	406	443	0.00	0.00	M I
TH-228	-9999	-9999	0	-15.991	5485.4	290.3	325	363	0.00	0.00	M
TH-229	577	8	0	1.150	4907.5	283.4	250	287	0.00	0.00	P
TH-230	4	1	0	0.008	4749.9	46.0	237	243	0.00	0.00	P
TH-232	1	4	0	0.001	4075.2	276.8	142	178	0.00	0.00	S
U-232	-9999	-9999	0	-15.991	5382.4	282.8	312	349	0.00	0.00	M
U-234	4	1	0	0.008	4836.8	46.0	237	243	0.00	0.00	P
U-235	3	1	0	0.006	4460.0	284.0	192	229	0.00	0.00	S
PU-236	-9999	-9999	0	-15.991	5829.9	282.2	371	408	0.00	0.00	M
NP-237	-9999	-9999	0	-15.991	4850.2	283.5	243	280	0.00	0.00	I
PU-238	-9999	-9999	0	-15.991	5561.3	290.2	335	373	0.00	0.00	M
U-238	-9999	-9999	0	-15.991	4260.2	284.3	166	203	0.00	0.00	M
PU-239	72	2	0	0.143	5218.8	137.8	277	295	0.00	0.00	P
AM-241	-9999	-9999	0	-15.991	5547.8	282.6	334	371	0.00	0.00	M
AM-242M	-9999	-9999	0	-15.991	5269.0	283.0	297	334	0.00	0.00	M
CM-242	8	1	0	0.016	6174.9	60.9	417	425	0.00	0.00	P
PU-242	577	8	0	1.150	4962.7	283.4	250	287	0.00	0.00	P
AM-243	-9999	-9999	0	-15.991	5337.5	282.9	306	343	0.00	0.00	M
CM-244	-9999	-9999	0	-15.991	5867.0	289.8	375	413	0.00	0.00	M
CM-246	-9999	-9999	0	-15.991	5448.7	282.7	321	358	0.00	0.00	M
CM-247	577	8	0	1.150	4932.6	283.4	250	287	0.00	0.00	P
CM-248	72	2	0	0.143	5140.8	137.8	277	295	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JMLA81AA
Detector: ALP118 1
Report Date: 18-Jan-07 02:14 AM
Acquire Date: 17-JAN-2007 17:54:32.45

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 02:14:46

Configuration : RDND06$DKA100:[ALP118.SAMPLE]JMLA81AA_170171754.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 5-DEC-2006 12:00:00 Acquisition date : 17-JAN-2007 17:54:32
Sample ID : JMLA81AA Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP118 Detector geometry:
Elapsed live time: 0 08:20:11.00 Elapsed real time: 0 08:20:11.00 0.0%
Start energy : 2862.87 kev End energy : 6763.50 kev
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4576.76	4	0	30.94	225.50	223	6	1.33E-04	50.0	
2	0	4684.14	4	0	30.94	239.50	237	6	1.33E-04	50.0	
3	0	4907.52	577	0	131.48	268.65	250	37	1.92E-02	4.2	
4	0	5059.23	72	0	46.41	288.46	277	18	2.40E-03	11.8	
5	0	6062.50	8	0	30.94	419.83	417	8	2.67E-04	35.4	

VMS Nuclide Identification Report V3.1 Generated 18-JAN-2007 02:14:48

Configuration : RDND06$DKA100:[ALP118.SAMPLE]JMLA81AA_170171754.CNF;1
Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title : TH BRC
Sample date : 5-DEC-2006 12:00:00
Sample ID : JMLA81AA
Sample type : disk
Detector name : ALP118
Elapsed live time: 0 08:20:11.00
Energy tolerance : 100.00 kev
Errors propagated: No
Efficiency type : Spline
Abundance limit : 0.00

Acquisition date : 17-JAN-2007 17:54:32
Sample quantity : 0.00000E+00 SAMPLE
Sample geometry :
Detector geometry:
Elapsed real time: 0 08:20:11.00 0.0%
Half life ratio : 1.00
Systematic Error : 0.00 %
Efficiencies at : Peak Energy

Summary of Nuclide Activity

Total number of lines in spectrum	5	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	4	80.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-234	2.45E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-239	24110.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-242	162.80D	1.20	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-248	3.39E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

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

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

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

Configuration: RDND06$DKA100:[ALP118.SAMPLE]JMLA81AA_170171754.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4576.75	223	229	4	3	0.50		
4684.14	237	243	4	6	-1.00		
4907.52	250	287	577	597	-0.83		
5059.22	277	295	72	179	-12.61	129	0.08
6062.49	417	425	8	7	0.35		

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

End of Report

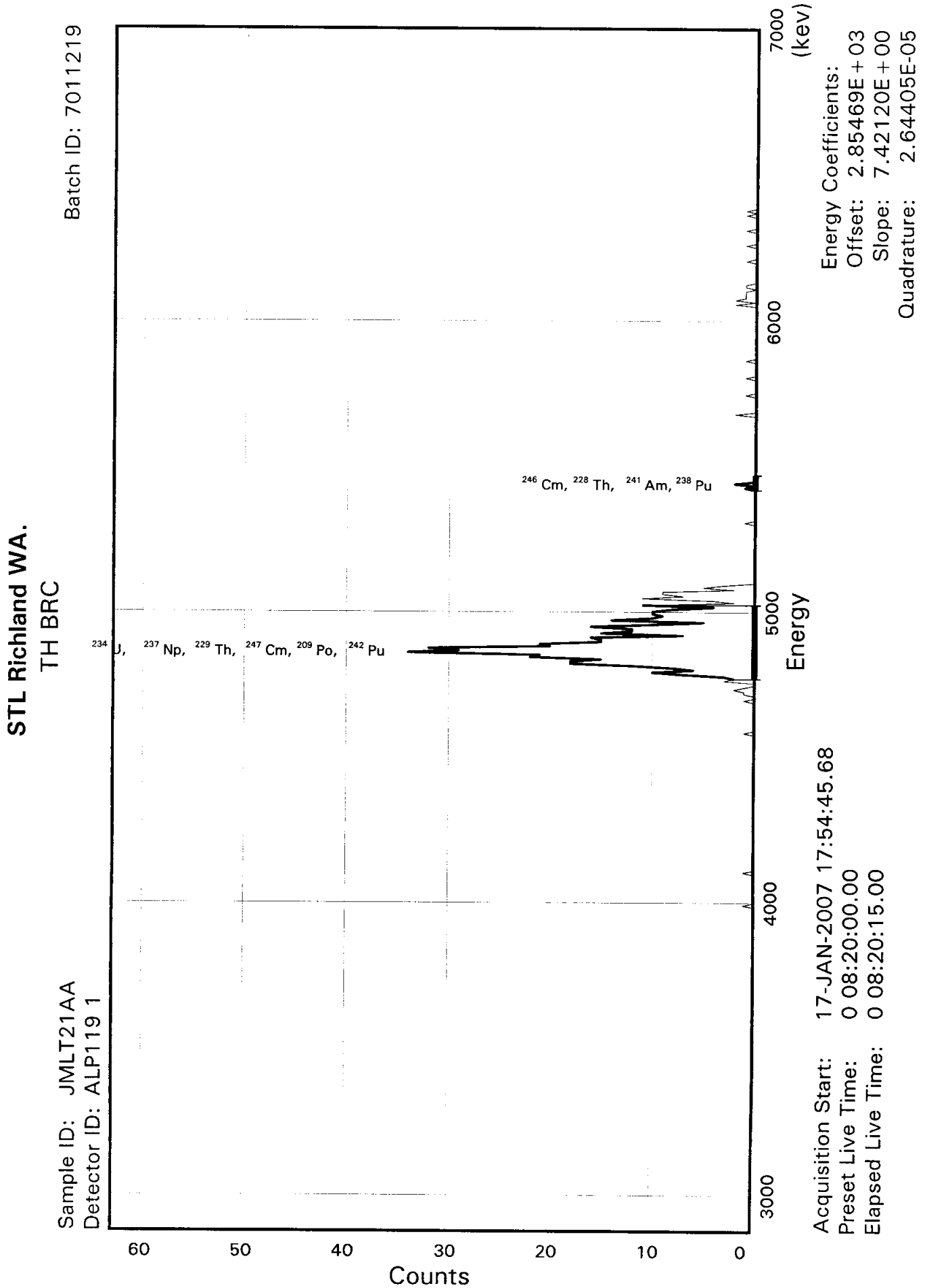
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMLT21AA

Detector: ALP119 1
Report Date: 18-Jan-07 05:24 AM
Acquire Date: 17-JAN-2007 17:54:45.68
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	3	3	0.003	5423.2	148.8	331	351
TH-229	532	1	1.062	4845.3	349.5	255	302
TH-230	4	0	0.008	4687.7	148.7	232	252
TH-232	1	0	0.002	4013.0	148.6	141	161

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMLT21AA
Detector ID: ALP119 1
234U, 237Np, 229Th, 247Cm, 209Po, 242Pu
246Cm, 228Th, 241Am, 238Pu
Counts
60
50
40
30
20
10
0
Energy
3000
4000
5000
6000
7000
(kev)
Acquisition Start: 17-JAN-2007 17:54:45.68
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:15.00
Energy Coefficients:
Offset: 2.85469E+03
Slope: 7.42120E+00
Quadrature: 2.64405E-05

SAMPLE IDENTIITY: JMLT21AA

TITLE : TH BRC

DETECTOR : ALP119 1
CONFIGURATION NAME : RDND06$DKA100:[ALP119.SAMPLE]JMLT21AA_170171
754.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:24

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:54:45 CALIB DATE : 15-DEC-2006 00:28:18

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:15

OFFSET : 2854.69 keV CONSTANT FWHM : 8.83333 Channels
SLOPE : 7.42120 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 2.644050E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JMLT21AA

Detector: ALP119 1
Report Date: 18-Jan-07 02:15 AM
Acquire Date: 17-JAN-2007 17:54:45.68
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-9.992	5134.3	252.9	294	328	0.00	0.00	M
PO-209	480	0	0	0.960	4902.6	252.8	258	292	0.00	0.00	P
PO-210	-9999	-9999	0	-9.992	5323.8	252.9	320	354	0.00	0.00	M I
AC-227	-9999	-9999	0	-9.992	6057.4	253.1	418	452	0.00	0.00	M
TH-227	-9999	-9999	0	-9.992	6057.4	253.1	418	452	0.00	0.00	M
TH-228	4	1	0	0.007	5442.6	52.1	345	352	0.00	0.00	P
TH-229	480	0	0	0.960	4864.7	252.8	258	292	0.00	0.00	P
TH-230	-9999	-9999	0	-9.992	4707.1	252.8	237	271	0.00	0.00	I
TH-232	2	0	0	0.004	4032.4	252.6	146	180	0.00	0.00	S
U-232	-9999	-9999	0	-9.992	5339.6	252.9	322	356	0.00	0.00	M I
U-234	480	0	0	0.960	4794.0	252.8	258	292	0.00	0.00	P
U-235	0	0	0	0.000	4417.2	252.7	198	232	0.00	0.00	S
PU-236	2	16	3	-0.012	5787.1	253.0	382	416	0.00	0.00	S
NP-237	480	0	0	0.960	4807.4	252.8	258	292	0.00	0.00	P
PU-238	4	1	0	0.007	5518.5	52.1	345	352	0.00	0.00	P
U-238	-9999	-9999	0	-9.992	4217.4	252.7	171	205	0.00	0.00	M
PU-239	-9999	-9999	0	-9.992	5176.0	252.9	300	334	0.00	0.00	M
AM-241	4	1	0	0.007	5505.0	52.1	345	352	0.00	0.00	P
AM-242M	-9999	-9999	0	-9.992	5226.2	252.9	307	341	0.00	0.00	M
CM-242	-9999	-9999	0	-9.992	6132.2	253.1	428	462	0.00	0.00	M
PU-242	480	0	0	0.960	4919.9	252.8	258	292	0.00	0.00	P
AM-243	-9999	-9999	0	-9.992	5294.7	252.9	316	350	0.00	0.00	M I
CM-244	-9999	-9999	0	-9.992	5824.3	253.0	387	421	0.00	0.00	M
CM-246	4	1	0	0.007	5405.9	52.1	345	352	0.00	0.00	P
CM-247	480	0	0	0.960	4889.8	252.8	258	292	0.00	0.00	P
CM-248	-9999	-9999	0	-9.992	5098.0	252.9	289	323	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: JMLT21AA
Detector: ALP119 1
Report Date: 18-Jan-07 02:15 AM
Acquire Date: 17-JAN-2007 17:54:45.68

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 02:15:03

Configuration : RDND06$DKA100:[ALP119.SAMPLE]JMLT21AA_170171754.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 5-DEC-2006 12:00:00 Acquisition date : 17-JAN-2007 17:54:45
Sample ID : JMLT21AA Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP119 Detector geometry:
Elapsed live time: 0 08:20:15.00 Elapsed real time: 0 08:20:15.00 0.0%
Start energy : 2876.95 kev End energy : 6661.27 kev
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4864.74	480	0	74.21	270.59	258	34	1.60E-02	4.6	
2	0	5436.75	4	0	29.68	347.50	345	7	1.33E-04	50.0	

VMS Nuclide Identification Report V3.1 Generated 18-JAN-2007 02:15:04

Configuration : RDND06$DKA100:[ALP119.SAMPLE]JMLT21AA_170171754.CNF;1
Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title : TH BRC
Sample date : 5-DEC-2006 12:00:00 Acquisition date : 17-JAN-2007 17:54:45
Sample ID : JMLT21AA Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP119 Detector geometry:
Elapsed live time: 0 08:20:15.00 Elapsed real time: 0 08:20:15.00 0.0%
Energy tolerance : 100.00 kev Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Spline Efficiencies at : Peak Energy
Abundance limit : 0.00

Summary of Nuclide Activity

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

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
TH-228	1.91Y	1.04	0.000E+00	0.000E+00	0.000E+00	0.00	
U-234	2.45E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-246	8500.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-238	87.74Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
AM-241	432.20Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

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

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

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

Configuration: RDND06$DKA100:[ALP119.SAMPLE]JMLT21AA_170171754.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4864.73	258	292	480	477	0.14		
5436.74	345	352	4	3	0.50		

End of Report

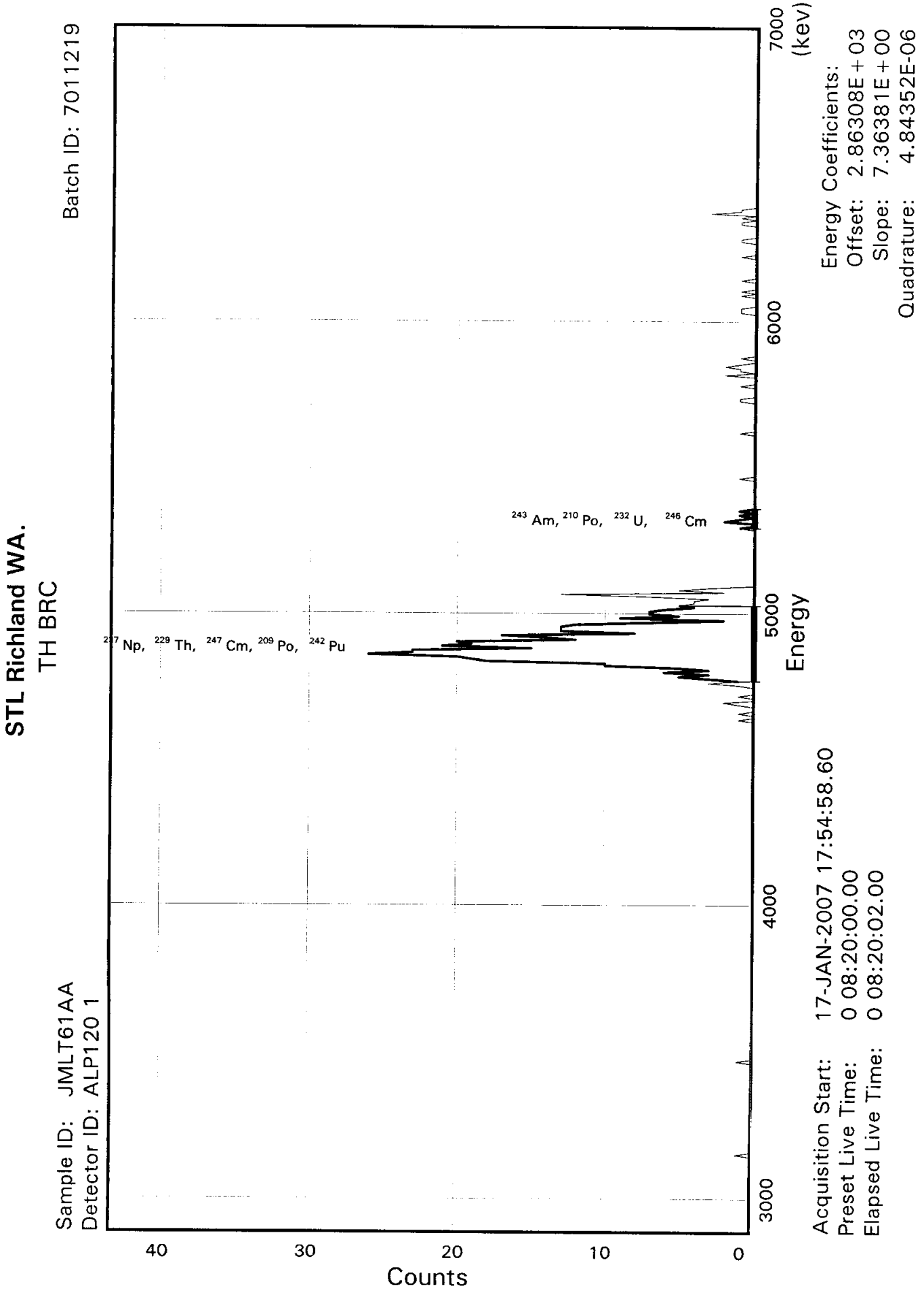
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMLT61AA

Detector: ALP120 1
Report Date: 18-Jan-07 05:24 AM
Acquire Date: 17-JAN-2007 17:54:58.60
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	6	0	0.012	5423.2	147.3	333	353
TH-229	449	5	0.893	4845.3	338.9	257	303
TH-230	6	0	0.012	4687.7	147.3	233	253
TH-232	0	0	0.000	4013.0	147.3	141	161

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMLT61AA
Detector ID: ALP120 1
^{237}Np, ^{229}Th, ^{247}Cm, ^{209}Po, ^{242}Pu
^{243}Am, ^{210}Po, ^{232}U, ^{246}Cm
Counts
40
30
20
10
0
Energy
3000
4000
5000
6000
7000
(kev)
Acquisition Start: 17-JAN-2007 17:54:58.60
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:02.00
Energy Coefficients:
Offset: 2.86308E+03
Slope: 7.36381E+00
Quadrature: 4.84352E-06

SAMPLE IDENTIITY: JMLT61AA

TITLE : TH BRC

DETECTOR : ALP120 1
CONFIGURATION NAME : RDND06$DKA100:[ALP120.SAMPLE]JMLT61AA_170171
754.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:26

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:54:58 CALIB DATE : 15-DEC-2006 00:27:59

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

OFFSET : 2863.08 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 7.36381 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 4.843520E-06 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JMLT61AA

Detector: ALP120 1
Report Date: 18-Jan-07 02:15 AM
Acquire Date: 17-JAN-2007 17:54:58.60
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-10.000	5153.9	257.8	296	331	0.00	0.00	M I
PO-209	410	2	0	0.818	4922.2	257.8	259	294	0.00	0.00	P
PO-210	6	0	0	0.012	5343.4	66.3	330	339	0.00	0.00	P
AC-227	-9999	-9999	0	-10.000	6077.0	257.9	421	456	0.00	0.00	M
TH-227	-9999	-9999	0	-10.000	6077.0	257.9	421	456	0.00	0.00	M
TH-228	-9999	-9999	0	-10.000	5462.2	257.9	337	372	0.00	0.00	M I
TH-229	410	2	0	0.818	4884.3	257.8	259	294	0.00	0.00	P
TH-230	-9999	-9999	0	-10.000	4726.7	257.8	238	273	0.00	0.00	S I
TH-232	0	0	0	0.000	4052.0	257.8	146	181	0.00	0.00	S
U-232	6	0	0	0.012	5359.2	66.3	330	339	0.00	0.00	P
U-234	-9999	-9999	0	-10.000	4813.6	257.8	249	284	0.00	0.00	S I
U-235	0	0	0	0.000	4436.8	257.8	198	233	0.00	0.00	S
PU-236	6	11	11	0.001	5806.6	257.9	384	419	0.00	0.00	S
NP-237	410	2	0	0.818	4827.0	257.8	259	294	0.00	0.00	P
PU-238	-9999	-9999	0	-10.000	5538.0	257.9	348	383	0.00	0.00	M
U-238	-9999	-9999	0	-10.000	4237.0	257.8	171	206	0.00	0.00	M
PU-239	-9999	-9999	0	-10.000	5195.6	257.8	301	336	0.00	0.00	M I
AM-241	-9999	-9999	0	-10.000	5524.6	257.9	346	381	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.000	5245.8	257.8	308	343	0.00	0.00	M I
CM-242	-9999	-9999	0	-10.000	6151.7	257.9	431	466	0.00	0.00	M
PU-242	410	2	0	0.818	4939.5	257.8	259	294	0.00	0.00	P
AM-243	6	0	0	0.012	5314.3	66.3	330	339	0.00	0.00	P
CM-244	-9999	-9999	0	-10.000	5843.8	257.9	389	424	0.00	0.00	M
CM-246	6	0	0	0.012	5425.5	66.3	330	339	0.00	0.00	P
CM-247	410	2	0	0.818	4909.4	257.8	259	294	0.00	0.00	P
CM-248	-9999	-9999	0	-10.000	5117.6	257.8	291	326	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: JMLT61AA
Detector: ALP120 1
Report Date: 18-Jan-07 02:15 AM
Acquire Date: 17-JAN-2007 17:54:58.60

Flags Key

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

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 02:15:06

Configuration	: RDND06$DKA100:[ALP120.SAMPLE]JMLT61AA_170171754.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:54:58
Sample ID	: JMLT61AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP120	Detector geometry	:
Elapsed live time	: 0 08:20:02.00	Elapsed real time	: 0 08:20:02.00 0.0%
Start energy	: 2885.17 kev	End energy	: 6634.62 kev
Sensitivity	: 3.00	Sum Sensitivity	: 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4884.28	410	0	125.18	274.43	259	35	1.37E-02	4.9	
2	0	5319.45	6	0	44.18	333.50	330	9	2.00E-04	40.8	

VMS Nuclide Identification Report V3.1 Generated 18-JAN-2007 02:15:07

Configuration : RDND06$DKA100:[ALP120.SAMPLE]JMLT61AA_170171754.CNF;1
Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title : TH BRC
Sample date : 5-DEC-2006 12:00:00 Acquisition date : 17-JAN-2007 17:54:58
Sample ID : JMLT61AA Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP120 Detector geometry:
Elapsed live time: 0 08:20:02.00 Elapsed real time: 0 08:20:02.00 0.0%
Energy tolerance : 100.00 kev Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Spline Efficiencies at : Peak Energy
Abundance limit : 0.00

Summary of Nuclide Activity

Total number of lines in spectrum 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	
PO-210	138.38D	1.24	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-246	8500.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-232	68.90Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
AM-243	7370.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

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

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

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

Configuration: RDND06$DKA100:[ALP120.SAMPLE]JMLT61AA_170171754.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4884.28	259	294	410	404	0.30		
5319.45	330	339	6	6	0.00		

End of Report

SEVERN TRENT **STL**

THORIUM ISOTOPIC COUNTING REQUEST

'18 0212

C.R. Technician OR
Date Counted 1/17/07
C.R. Analyst C
Date Analyzed 1/18/07

Counting Time
Sample 500 Minutes
Background See Alpha Analysis Report
BRC 12/5/06

SOP's
Operating: RICHRD008
Review: RICHRD0016
7011219

WorkOrder #	Th-229 (4845 KeV) Tracer from Th-234 Beta Count (7)				TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV) (6)	Th-230 (4688 KeV) (8)	Th-232 (4010 KeV) (9)		
JMLT71AA		10		0	See Alpha Analysis Report for ROI Information			171	
JMLT81AA		10		0	See Alpha Analysis Report for ROI Information			172	
JMLVA1AA		10		0	See Alpha Analysis Report for ROI Information			173	
JMLVW1AA		10		0	See Alpha Analysis Report for ROI Information			174	
JMLV31AA		10		0	See Alpha Analysis Report for ROI Information			175	
JMLV51AA		10		0	See Alpha Analysis Report for ROI Information			176	
JMLV81AA		10		0	See Alpha Analysis Report for ROI Information			177	
JMLV91AA		10		0	See Alpha Analysis Report for ROI Information			178	
		10		0	See Alpha Analysis Report for ROI Information				

Comments:

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

Approved by: S

Date: 1/18/07

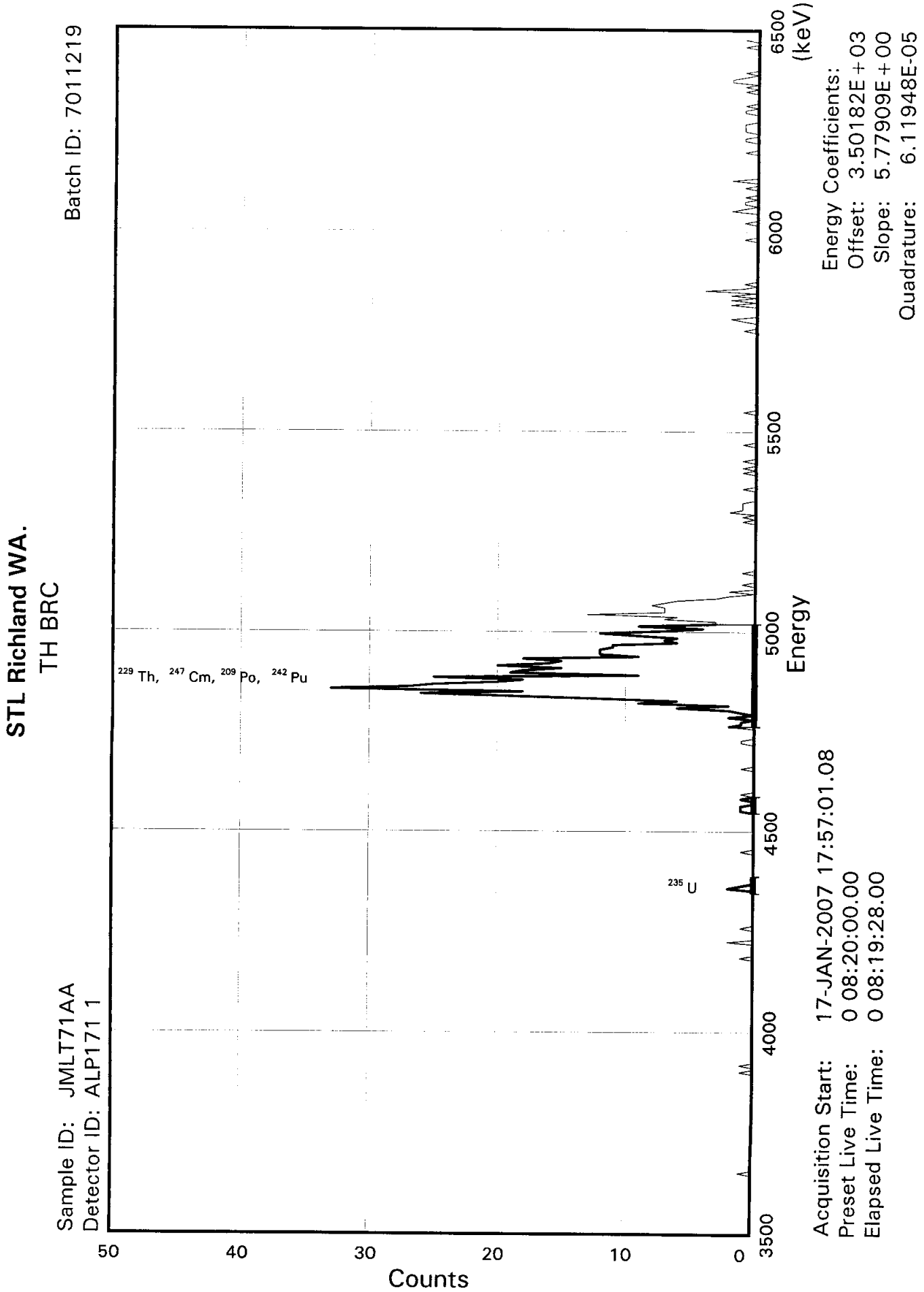
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMLT71AA

Detector: ALP171 1
Report Date: 18-Jan-07 04:56 AM
Acquire Date: 17-JAN-2007 17:57:01.08
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	4	3	0.005	5423.2	116.4	316	336
TH-229	593	2	1.185	4845.3	354.4	217	278
TH-230	1	1	0.001	4687.7	116.1	190	210
TH-232	0	1	-0.001	4013.0	115.8	73	93

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMLT71AA
Detector ID: ALP171 1
229 Th, 247 Cm, 209 Po, 242 Pu
235 U
Counts
50
40
30
20
10
0
Energy
3500
4000
4500
5000
5500
6000
6500
(keV)
Acquisition Start: 17-JAN-2007 17:57:01.08
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.50182E+03
Slope: 5.77909E+00
Quadrature: 6.11948E-05

SAMPLE IDENTIITY: JMLT71AA

TITLE : TH BRC

DETECTOR : ALP171 1
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JMLT71AA_170171757A.CN
F;1
ACQUIRE DATE of BACKGROUND: 14-JAN-2007 11:22:50

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:57:01 CALIB DATE : 14-JAN-2007 01:52:46

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

OFFSET : 3501.82 keV CONSTANT FWHM : 9.00000 Channels
SLOPE : 5.77909 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 6.119480E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JMLT71AA

Detector: ALP171 1
Report Date: 18-Jan-07 02:17 AM
Acquire Date: 17-JAN-2007 17:57:01.08
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	5151.9	255.8	264	308	0.00	0.00	M
PO-209	514	1	0	1.028	4920.2	255.6	218	262	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5341.4	256.0	297	341	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6075.0	256.7	423	467	0.00	0.00	M
TH-227	-9999	-9999	0	-10.010	6075.0	256.7	423	467	0.00	0.00	M
TH-228	-9999	-9999	0	-10.010	5460.2	256.1	317	361	0.00	0.00	M
TH-229	514	1	0	1.028	4882.3	255.6	218	262	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4724.7	255.4	191	235	0.00	0.00	M I
TH-232	1	1	1	0.000	4050.0	260.6	74	119	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5357.1	256.0	300	344	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4811.6	255.5	206	250	0.00	0.00	M I
U-235	4	0	0	0.008	4434.8	40.6	146	153	0.00	0.00	P
PU-236	8	28	16	-0.012	5804.6	250.6	377	420	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4825.0	255.5	208	252	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5536.0	256.2	330	374	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4235.0	255.0	106	150	0.00	0.00	S I
PU-239	-9999	-9999	0	-10.010	5193.6	255.9	272	316	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5522.6	256.2	328	372	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5243.8	255.9	280	324	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6149.7	256.7	436	480	0.00	0.00	M
PU-242	514	1	0	1.028	4937.5	255.6	218	262	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5312.3	256.0	292	336	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5841.8	256.5	383	427	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5423.5	256.1	311	355	0.00	0.00	M
CM-247	514	1	0	1.028	4907.4	255.6	218	262	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5115.6	255.8	258	302	0.00	0.00	M I

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JMLT71AA
Detector: ALP171 1
Report Date: 18-Jan-07 02:17 AM
Acquire Date: 17-JAN-2007 17:57:01.08

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 02:17:36

Configuration : $DISK1:[ALP171.SAMPLE]JMLT71AA_170171757A.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 5-DEC-2006 12:00:00 Acquisition date : 17-JAN-2007 17:57:01
Sample ID : JMLT71AA 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 : 3519.16 keV End energy : 6476.76 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4361.36	4	0	23.12	148.50	146	7	1.33E-04	50.0	
2	0	4564.34	4	0	23.12	183.50	181	7	1.33E-04	50.0	
3	0	4882.28	514	0	98.24	238.27	218	44	1.72E-02	4.4	

VMS Nuclide Identification Report V3.0 Generated 18-JAN-2007 02:17:42

Configuration	: $DISK1:[ALP171.SAMPLE]JMLT71AA_170171757A.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:57:01
Sample ID	: JMLT71AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP171 1	Detector geometry	:
Elapsed live time	: 0 08:19:28.00	Elapsed real time	: 0 08:19:28.00 0.0%
Energy tolerance	: 80.00 keV	Half life ratio	: 1.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Spline	Efficiencies at	: Peak Energy
Abundance limit	: 70.00		

Summary of Nuclide Activity

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

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-235	7.08E+08Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

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

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

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

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

Configuration: $DISK1:[ALP171.SAMPLE]JMLT71AA_170171757A.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4361.36	146	153	4	3	0.50		
4564.34	181	188	4	4	0.00		
4882.27	218	262	514	515	-0.04		

End of Report

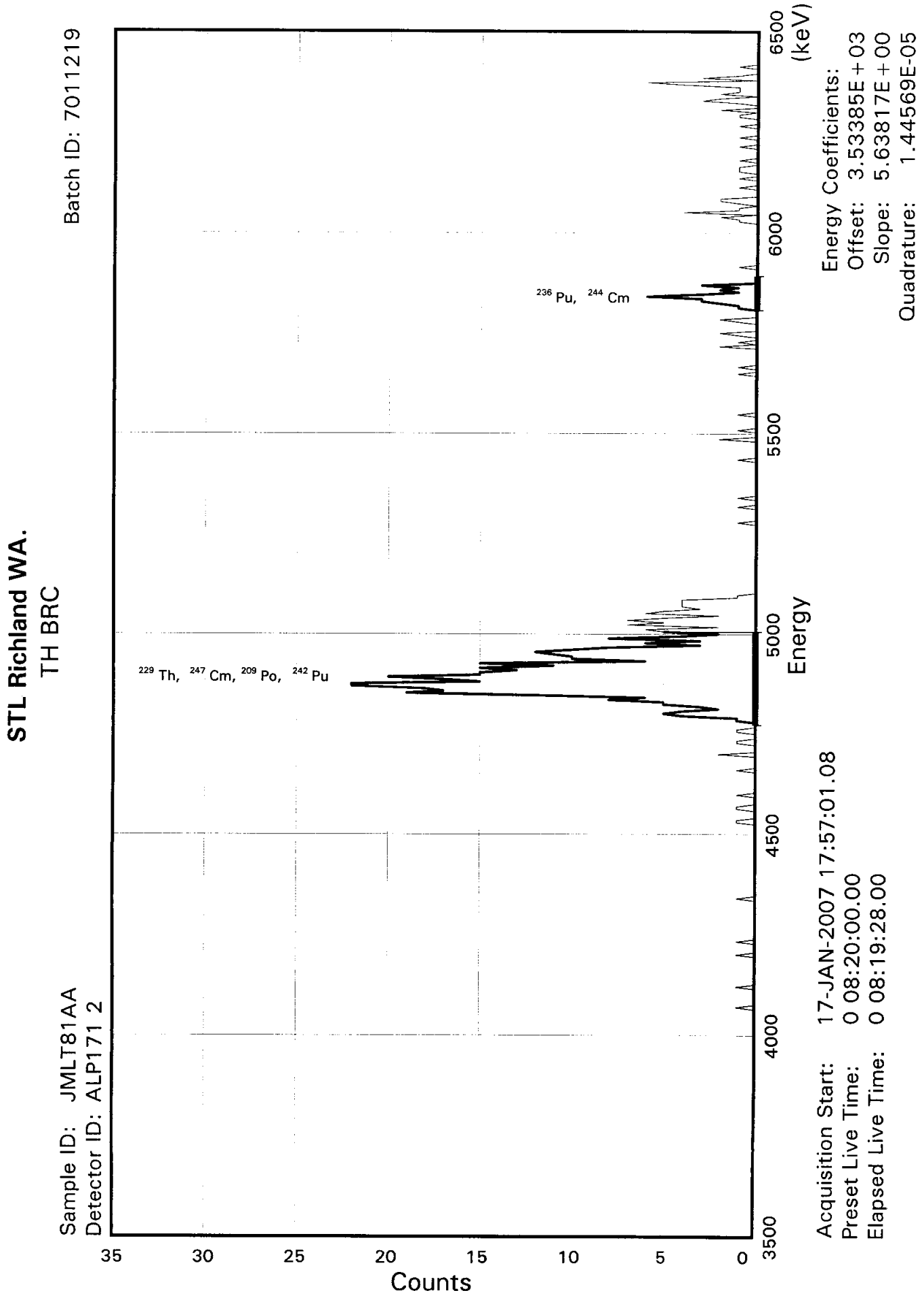
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMLT81AA

Detector: ALP171 2
Report Date: 18-Jan-07 04:56 AM
Acquire Date: 17-JAN-2007 17:57:01.08
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	2	2	0.002	5423.2	113.0	320	340
TH-229	454	2	0.907	4845.3	327.4	220	278
TH-230	3	2	0.004	4687.7	112.9	190	210
TH-232	0	1	-0.001	4013.0	112.8	70	90

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMLT81AA
Detector ID: ALP171 2
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: 17-JAN-2007 17:57:01.08
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.53385E+03
Slope: 5.63817E+00
Quadrature: 1.44569E-05

SAMPLE IDENTIITY: JMLT81AA

TITLE : TH BRC

DETECTOR : ALP171 2
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JMLT81AA_170171757B.CN
F;1
ACQUIRE DATE of BACKGROUND: 14-JAN-2007 11:22:50

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:57:01 CALIB DATE : 14-JAN-2007 01:52:58

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

OFFSET : 3533.85 keV CONSTANT FWHM : 10.33330 Channels
SLOPE : 5.63817 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 1.445690E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JMLT81AA

Detector: ALP171 2
Report Date: 18-Jan-07 04:27 AM
Acquire Date: 17-JAN-2007 17:57:01.08
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-10.010	5164.0	231.5	268	309	0.00	0.00	M
PO-209	404	1	0	0.808	4932.3	231.5	220	261	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5353.5	231.5	301	342	0.00	0.00	M
AC-227	12	6	19	0.017	6087.1	231.7	431	472	0.00	0.00	S
TH-227	12	6	19	0.017	6087.1	231.7	431	472	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5472.3	231.6	322	363	0.00	0.00	M
TH-229	404	1	0	0.808	4894.4	231.5	220	261	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4736.8	231.4	192	233	0.00	0.00	M I
TH-232	2	1	0	0.003	4062.1	236.9	72	114	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5369.3	231.5	304	345	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4823.7	231.4	207	248	0.00	0.00	M I
U-235	3	2	1	0.003	4446.9	231.4	141	182	0.00	0.00	S
PU-236	8	35	0	-0.019	5816.8	84.8	403	418	0.00	0.00	P
NP-237	-9999	-9999	0	-10.010	4837.1	231.4	210	251	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5548.1	231.6	336	377	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4247.1	231.3	105	146	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5205.7	231.5	275	316	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5534.7	231.6	333	374	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5255.9	231.5	284	325	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6161.8	231.7	444	485	0.00	0.00	M
PU-242	404	1	0	0.808	4949.6	231.5	220	261	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5324.4	231.5	296	337	0.00	0.00	M
CM-244	8	35	0	-0.019	5853.9	84.8	403	418	0.00	0.00	P
CM-246	-9999	-9999	0	-10.010	5435.6	231.6	316	357	0.00	0.00	M
CM-247	404	1	0	0.808	4919.5	231.5	220	261	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5127.7	231.5	261	302	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JMLT81AA
Detector: ALP171 2
Report Date: 18-Jan-07 04:27 AM
Acquire Date: 17-JAN-2007 17:57:01.08

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 04:27:53

Configuration : $DISK1:[ALP171.SAMPLE]JMLT81AA_170171757B.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 5-DEC-2006 12:00:00 Acquisition date : 17-JAN-2007 17:57:01
Sample ID : JMLT81AA 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 : 3550.77 keV End energy : 6424.38 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4894.39	404	0	118.40	241.16	220	41	1.35E-02	5.0	
2	0	5840.20	8	0	33.83	408.63	403	15	2.67E-04	35.4	

VMS Nuclide Identification Report V3.0 Generated 18-JAN-2007 04:27:56

Configuration	: $DISK1:[ALP171.SAMPLE]JMLT81AA_170171757B.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:57:01
Sample ID	: JMLT81AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP171 1	Detector geometry	:
Elapsed live time	: 0 08:19:28.00	Elapsed real time	: 0 08:19:28.00 0.0%
Energy tolerance	: 80.00 keV	Half life ratio	: 1.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Spline	Efficiencies at	: Peak Energy
Abundance limit	: 70.00		

Summary of Nuclide Activity

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

Nuclide Type : NP

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

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-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]JMLT81AA_170171757B.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4894.39	220	261	404	388	0.80		
5840.20	403	418	8	26	-6.36		

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

End of Report

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

Sample Identity: JMLVA1AA

Detector: ALP171 3
Report Date: 18-Jan-07 04:56 AM
Acquire Date: 17-JAN-2007 17:57:01.08
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	6	3	0.009	5423.2	119.5	308	328
TH-229	447	4	0.891	4845.3	322.3	218	272
TH-230	5	0	0.010	4687.7	119.3	185	205
TH-232	3	0	0.006	4013.0	119.1	72	92

End of Alpha Region Report
(Produced by ANAL Report)

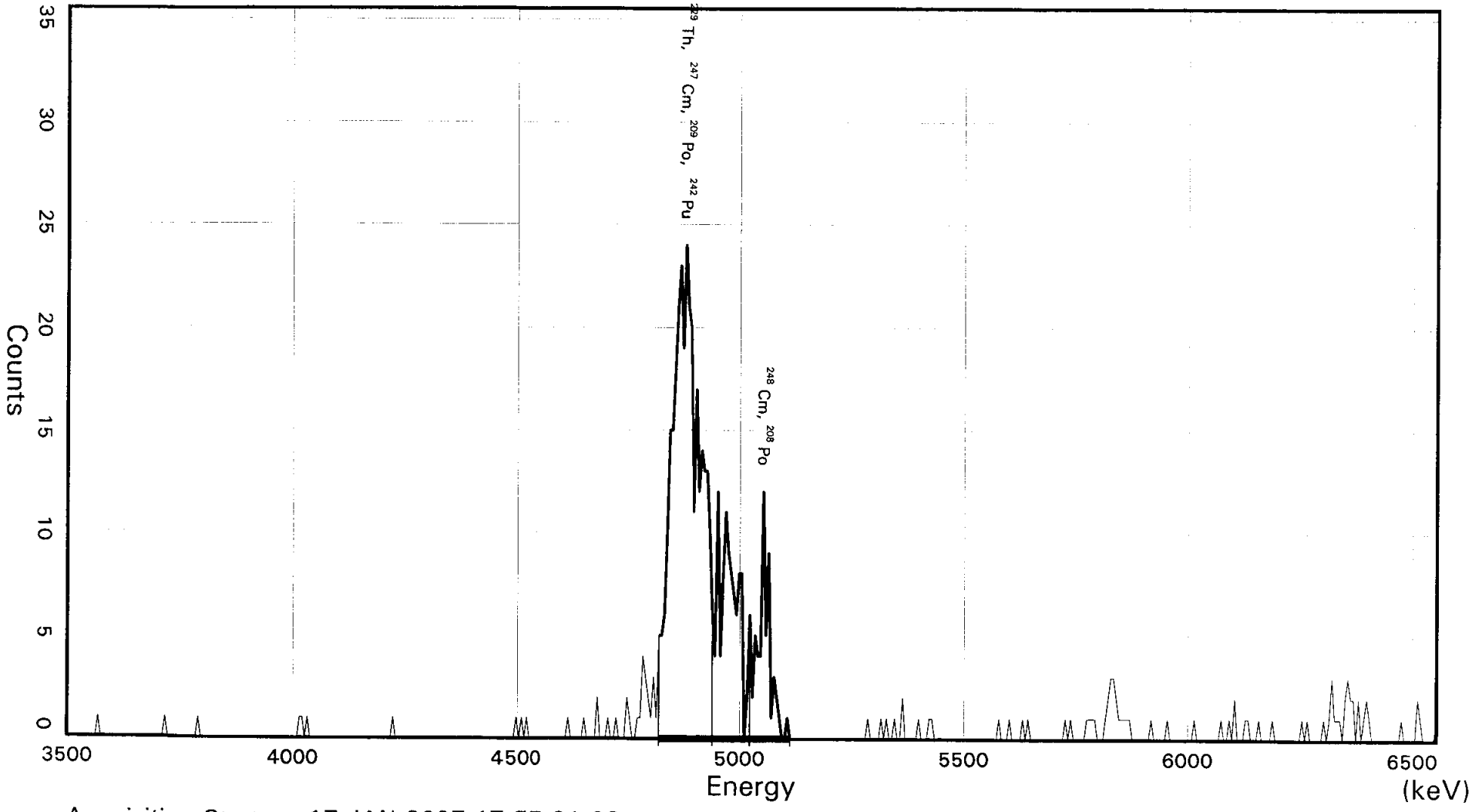
STL Richland WA.

TH BRC

Sample ID: JMLVA1AA

Detector ID: ALP171 3

Batch ID: 7011219



Acquisition Start: 17-JAN-2007 17:57:01.08

Preset Live Time: 0 08:20:00.00

Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:

Offset: 3.49708E+03

Slope: 5.94572E+00

Quadrature: 4.65648E-05

SAMPLE IDENTIITY: JMLVA1AA

TITLE : TH BRC

DETECTOR : ALP171 3
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JMLVA1AA_170171757C.CN
F;1
ACQUIRE DATE of BACKGROUND: 14-JAN-2007 11:22:50

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:57:01 CALIB DATE : 14-JAN-2007 01:53:10

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

OFFSET : 3497.08 keV CONSTANT FWHM : 9.50000 Channels
SLOPE : 5.94572 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 4.656480E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JMLVA1AA

Detector: ALP171 3
Report Date: 18-Jan-07 02:17 AM
Acquire Date: 17-JAN-2007 17:57:01.08
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	65	1	0	0.129	5149.7	173.1	242	271	0.00	0.00	P
PO-209	371	4	0	0.739	4918.0	202.9	222	256	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5339.2	203.2	299	333	0.00	0.00	M
AC-227	6	7	7	0.004	6072.8	197.6	422	455	0.00	0.00	S
TH-227	6	7	7	0.004	6072.8	197.6	422	455	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5458.0	203.2	319	353	0.00	0.00	M
TH-229	371	4	0	0.739	4880.1	202.9	222	256	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4722.5	202.8	196	230	0.00	0.00	M I
TH-232	3	2	0	0.004	4047.8	202.5	82	116	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5355.0	197.2	302	335	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4809.4	202.9	210	244	0.00	0.00	M I
U-235	3	1	0	0.005	4432.6	202.7	147	181	0.00	0.00	
PU-236	12	28	20	-0.004	5802.5	203.4	376	410	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4822.8	202.9	212	246	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5533.8	203.3	331	365	0.00	0.00	M
U-238	1	1	0	0.001	4232.8	202.6	113	147	0.00	0.00	S
PU-239	-9999	-9999	0	-10.010	5191.4	203.1	274	308	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5520.4	203.2	329	363	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5241.6	203.1	283	317	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6147.5	203.6	434	468	0.00	0.00	M
PU-242	371	4	0	0.739	4935.3	202.9	222	256	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5310.1	203.1	294	328	0.00	0.00	M
CM-244	11	21	20	0.002	5839.6	203.4	383	417	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5421.3	203.2	313	347	0.00	0.00	M
CM-247	371	4	0	0.739	4905.2	202.9	222	256	0.00	0.00	P
CM-248	65	1	0	0.129	5113.4	173.1	242	271	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29 Jun-92)

Sample Identity: JMLVA1AA
Detector: ALP171 3
Report Date: 18-Jan-07 02:17 AM
Acquire Date: 17-JAN-2007 17:57:01.08

Flags Key

Intersect Region: @
Non Intersect Region: +, -

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 02:17:52

Configuration	: $DISK1:[ALP171.SAMPLE]JMLVA1AA_170171757C.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:57:01
Sample ID	: JMLVA1AA	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	: 3514.92 keV	End energy	: 6553.50 keV
Sensitivity	: 3.00	Sum Sensitivity	: 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4880.09	371	0	83.24	232.18	222	34	1.24E-02	5.2	
2	0	5052.52	65	0	41.62	261.07	242	29	2.17E-03	12.4	

VMS Nuclide Identification Report V3.0 Generated 18-JAN-2007 02:17:57

Configuration	: $DISK1:[ALP171.SAMPLE]JMLVA1AA_170171757C.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:57:01
Sample ID	: JMLVA1AA	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-208	2.90Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

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

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

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

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

Configuration: $DISK1:[ALP171.SAMPLE]JMLVA1AA_170171757C.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4880.09	222	256	371	391	-1.04		
5052.52	242	271	65	148	-10.29	99	-0.19

End of Report

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

Sample Identity: JMLVW1AA

Detector: ALP171 4
Report Date: 18-Jan-07 04:57 AM
Acquire Date: 17-JAN-2007 17:57:01.08
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	2	1	0.003	5423.2	111.1	307	327
TH-229	405	0	0.811	4845.3	322.6	206	264
TH-230	5	1	0.009	4687.7	111.3	175	195
TH-232	1	0	0.002	4013.0	111.6	54	74

End of Alpha Region Report
(Produced by ANAL Report)

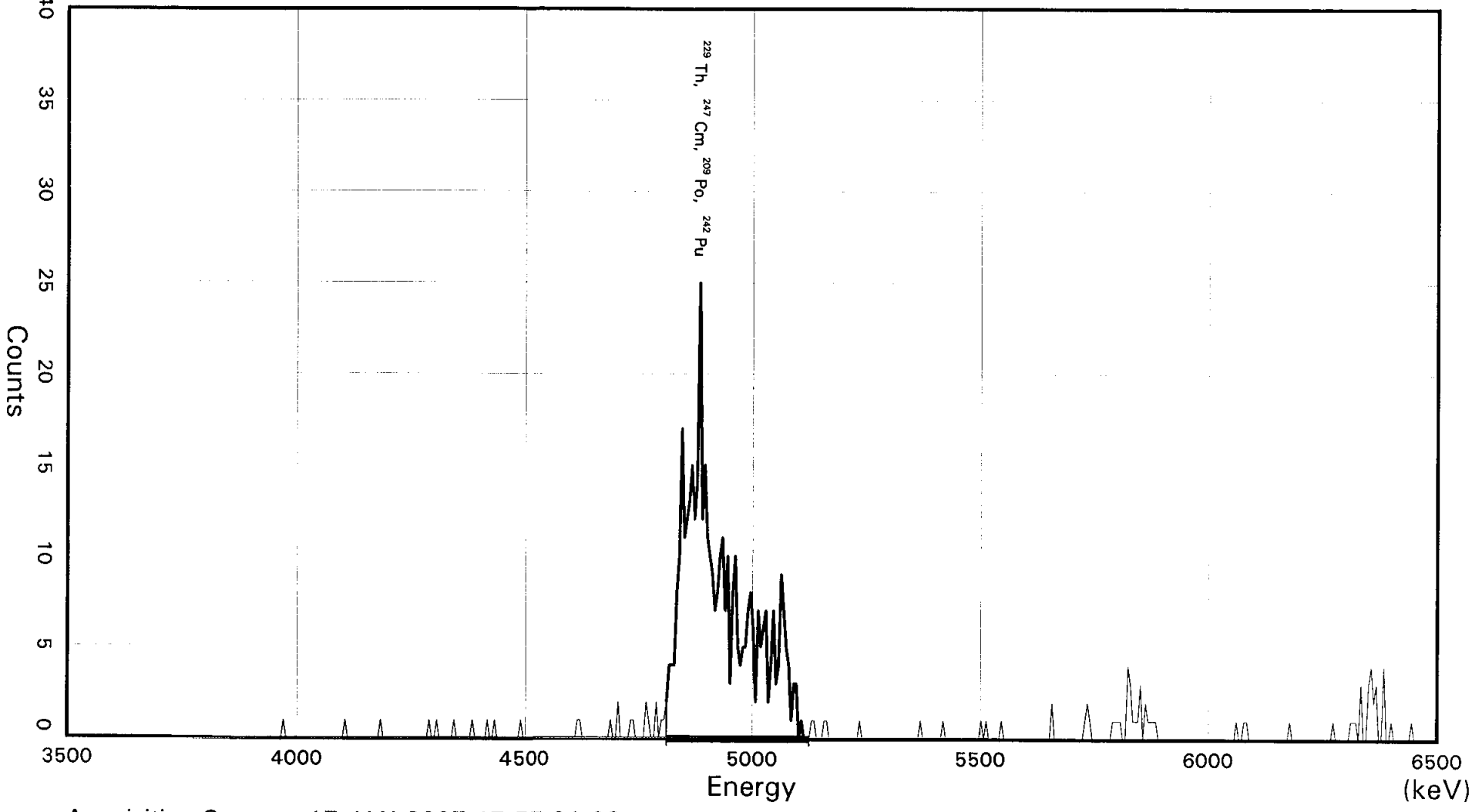
STL Richland WA.

TH BRC

Sample ID: JMLVW1AA

Detector ID: ALP171 4

Batch ID: 7011219



Acquisition Start: 17-JAN-2007 17:57:01.08

Preset Live Time: 0 08:20:00.00

Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:

Offset: 3.63058E+03

Slope: 5.58318E+00

Quadrature: -4.43354E-05

SAMPLE IDENTIITY: JMLVW1AA

TITLE : TH BRC

DETECTOR : ALP171 4
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JMLVW1AA_170171757D.CN
F;1
ACQUIRE DATE of BACKGROUND: 14-JAN-2007 11:22:50

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:57:01 CALIB DATE : 14-JAN-2007 01:53:20

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

OFFSET : 3630.58 keV CONSTANT FWHM : 10.83330 Channels
SLOPE : 5.58318 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.443354E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JMLVW1AA

Detector: ALP171 4
Report Date: 18-Jan-07 04:28 AM
Acquire Date: 17-JAN-2007 17:57:01.08
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	316.8	260	317	0.00	0.00	M I
PO-209	401	0	0	0.803	4922.0	311.5	212	268	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5343.2	311.1	295	351	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6076.9	310.4	427	483	0.00	0.00	M
TH-227	-9999	-9999	0	-10.010	6076.9	310.4	427	483	0.00	0.00	M
TH-228	-9999	-9999	0	-10.010	5462.0	311.0	316	372	0.00	0.00	M
TH-229	401	0	0	0.803	4884.1	311.5	212	268	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4726.5	311.6	184	240	0.00	0.00	M I
TH-232	2	1	2	0.004	4051.8	306.6	63	118	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5359.0	311.0	297	353	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4813.4	311.5	199	255	0.00	0.00	M I
U-235	-9999	-9999	0	-10.010	4436.6	311.9	132	188	0.00	0.00	M
PU-236	-9999	-9999	0	-10.010	5806.5	310.6	378	434	0.00	0.00	M
NP-237	-9999	-9999	0	-10.010	4826.8	311.5	202	258	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5537.9	310.9	330	386	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4236.8	312.0	96	152	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5195.4	311.2	268	324	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5524.4	310.9	327	383	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5245.6	311.1	277	333	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6151.6	310.3	440	496	0.00	0.00	M
PU-242	401	0	0	0.803	4939.3	311.5	212	268	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5314.1	311.1	289	345	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5843.7	310.6	385	441	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5425.3	311.0	309	365	0.00	0.00	M
CM-247	401	0	0	0.803	4909.2	311.5	212	268	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5117.4	311.3	254	310	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: JMLVW1AA
Detector: ALP171 4
Report Date: 18-Jan-07 04:28 AM
Acquire Date: 17-JAN-2007 17:57:01.08

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 04:28:07

Configuration	: $DISK1:[ALP171.SAMPLE]JMLVW1AA_170171757D.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:57:01
Sample ID	: JMLVW1AA	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	: 3647.33 keV	End energy	: 6477.55 keV
Sensitivity	: 3.00	Sum Sensitivity	: 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4884.14	401	0100.50		224.93	212	56	1.34E-02	5.0	

VMS Nuclide Identification Report V3.0 Generated 18-JAN-2007 04:28:09

Configuration	: $DISK1:[ALP171.SAMPLE]JMLVW1AA_170171757D.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:57:01
Sample ID	: JMLVW1AA	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]JMLVW1AA_170171757D.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4884.14	212	268	401	402	-0.05		

End of Report

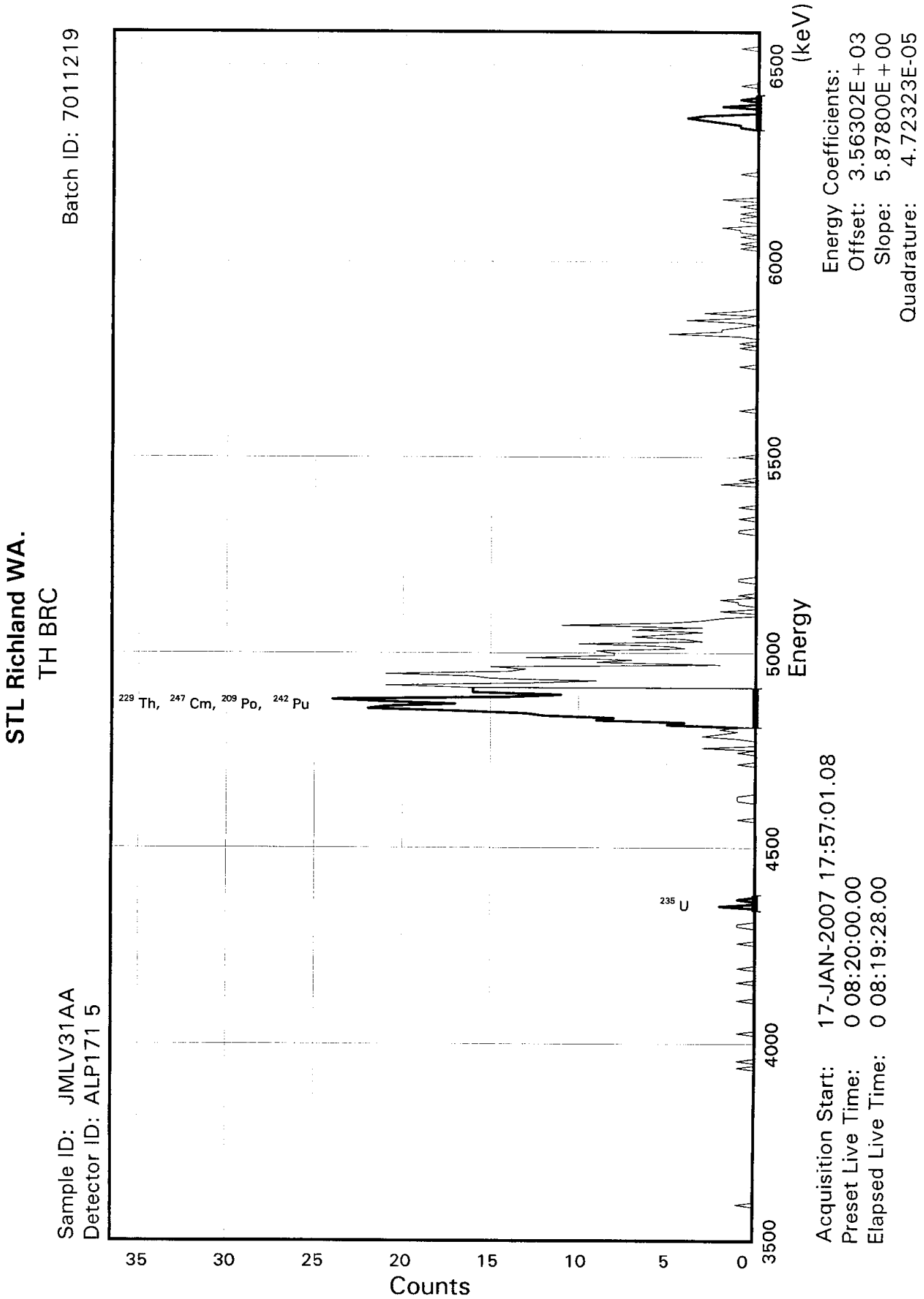
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMLV31AA

Detector: ALP171 5
Report Date: 18-Jan-07 04:57 AM
Acquire Date: 17-JAN-2007 17:57:01.08
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	5	0	0.010	5423.2	118.1	301	321
TH-229	528	4	1.053	4845.3	371.7	207	270
TH-230	4	1	0.007	4687.7	117.9	176	196
TH-232	3	0	0.006	4013.0	117.7	62	82

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMLV31AA
Detector ID: ALP171 5
229 Th, 247 Cm, 209 Po, 242 Pu
235 U
Counts
35
30
25
20
15
10
5
0
3500
4000
4500
5000
5500
6000
6500
Energy
(keV)
Acquisition Start: 17-JAN-2007 17:57:01.08
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.56302E+03
Slope: 5.87800E+00
Quadrature: 4.72323E-05

SAMPLE IDENTIITY: JMLV31AA

TITLE : TH BRC

DETECTOR : ALP171 5
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JMLV31AA_170171757E.CN
F;1
ACQUIRE DATE of BACKGROUND: 14-JAN-2007 11:22:50

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:57:01 CALIB DATE : 14-JAN-2007 01:53:33

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

OFFSET : 3563.02 keV CONSTANT FWHM : 7.83333 Channels
SLOPE : 5.87800 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 4.723230E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JMLV31AA

Detector: ALP171 5
Report Date: 18-Jan-07 02:18 AM
Acquire Date: 17-JAN-2007 17:57:01.08
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	-9999	-9999	0	-10.010	5137.9	100.4	258	275	0.00	0.00	M
PO-209	217	1	0	0.433	4906.2	100.3	212	229	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5327.3	100.4	290	307	0.00	0.00	M
AC-227	6	3	4	0.009	6061.0	100.6	414	431	0.00	0.00	S
TH-227	6	3	4	0.009	6061.0	100.6	414	431	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5446.2	100.4	310	327	0.00	0.00	M
TH-229	217	1	0	0.433	4868.3	100.3	212	229	0.00	0.00	P
TH-230	2	1	1	0.002	4710.7	100.2	185	202	0.00	0.00	S
TH-232	1	0	0	0.002	4036.0	100.1	71	88	0.00	0.00	
U-232	-9999	-9999	0	-10.010	5343.1	100.4	292	309	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4797.6	100.3	200	217	0.00	0.00	M I
U-235	4	0	0	0.008	4420.8	41.2	132	139	0.00	0.00	P
PU-236	8	12	13	0.003	5790.6	100.5	368	385	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4811.0	100.3	202	219	0.00	0.00	S I
PU-238	-9999	-9999	0	-10.010	5522.0	100.5	323	340	0.00	0.00	M
U-238	2	0	0	0.004	4221.0	100.1	102	119	0.00	0.00	
PU-239	-9999	-9999	0	-10.010	5179.5	100.4	265	282	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5508.6	100.5	320	337	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5229.8	100.4	273	290	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6135.7	94.7	427	443	0.00	0.00	M
PU-242	217	1	0	0.433	4923.5	100.3	212	229	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5298.3	100.4	285	302	0.00	0.00	M
CM-244	16	34	13	-0.003	5827.8	100.5	374	391	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5409.5	100.4	304	321	0.00	0.00	M
CM-247	217	1	0	0.433	4893.4	100.3	212	229	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5101.6	100.3	252	269	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JMLV31AA
Detector: ALP171 5
Report Date: 18-Jan-07 02:18 AM
Acquire Date: 17-JAN-2007 17:57:01.08

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 02:18:05

Configuration : $DISK1:[ALP171.SAMPLE]JMLV31AA_170171757E.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 5-DEC-2006 12:00:00 Acquisition date : 17-JAN-2007 17:57:01
Sample ID : JMLV31AA 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 : 3580.65 keV End energy : 6584.94 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4354.46	4	0	23.51	134.50	132	7	1.33E-04	50.0	
2	0	4868.25	217	0	58.78	221.66	212	17	7.24E-03	6.8	
3	0	6362.76	16	0	23.51	474.50	470	15	5.34E-04	25.0	

VMS Nuclide Identification Report V3.0 Generated 18-JAN-2007 02:18:09

Configuration	: $DISK1:[ALP171.SAMPLE]JMLV31AA_170171757E.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:57:01
Sample ID	: JMLV31AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP171 1	Detector geometry	:
Elapsed live time	: 0 08:19:28.00	Elapsed real time	: 0 08:19:28.00 0.0%
Energy tolerance	: 80.00 keV	Half life ratio	: 1.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Spline	Efficiencies at	: Peak Energy
Abundance limit	: 70.00		

Summary of Nuclide Activity

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

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-235	7.08E+08Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
	Total Activity :		0.000E+00	0.000E+00			

Nuclide Type : AP

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

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

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

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

Configuration: $DISK1:[ALP171.SAMPLE]JMLV31AA_170171757E.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4354.46	132	139	4	3	0.50		
4868.25	212	229	217	247	-2.04		
6362.76	470	485	16	17	-0.25		

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

End of Report

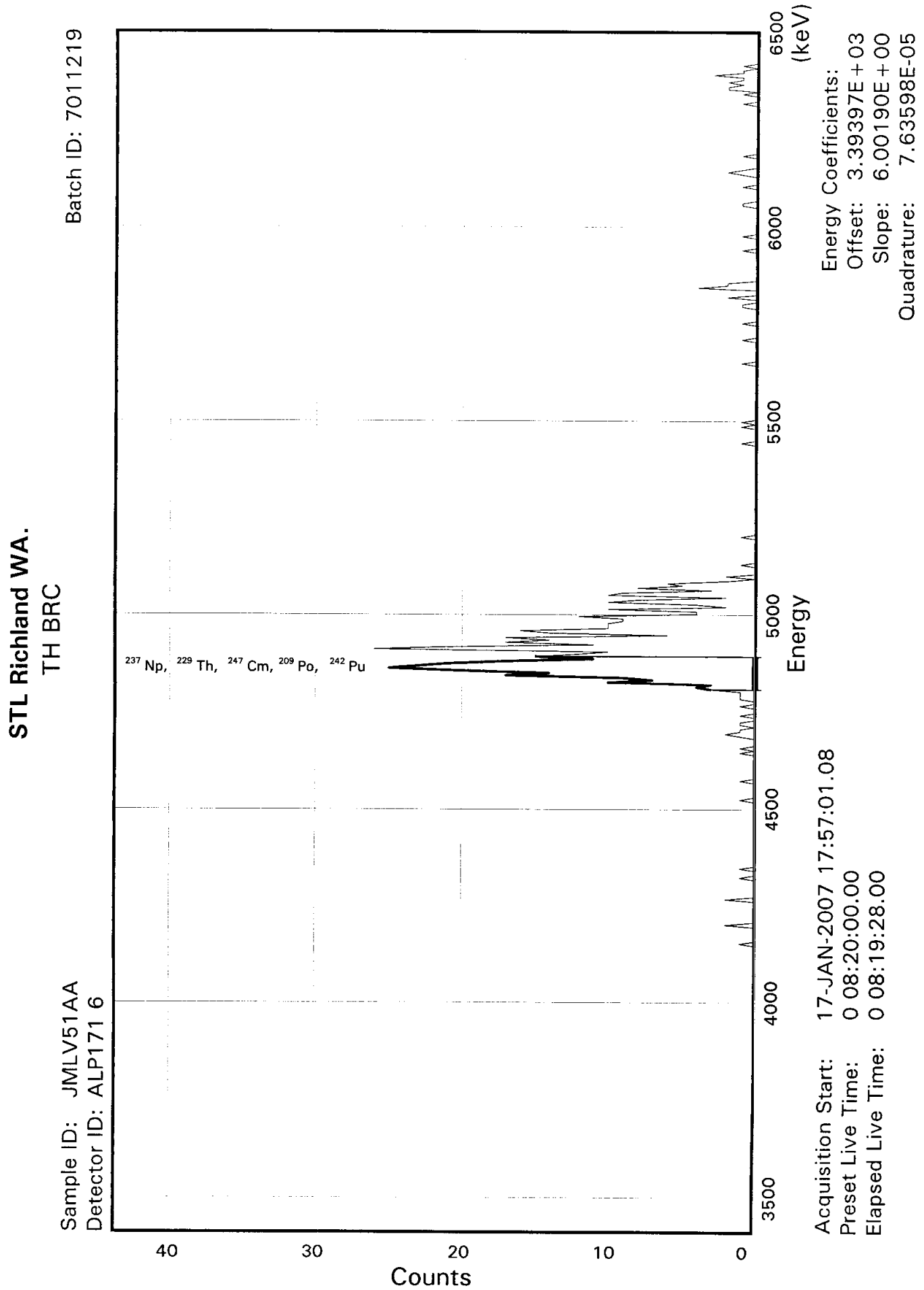
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMLV51AA

Detector: ALP171 6
Report Date: 18-Jan-07 04:57 AM
Acquire Date: 17-JAN-2007 17:57:01.08
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	4	-0.002	5423.2	121.1	322	342
TH-229	516	3	1.030	4845.3	332.3	229	284
TH-230	8	0	0.016	4687.7	120.7	200	220
TH-232	0	0	0.000	4013.0	120.3	88	108

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMLV51AA
Detector ID: ALP171 6
237 Np, 229 Th, 247 Cm, 209 Po, 242 Pu
Energy
(keV)
3500
4000
4500
5000
5500
6000
6500
Counts
40
30
20
10
0
Acquisition Start: 17-JAN-2007 17:57:01.08
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.39397E+03
Slope: 6.00190E+00
Quadrature: 7.63598E-05

SAMPLE IDENTIITY: JMLV51AA

TITLE : TH BRC

DETECTOR : ALP171 6
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JMLV51AA_170171757F.CN
F;1
ACQUIRE DATE of BACKGROUND: 14-JAN-2007 11:22:50

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:57:01 CALIB DATE : 14-JAN-2007 01:53:45

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

OFFSET : 3393.97 keV CONSTANT FWHM : 7.66667 Channels
SLOPE : 6.00190 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 7.635980E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JMLV51AA

Detector: ALP171 6
Report Date: 18-Jan-07 04:28 AM
Acquire Date: 17-JAN-2007 17:57:01.08
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	5135.7	84.6	280	294	0.00	0.00	M
PO-209	196	0	0	0.392	4904.0	84.5	235	249	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5325.2	84.7	311	325	0.00	0.00	M
AC-227	2	2	0	0.002	6058.8	85.0	432	446	0.00	0.00	S
TH-227	2	2	0	0.002	6058.8	85.0	432	446	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5444.0	84.7	331	345	0.00	0.00	M
TH-229	196	0	0	0.392	4866.1	84.5	235	249	0.00	0.00	P
TH-230	8	0	0	0.016	4708.5	84.5	209	223	0.00	0.00	
TH-232	0	0	0	0.000	4033.8	84.2	97	111	0.00	0.00	
U-232	-9999	-9999	0	-10.010	5341.0	84.7	314	328	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4795.4	84.5	223	237	0.00	0.00	I
U-235	0	0	0	0.000	4418.6	84.4	161	175	0.00	0.00	
PU-236	2	11	2	-0.007	5788.5	84.9	387	401	0.00	0.00	S
NP-237	196	0	0	0.392	4808.8	84.5	235	249	0.00	0.00	P
PU-238	-9999	-9999	0	-10.010	5519.8	84.8	343	357	0.00	0.00	M
U-238	2	0	0	0.004	4218.8	84.3	128	142	0.00	0.00	
PU-239	-9999	-9999	0	-10.010	5177.4	84.7	287	301	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5506.4	84.8	341	355	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5227.6	84.7	295	309	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6133.5	85.0	444	458	0.00	0.00	M
PU-242	196	0	0	0.392	4921.3	84.5	235	249	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5296.1	84.7	306	320	0.00	0.00	M
CM-244	11	26	2	-0.004	5825.6	84.9	394	408	0.00	0.00	S
CM-246	-9999	-9999	0	-10.010	5407.3	84.7	325	339	0.00	0.00	M
CM-247	196	0	0	0.392	4891.2	84.5	235	249	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5099.4	84.6	274	288	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JMLV51AA
Detector: ALP171 6
Report Date: 18-Jan-07 04:28 AM
Acquire Date: 17-JAN-2007 17:57:01.08

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 04:28:17

```
Configuration     : $DISK1:[ALP171.SAMPLE]JMLV51AA_170171757F.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 5-DEC-2006 12:00:00  Acquisition date : 17-JAN-2007 17:57:01
Sample ID         : JMLV51AA             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      :  3411.97 keV         End energy       :  6486.96 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4866.12	196	0	48.02	244.52	235	14	6.54E-03	7.1	

VMS Nuclide Identification Report V3.0 Generated 18-JAN-2007 04:28:19

```
Configuration     : $DISK1:[ALP171.SAMPLE]JMLV51AA_170171757F.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 5-DEC-2006 12:00:00  Acquisition date : 17-JAN-2007 17:57:01
Sample ID         : JMLV51AA             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	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

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

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

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

Configuration: $DISK1:[ALP171.SAMPLE]JMLV51AA_170171757F.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4866.11	235	249	196	199	-0.21		

End of Report

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

Sample Identity: JMLV81AA

Detector: ALP171 7
Report Date: 18-Jan-07 04:57 AM
Acquire Date: 17-JAN-2007 17:57:01.08
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	0	0.000	5423.2	112.6	310	330
TH-229	292	1	0.584	4845.3	332.5	209	268
TH-230	2	1	0.003	4687.7	112.7	180	200
TH-232	2	1	0.003	4013.0	112.9	60	80

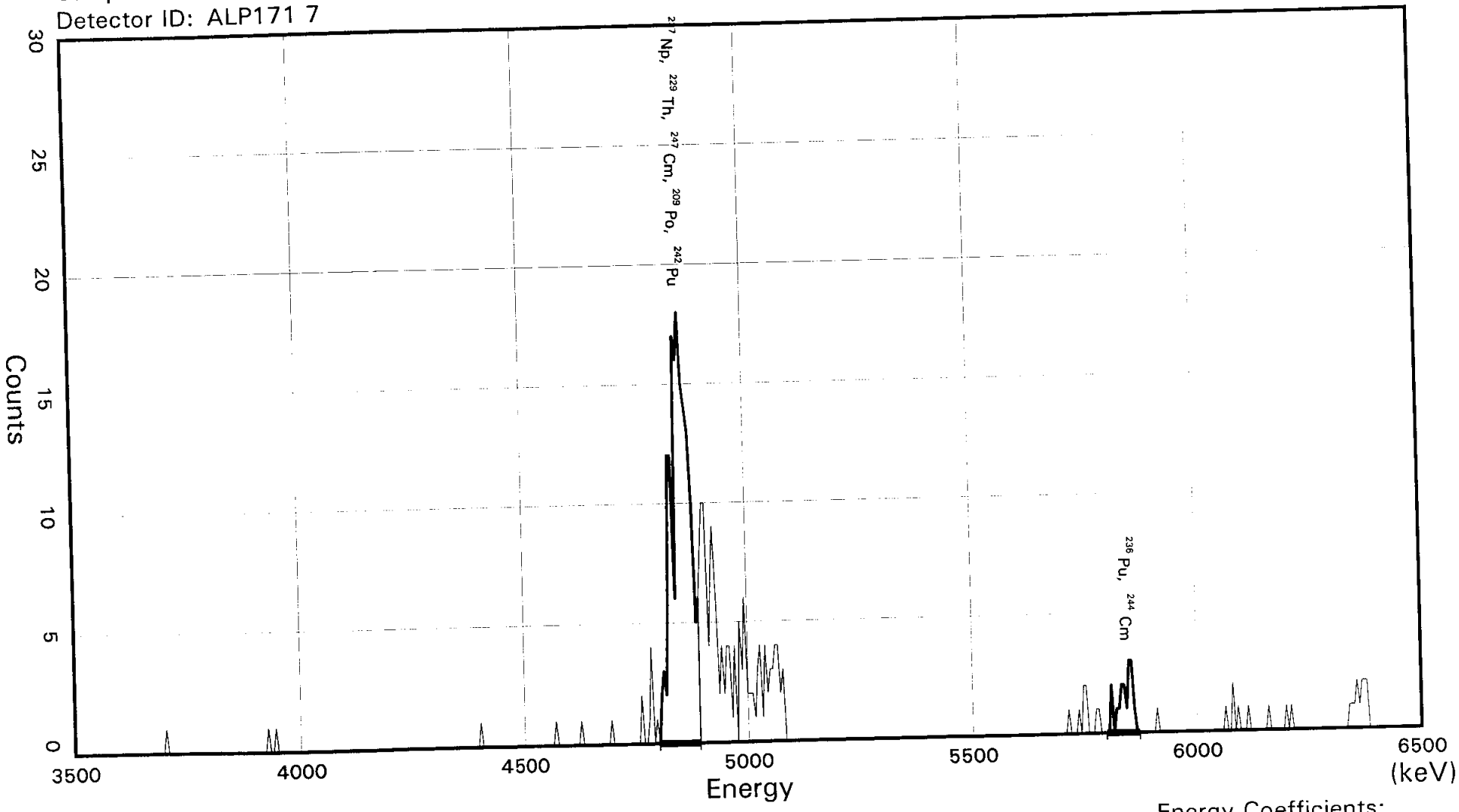
End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.

TH BRC

Batch ID: 7011219

Sample ID: JMLV81AA
Detector ID: ALP171 7



Acquisition Start: 17-JAN-2007 17:57:01.08
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:
Offset: 3.58973E+03
Slope: 5.64648E+00
Quadrature: -2.37631E-05

SAMPLE IDENTITY: JMLV81AA

TITLE : TH BRC

DETECTOR : ALP171 7
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JMLV81AA_170171757G.CN
F;1
ACQUIRE DATE of BACKGROUND: 14-JAN-2007 11:22:50

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:57:01 CALIB DATE : 14-JAN-2007 01:54:02

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

OFFSET : 3589.73 keV CONSTANT FWHM : 6.16667 Channels
SLOPE : 5.64648 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.237631E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JMLV81AA

Detector: ALP171 7
Report Date: 18-Jan-07 02:18 AM
Acquire Date: 17-JAN-2007 17:57:01.08
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	5124.6	90.1	263	279	0.00	0.00	M
PO-209	174	0	0	0.348	4892.9	90.2	215	231	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5314.1	90.1	296	312	0.00	0.00	M
AC-227	2	0	2	0.004	6047.7	90.0	427	443	0.00	0.00	S
TH-227	2	0	2	0.004	6047.7	90.0	427	443	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5432.9	90.1	318	334	0.00	0.00	M
TH-229	174	0	0	0.348	4855.0	90.2	215	231	0.00	0.00	P
TH-230	1	1	0	0.001	4697.4	90.2	187	203	0.00	0.00	S
TH-232	0	1	0	-0.001	4022.7	90.3	67	83	0.00	0.00	
U-232	-9999	-9999	0	-10.010	5329.9	90.1	299	315	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4784.3	90.2	202	218	0.00	0.00	S I
U-235	1	1	0	0.001	4407.5	90.2	136	152	0.00	0.00	
PU-236	17	29	0	0.005	5777.4	73.2	392	405	0.00	0.00	P
NP-237	174	0	0	0.348	4797.7	90.2	215	231	0.00	0.00	P
PU-238	-9999	-9999	0	-10.010	5508.7	90.1	331	347	0.00	0.00	M
U-238	0	0	0	0.000	4207.7	90.3	100	116	0.00	0.00	
PU-239	-9999	-9999	0	-10.010	5166.3	90.1	270	286	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5495.3	90.1	329	345	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5216.5	90.1	279	295	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6122.4	90.0	440	456	0.00	0.00	M
PU-242	174	0	0	0.348	4910.2	90.2	215	231	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5285.0	90.1	291	307	0.00	0.00	M
CM-244	17	29	0	0.005	5814.5	73.2	392	405	0.00	0.00	P
CM-246	-9999	-9999	0	-10.010	5396.2	90.1	311	327	0.00	0.00	M
CM-247	174	0	0	0.348	4880.1	90.2	215	231	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5088.3	90.1	256	272	0.00	0.00	M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JMLV81AA
Detector: ALP171 7
Report Date: 18-Jan-07 02:18 AM
Acquire Date: 17-JAN-2007 17:57:01.08

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 02:18:16

```
Configuration     : $DISK1:[ALP171.SAMPLE]JMLV81AA_170171757G.CNF;1
Analyses by       : ALPHA V1.8
Sample title      : TH BRC
Sample date       : 5-DEC-2006 12:00:00  Acquisition date : 17-JAN-2007 17:57:01
Sample ID         : JMLV81AA             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      :  3606.67 keV         End energy       :  6474.50 keV
Sensitivity       :     3.00             Sum Sensitivity  :     1.00
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4855.02	174	0	50.82	224.30	215	16	5.81E-03	7.6	
2	0	5845.93	17	0	28.23	400.25	392	13	5.67E-04	24.3	

VMS Nuclide Identification Report V3.0 Generated 18-JAN-2007 02:18:21

```
Configuration     : $DISK1:[ALP171.SAMPLE]JMLV81AA_170171757G.CNF;1
Analyses by       : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title      : TH BRC
Sample date       : 5-DEC-2006 12:00:00  Acquisition date : 17-JAN-2007 17:57:01
Sample ID         : JMLV81AA             Sample quantity  : 0.00000E+00 SAMPLE
Sample type       : disk                 Sample geometry  :
Detector name     : ALP171 1             Detector geometry:
Elapsed live time: 0 08:19:28.00         Elapsed real time: 0 08:19:28.00   0.0%
Energy tolerance :    80.00 keV          Half life ratio  :     1.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Spline                Efficiencies at  : Peak Energy
Abundance limit  :    70.00
```

Summary of Nuclide Activity

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

Nuclide Type : NP

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

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-244	18.10Y	1.00	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]JMLV81AA_170171757G.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4855.01	215	231	174	157	1.29		
5845.93	392	405	17	16	0.24		

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

End of Report

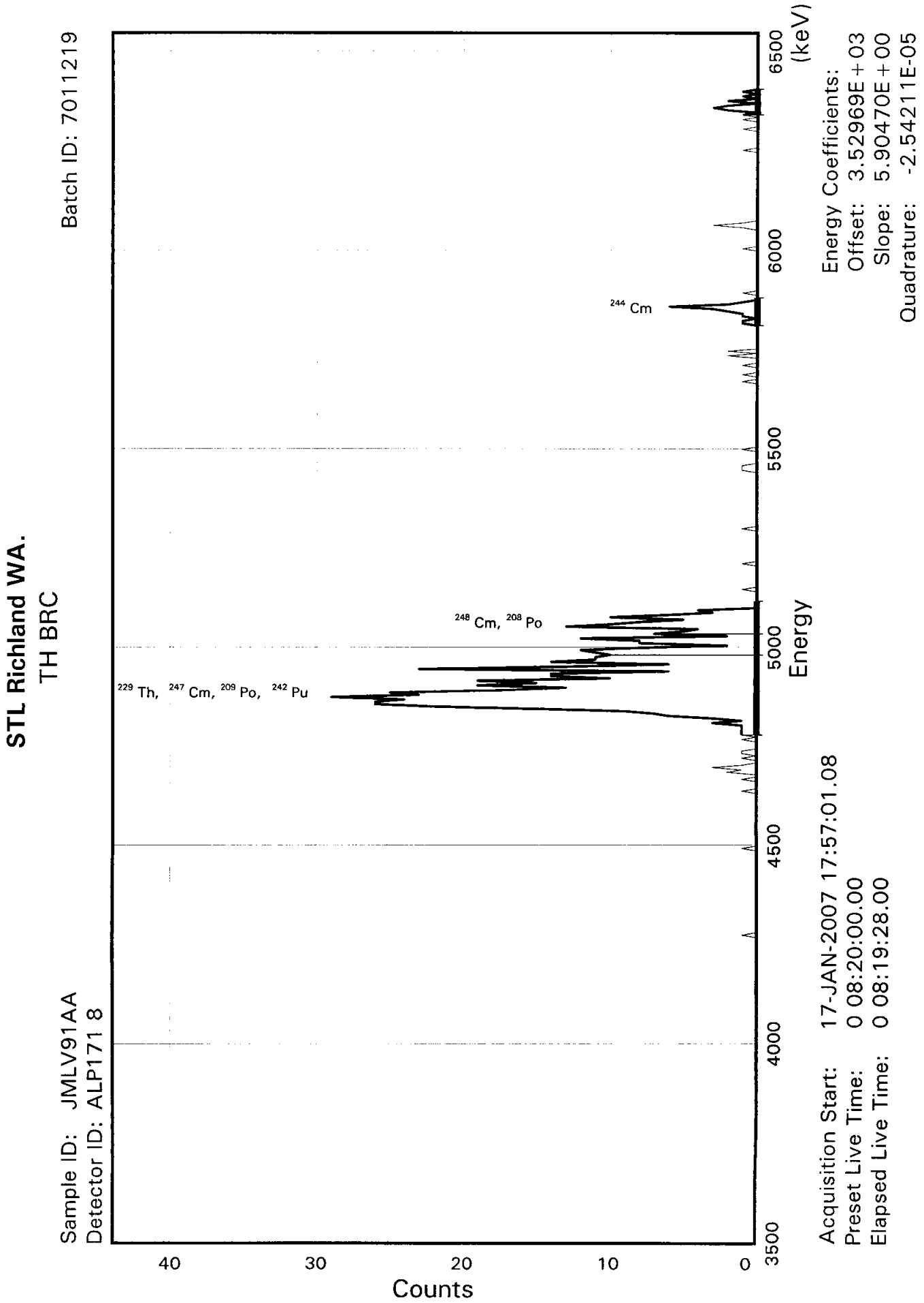
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMLV91AA

Detector: ALP171 8
Report Date: 18-Jan-07 04:58 AM
Acquire Date: 17-JAN-2007 17:57:01.08
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	2	0	0.004	5423.2	117.8	306	326
TH-229	575	0	1.151	4845.3	318.2	214	268
TH-230	9	0	0.018	4687.7	117.9	181	201
TH-232	0	0	0.000	4013.0	118.0	67	87

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMLV91AA
Detector ID: ALP171 8
229 Th, 247 Cm, 209 Po, 242 Pu
248 Cm, 208 Po
244 Cm
Counts
40
30
20
10
0
3500
4000
4500
5000
5500
6000
6500
Energy
(keV)
Acquisition Start: 17-JAN-2007 17:57:01.08
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00
Energy Coefficients:
Offset: 3.52969E+03
Slope: 5.90470E+00
Quadrature: -2.54211E-05

SAMPLE IDENTIITY: JMLV91AA

TITLE : TH BRC

DETECTOR : ALP171 8
CONFIGURATION NAME : $DISK1:[ALP171.SAMPLE]JMLV91AA_170171757H.CN
F;1
ACQUIRE DATE of BACKGROUND: 14-JAN-2007 11:22:50

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 17-JAN-2007 17:57:01 CALIB DATE : 14-JAN-2007 01:54:21

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

OFFSET : 3529.69 keV CONSTANT FWHM : 7.66667 Channels
SLOPE : 5.90470 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.254211E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JMLV91AA

Detector: ALP171 8
Report Date: 18-Jan-07 02:18 AM
Acquire Date: 17-JAN-2007 17:57:01.08
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	78	0	0	0.156	5156.4	135.5	246	269	0.00	0.00	P
PO-209	499	0	0	0.999	4924.7	253.4	212	255	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5345.9	253.2	290	333	0.00	0.00	M
AC-227	4	3	5	0.004	6079.5	252.9	415	458	0.00	0.00	S
TH-227	4	3	5	0.004	6079.5	252.9	415	458	0.00	0.00	S
TH-228	-9999	-9999	0	-10.010	5464.7	253.2	310	353	0.00	0.00	M
TH-229	499	0	0	0.999	4886.8	253.4	212	255	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4729.2	253.5	185	228	0.00	0.00	M I
TH-232	0	0	0	0.000	4054.5	253.7	71	114	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5361.6	253.2	293	336	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4816.1	253.4	200	243	0.00	0.00	M I
U-235	1	0	0	0.002	4439.3	253.6	136	179	0.00	0.00	S
PU-236	-9999	-9999	0	-10.010	5809.1	253.0	369	412	0.00	0.00	I
NP-237	-9999	-9999	0	-10.010	4829.5	253.4	202	245	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5540.5	253.1	323	366	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4239.5	253.6	102	145	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5198.1	253.3	265	308	0.00	0.00	M I
AM-241	-9999	-9999	0	-10.010	5527.1	253.2	321	364	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5248.3	253.3	273	316	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6154.2	252.9	427	470	0.00	0.00	M
PU-242	499	0	0	0.999	4942.0	253.4	212	255	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5316.8	253.2	285	328	0.00	0.00	M
CM-244	20	28	0	0.012	5846.3	70.6	387	399	0.00	0.00	P
CM-246	-9999	-9999	0	-10.010	5428.0	253.2	304	347	0.00	0.00	M
CM-247	499	0	0	0.999	4911.9	253.4	212	255	0.00	0.00	P
CM-248	78	0	0	0.156	5120.1	135.5	246	269	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JMLV91AA
Detector: ALP171 8
Report Date: 18-Jan-07 02:18 AM
Acquire Date: 17-JAN-2007 17:57:01.08

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 02:18:26

Configuration : $DISK1:[ALP171.SAMPLE]JMLV91AA_170171757H.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 5-DEC-2006 12:00:00 Acquisition date : 17-JAN-2007 17:57:01
Sample ID : JMLV91AA 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 : 3547.41 keV End energy : 6546.23 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4886.78	499	0	100.38	230.06	212	43	1.67E-02	4.5	
2	0	5062.21	78	0	53.14	259.83	246	23	2.60E-03	11.3	
3	0	5855.14	20	0	23.62	394.50	387	12	6.67E-04	22.4	
4	0	6356.41	11	0	23.62	479.71	477	11	3.67E-04	30.2	

VMS Nuclide Identification Report V3.0 Generated 18-JAN-2007 02:18:31

Configuration	: $DISK1:[ALP171.SAMPLE]JMLV91AA_170171757H.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.3		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 17-JAN-2007 17:57:01
Sample ID	: JMLV91AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP171 1	Detector geometry	:
Elapsed live time	: 0 08:19:28.00	Elapsed real time	: 0 08:19:28.00 0.0%
Energy tolerance	: 80.00 keV	Half life ratio	: 1.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Spline	Efficiencies at	: Peak Energy
Abundance limit	: 70.00		

Summary of Nuclide Activity

Total number of lines in spectrum	4	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	3	75.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

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

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

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

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

Configuration: $DISK1:[ALP171.SAMPLE]JMLV91AA_170171757H.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4886.77	212	255	499	509	-0.45		
5062.21	246	269	78	148	-7.93	80	0.00
5855.14	387	399	20	18	0.45		
6356.41	477	488	11	12	-0.30		

End of Report

SEVERN TRENT STL

THORIUM ISOTOPIC COUNTING REQUEST

1352

C.R. Technician 03
Date Counted 1/18/07

C.R. Analyst
Date Analyzed

Counting Time
Sample 500 Minutes

Background See Alpha Analysis Report
BRC 12/5/06

SOP's
Operating: RICHRD008
Review: RICHRD0016
7011219

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)		
JMN8F1AA		10		0	See Alpha Analysis Report for ROI Information			119	
JMN8F1AC		10		0	See Alpha Analysis Report for ROI Information			120	
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				
		10		0	See Alpha Analysis Report for ROI Information				

Comments:

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

Approved by: _____ Date: _____

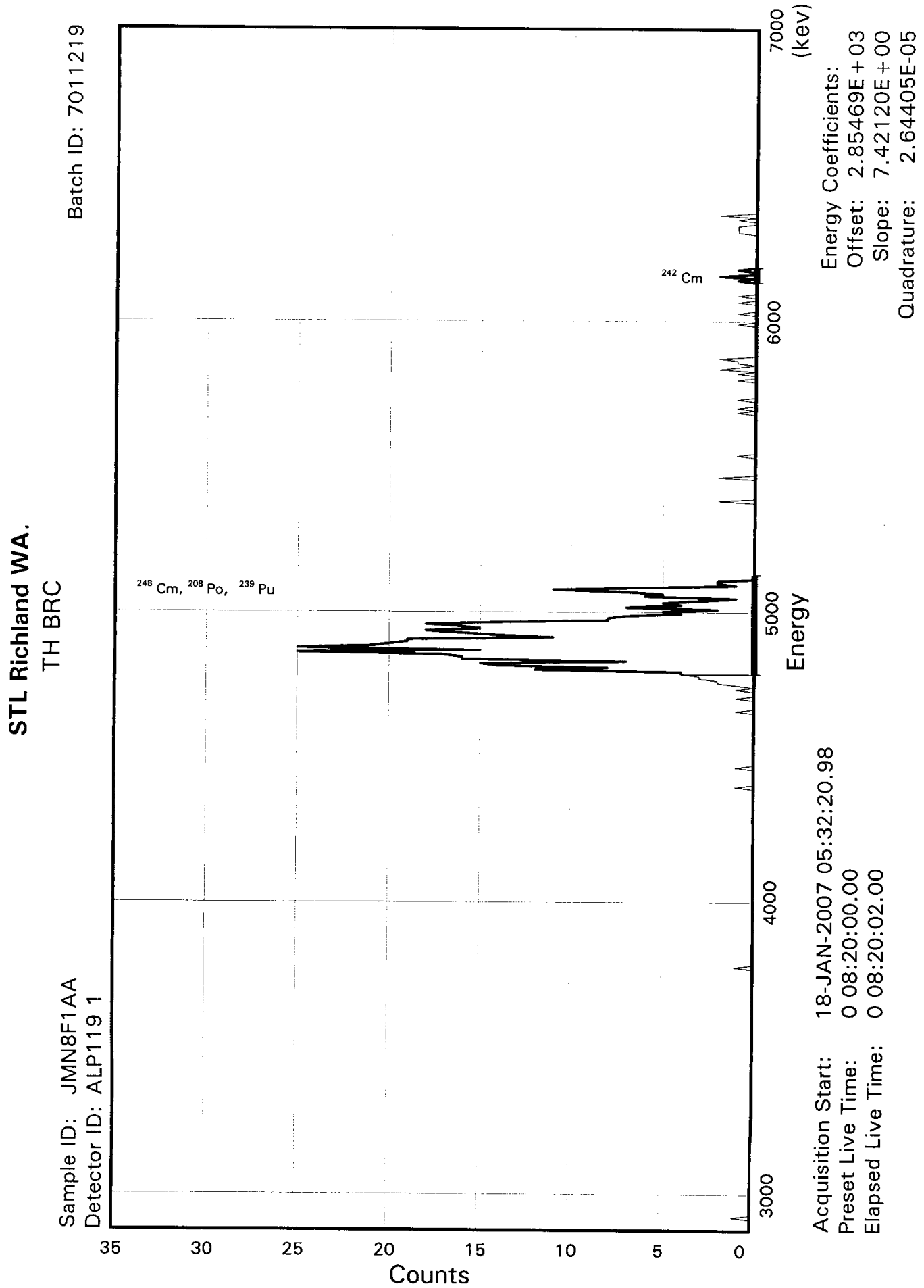
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMN8F1AA

Detector: ALP119 1
Report Date: 18-Jan-07 03:27 PM
Acquire Date: 18-JAN-2007 05:32:20.98
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	4	3	0.005	5423.2	163.7	331	353
TH-229	485	1	0.969	4845.3	386.7	252	304
TH-230	2	0	0.004	4687.7	148.7	231	251
TH-232	0	0	0.000	4013.0	148.6	141	161

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMN8F1AA
Detector ID: ALP119 1
^{248}Cm, ^{208}Po, ^{239}Pu
^{242}Cm
Counts
35
30
25
20
15
10
5
0
Energy
3000
4000
5000
6000
7000
(kev)
Acquisition Start: 18-JAN-2007 05:32:20.98
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:02.00
Energy Coefficients:
Offset: 2.85469E+03
Slope: 7.42120E+00
Quadrature: 2.64405E-05

SAMPLE IDENTIITY: JMN8F1AA

TITLE : TH BRC

DETECTOR : ALP119 1
CONFIGURATION NAME : RDND06$DKA100:[ALP119.SAMPLE]JMN8F1AA_180170
532.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:24

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 18-JAN-2007 05:32:20 CALIB DATE : 15-DEC-2006 00:28:18

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

OFFSET : 2854.69 keV CONSTANT FWHM : 8.83333 Channels
SLOPE : 7.42120 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 2.644050E-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: JMN8F1AA
Detector: ALP119 1
Report Date: 18-Jan-07 01:52 PM
Acquire Date: 18-JAN-2007 05:32:20.98

Flags Key

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

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 13:52:27

Configuration	: RDND06$DKA100:[ALP119.SAMPLE]JMN8F1AA_180170532.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 18-JAN-2007 05:32:20
Sample ID	: JMN8F1AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP119	Detector geometry	:
Elapsed live time	: 0 08:20:02.00	Elapsed real time	: 0 08:20:02.00 0.0%
Start energy	: 2876.95 kev	End energy	: 6661.27 kev
Sensitivity	: 3.00	Sum Sensitivity	: 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5071.74	473	0	44.53	298.43	260	46	1.58E-02	4.6	
2	0	6151.19	4	0	29.68	443.50	441	7	1.33E-04	50.0	

VMS Nuclide Identification Report V3.1 Generated 18-JAN-2007 13:52:28

Configuration	: RDND06$DKA100:[ALP119.SAMPLE]JMN8F1AA_180170532.CNF;1		
Analyses by	: ALPHA V1.8,PEAKEFF V2.2,NID V3.4		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 18-JAN-2007 05:32:20
Sample ID	: JMN8F1AA	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP119	Detector geometry	:
Elapsed live time	: 0 08:20:02.00	Elapsed real time	: 0 08:20:02.00 0.0%
Energy tolerance	: 100.00 kev	Half life ratio	: 1.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Spline	Efficiencies at	: Peak Energy
Abundance limit	: 0.00		

Summary of Nuclide Activity

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

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PU-239	24110.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-242	162.80D	1.21	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-248	3.39E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

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

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

```
  Error Report  (Date: 18-Jan-07  01:52 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
```

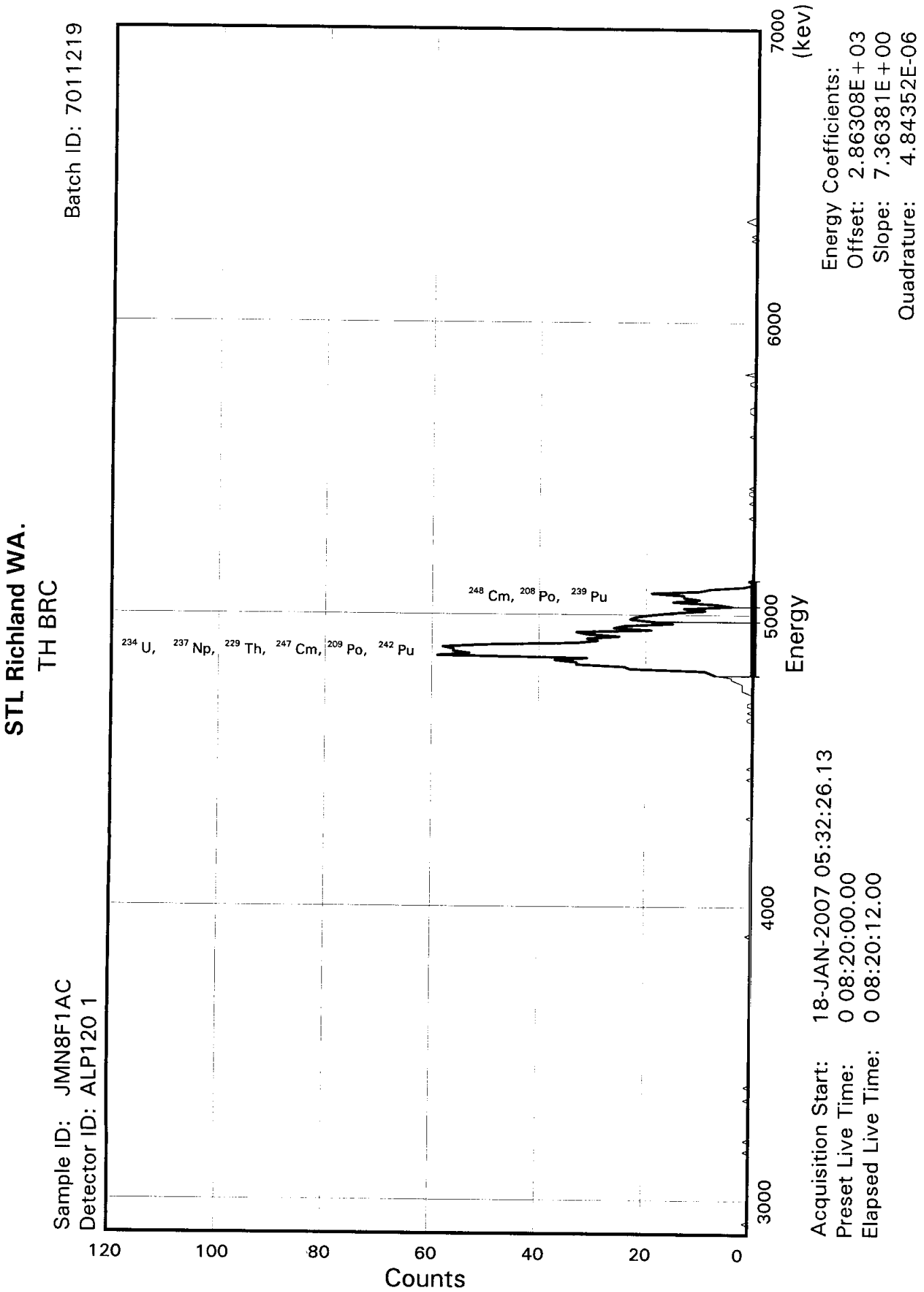
Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JMN8F1AC

Detector: ALP120 1
Report Date: 18-Jan-07 03:25 PM
Acquire Date: 18-JAN-2007 05:32:26.13
Tracer Nuclide: TH-229
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Nuclide Name	Smpl Count	Bkg Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl
TH-228	5	0	0.010	5423.2	147.3	333	353
TH-229	1045	6	2.083	4845.3	405.2	253	308
TH-230	5	0	0.010	4687.7	147.3	232	252
TH-232	1	0	0.002	4013.0	154.7	140	161

End of Alpha Region Report
(Produced by ANAL Report)


STL Richland WA.
TH BRC
Batch ID: 7011219
Sample ID: JMN8F1AC
Detector ID: ALP120 1
234 U, 237 Np, 229 Th, 247 Cm, 209 Po, 242 Pu
248 Cm, 208 Po, 239 Pu
Counts
120
100
80
60
40
20
0
3000
4000
5000
6000
7000
(kev)
Energy
Energy Coefficients:
Offset: 2.86308E+03
Slope: 7.36381E+00
Quadrature: 4.84352E-06
Acquisition Start: 18-JAN-2007 05:32:26.13
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:20:12.00

SAMPLE IDENTIITY: JMN8F1AC

TITLE : TH BRC

DETECTOR : ALP120 1
CONFIGURATION NAME : RDND06$DKA100:[ALP120.SAMPLE]JMN8F1AC_180170
532.CNF;1
ACQUIRE DATE of BACKGROUND: 15-DEC-2006 07:00:26

REPORT DATE : 18-Jan-07 SAMPLE DATE: 05-DEC-2006 12:00:00
ACQUIRE DATE: 18-JAN-2007 05:32:26 CALIB DATE : 15-DEC-2006 00:27:59

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:20:12

OFFSET : 2863.08 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 7.36381 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 4.843520E-06 keV/C^2 SUM SENSITIVITY: 1.00000 %

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

Sample Identity: JMN8F1AC

Detector: ALP120 1
Report Date: 18-Jan-07 02:35 PM
Acquire Date: 18-JAN-2007 05:32:26.13
Tracer Nuclide: TH-229
High Counts Limit: 36
Sample Live Time: 500 minutes
Bkgrnd Live Time: 1000 minutes

Flags Key

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

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Wdth Mult	Rght Wdth Mult	Flags
PO-208	116	3	0	0.229	5143.7	140.0	287	306	0.00	0.00	P
PO-209	908	2	0	1.813	4912.0	235.7	262	294	0.00	0.00	P
PO-210	-9999	-9999	0	-9.994	5333.2	235.7	324	356	0.00	0.00	M
AC-227	0	2	0	-0.001	6066.9	235.8	424	456	0.00	0.00	S
TH-227	0	2	0	-0.001	6066.9	235.8	424	456	0.00	0.00	S
TH-228	-9999	-9999	0	-9.994	5452.0	235.8	340	372	0.00	0.00	M
TH-229	908	2	0	1.813	4874.1	235.7	262	294	0.00	0.00	P
TH-230	-9999	-9999	0	-9.994	4716.5	235.7	241	273	0.00	0.00	I
TH-232	0	0	0	0.000	4041.8	235.7	149	181	0.00	0.00	S
U-232	-9999	-9999	0	-9.994	5349.0	235.7	326	358	0.00	0.00	M
U-234	908	2	0	1.813	4803.4	235.7	262	294	0.00	0.00	P
U-235	2	0	0	0.004	4426.6	235.7	201	233	0.00	0.00	S
PU-236	2	9	4	-0.005	5796.5	235.8	387	419	0.00	0.00	S
NP-237	908	2	0	1.813	4816.8	235.7	262	294	0.00	0.00	P
PU-238	-9999	-9999	0	-9.994	5527.9	235.8	351	383	0.00	0.00	M
U-238	-9999	-9999	0	-9.994	4226.8	235.7	174	206	0.00	0.00	M
PU-239	116	3	0	0.229	5185.4	140.0	287	306	0.00	0.00	P
AM-241	-9999	-9999	0	-9.994	5514.4	235.8	349	381	0.00	0.00	M
AM-242M	-9999	-9999	0	-9.994	5235.6	235.7	311	343	0.00	0.00	M
CM-242	-9999	-9999	0	-9.994	6141.6	235.8	434	466	0.00	0.00	M
PU-242	908	2	0	1.813	4929.3	235.7	262	294	0.00	0.00	P
AM-243	-9999	-9999	0	-9.994	5304.1	235.7	320	352	0.00	0.00	M
CM-244	2	7	4	-0.003	5833.7	235.8	392	424	0.00	0.00	S
CM-246	-9999	-9999	0	-9.994	5415.3	235.8	335	367	0.00	0.00	M
CM-247	908	2	0	1.813	4899.2	235.7	262	294	0.00	0.00	P
CM-248	116	3	0	0.229	5107.4	140.0	287	306	0.00	0.00	P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

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

Sample Identity: JMN8F1AC
Detector: ALP120 1
Report Date: 18-Jan-07 02:35 PM
Acquire Date: 18-JAN-2007 05:32:26.13

Flags Key

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

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

VMS Peak Search Report V1.9 Generated 18-JAN-2007 14:35:00

Configuration	: RDND06$DKA100:[ALP120.SAMPLE]JMN8F1AC_180170532.CNF;1		
Analyses by	: ALPHA V1.8		
Sample title	: TH BRC		
Sample date	: 5-DEC-2006 12:00:00	Acquisition date	: 18-JAN-2007 05:32:26
Sample ID	: JMN8F1AC	Sample quantity	: 0.00000E+00 SAMPLE
Sample type	: disk	Sample geometry	:
Detector name	: ALP120	Detector geometry	:
Elapsed live time	: 0 08:20:12.00	Elapsed real time	: 0 08:20:12.00 0.0%
Start energy	: 2885.17 kev	End energy	: 6634.62 kev
Sensitivity	: 3.00	Sum Sensitivity	: 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4874.15	908	0	81.00	273.05	262	32	3.03E-02	3.3	
2	0	5061.69	116	0	58.91	298.51	287	19	3.87E-03	9.3	

VMS Nuclide Identification Report V3.1 Generated 18-JAN-2007 14:35:01

Configuration : RDND06$DKA100:[ALP120.SAMPLE]JMN8F1AC_180170532.CNF;1
Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.4
Sample title : TH BRC
Sample date : 5-DEC-2006 12:00:00
Sample ID : JMN8F1AC
Sample type : disk
Detector name : ALP120
Elapsed live time: 0 08:20:12.00
Energy tolerance : 100.00 kev
Errors propagated: No
Efficiency type : Spline
Abundance limit : 0.00

Acquisition date : 18-JAN-2007 05:32:26
Sample quantity : 0.00000E+00 SAMPLE
Sample geometry :
Detector geometry:
Elapsed real time: 0 08:20:12.00 0.0%
Half life ratio : 1.00
Systematic Error : 0.00 %
Efficiencies at : Peak Energy

Summary of Nuclide Activity

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

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma Error	0-Sigma %Error	Flags
PO-208	2.90Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
U-234	2.45E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00	
			---	---			
Total Activity :			0.000E+00	0.000E+00			

Nuclide Type : AP

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

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

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

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

Configuration: RDND06$DKA100:[ALP120.SAMPLE]JMN8F1AC_180170532.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4874.14	262	294	908	927	-0.63		
5061.69	287	306	116	222	-9.84	124	-0.03

End of Report

ALPHA

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

1/29/2007 9:50:35 AM

Lot No., Due Date: J7A090287,J7A100115,J7A100118; 02/06/2007

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 7011221; RALPHA-A Alpha by GPC-Am

SDG, Matrix: 33442,33443,33444; 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 Pam Anderson 1-29-07 **Date** 1/29/07

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 7011221

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

Comments on any "No" response:

Second Level Review: Sherryl A Adam Date: 1-29-07

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

STL RICHLAND

1/15/2007 12:30:46 PM

536403, Brown and Caldwell , Brown & Caldwell

AnalyDueDate: 02/05/2007

Batch: 7011221 FILTER pCi/sampl

SEQ Batch, Test: None

Sample Preparation/Analysis

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

PM, Quote: SA , 63174

Balance Id:1120373922

Pipet #: _____

Sep1 DT/Tm Tech:

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 JMK81-1-AE J7A090287-1-SAMP 12/05/2006 12:25	0.833sa,g	12.57g,in AmtRec: FILTER	#Containers: 1	1.5	1.0	1.50	10A	2107	1/23/07 OK	
							Scr:	Alpha:		Beta:
2 JMLA1-1-AE J7A090287-2-SAMP 12/05/2006 12:10	0.833sa,g	12.53g,in AmtRec: FILTER	#Containers: 1		0.8		10B			
							Scr:	Alpha:		Beta:
3 JMLA4-1-AE J7A090287-3-SAMP 12/05/2006 12:45	0.833sa,g	12.55g,in AmtRec: FILTER	#Containers: 1		0.7		10C			
							Scr:	Alpha:		Beta:
4 JMLA7-1-AE J7A090287-4-SAMP 12/05/2006 12:30	0.833sa,g	12.52g,in AmtRec: FILTER	#Containers: 1		0.7	1/15/07	10D			
							Scr:	Alpha:		Beta:
5 JMLA8-1-AE J7A090287-5-SAMP 12/05/2006 12:50	0.833sa,g	12.59g,in AmtRec: FILTER	#Containers: 1		0.9		10F			
							Scr:	Alpha:		Beta:
6 JMLT2-1-AE J7A100115-1-SAMP 12/11/2006 11:40	0.833sa,g	12.51g,in AmtRec: FILTER	#Containers: 1		1.1		10A	1242	1/24/07 R	
							Scr:	Alpha:		Beta:
7 JMLT6-1-AE J7A100115-2-SAMP 12/11/2006 12:00	0.833sa,g	12.60g,in AmtRec: FILTER	#Containers: 1		0.8		10B			
							Scr:	Alpha:		Beta:

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

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

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1/15/2007 12:30:47 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922
Pipet #:

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011221 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: WoodT

STL RICHLAND

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
8 JMLT7-1-AE J7A100115-3-SAMP 12/11/2006 12:15	0.833sa,g	12.59g,in	AmtRec: FILTER #Containers: 1	1.5	0.7	1/17/07 150	10c	1242	1/24/07 R	Scr: Alpha: Beta:
9 JMLT8-1-AE J7A100115-4-SAMP 12/11/2006 11:45	0.833sa,g	12.55g,in	AmtRec: FILTER #Containers: 1		0.5		10d			Scr: Alpha: Beta:
10 JMLVA-1-AE J7A100115-5-SAMP 12/11/2006 12:20	0.833g	12.59g,in	AmtRec: FILTER #Containers: 1		1.0		10F			Scr: Alpha: Beta:
11 JMLVW-1-AE J7A100118-1-SAMP 12/13/2006 12:10	0.833g	12.58g,in	AmtRec: FILTER #Containers: 1		0.9		10A	1528	1/24/07 R	Scr: Alpha: Beta:
12 JMLV3-1-AE J7A100118-2-SAMP 12/13/2006 12:43	0.833sa,g	12.53g,in	AmtRec: FILTER #Containers: 1		1.0		10B			Scr: Alpha: Beta:
13 JMLV5-1-AE J7A100118-3-SAMP 12/13/2006 13:15	0.833sa,g	12.59g,in	AmtRec: FILTER #Containers: 1		0.7		10C			Scr: Alpha: Beta:
14 JMLV8-1-AE J7A100118-4-SAMP 12/13/2006 13:18	0.833sa,g	12.52g,in	AmtRec: FILTER #Containers: 1		0.8		10d			Scr: Alpha: Beta:

STL RICHLAND

1/15/2007 12:30:48 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922
Pipet #:

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011221 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: WoodT

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
15 JMLV9-1-AE J7A100118-5-SAMP 12/13/2006 13:21	0.833sa,g	12.54g,in AmtRec: FILTER	#Containers: 1	1.5	0.8	150	10F	1528	1/24/07 K Scr: Alpha: Beta:	
16 JMN8V-1-AA-B J7A110000-221-BLK 12/05/2006 12:25		12.59g,in AmtRec:	#Containers: 1		0.4	1/15/07	10B	1818	Scr: Alpha: Beta:	
17 JMN8V-1-AC-C J7A110000-221-LCS 12/05/2006 12:25		12.55g,in AmtRec:	ASC0424 12/18/06,pd 02/09/06,r #Containers: 1		0.5		10A		Scr: Alpha: Beta:	

Comments:

1% collodion added to ea. samp. 1/23/07 APA

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

JMK811AE-SAMP Constituent List:
ALPHA RDL:20 pCi/sam LCL: UCL: RPD:
JMN8V1AA-BLK:
ALPHA RDL:20 pCi/sam LCL: UCL: RPD:
JMN8V1AC-LCS:

JMK811AE-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JMN8V1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JMN8V1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

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STL RICHLAND

1/15/2007 12:30:51 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: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011221
SEQ Batch, Test: None

pCi/sampl

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:

Approved By _____ Date: _____

1/29/2007 9:51:30 AM

ICOC Fraction Transfer/Status Report

ByDate: 1/29/2006, 2/3/2007, Batch: '7011221', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
7011221						
AC		CalcC	WoodT	1/15/2007 10:14:21		
SC			wagarr	IsBatched	1/11/2007 11:25:28 AM	ICOC_RADCALC v4.8.26
SC			WoodT	InPrep	1/15/2007 10:14:21 AM	RICH-RC-5016 Revision 5
SC			WoodT	Prep1C	1/15/2007 12:31:51 PM	RICH-RC-5016 REVISION 5
SC			AshworthA	InPrep2	1/23/2007 9:56:03 AM	RICH-RC-5014 REVISION 6
SC			AshworthA	Prep2C	1/23/2007 4:52:32 PM	RICH-RC-5014 REVISION 6
SC			DAWKINSO	InCnt1	1/23/2007 5:13:57 PM	RICH-RD-0003 REVISION 4
SC			DAWKINSO	CalcC	1/24/2007 8:37:07 PM	RICH-RD-0003 REVISION 4
AC			WoodT	1/15/2007 12:31:51		
AC			AshworthA	1/23/2007 9:56:03		
AC			AshworthA	1/23/2007 4:52:32 PM		
AC			DAWKINSO	1/23/2007 5:13:57 PM		
AC			DAWKINSO	1/24/2007 8:37:07 PM		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 6

ICOCFractions v4.8.26

1/29/2007 9:51:19 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
33442	**9JMK8110**			**J7A0902871**	P-0812	FILTER	1/8/2007 10:00:00	12/5/2006 12:25:00 PM				
ALPHA	BAS7		0	1/23/2007 7:52:27 PM	**7.3565E+00**	1.942E+00	2.126E+00	5.371E+00	PCI/SA	1.0	1.0E+0	1.971E-2
TH-228	9NS1		0	1/17/2007 10:03:53 PM	**3.9481E-06**	8.376E-02	8.376E-02	4.25E-01	PCI/SA	0.953	1.0E+0	7.881E-2
TH-230	9NS1		0	1/17/2007 10:03:53 PM	**3.0258E-01**	1.086E-01	1.116E-01	2.269E-01	PCI/SA	0.953	1.0E+0	7.881E-2
TH-232	9NS1		0	1/17/2007 10:03:53 PM	**-3.7821E-02**	4.632E-02	4.643E-02	2.784E-01	PCI/SA	0.953	1.0E+0	7.881E-2
33442	**9JMLA110**			**J7A0902872**	P-0813	FILTER	1/8/2007 10:00:00	12/5/2006 12:10:00 PM				
ALPHA	BAS7		0	1/23/2007 7:52:27 PM	**5.0205E+00**	1.488E+00	1.593E+00	3.811E+00	PCI/SA	1.0	1.0E+0	2.076E-2
TH-228	9NS1		0	1/17/2007 10:04:06 PM	**7.7868E-02**	1.828E-01	1.829E-01	8.388E-01	PCI/SA	0.438	1.0E+0	8.298E-2
TH-230	9NS1		0	1/17/2007 10:04:06 PM	**2.2391E-01**	1.346E-01	1.362E-01	4.477E-01	PCI/SA	0.438	1.0E+0	8.298E-2
TH-232	9NS1		0	1/17/2007 10:04:06 PM	**0.0E+00**	0.0E+00	8.345E-02	4.477E-01	PCI/SA	0.438	1.0E+0	8.298E-2
33442	**9JMLA410**			**J7A0902873**	P-0814	FILTER	1/8/2007 10:00:00	12/5/2006 12:45:00 PM				
ALPHA	BAS7		0	1/23/2007 7:52:27 PM	**1.021E+01**	2.124E+00	2.428E+00	5.17E+00	PCI/SA	1.0	1.0E+0	2.024E-2
TH-228	9NS1		0	1/17/2007 10:04:25 PM	**1.8576E-01**	1.273E-01	1.283E-01	4.461E-01	PCI/SA	0.833	1.0E+0	8.115E-2
TH-230	9NS1		0	1/17/2007 10:04:25 PM	**1.271E-01**	9.165E-02	9.234E-02	3.05E-01	PCI/SA	0.833	1.0E+0	8.115E-2
TH-232	9NS1		0	1/17/2007 10:04:25 PM	**-2.5423E-02**	5.684E-02	5.689E-02	3.05E-01	PCI/SA	0.833	1.0E+0	8.115E-2
33442	**9JMLA710**			**J7A0902874**	P-0815	FILTER	1/8/2007 10:00:00	12/5/2006 12:30:00 PM				
ALPHA	BAS7		0	1/23/2007 7:52:27 PM	**8.5202E+00**	1.921E+00	2.163E+00	4.521E+00	PCI/SA	1.0	1.0E+0	2.008E-2
TH-228	9NS1		0	1/17/2007 10:04:10 PM	**1.636E-01**	8.016E-02	8.133E-02	2.01E-01	PCI/SA	0.996	1.0E+0	8.039E-2
TH-230	9NS1		0	1/17/2007 10:04:10 PM	**9.5387E-02**	5.94E-02	5.994E-02	1.632E-01	PCI/SA	0.996	1.0E+0	8.039E-2
TH-232	9NS1		0	1/17/2007 10:04:10 PM	**2.044E-02**	3.54E-02	3.544E-02	1.925E-01	PCI/SA	0.996	1.0E+0	8.039E-2
33442	**9JMLA810**			**J7A0902875**	000580	FILTER	1/8/2007 10:00:00	12/5/2006 12:50:00 PM				
ALPHA	BAS7		0	1/23/2007 7:52:27 PM	**1.2459E+01**	2.199E+00	2.634E+00	4.493E+00	PCI/SA	1.0	1.0E+0	2.094E-2
TH-228	9NS1		0	1/17/2007 10:04:38 PM	**1.1513E-01**	7.339E-02	7.403E-02	2.472E-01	PCI/SA	0.893	1.0E+0	8.345E-2
TH-230	9NS1		0	1/17/2007 10:04:38 PM	**3.6534E-01**	1.147E-01	1.188E-01	1.948E-01	PCI/SA	0.893	1.0E+0	8.345E-2
TH-232	9NS1		0	1/17/2007 10:04:38 PM	**2.757E-02**	3.515E-02	3.523E-02	1.651E-01	PCI/SA	0.893	1.0E+0	8.345E-2
33443	**9JMLT210**			**J7A1001151**	P-0816	FILTER	1/8/2007 10:00:00	12/11/2006 11:40:00 AM				
ALPHA	BAS7		0	1/24/2007 11:27:16	**2.4671E+01**	3.073E+00	4.223E+00	4.533E+00	PCI/SA	1.0	1.0E+0	1.987E-2
TH-228	9NS1		0	1/17/2007 10:04:53 PM	**6.9525E-02**	8.978E-02	8.998E-02	3.897E-01	PCI/SA	1.034	1.0E+0	7.981E-2
TH-230	9NS1		0	1/17/2007 10:04:53 PM	**1.7867E-01**	9.209E-02	9.337E-02	2.679E-01	PCI/SA	1.034	1.0E+0	7.981E-2
TH-232	9NS1		0	1/17/2007 10:04:53 PM	**4.4668E-02**	4.994E-02	5.009E-02	2.679E-01	PCI/SA	1.034	1.0E+0	7.981E-2
33443	**9JMLT610**			**J7A1001152**	P-0817	FILTER	1/8/2007 10:00:00	12/11/2006 12:00:00 PM				
ALPHA	BAS7		0	1/24/2007 11:27:16	**1.7047E+01**	2.595E+00	3.236E+00	4.148E+00	PCI/SA	1.0	1.0E+0	1.972E-2
TH-228	9NS1		0	1/17/2007 10:05:00 PM	**3.2653E-01**	1.361E-01	1.391E-01	3.264E-01	PCI/SA	0.925	1.0E+0	7.84E-2
TH-230	9NS1		0	1/17/2007 10:05:00 PM	**3.1463E-01**	1.311E-01	1.34E-01	3.145E-01	PCI/SA	0.925	1.0E+0	7.84E-2
TH-232	9NS1		0	1/17/2007 10:05:00 PM	**0.0E+00**	0.0E+00	5.863E-02	3.145E-01	PCI/SA	0.925	1.0E+0	7.84E-2
33443	**9JMLT710**			**J7A1001153**	P-0818	FILTER	1/8/2007 10:00:00	12/11/2006 12:15:00 PM				
ALPHA	BAS7		0	1/24/2007 11:27:16	**2.0458E+01**	2.807E+00	3.665E+00	4.808E+00	PCI/SA	1.0	1.0E+0	1.987E-2
TH-228	9NS1		0	1/17/2007 10:06:45 PM	**1.0138E-01**	8.838E-02	8.88E-02	3.408E-01	PCI/SA	1.003	1.0E+0	7.935E-2
TH-230	9NS1		0	1/17/2007 10:06:45 PM	**1.9537E-02**	4.368E-02	4.372E-02	2.344E-01	PCI/SA	1.003	1.0E+0	7.935E-2
TH-232	9NS1		0	1/17/2007 10:06:45 PM	**-1.9536E-02**	4.368E-02	4.372E-02	2.344E-01	PCI/SA	1.003	1.0E+0	7.935E-2
33443	**9JMLT810**			**J7A1001154**	P-0819	FILTER	1/8/2007 10:00:00	12/11/2006 11:45:00 AM				
ALPHA	BAS7		0	1/24/2007 11:27:16	**1.0219E+00**	9.422E-01	9.498E-01	3.921E+00	PCI/SA	1.0	1.0E+0	2.078E-2
TH-228	9NS1		0	1/17/2007 10:06:45 PM	**5.0395E-02**	7.968E-02	7.98E-02	3.709E-01	PCI/SA	0.746	1.0E+0	8.314E-2
TH-230	9NS1		0	1/17/2007 10:06:45 PM	**9.7115E-02**	9.084E-02	9.125E-02	3.574E-01	PCI/SA	0.746	1.0E+0	8.314E-2
TH-232	9NS1		0	1/17/2007 10:06:45 PM	**-2.4278E-02**	5.429E-02	5.433E-02	2.912E-01	PCI/SA	0.746	1.0E+0	8.314E-2
33444	**9JMLV310**			**J7A1001182**	P-0821	FILTER	1/8/2007 10:00:00	12/13/2006 12:43:00 PM				
ALPHA	BAS7		0	1/24/2007 2:12:29 PM	**6.7087E+00**	1.697E+00	1.86E+00	3.988E+00	PCI/SA	1.0	1.0E+0	2.057E-2
TH-228	9NS1		0	1/17/2007 10:06:45 PM	**2.1713E-01**	9.95E-02	1.013E-01	2.605E-01	PCI/SA	0.883	1.0E+0	8.297E-2
TH-230	9NS1		0	1/17/2007 10:06:45 PM	**1.4675E-01**	8.644E-02	8.737E-02	2.515E-01	PCI/SA	0.883	1.0E+0	8.297E-2
TH-232	9NS1		0	1/17/2007 10:06:45 PM	**1.2578E-01**	7.559E-02	7.637E-02	2.515E-01	PCI/SA	0.883	1.0E+0	8.297E-2
33444	**9JMLV510**			**J7A1001183**	P-0822	FILTER	1/8/2007 10:00:00	12/13/2006 1:15:00 PM				
ALPHA	BAS7		0	1/24/2007 2:12:29 PM	**5.6103E+00**	1.643E+00	1.766E+00	4.653E+00	PCI/SA	1.0	1.0E+0	2.053E-2

7011221,7011221, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 15,
**Results Inserted | ReTestInserted | Updated | NotInserted => 17 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

STL Richland, Wa Calc Review v4.8.26

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Matrix / Cnt Uncert	Received Date / Tot Uncert	Sample Date / Mda	Units	Expected	Yield	Volumes	
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**4.4948E-02**	6.357E-02	6.369E-02	4.174E-01	PCI/SA		0.869	1.0E+0	8.203E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**3.472E-01**	1.247E-01	1.283E-01	2.603E-01	PCI/SA		0.869	1.0E+0	8.203E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**0.0E+00**	0.0E+00	4.852E-02	2.603E-01	PCI/SA		0.869	1.0E+0	8.203E-2
33444	**9JMLV810**			**J7A1001184**	P-0824	FILTER	1/8/2007 10:00:00	12/13/2006 1:18:00 PM					
ALPHA	BAS7	0		1/24/2007 2:12:29 PM	**3.332E-02**	7.576E-01	7.576E-01	3.963E+00	PCI/SA		1.0	1.0E+0	2.066E-2
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**0.0E+00**	0.0E+00	8.769E-02	4.705E-01	PCI/SA		0.55	1.0E+0	8.28E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**1.136E-01**	1.136E-01	1.141E-01	4.542E-01	PCI/SA		0.55	1.0E+0	8.28E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**1.136E-01**	1.136E-01	1.141E-01	4.542E-01	PCI/SA		0.55	1.0E+0	8.28E-2
33444	**9JMLV910**			**J7A1001185**	P-0582	FILTER	1/8/2007 10:00:00	12/13/2006 1:21:00 PM					
ALPHA	BAS7	0		1/24/2007 2:12:29 PM	**4.1991E+00**	1.476E+00	1.555E+00	4.504E+00	PCI/SA		1.0	1.0E+0	2.041E-2
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**8.0735E-02**	6.055E-02	6.094E-02	2.421E-01	PCI/SA		0.905	1.0E+0	8.161E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**3.5078E-01**	1.185E-01	1.223E-01	2.338E-01	PCI/SA		0.905	1.0E+0	8.161E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**0.0E+00**	0.0E+00	4.358E-02	2.338E-01	PCI/SA		0.905	1.0E+0	8.161E-2
33443	**9JMLVA10**			**J7A1001155**	000581	FILTER	1/8/2007 10:00:00	12/11/2006 12:20:00 PM					
ALPHA	BAS7	0		1/24/2007 11:27:16	**2.6821E+01**	3.115E+00	4.452E+00	4.498E+00	PCI/SA		1.0	1.0E+0	2.05E-2
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**2.3414E-01**	1.352E-01	1.369E-01	4.373E-01	PCI/SA		0.864	1.0E+0	8.202E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**2.5068E-01**	1.149E-01	1.171E-01	3.007E-01	PCI/SA		0.864	1.0E+0	8.202E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**1.5041E-01**	9.038E-02	9.143E-02	3.007E-01	PCI/SA		0.864	1.0E+0	8.202E-2
33444	**9JMLVW10**			**J7A1001181**	P-0820	FILTER	1/8/2007 10:00:00	12/13/2006 12:10:00 PM					
ALPHA	BAS7	0		1/24/2007 2:12:29 PM	**4.4092E+00**	1.473E+00	1.564E+00	4.308E+00	PCI/SA		1.0	1.0E+0	2.084E-2
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**8.4482E-02**	8.448E-02	8.484E-02	3.378E-01	PCI/SA		0.801	1.0E+0	8.348E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**2.447E-01**	1.246E-01	1.266E-01	3.262E-01	PCI/SA		0.801	1.0E+0	8.348E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**5.4377E-02**	6.079E-02	6.1E-02	3.262E-01	PCI/SA		0.801	1.0E+0	8.348E-2
33442	**JMN8V1AB**			**J7A110000221**	INTRA-LAB BLANK	FILTER	1/8/2007 10:00:00	12/5/2006 12:25:00 PM					
ALPHA	BAS7	0	B	1/24/2007 5:03:07 PM	**2.2397E-04**	1.262E-03	1.262E-03	6.457E-03	PCI/SA		1.0	1.0E+0	1.259E+1
33442	**JMN8V1CS**			**J7A110000221**	INTRA-LAB CHECK	FILTER	1/8/2007 10:00:00	12/5/2006 12:25:00 PM					
ALPHA	BAS7	0	S	1/24/2007 5:03:07 PM	**1.6666E-01**	9.685E-03	2.184E-02	7.113E-03	PCI/SA	1.793E-01	1.0	1.0E+0	1.255E+1

7011221,7011221, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 15,
**Results Inserted | ReTestInserted | Updated | NotInserted => 17 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 7011221

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

1/24/2007 7:57:38 PM

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Alpha by GPC-Am				Richland Standard Gross Alpha/Beta Wo Blk Subt										
Calc	S7	FILTER	JMK811AE	ALPHA	7.36E+00	(2.13E+00)		PCI/SA	R	2.21E+00	5.37E+00		100%	
Calc	S7	FILTER	JMLA11AE	ALPHA	5.02E+00	(1.59E+00)		PCI/SA	R	1.44E+00	3.81E+00		100%	
Calc	S7	FILTER	JMLA41AE	ALPHA	1.02E+01	(2.43E+00)		PCI/SA	R	2.13E+00	5.17E+00		100%	
Calc	S7	FILTER	JMLA71AE	ALPHA	8.52E+00	(2.16E+00)		PCI/SA	R	1.80E+00	4.52E+00		100%	
Calc	S7	FILTER	JMLA81AE	ALPHA	1.25E+01	(2.63E+00)		PCI/SA	R	1.81E+00	4.49E+00		100%	
Calc	S7	FILTER	JMLT21AE	ALPHA	2.47E+01	(4.22E+00)		PCI/SA	R	1.79E+00	4.53E+00		100%	
Calc	S7	FILTER	JMLT61AE	ALPHA	1.70E+01	(3.24E+00)		PCI/SA	R	1.59E+00	4.15E+00		100%	
Calc	S7	FILTER	JMLT71AE	ALPHA	2.05E+01	(3.67E+00)		PCI/SA	R	1.94E+00	4.81E+00		100%	
Calc	S7	FILTER	JMLT81AE	ALPHA	1.02E+00	(9.50E-01)	U4	PCI/SA	R	1.51E+00	3.92E+00		100%	
Calc	S7	FILTER	JMLVA1AE	ALPHA	2.68E+01	(4.45E+00)		PCI/SA	R	1.80E+00	4.50E+00		100%	
Calc	S7	FILTER	JMLVW1AE	ALPHA	4.41E+00	(1.56E+00)		PCI/SA	R	1.70E+00	4.31E+00		100%	
Calc	S7	FILTER	JMLV31AE	ALPHA	6.71E+00	(1.86E+00)		PCI/SA	R	1.53E+00	3.99E+00		100%	
Calc	S7	FILTER	JMLV51AE	ALPHA	5.61E+00	(1.77E+00)		PCI/SA	R	1.88E+00	4.65E+00		100%	
Calc	S7	FILTER	JMLV81AE	ALPHA	3.33E-02	(7.58E-01)	U4	PCI/SA	R	1.53E+00	3.96E+00		100%	
Calc	S7	FILTER	JMLV91AE	ALPHA	4.20E+00	(1.55E+00)		PCI/SA	R	1.80E+00	4.50E+00		100%	
Calc	S7	FILTER	JMN8V1AA	ALPHA	2.24E-04	(1.26E-03)	U4	PCI/SA	R	2.47E-03	6.46E-03	B	100%	
Calc	S7	FILTER	JMN8V1AC	ALPHA	1.67E-01	(2.18E-02)		PCI/SA	R	2.81E-03	7.11E-03	S	100%	93%

?[illegible]
1-29-07

() - (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:17
RADCALC v4.8.26
STL Richland

Batch Nbr: 7011221

Alpha Beta, Alpha by GPC-Am , Calculated Results

1/24/2007 7:57:39 PM

Detailed Report

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
1	Calc	S7	FILTER	*STLE	GabWoBS	**JMK811AE**	**PCI/SA**		12/05/06 12:25	01/23/07 19:52			1	1.00 Sa	
536403,P-0812					,J7A090287-1 v4.8.26		FILTER			01.0				0.019713 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	01/23/07 21:07	ALPHA	28	24	GPC10A	1.5	N	N	4.3071E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.951E-02)	(0.000E+00)		8%			(0.000E+00)	50.726735		

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
	01/24/07	ALPHA	R	**7.356469**		1.38667E-01	0.321948	0.321948	1.00 Sa	100%		5.371375		
				(2.125818)		(3.6612E-02)	(0.091518)	(0.091518)	(0.014142)			2.207767		

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	**JMLA11AE**	**PCI/SA**		12/05/06 12:10	01/23/07 19:52			1	1.00 Sa	
536403,P-0813					,J7A090287-2 v4.8.26		FILTER			00.8				0.020762 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	01/23/07 21:07	ALPHA	18	11	GPC10B	1.5	N	N	4.2349E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.597E-02)	(0.000E+00)		8%			(0.000E+00)	48.163878		

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
	01/24/07	ALPHA	R	**5.020511**		9.80000E-02	0.231409	0.231409	1.00 Sa	100%		3.810514		
				(1.59349)		(2.9052E-02)	(0.072457)	(0.072457)	(0.014142)			1.443339		

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	**JMLA41AE**	**PCI/SA**		12/05/06 12:45	01/23/07 19:52			1	1.00 Sa	
536403,P-0814					,J7A090287-3 v4.8.26		FILTER			00.7				0.020239 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	01/23/07 21:07	ALPHA	38	25	GPC10C	1.5	N	N	4.4325E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.861E-02)	(0.000E+00)		8%			(0.000E+00)	49.410043		

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
	01/24/07	ALPHA	R	**10.209895**		2.03333E-01	0.458732	0.458732	1.00 Sa	100%		5.170073		
				(2.42758)		(4.2295E-02)	(0.106435)	(0.106435)	(0.014142)			2.132716		

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	**JMLA71AE**	**PCI/SA**		12/05/06 12:30	01/23/07 19:52			1	1.00 Sa	
536403,P-0815					,J7A090287-4 v4.8.26		FILTER			00.7				0.020082 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	01/23/07 21:07	ALPHA	30	17	GPC10D	1.5	N	N	4.3701E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.932E-02)	(0.000E+00)		8%			(0.000E+00)	49.794998		

() - (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: 7011221

Alpha Beta, Alpha by GPC-Am , Calculated Results

1/24/2007 7:57:39 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
	01/24/07	ALPHA	R	**8.520226**		1.66000E-01	0.379856	0.379856	1.00 Sa	100%		4.520571		
				(2.163138)		(3.7434E-02)	(0.094397)	(0.094397)	(0.014142)			1.797702		

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	**JMLA81AE**	**PCI/SA**		12/05/06 12:50	01/23/07 19:52			1	1.00 Sa	
536403,000580					,J7A090287-5 v4.8.26		FILTER			00.9				0.020942 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	01/23/07 21:07	ALPHA	44	19	GPC10F	1.5	N	N	4.4081E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.933E-02)	(0.000E+00)		8%			(0.000E+00)	47.750315		

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
	01/24/07	ALPHA	R	**12.458965**		2.55333E-01	0.579241	0.579241	1.00 Sa	100%		4.492944		
				(2.633789)		(4.5073E-02)	(0.118693)	(0.118693)	(0.014142)			1.806764		

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	**JMLT21AE**	**PCI/SA**		12/11/06 11:40	01/24/07 11:27			1	1.00 Sa	
536403,P-0816					,J7A100115-1 v4.8.26		FILTER			01.1				0.019869 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	01/24/07 12:42	ALPHA	75	16	GPC10A	1.5	N	N	4.3008E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.946E-02)	(0.000E+00)		8%			(0.000E+00)	50.330924		

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
	01/24/07	ALPHA	R	**24.670734**		4.68000E-01	1.08818	1.08818	1.00 Sa	100%		4.532681		
				(4.2233)		(5.8287E-02)	(0.177493)	(0.177493)	(0.014142)			1.79121		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
7	Calc	S7	FILTER	*STLE	GabWoBS	**JMLT61AE**	**PCI/SA**		12/11/06 12:00	01/24/07 11:27			1	1.00 Sa	
536403,P-0817					,J7A100115-2 v4.8.26		FILTER			00.8				0.019717 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	01/24/07 12:42	ALPHA	51	12	GPC10B	1.5	N	N	4.2349E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.597E-02)	(0.000E+00)		8%			(0.000E+00)	50.716477		

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
	01/24/07	ALPHA	R	**17.046551**		3.16000E-01	0.746175	0.746175	1.00 Sa	100%		4.147546		
				(3.23616)		(4.8111E-02)	(0.136246)	(0.136246)	(0.014142)			1.587414		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	S7	FILTER	*STLE	GabWoBS	**JMLT71AE**	**PCI/SA**		12/11/06 12:15	01/24/07 11:27			1	1.00 Sa	
536403,P-0818					,J7A100115-3 v4.8.26		FILTER			00.7				0.01987 Sa	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn

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

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

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

RecCnt:8

RADCALC v4.8.26

STL Richland

Batch Nbr: 7011221

Alpha Beta, Alpha by GPC-Am , Calculated Results

1/24/2007 7:57:39 PM

0	01/24/07 12:42	ALPHA	66	20	GPC10C	1.5	N	N	4.4325E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00
			150	500			Y		(2.861E-02)	(0.000E+00)		8%			(0.000E+00)	50.326723	

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
	01/24/07	ALPHA	R	**20.457666**		4.00000E-01	0.902424	0.902424	1.00 Sa	100%		4.807595		
				(3.665221)		(5.4894E-02)	(0.15473)	(0.15473)	(0.014142)			1.942949		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
9	Calc	S7	FILTER	*STLE	GabWoBS	**JMLT81AE**	**PCI/SA**		12/11/06 11:45	01/24/07 11:27			1	1.00 Sa	
536403,P-0819					,J7A100115-4 v4.8.26		FILTER			00.5				0.020782 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	01/24/07 12:42	ALPHA	7	13	GPC10D	1.5	N	N	4.3834E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.941E-02)	(0.000E+00)		8%			(0.000E+00)	48.11869		

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
	01/24/07	ALPHA	R	**1.021916**	**U4**	2.06667E-02	0.047147	0.047147	1.00 Sa	100%		3.920535		
				(0.949754)		(1.9055E-02)	(0.043749)	(0.043749)	(0.014142)			1.514491		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	S7	FILTER	*STLE	GabWoBS	**JMLVA1AE**	**PCI/SA**		12/11/06 12:20	01/24/07 11:27			1	1.00 Sa	
536403,000581					,J7A100115-5 v4.8.26		FILTER			01.0				0.020505 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	01/24/07 12:42	ALPHA	86	18	GPC10F	1.5	N	N	4.4011E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.929E-02)	(0.000E+00)		8%			(0.000E+00)	48.769627		

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
	01/24/07	ALPHA	R	**26.821056**		5.37333E-01	1.220899	1.220899	1.00 Sa	100%		4.497559		
				(4.451759)		(6.2404E-02)	(0.190379)	(0.190379)	(0.027097)			1.798948		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
11	Calc	S7	FILTER	*STLE	GabWoBS	**JMLVW1AE**	**PCI/SA**		12/13/06 12:10	01/24/07 14:12			1	1.00 Sa	
536403,P-0820					,J7A100118-1 v4.8.26		FILTER			00.9				0.020842 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	01/24/07 15:27	ALPHA	18	16	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)	47.980082		

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
	01/24/07	ALPHA	R	**4.409238**		8.80000E-02	0.204012	0.204012	1.00 Sa	100%		4.308239		
				(1.564491)		(2.9394E-02)	(0.071452)	(0.071452)	(0.027097)			1.702516		

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

RecCnt:12 RADCALC v4.8.26
STL Richland

Batch Nbr: 7011221

Alpha Beta, Alpha by GPC-Am , Calculated Results

1/24/2007 7:57:40 PM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
12	Calc	S7	FILTER	*STLE	GabWoBS	JMLV31AE	PCI/SA		12/13/06 12:43	01/24/07 14:12			1	1.00 Sa	
536403,P-0821					,J7A100118-2 v4.8.26		FILTER			01.0				0.020566 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	01/24/07 15:27	ALPHA	23	12	GPC10B	1.5	N	N	4.2225E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.589E-02)	(0.000E+00)		8%			(0.000E+00)	48.623759		

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
	01/24/07	ALPHA	R	**6.708693**		1.29333E-01	0.306297	0.306297	1.00 Sa	100%		3.988129		
				(1.859669)		(3.2714E-02)	(0.083401)	(0.083401)	(0.014142)			1.5264		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
13	Calc	S7	FILTER	*STLE	GabWoBS	JMLV51AE	PCI/SA		12/13/06 13:15	01/24/07 14:12			1	1.00 Sa	
536403,P-0822					,J7A100118-3 v4.8.26		FILTER			00.7				0.020529 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	01/24/07 15:27	ALPHA	23	20	GPC10C	1.5	N	N	4.4325E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.861E-02)	(0.000E+00)		8%			(0.000E+00)	48.711462		

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
	01/24/07	ALPHA	R	**5.610302**		1.13333E-01	0.255687	0.255687	1.00 Sa	100%		4.653293		
				(1.765941)		(3.3200E-02)	(0.079378)	(0.079378)	(0.014142)			1.880589		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
14	Calc	S7	FILTER	*STLE	GabWoBS	JMLV81AE	PCI/SA		12/13/06 13:18	01/24/07 14:12			1	1.00 Sa	
536403,P-0824					,J7A100118-4 v4.8.26		FILTER			00.8				0.020655 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	01/24/07 15:27	ALPHA	4	13	GPC10D	1.5	N	N	4.3634E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.928E-02)	(0.000E+00)		8%			(0.000E+00)	48.414254		

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
	01/24/07	ALPHA	R	**0.03332**	**U4**	6.66667E-04	0.001528	0.001528	1.00 Sa	100%		3.962733		
				(0.757624)		(1.5158E-02)	(0.03474)	(0.03474)	(0.014142)			1.530792		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
15	Calc	S7	FILTER	*STLE	GabWoBS	JMLV91AE	PCI/SA		12/13/06 13:21	01/24/07 14:12			1	1.00 Sa	
536403,P-0582					,J7A100118-5 v4.8.26		FILTER			00.8				0.02041 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	01/24/07 15:27	ALPHA	18	18	GPC10F	1.5	N	N	4.4150E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.938E-02)	(0.000E+00)		8%			(0.000E+00)	48.996632		

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

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

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

RecCnt:15

RADCALC v4.8.26

STL Richland

Batch Nbr: 7011221

Alpha Beta, Alpha by GPC-Am , Calculated Results

1/24/2007 7:57:40 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
	01/24/07	ALPHA	R	**4.19913**		8.40000E-02	0.19026	0.19026	1.00 Sa	100%		4.504275		
				(1.554871)		(2.9530E-02)	(0.069753)	(0.069753)	(0.014142)			1.801634		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
16	Calc	S7	FILTER	*STLE	GabWoBS	**JMN8V1AA**	**PCI/SA**	**B**	12/05/06 12:25	01/24/07 17:03			1	1.00 Sa	
0,INTRA-LAB BLANK					,J7A110000-221		FILTER			00.4				12.59 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	01/24/07 18:18	ALPHA	4	12	GPC10B	1.5	N	N	4.2599E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.612E-02)	(0.000E+00)		8%			(0.000E+00)	0.079428		

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
	01/24/07	ALPHA	R	**0.000224**	**U4**	2.66667E-03	0.00626	0.00626	1.00 Sa	100%		0.006457		
				(0.001262)		(1.5026E-02)	(0.035278)	(0.035278)	(0.014142)			0.002472		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
17	Calc	S7	FILTER	*STLE	GabWoBS	**JMN8V1AC**	**PCI/SA**	**S**	12/05/06 12:25	01/24/07 17:03		ASC0424	1	1.00 Sa	
0,INTRA-LAB CHECK					,J7A110000-221		FILTER			00.5		ASC0424 Alq		12.55 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	01/24/07 18:18	ALPHA	307	16	GPC10A	1.5	N	N	4.3390E-01	1.0000E+00	N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			150	500			Y		(2.973E-02)	(0.000E+00)		8%			(0.000E+00)	0.079681		

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
	01/24/07	ALPHA	R	**0.166655**		2.01467E+00	4.643191	4.643191	1.00 Sa	100%	93%	0.007113		
				(0.021838)		(1.1708E-01)	(0.558555)	(0.558555)	(0.014142)			0.002811		

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

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

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

RecCnt:17

RADCALC v4.8.26

STL Richland

UST Number: JMK811AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JMK811AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4461

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00028	00000	0150	00000	1000	23-JAN-2007 21:07:27.93

Bkg File: [quad10.bkgrnd]2007-01-23_0415.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00024	0500	0.05	00000	1000	23-JAN-2007 04:15:36.53

UST Number: JMLA11AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JMLA11AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4456

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00018	00000	0150	00000	1000	23-JAN-2007 21:07:27.93

Bkg File: [quad10.bkgrnd]2007-01-23_0415.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00011	0500	0.02	00000	1000	23-JAN-2007 04:15:36.53

UST Number: JMLA41AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C File: [quad10.sample.C]JMLA41AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.C_15;4467

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00038	00000	0150	00000	1000	23-JAN-2007 21:07:27.93

Bkg File: [quad10.bkgrnd]2007-01-23_0415.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00025	0500	0.05	00000	1000	23-JAN-2007 04:15:36.53

UST Number: JMLA71AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-D File: [quad10.sample.D]JMLA71AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.D_15;4460

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00030	00000	0150	00000	1000	23-JAN-2007 21:07:27.93

Bkg File: [quad10.bkgrnd]2007-01-23_0415.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00017	0500	0.03	00000	1000	23-JAN-2007 04:15:36.53

UST Number: JMLA81AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-F File: [quad10.sample.F]JMLA81AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.F_15;4452

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00044	00000	0150	00000	1000	23-JAN-2007 21:07:27.93

Bkg File: [quad10.bkgrnd]2007-01-23_0415.F_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00019	0500	0.04	00000	1000	23-JAN-2007 04:15:36.53

UST Number: JMLT21AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JMLT21AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4462

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00075	00000	0150	00000	1000	24-JAN-2007 12:42:16.46

Bkg File: [quad10.bkgrnd]2007-01-24_0545.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00016	0500	0.03	00000	1000	24-JAN-2007 05:45:19.91

UST Number: JMLT61AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JMLT61AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4457

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00051	00000	0150	00000	1000	24-JAN-2007 12:42:16.46

Bkg File: [quad10.bkgrnd]2007-01-24_0545.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00012	0500	0.02	00000	1000	24-JAN-2007 05:45:19.91

UST Number: JMLT71AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C File: [quad10.sample.C]JMLT71AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.C_15;4468

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00066	00000	0150	00000	1000	24-JAN-2007 12:42:16.46

Bkg File: [quad10.bkgrnd]2007-01-24_0545.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00020	0500	0.04	00000	1000	24-JAN-2007 05:45:19.91

UST Number: JMLT81AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-D File: [quad10.sample.D]JMLT81AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.D_15;4461

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00007	00000	0150	00000	1000	24-JAN-2007 12:42:16.46

Bkg File: [quad10.bkgrnd]2007-01-24_0545.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00013	0500	0.03	00000	1000	24-JAN-2007 05:45:19.91

UST Number: JMLVA1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-F File: [quad10.sample.F]JMLVA1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.F_15;4453

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00086	00000	0150	00000	1000	24-JAN-2007 12:42:16.46

Bkg File: [quad10.bkgrnd]2007-01-24_0545.F_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00018	0500	0.04	00000	1000	24-JAN-2007 05:45:19.91

UST Number: JMLVW1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JMLVW1AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4462

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00018	00000	0150	00000	1000	24-JAN-2007 15:27:29.93

Bkg File: [quad10.bkgrnd]2007-01-24_0545.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00016	0500	0.03	00000	1000	24-JAN-2007 05:45:19.91

UST Number: JMLV31AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JMLV31AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4457

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00023	00000	0150	00000	1000	24-JAN-2007 15:27:29.93

Bkg File: [quad10.bkgrnd]2007-01-24_0545.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00012	0500	0.02	00000	1000	24-JAN-2007 05:45:19.91

UST Number: JMLV51AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C File: [quad10.sample.C]JMLV51AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.C_15;4468

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00023	00000	0150	00000	1000	24-JAN-2007 15:27:29.93

Bkg File: [quad10.bkgrnd]2007-01-24_0545.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00020	0500	0.04	00000	1000	24-JAN-2007 05:45:19.91

UST Number: JMLV81AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-D File: [quad10.sample.D]JMLV81AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.D_15;4461

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00004	00000	0150	00000	1000	24-JAN-2007 15:27:29.93

Bkg File: [quad10.bkgrnd]2007-01-24_0545.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00013	0500	0.03	00000	1000	24-JAN-2007 05:45:19.91

UST Number: JMLV91AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-F File: [quad10.sample.F]JMLV91AE.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.F_15;4453

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00018	00000	0150	00000	1000	24-JAN-2007 15:27:29.93

Bkg File: [quad10.bkgrnd]2007-01-24_0545.F_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00018	0500	0.04	00000	1000	24-JAN-2007 05:45:19.91

UST Number: JMN8V1AA Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B File: [quad10.sample.B]JMN8V1AA.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.B_15;4457

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00004	00000	0150	00000	1000	24-JAN-2007 18:18:07.82

Bkg File: [quad10.bkgrnd]2007-01-24_0545.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00012	0500	0.02	00000	1000	24-JAN-2007 05:45:19.91

UST Number: JMN8V1AC Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A File: [quad10.sample.A]JMN8V1AC.112
Dish Size: 15 Bkg File: $DISK1:[QUAD10.BKGRND]CURRENT.A_15;4462

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00307	00000	0150	00000	1000	24-JAN-2007 18:18:07.82

Bkg File: [quad10.bkgrnd]2007-01-24_0545.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00016	0500	0.03	00000	1000	24-JAN-2007 05:45:19.91

RADIUM 228

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

2/2/2007 5:16:19 PM

Lot No., Due Date: J7A090287,J7A100115,J7A100118; 02/06/2007

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 7029198; RRA228 Ra-228 by GPC

SDG, Matrix: 33442,33443,33444; 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 10-09399.

First Level Review Angela Long **Date** 2/2/07

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 7029198

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

Comments on any "No" response: See NCM

Second Level Review: Sherryl A Allen Date: 2-6-07

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

1/29/2007 2:13:06 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:1120373922,1120403183

Pipet #:

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech: AL 1/30/07 8:41

Batch: 7029198 FILTER pCi/sampl PM, Quote: SA , 63174

Sep2 DT/Tm Tech: 02/01/07 0900

SEQ Batch, Test: 7011225, BXTE All Tests: 7011219 9NS1, 7011221 BAS7, 7011225 BXTE, 7011229 BXTF, 7029198 BXTF,

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 JMK81-2-AD J7A090287-1-SAMP	0.833sa,g	531.15sa,g	150.35g,in	0.2358g 7.57 = 7.5092 = 1.0081 ✓	RATA25421R 1"	29.43 x 50	9	0953	1/30/07	
							7A	1452	2/1/07	
							7A	0607	2/2/07	
12/05/2006 12:25		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:	Beta:	
2 JMLA1-2-AD J7A090287-2-SAMP	0.833sa,g	502.71sa,g	150.45g,in	0.2493g 8.335 = 7.4901 = 1.1128 ✓	RATA25422 01/10/07	28.9	6	0953	1/30/07	
							7B	1452	2/1/07	
							7B	0607	2/2/07	
12/05/2006 12:10		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:	Beta:	
3 JMLA4-2-AD J7A090287-3-SAMP	0.833sa,g	516.54sa,g	150.04g,in	0.242g 7.468 = 7.4901 = .9970 ✓	RATA25423 01/10/07	30.3	6Y	0953	1/30/07	
							1B	1452	2/1/07	
							7C	0607	2/2/07	
12/05/2006 12:45		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:	Beta:	
4 JMLA7-2-AD J7A090287-4-SAMP	0.833sa,g	519.32sa,g	150.04g,in	0.2407g 7.276 = 7.5092 = .9689 ✓	RATA25433 01/10/07	29.2	6Y	0954	1/30/07	
							1C	1452	2/1/07	
							1B	0607	2/2/07	
12/05/2006 12:30		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:	Beta:	

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

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

STL RICHLAND

1/29/2007 2:13:08 PM

536403, Brown and Caldwell , Brown & Caldwell

AnalyDueDate: 02/05/2007

Batch: 7029198 FILTER pCi/sampl

SEQ Batch, Test: 7011225, BXTE

Sample Preparation/Analysis

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

PM, Quote: SA , 63174

Balance Id:1120373922,1120373922,1120

Pipet #:

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
5 JMLA8-2-AD J7A090287-5-SAMP	0.833sa,g	500.78sa,g	150.17g,in	0.2498g	RATA25424 01/10/07	1" 28.6 3x50	68	0954	1/30/07	
				7.863 –						
				7.4329 =			1D	1452	2/1/07	
				1.0579 ✓			1C	0601	2/2/07	
12/05/2006 12:50		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
6 JMLT2-2-AD J7A100115-1-SAMP	0.833sa,g	524.49sa,g	150.14g,in	0.2385g	RATA25425 01/10/07	30.0	66	0954	1/30/07	
				6.962 –						
				7.4996 =			3A	1452	2/1/07	
				.9283 ✓			1D	0601	2/2/07	
12/11/2006 11:40		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
7 JMLT6-2-AD J7A100115-2-SAMP	0.833sa,g	532.31sa,g	150.39g,in	0.2353g	RATA25426 01/10/07	29.0	9"	1027	1/30/07	
				7.97 –						
				7.4711 =			3B	1452	2/1/07	
				1.0668 ✓			3A	0601	2/2/07	
12/11/2006 12:00		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
8 JMLT7-2-AD J7A100115-3-SAMP	0.833sa,g	527.80sa,g	150.19g,in	0.237g	RATA25427 01/10/07	29.2	68	1027	1/30/07	
				6.959 –						
				7.4901 =			3C	1452	2/1/07	
				.9291 ✓			3B	0601	2/2/07	
12/11/2006 12:15		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:

STL RICHLAND

1/29/2007 2:13:08 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

AnalyDueDate: 02/05/2007

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

Balance Id:1120373922,1120373922,1120

Pipet #:

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Batch: 7029198 FILTER pCi/sampl
SEQ Batch, Test: 7011225, BXTE

PM, Quote: SA , 63174

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
9 JMLT8-2-AD J7A100115-4-SAMP	0.833sa,g	503.04sa,g	150.15g,in	0.2486g 7.163 – 7.4234 .9649 ✓	RATA25428 01/10/07	1" 30.9 3x50	64 30 3C	1027 1452 0607	1/30/07 2/1/07 2/2/07	
12/11/2006 11:45		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
10 JMLVA-2-AD J7A100115-5-SAMP	0.833g	511.47g	150.13g,in	0.2445g 7.819 – 7.4615 1.0479 ✓	RATA25429 01/10/07	27.4	67 4A 4A	1027 1452 0607	1/30/07 2/1/07 2/2/07	
12/11/2006 12:20		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
11 JMLVW-2-AD J7A100118-1-SAMP	0.833g	502.79g	150.13g,in	0.2487g 7.554 – 7.4901 1.0085 ✓	RATA25430 01/10/07	30.1	68 4B 4B	1027 1452 0607	1/30/07 2/1/07 2/2/07	
12/13/2006 12:10		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
12 JMLV3-2-AD J7A100118-2-SAMP	0.833sa,g	507.51sa,g	150.08g,in	0.2463g 7.492 – 7.4329 1.0080 ✓	RATA25431 01/10/07	28.9	66 4C 4C	1027 ✓ 1452 0607	1/30/07 2/1/07 2/2/07	
12/13/2006 12:43		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:

1/29/2007 2:13:09 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: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7029198 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 7011225, BXTE

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
13 JMLV5-2-AD J7A100118-3-SAMP	0.833sa,g	510.86sa,g	150.11g,in	0.2448g 7.98 = 7.4996 = 1.0641 ✓	RATA25432 01/10/07	1" 30.0 3x50	9 40 40	1102 1452 0607	1/30/07 1/31/07 2/1/07	
12/13/2006 13:15		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
[redacted] J7A100118-4-SAMP	0.833sa,g	504.92sa,g	150.33g,in	0.248g 7.82 = 7.4329 = 1.0521 ✓	RATA25434 01/10/07	1½" 30.2 3x5065	9" 5A 5A	1102 0915 1452 0607	1/30/07 1/31/07 R 2/1/07 2/2/07	
12/13/2006 13:18		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
15 JMLV9-2-AD J7A100118-5-SAMP	0.833sa,g	511.81sa,g	150.39g,in	0.2448g 7.953 = 7.4996 = 1.0605 ✓	RATA25435 01/10/07	31.2	6 5B 5B	1107 1452 0607	1/30/07 2/1/07 2/2/07	
12/13/2006 13:21		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
16 JMN9F-2-AA-B J7A110000-229-BLK			150.23g,in	150.23g 8.306 = 7.4615 1.1132 ✓	RATA25436 01/10/07	30.6	6 5C 5C	1107 1452 0607	1/30/07 2/1/07 2/2/07	
12/05/2006 12:25		AmtRec:		#Containers: 1			Scr:	Alpha:		Beta:

1/29/2007 2:13:10 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: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7029198 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:
17 JMN9F-2-AC-C			150.01g,in	150.01g	RASC4328					
J7A110000-229-LCS				7.439	01/11/07	1½" 29.93x50	6X	1107	1/30/07	
				7.4988			5D	1452	2/1/07	
				.9920 ✓			5D	0607	2/2/07	

12/05/2006 12:25 AmtRec: #Containers: 1 Scr: Alpha: Beta:

Comments:

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

JMK812AD-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:						

JMN9F2AA-BLK:

Ba-133	RDL:	pCi/sam	LCL:70	UCL:130	RPD:20	RA-228	RDL:1	pCi/sam	LCL:	UCL:	RPD:
RA-228DA	RDL:1	pCi/sam	LCL:	UCL:	RPD:						

JMN9F2AC-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

JMK812AD-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

JMN9F2AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

JMN9F2AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #: **10-09399**
NCM Initiated By: angela long
Date Opened: 02/02/2007
Date Closed:

Classification: **Anomaly**
Status: **GLREVIEW**
Production Area: Environmental - Prep
Tests: Ra-228 by GPC
Lot #'s (Sample #'s): J7A090287 (1,2,3,4,5), J7A100115 (1,2,3,4,5), J7A100118 (1,2,3,4,5), J7A110000 (229),
QC Batches: 7011229, 7029198

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

Problem Description / Root Cause

Name	Date	Description
angela long	02/02/2007	The original batch had a low LCS at 72%, so we re-ran the samples and the results were good. The batch will be accepted.

Corrective Action

Name	Date	Corrective Action
angela long	02/02/2007	A re-run was performed and the results are good, so the batch will be accepted.

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: 2/2/2007

2/5/2007 5:53:10 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
33442	**9JMK8120**			**J7A0902871**	P-0812	FILTER	1/8/2007 10:00:00	12/5/2006 12:25:00 PM				
RA-228	BXTF	1		2/2/2007 6:05:51 AM	**1.1531E+00**	5.952E-01	5.952E-01	2.588E+00	PCI/SA	0.862	1.0E+0	2.358E-1
33442	**9JMLA120**			**J7A0902872**	P-0813	FILTER	1/8/2007 10:00:00	12/5/2006 12:10:00 PM				
RA-228	BXTF	1		2/2/2007 6:05:51 AM	**4.4305E-01**	3.903E-01	4.778E-01	2.19E+00	PCI/SA	0.935	1.0E+0	2.493E-1
33442	**9JMLA420**			**J7A0902873**	P-0814	FILTER	1/8/2007 10:00:00	12/5/2006 12:45:00 PM				
RA-228	BXTF	1		2/2/2007 6:05:51 AM	**8.5941E-01**	5.806E-01	5.806E-01	2.572E+00	PCI/SA	0.878	1.0E+0	2.42E-1
33442	**9JMLA720**			**J7A0902874**	P-0815	FILTER	1/8/2007 10:00:00	12/5/2006 12:30:00 PM				
RA-228	BXTF	1		2/2/2007 6:06:01 AM	**3.2525E-01**	4.459E-01	5.411E-01	2.541E+00	PCI/SA	0.822	1.0E+0	2.407E-1
33442	**9JMLA820**			**J7A0902875**	000580	FILTER	1/8/2007 10:00:00	12/5/2006 12:50:00 PM				
RA-228	BXTF	1		2/2/2007 6:06:01 AM	**9.0151E-01**	5.005E-01	5.221E-01	2.304E+00	PCI/SA	0.88	1.0E+0	2.498E-1
33443	**9JMLT220**			**J7A1001151**	P-0816	FILTER	1/8/2007 10:00:00	12/11/2006 11:40:00 AM				
RA-228	BXTF	1		2/2/2007 6:06:01 AM	**5.8208E-01**	3.816E-01	4.278E-01	1.937E+00	PCI/SA	0.81	1.0E+0	2.385E-1
33443	**9JMLT620**			**J7A1001152**	P-0817	FILTER	1/8/2007 10:00:00	12/11/2006 12:00:00 PM				
RA-228	BXTF	1		2/2/2007 6:06:10 AM	**2.5662E-02**	1.11E-01	3.464E-01	1.741E+00	PCI/SA	0.899	1.0E+0	2.353E-1
33443	**9JMLT720**			**J7A1001153**	P-0818	FILTER	1/8/2007 10:00:00	12/11/2006 12:15:00 PM				
RA-228	BXTF	1		2/2/2007 6:06:10 AM	**1.7502E+00**	4.993E-01	5.292E-01	2.007E+00	PCI/SA	0.789	1.0E+0	2.37E-1
33443	**9JMLT820**			**J7A1001154**	P-0819	FILTER	1/8/2007 10:00:00	12/11/2006 11:45:00 AM				
RA-228	BXTF	1		2/2/2007 6:06:10 AM	**2.8937E-01**	2.893E-01	3.398E-01	1.614E+00	PCI/SA	0.867	1.0E+0	2.486E-1
33444	**9JMLV320**			**J7A1001182**	P-0821	FILTER	1/8/2007 10:00:00	12/13/2006 12:43:00 PM				
RA-228	BXTF	1		2/2/2007 6:06:22 AM	**8.8132E-01**	4.113E-01	4.164E-01	1.781E+00	PCI/SA	0.847	1.0E+0	2.463E-1
33444	**9JMLV520**			**J7A1001183**	P-0822	FILTER	1/8/2007 10:00:00	12/13/2006 1:15:00 PM				
RA-228	BXTF	1		2/2/2007 6:06:22 AM	**4.4957E-01**	3.657E-01	3.715E-01	1.714E+00	PCI/SA	0.928	1.0E+0	2.448E-1
33444	**9JMLV820**			**J7A1001184**	P-0824	FILTER	1/8/2007 10:00:00	12/13/2006 1:18:00 PM				
RA-228	BXTF	1		2/2/2007 6:06:34 AM	**3.4175E-01**	3.712E-01	4.271E-01	1.983E+00	PCI/SA	0.924	1.0E+0	2.48E-1
33444	**9JMLV920**			**J7A1001185**	P-0582	FILTER	1/8/2007 10:00:00	12/13/2006 1:21:00 PM				
RA-228	BXTF	1		2/2/2007 6:06:34 AM	**2.628E-01**	3.301E-01	4.423E-01	2.059E+00	PCI/SA	0.962	1.0E+0	2.448E-1
33443	**9JMLVA20**			**J7A1001155**	000581	FILTER	1/8/2007 10:00:00	12/11/2006 12:20:00 PM				
RA-228	BXTF	1		2/2/2007 6:06:22 AM	**7.9041E-01**	4.043E-01	4.108E-01	1.789E+00	PCI/SA	0.835	1.0E+0	2.445E-1
33444	**9JMLVW20**			**J7A1001181**	P-0820	FILTER	1/8/2007 10:00:00	12/13/2006 12:10:00 PM				
RA-228	BXTF	1		2/2/2007 6:06:22 AM	**2.9198E-01**	2.929E-01	3.325E-01	1.594E+00	PCI/SA	0.882	1.0E+0	2.487E-1
33442	**JMN9F2AB**			**J7A110000229**	INTRA-LAB BLANK	FILTER	1/8/2007 10:00:00	12/5/2006 12:25:00 PM				
RA-228	BXTF	1	B	2/2/2007 6:06:34 AM	**1.0189E-01**	9.189E-02	1.08E-01	4.912E-01	PCI/SA	0.99	1.0E+0	1.0E+0
33442	**JMN9F2CS**			**J7A110000229**	INTRA-LAB CHECK	FILTER	1/8/2007 10:00:00	12/5/2006 12:25:00 PM				
RA-228	BXTF	1	S	2/2/2007 6:06:34 AM	**5.49E+00**	2.684E-01	4.127E-01	5.422E-01	PCI/SA	5.1483E+00	0.862	1.0E+0	1.0E+0

7029198, **Samples Inserted | Updated | NotUpdated => 0 | 17 | 0,
**Results Inserted | ReTestInserted | Updated | NotInserted => 0 | 0 | 17 | 0.
**Diff RptDb | Qtims => .

STL Richland, Wa Calc Review v4.8.26

2/5/2007 5:53:12 AM

ICOC Fraction Transfer/Status Report

ByDate: 2/5/2006, 2/10/2007, Batch: '7029198', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
7029198						
AC		**CalcC**	**WoodT**	1/29/2007 10:43:25		
SC			longa	IsBatched	1/29/2007 10:30:11 AM	ICOC_RADCALC v4.8.26
SC			WoodT	InPrep	1/29/2007 10:43:25 AM	RICH-RC-5016 Revision 5
SC			WoodT	Prep1C	1/29/2007 11:21:47 AM	RICH-RC-5016 REVISION 5
SC			HarrisonJ	InPrep	1/29/2007 12:36:07 PM	RICH-RC-5005 Revision 5
SC			LongA	Sep1C	1/30/2007 8:52:09 AM	RICH-RC-5005 REVISION 5
SC			BlackCL	InCnt1	1/30/2007 9:18:18 AM	RICH-RD-0007 REVISION 5
SC			BlackCL	Cnt1C	1/30/2007 11:11:59 AM	RICH-RD-0007 REVISION 5
SC			HarrisonJ	Sep2C	2/1/2007 9:18:48 AM	RICH-RC-5005 REVISION 4
SC			BlackCL	InCnt2	2/1/2007 12:19:48 PM	RICH-RD-0003 REVISION 4
SC			BlackCL	CalcC	2/2/2007 6:37:32 AM	RICH-RD-0003 REVISION 4
AC			**WoodT**	1/29/2007 11:21:47		
AC			**HarrisonJ**	1/29/2007 12:36:07		
AC			**LongA**	1/30/2007 8:52:09		
AC			**BlackCL**	1/30/2007 9:18:18		
AC			**BlackCL**	1/30/2007 11:11:59		
AC			**HarrisonJ**	2/1/2007 9:18:48 AM		
AC			**BlackCL**	2/1/2007 12:19:48 PM		
AC			**BlackCL**	2/2/2007 6:37:32 AM		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 9

ICOCFractions v4.8.26

Batch Nbr: 7029198

Alpha Beta, Ra-228 by GPC , Results

2/2/2007 7:27:31 AM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Ra-228 by GPC				Ra-226/Ra-228 Deem With Out Blk Subt.										
Calc	TF	FILTER	JMK812AD	RA-228	1.02E+00	(9.19E-01)	U4	PCI/SA	R	1.84E+00	4.03E+00		86%	
Calc	TF	FILTER	JMK812AD	RA-228	7.02E-01	(9.85E-01)	U4	PCI/SA	R	2.04E+00	4.47E+00		86%	
Calc	TF	FILTER	JMK812AD	RA-228	1.74E+00	(1.17E+00)	U4	PCI/SA	R	2.26E+00	4.96E+00		86%	
Calc	TF	FILTER	JMK812AD	RA-228	1.15E+00	(5.95E-01)		PCI/SA	A	1.18E+00	2.59E+00		86%	
Calc	TF	FILTER	JMK812AD	RA-228	-2.50E+00	(5.55E+00)	U4	PCI/SA	R	1.26E+01	2.75E+01		86%	
Calc	TF	FILTER	JMLA12AD	RA-228	1.58E+00	(8.38E-01)		PCI/SA	R	1.55E+00	3.41E+00		93%	
Calc	TF	FILTER	JMLA12AD	RA-228	1.00E+00	(8.67E-01)	U4	PCI/SA	R	1.72E+00	3.78E+00		93%	
Calc	TF	FILTER	JMLA12AD	RA-228	-1.25E+00	(7.75E-01)	U4	PCI/SA	R	1.91E+00	4.19E+00		93%	
Calc	TF	FILTER	JMLA12AD	RA-228	4.43E-01	(4.78E-01)	U4	PCI/SA	A	9.97E-01	2.19E+00		93%	
Calc	TF	FILTER	JMLA12AD	RA-228	3.11E+00	(4.91E+00)	U4	PCI/SA	R	1.02E+01	2.25E+01		93%	
Calc	TF	FILTER	JMLA42AD	RA-228	-2.57E-01	(8.19E-01)	U4	PCI/SA	R	1.84E+00	4.03E+00		88%	
Calc	TF	FILTER	JMLA42AD	RA-228	1.27E+00	(1.02E+00)	U4	PCI/SA	R	2.02E+00	4.43E+00		88%	
Calc	TF	FILTER	JMLA42AD	RA-228	1.57E+00	(1.15E+00)	U4	PCI/SA	R	2.24E+00	4.91E+00		88%	
Calc	TF	FILTER	JMLA42AD	RA-228	8.59E-01	(5.81E-01)	U4	PCI/SA	A	1.18E+00	2.57E+00		88%	
Calc	TF	FILTER	JMLA42AD	RA-228	7.56E+00	(6.35E+00)	U4	PCI/SA	R	1.26E+01	2.76E+01		88%	
Calc	TF	FILTER	JMLA72AD	RA-228	1.53E+00	(9.56E-01)	U4	PCI/SA	R	1.80E+00	3.98E+00		82%	
Calc	TF	FILTER	JMLA72AD	RA-228	-1.94E-02	(9.00E-01)	U4	PCI/SA	R	1.98E+00	4.37E+00		82%	
Calc	TF	FILTER	JMLA72AD	RA-228	-5.37E-01	(9.55E-01)	U4	PCI/SA	R	2.19E+00	4.85E+00		82%	
Calc	TF	FILTER	JMLA72AD	RA-228	3.25E-01	(5.41E-01)	U4	PCI/SA	A	1.15E+00	2.54E+00		82%	
Calc	TF	FILTER	JMLA72AD	RA-228	3.45E+00	(5.92E+00)	U4	PCI/SA	R	1.24E+01	2.72E+01		82%	
Calc	TF	FILTER	JMLA82AD	RA-228	1.63E+00	(8.87E-01)		PCI/SA	R	1.64E+00	3.61E+00		88%	
Calc	TF	FILTER	JMLA82AD	RA-228	2.91E-01	(8.44E-01)	U4	PCI/SA	R	1.80E+00	3.97E+00		88%	
Calc	TF	FILTER	JMLA82AD	RA-228	7.79E-01	(9.76E-01)	U4	PCI/SA	R	2.00E+00	4.40E+00		88%	
Calc	TF	FILTER	JMLA82AD	RA-228	9.02E-01	(5.22E-01)		PCI/SA	A	1.05E+00	2.30E+00		88%	
Calc	TF	FILTER	JMLA82AD	RA-228	-5.95E+00	(4.71E+00)	U4	PCI/SA	R	1.14E+01	2.50E+01		88%	
Calc	TF	FILTER	JMLT22AD	RA-228	1.06E+00	(7.31E-01)	U4	PCI/SA	R	1.29E+00	3.01E+00		81%	
Calc	TF	FILTER	JMLT22AD	RA-228	1.53E+00	(8.58E-01)		PCI/SA	R	1.43E+00	3.34E+00		81%	
Calc	TF	FILTER	JMLT22AD	RA-228	-8.41E-01	(6.13E-01)	U4	PCI/SA	R	1.59E+00	3.71E+00		81%	
Calc	TF	FILTER	JMLT22AD	RA-228	5.82E-01	(4.28E-01)	U4	PCI/SA	A	8.31E-01	1.94E+00		81%	
Calc	TF	FILTER	JMLT22AD	RA-228	1.89E+01	(7.20E+00)		PCI/SA	R	1.21E+01	2.67E+01		81%	
Calc	TF	FILTER	JMLT62AD	RA-228	5.85E-01	(6.10E-01)	U4	PCI/SA	R	1.17E+00	2.71E+00		90%	
Calc	TF	FILTER	JMLT62AD	RA-228	4.94E-01	(6.56E-01)	U4	PCI/SA	R	1.29E+00	3.01E+00		90%	
Calc	TF	FILTER	JMLT62AD	RA-228	-1.00E+00	(5.27E-01)	U4	PCI/SA	R	1.43E+00	3.33E+00		90%	
Calc	TF	FILTER	JMLT62AD	RA-228	2.57E-02	(3.46E-01)	U4	PCI/SA	A	7.49E-01	1.74E+00		90%	
Calc	TF	FILTER	JMLT62AD	RA-228	5.73E+00	(4.28E+00)	U4	PCI/SA	R	7.64E+00	1.79E+01		90%	
Calc	TF	FILTER	JMLT72AD	RA-228	2.38E+00	(9.32E-01)		PCI/SA	R	1.34E+00	3.12E+00		79%	
Calc	TF	FILTER	JMLT72AD	RA-228	1.55E+00	(8.87E-01)		PCI/SA	R	1.49E+00	3.46E+00		79%	
Calc	TF	FILTER	JMLT72AD	RA-228	1.32E+00	(9.30E-01)	U4	PCI/SA	R	1.65E+00	3.84E+00		79%	

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

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

RecCnt:39
RADCALC v4.8.26
STL Richland

Batch Nbr: 7029198

Alpha Beta, Ra-228 by GPC , Results

2/2/2007 7:27:32 AM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	TF	FILTER	JMLT72AD	RA-228	1.75E+00	(5.29E-01)		PCI/SA	A	8.62E-01	2.01E+00		79%	
Calc	TF	FILTER	JMLT72AD	RA-228	-8.89E-01	(4.11E+00)	U4	PCI/SA	R	9.24E+00	2.14E+01		79%	
Calc	TF	FILTER	JMLT82AD	RA-228	1.30E+00	(6.69E-01)		PCI/SA	R	1.07E+00	2.51E+00		87%	
Calc	TF	FILTER	JMLT82AD	RA-228	-3.66E-01	(4.91E-01)	U4	PCI/SA	R	1.19E+00	2.79E+00		87%	
Calc	TF	FILTER	JMLT82AD	RA-228	-7.07E-02	(5.92E-01)	U4	PCI/SA	R	1.32E+00	3.09E+00		87%	
Calc	TF	FILTER	JMLT82AD	RA-228	2.89E-01	(3.40E-01)	U4	PCI/SA	A	6.89E-01	1.61E+00		87%	
Calc	TF	FILTER	JMLT82AD	RA-228	4.87E+00	(4.35E+00)	U4	PCI/SA	R	8.16E+00	1.89E+01		87%	
Calc	TF	FILTER	JMLVA2AD	RA-228	8.57E-01	(6.55E-01)	U4	PCI/SA	R	1.20E+00	2.78E+00		83%	
Calc	TF	FILTER	JMLVA2AD	RA-228	6.34E-01	(6.88E-01)	U4	PCI/SA	R	1.33E+00	3.09E+00		83%	
Calc	TF	FILTER	JMLVA2AD	RA-228	8.80E-01	(7.85E-01)	U4	PCI/SA	R	1.48E+00	3.43E+00		83%	
Calc	TF	FILTER	JMLVA2AD	RA-228	7.90E-01	(4.11E-01)		PCI/SA	A	7.71E-01	1.79E+00		83%	
Calc	TF	FILTER	JMLVA2AD	RA-228	-4.83E-01	(4.23E+00)	U4	PCI/SA	R	9.39E+00	2.14E+01		83%	
Calc	TF	FILTER	JMLVW2AD	RA-228	6.63E-01	(5.71E-01)	U4	PCI/SA	R	1.06E+00	2.48E+00		88%	
Calc	TF	FILTER	JMLVW2AD	RA-228	7.36E-01	(6.34E-01)	U4	PCI/SA	R	1.17E+00	2.75E+00		88%	
Calc	TF	FILTER	JMLVW2AD	RA-228	-5.24E-01	(5.16E-01)	U4	PCI/SA	R	1.30E+00	3.05E+00		88%	
Calc	TF	FILTER	JMLVW2AD	RA-228	2.92E-01	(3.33E-01)	U4	PCI/SA	A	6.79E-01	1.59E+00		88%	
Calc	TF	FILTER	JMLVW2AD	RA-228	1.29E+01	(5.27E+00)		PCI/SA	R	8.28E+00	1.91E+01		88%	
Calc	TF	FILTER	JMLV32AD	RA-228	1.07E+00	(6.77E-01)	U4	PCI/SA	R	1.20E+00	2.77E+00		85%	
Calc	TF	FILTER	JMLV32AD	RA-228	2.53E-01	(6.37E-01)	U4	PCI/SA	R	1.33E+00	3.07E+00		85%	
Calc	TF	FILTER	JMLV32AD	RA-228	1.32E+00	(8.34E-01)	U4	PCI/SA	R	1.47E+00	3.41E+00		85%	
Calc	TF	FILTER	JMLV32AD	RA-228	8.81E-01	(4.16E-01)		PCI/SA	A	7.69E-01	1.78E+00		85%	
Calc	TF	FILTER	JMLV32AD	RA-228	9.97E+00	(5.01E+00)		PCI/SA	R	8.41E+00	1.94E+01		85%	
Calc	TF	FILTER	JMLV52AD	RA-228	5.87E-01	(5.98E-01)	U4	PCI/SA	R	1.15E+00	2.67E+00		93%	
Calc	TF	FILTER	JMLV52AD	RA-228	2.05E-01	(6.09E-01)	U4	PCI/SA	R	1.28E+00	2.96E+00		93%	
Calc	TF	FILTER	JMLV52AD	RA-228	5.57E-01	(7.17E-01)	U4	PCI/SA	R	1.42E+00	3.28E+00		93%	
Calc	TF	FILTER	JMLV52AD	RA-228	4.50E-01	(3.72E-01)	U4	PCI/SA	A	7.40E-01	1.71E+00		93%	
Calc	TF	FILTER	JMLV52AD	RA-228	6.91E+00	(4.48E+00)	U4	PCI/SA	R	7.99E+00	1.84E+01		93%	
Calc	TF	FILTER	JMLV82AD	RA-228	1.17E+00	(7.37E-01)	U4	PCI/SA	R	1.40E+00	3.08E+00		92%	
Calc	TF	FILTER	JMLV82AD	RA-228	1.18E-01	(7.18E-01)	U4	PCI/SA	R	1.55E+00	3.42E+00		92%	
Calc	TF	FILTER	JMLV82AD	RA-228	-2.62E-01	(7.64E-01)	U4	PCI/SA	R	1.72E+00	3.80E+00		92%	
Calc	TF	FILTER	JMLV82AD	RA-228	3.42E-01	(4.27E-01)	U4	PCI/SA	A	8.99E-01	1.98E+00		92%	
Calc	TF	FILTER	JMLV82AD	RA-228	5.28E+00	(4.91E+00)	U4	PCI/SA	R	9.73E+00	2.14E+01		92%	
Calc	TF	FILTER	JMLV92AD	RA-228	1.62E+00	(7.98E-01)		PCI/SA	R	1.46E+00	3.20E+00		96%	
Calc	TF	FILTER	JMLV92AD	RA-228	8.57E-02	(7.47E-01)	U4	PCI/SA	R	1.62E+00	3.55E+00		96%	
Calc	TF	FILTER	JMLV92AD	RA-228	-9.20E-01	(7.52E-01)	U4	PCI/SA	R	1.80E+00	3.94E+00		96%	
Calc	TF	FILTER	JMLV92AD	RA-228	2.63E-01	(4.42E-01)	U4	PCI/SA	A	9.40E-01	2.06E+00		96%	
Calc	TF	FILTER	JMLV92AD	RA-228	-2.25E+00	(4.53E+00)	U4	PCI/SA	R	1.02E+01	2.22E+01		96%	
Calc	TF	FILTER	JMN9F2AA	RA-228	4.98E-01	(2.00E-01)		PCI/SA	R	3.49E-01	7.64E-01	B	99%	
Calc	TF	FILTER	JMN9F2AA	RA-228	-2.34E-01	(1.59E-01)	U4	PCI/SA	R	3.87E-01	8.48E-01	B	99%	

() - (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:78
RADCALC v4.8.26
STL Richland

Batch Nbr: 7029198

Alpha Beta, Ra-228 by GPC , Results

2/2/2007 7:27:32 AM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	TF	FILTER	**JMN9F2AA**	RA-228	**4.14E-02**	**(1.99E-01)**	**U4**	PCI/SA	R	4.30E-01	9.41E-01	**B**	99%	
Calc	TF	FILTER	**JMN9F2AA**	RA-228	**1.02E-01**	**(1.08E-01)**	**U4**	PCI/SA	A	2.24E-01	4.91E-01	**B**	99%	
Calc	TF	FILTER	**JMN9F2AA**	RA-228	**1.84E+00**	**(1.15E+00)**	**U4**	PCI/SA	R	2.15E+00	4.73E+00	**B**	99%	
Calc	TF	FILTER	**JMN9F2AC**	RA-228	**5.31E+00**	**(6.78E-01)**		PCI/SA	R	3.82E-01	8.43E-01	**S**	86%	103%
Calc	TF	FILTER	**JMN9F2AC**	RA-228	**5.79E+00**	**(7.43E-01)**		PCI/SA	R	4.24E-01	9.36E-01	**S**	86%	112%
Calc	TF	FILTER	**JMN9F2AC**	RA-228	**5.37E+00**	**(7.22E-01)**		PCI/SA	R	4.70E-01	1.04E+00	**S**	86%	104%
Calc	TF	FILTER	**JMN9F2AC**	RA-228	**5.49E+00**	**(4.13E-01)**		PCI/SA	A	2.46E-01	5.42E-01	**S**	86%	107%
Calc	TF	FILTER	**JMN9F2AC**	RA-228	**8.82E+00**	**(1.94E+00)**		PCI/SA	R	2.44E+00	5.41E+00	**S**	86%	171%

Angela Long
2/2/07

() - (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:85
RADCALC v4.8.26
STL Richland

Batch Nbr: 7029198

Alpha Beta, Ra-228 by GPC , Calculated Results

2/2/2007 7:27:32 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	**JMK812AD**	**PCI/SA**		12/05/06 12:25	02/02/07 06:05	01/30/07 08:41	RATA25421R	1	1.00 SA	
536403,P-0812					,J7A090287-1 v4.8.26		FILTER			29.4	02/01/07 09:00	RATA25421R	101%	0.235793 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	02/01/07 13:17	RA-228	45	297	GPC7A	1	N	N	5.4150E-01	1.0000E+00	N	86%	N		1.5544E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.622E-02)	(0.000E+00)		7%			(0.000E+00)	4.241005		
1	02/01/07 14:12	RA-228	42	297	GPC7A	1	N	N	5.4150E-01	1.0000E+00	N	86%	N		1.7250E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.622E-02)	(0.000E+00)		7%			(0.000E+00)	4.241005		
2	02/01/07 15:07	RA-228	48	297	GPC7A	1	N	N	5.4150E-01	1.0000E+00	N	86%	N		1.9144E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.622E-02)	(0.000E+00)		7%			(0.000E+00)	4.241005		
3	02/02/07 06:05	RA-228	36	311	GPC7A	1	N	N	5.4150E-01	1.0000E+00	N	86%	N		1.0406E+01	4.5045E-01	1.0186E+00	
			50	400			N		(1.622E-02)	(0.000E+00)		7%			(0.000E+00)	4.241005		

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
	02/02/07	RA-228	R	**1.021122**	U4	1.57500E-01	0.524756	0.524756	1.00 SA	86%		4.025176		
				(0.919265)		(1.4091E-01)	(0.471625)	(0.471625)	(0.014142)			1.837981		
	02/02/07	RA-228	R	**0.701512**	U4	9.75000E-02	0.360508	0.360508	1.00 SA	86%		4.467026		
				(0.985249)		(1.3659E-01)	(0.505975)	(0.505975)	(0.014142)			2.03974		
	02/02/07	RA-228	R	**1.736695**	U4	2.17500E-01	0.892491	0.892491	1.00 SA	86%		4.957379		
				(1.171596)		(1.4511E-01)	(0.600297)	(0.600297)	(0.014142)			2.263645		
	02/02/07	RA-228	A	**1.15311**		1.57500E-01	0.592585	0.592585	1.00 SA	86%		2.588373		
				(0.595203)		(8.1356E-02)	(0.305286)	(0.305286)	(0.008165)			1.181906		
	02/02/07	RA-228	R	**-2.495568**	U4	-5.75000E-02	-1.282477	-1.282477	1.00 SA	86%		27.518659		
				(5.55413)		(1.2784E-01)	(2.8535)	(2.8535)	(0.014142)			12.590634		

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	**JMLA12AD**	**PCI/SA**		12/05/06 12:10	02/02/07 06:05	01/30/07 08:41	RATA25422	1	1.00 SA	
536403,P-0813					,J7A090287-2 v4.8.26		FILTER			28.9	02/01/07 09:00	RATA25422 Alq	111%	0.249299 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	02/01/07 13:17	RA-228	49	280	GPC7B	1	N	N	5.4307E-01	1.0000E+00	N	93%	N		1.5544E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.561E-02)	(0.000E+00)		7%			(0.000E+00)	4.011256		
1	02/01/07 14:12	RA-228	43	280	GPC7B	1	N	N	5.4307E-01	1.0000E+00	N	93%	N		1.7250E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.561E-02)	(0.000E+00)		7%			(0.000E+00)	4.011256		
2	02/01/07 15:07	RA-228	26	280	GPC7B	1	N	N	5.4307E-01	1.0000E+00	N	93%	N		1.9144E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.561E-02)	(0.000E+00)		7%			(0.000E+00)	4.011256		

() - (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: 7029198

Alpha Beta, Ra-228 by GPC , Calculated Results

2/2/2007 7:27:33 AM

3	02/02/07 06:05	RA-228	38	271	GPC7B	1	N	N	5.4307E-01	1.0000E+00	N	93%	N		1.0406E+01	4.5045E-01	1.0186E+00
			50	400			N		(1.561E-02)	(0.000E+00)		7%			(0.000E+00)	4.011256	

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
	02/02/07	RA-228	R	**1.577788**		2.80000E-01	0.857267	0.857267	1.00 SA	93%		3.405743		
				(0.838231)		(1.4612E-01)	(0.453256)	(0.453256)	(0.014142)			1.551085		
	02/02/07	RA-228	R	**1.000563**	U4	1.60000E-01	0.54364	0.54364	1.00 SA	93%		3.779597		
				(0.866605)		(1.3766E-01)	(0.470008)	(0.470008)	(0.014142)			1.72135		
	02/02/07	RA-228	R	**-1.249196**	U4	-1.80000E-01	-0.678731	-0.678731	1.00 SA	93%		4.19449		
				(0.775031)		(1.1023E-01)	(0.419621)	(0.419621)	(0.014142)			1.910306		
	02/02/07	RA-228	A	**0.443052**	U4	8.66667E-02	0.240725	0.240725	1.00 SA	93%		2.190049		
				(0.477762)		(7.6340E-02)	(0.258721)	(0.258721)	(0.008165)			0.997419		
	02/02/07	RA-228	R	**3.112069**	U4	8.25000E-02	1.690894	1.690894	1.00 SA	93%		22.462752		
				(4.912753)		(1.2998E-01)	(2.667821)	(2.667821)	(0.014142)			10.215174		

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	**JMLA42AD**	**PCI/SA**		12/05/06 12:45	02/02/07 06:05	01/30/07 08:41	RATA25423	1	1.00 SA	
536403,P-0814					,J7A090287-3 v4.8.26		FILTER			30.3	02/01/07 09:00	RATA25423 Alq	100%	0.241963 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	02/01/07 13:17	RA-228	36	304	GPC1B	1	N	N	5.2336E-01	1.0000E+00	N	88%	N		1.5550E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.538E-02)	(0.000E+00)		7%			(0.000E+00)	4.132871		
1	02/01/07 14:07	RA-228	47	304	GPC1B	1	N	N	5.2336E-01	1.0000E+00	N	88%	N		1.7094E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.538E-02)	(0.000E+00)		7%			(0.000E+00)	4.132871		
2	02/01/07 15:02	RA-228	48	304	GPC1B	1	N	N	5.2336E-01	1.0000E+00	N	88%	N		1.8970E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.538E-02)	(0.000E+00)		7%			(0.000E+00)	4.132871		
3	02/02/07 06:05	RA-228	47	307	GPC7C	1	N	N	5.1299E-01	1.0000E+00	N	88%	N		1.0406E+01	4.5045E-01	1.0186E+00	
			50	400			N		(1.642E-02)	(0.000E+00)		7%			(0.000E+00)	4.132871		

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
	02/02/07	RA-228	R	**-0.256623**	U4	-4.00000E-02	-0.13533	-0.13533	1.00 SA	88%		4.025709		
				(0.819486)		(1.2767E-01)	(0.432099)	(0.432099)	(0.014142)			1.840085		
	02/02/07	RA-228	R	**1.269508**	U4	1.80000E-01	0.669475	0.669475	1.00 SA	88%		4.425579		
				(1.022606)		(1.4387E-01)	(0.538148)	(0.538148)	(0.014142)			2.022859		
	02/02/07	RA-228	R	**1.565355**	U4	2.00000E-01	0.82549	0.82549	1.00 SA	88%		4.911227		
				(1.147591)		(1.4526E-01)	(0.60366)	(0.60366)	(0.014142)			2.244841		
	02/02/07	RA-228	A	**0.859413**	U4	1.13333E-01	0.453212	0.453212	1.00 SA	88%		2.571617		
				(0.580636)		(8.0346E-02)	(0.305636)	(0.305636)	(0.008165)			1.175444		
	02/02/07	RA-228	R	**7.555641**	U4	1.72500E-01	3.984468	3.984468	1.00 SA	88%		27.608194		
				(6.350366)		(1.4394E-01)	(3.34246)	(3.34246)	(0.014142)			12.624591		

() - (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: 7029198

Alpha Beta, Ra-228 by GPC , Calculated Results

2/2/2007 7:27:33 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
4	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLA72AD**	**PCI/SA**		12/05/06 12:30	02/02/07 06:06	01/30/07 08:41	RATA25433	1	1.00 SA	
536403,P-0815					,J7A090287-4 v4.8.26		FILTER			29.2	02/01/07 09:00	RATA25433 Alq	97%	0.240667 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	02/01/07 13:17	RA-228	41	241	GPC1C	1	N	N	5.1164E-01	1.0000E+00	N	82%	N		1.5550E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.846E-02)	(0.000E+00)		7%			(0.000E+00)	4.155114		
1	02/01/07 14:07	RA-228	30	241	GPC1C	1	N	N	5.1164E-01	1.0000E+00	N	82%	N		1.7094E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.846E-02)	(0.000E+00)		7%			(0.000E+00)	4.155114		
2	02/01/07 15:02	RA-228	27	241	GPC1C	1	N	N	5.1164E-01	1.0000E+00	N	82%	N		1.8970E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.846E-02)	(0.000E+00)		7%			(0.000E+00)	4.155114		
3	02/02/07 06:06	RA-228	37	266	GPC1B	1	N	N	5.2380E-01	1.0000E+00	N	82%	N		1.0409E+01	4.5045E-01	1.0186E+00	
			50	400			N		(1.539E-02)	(0.000E+00)		7%			(0.000E+00)	4.155114		

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
	02/02/07	RA-228	R	**1.532286**	U4	2.17500E-01	0.803723	0.803723	1.00 SA	82%		3.9779		
				(0.955586)		(1.3381E-01)	(0.499486)	(0.499486)	(0.014142)			1.799099		
	02/02/07	RA-228	R	**-0.019362**	U4	-2.50000E-03	-0.010156	-0.010156	1.00 SA	82%		4.37302		
				(0.900071)		(1.1622E-01)	(0.47211)	(0.47211)	(0.014142)			1.977801		
	02/02/07	RA-228	R	**-0.537166**	U4	-6.25000E-02	-0.281757	-0.281757	1.00 SA	82%		4.852901		
				(0.955008)		(1.1093E-01)	(0.500712)	(0.500712)	(0.014142)			2.194839		
	02/02/07	RA-228	A	**0.325253**	U4	5.08333E-02	0.170603	0.170603	1.00 SA	82%		2.541077		
				(0.541121)		(6.9697E-02)	(0.283448)	(0.283448)	(0.008165)			1.149262		
	02/02/07	RA-228	R	**3.454868**	U4	7.50000E-02	1.812166	1.812166	1.00 SA	82%		27.199678		
				(5.920469)		(1.2831E-01)	(3.104008)	(3.104008)	(0.014142)			12.358818		

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	**JMLA82AD**	**PCI/SA**		12/05/06 12:50	02/02/07 06:06	01/30/07 08:41	RATA25424	1	1.00 SA	
536403,000580					,J7A090287-5 v4.8.26		FILTER			28.6	02/01/07 09:00	RATA25424 Alq	106%	0.249794 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	02/01/07 13:17	RA-228	45	255	GPC1D	1	N	N	5.2143E-01	1.0000E+00	N	88%	N		1.5550E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.783E-02)	(0.000E+00)		7%			(0.000E+00)	4.003306		
1	02/01/07 14:07	RA-228	34	255	GPC1D	1	N	N	5.2143E-01	1.0000E+00	N	88%	N		1.7094E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.783E-02)	(0.000E+00)		7%			(0.000E+00)	4.003306		
2	02/01/07 15:02	RA-228	37	255	GPC1D	1	N	N	5.2143E-01	1.0000E+00	N	88%	N		1.8970E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.783E-02)	(0.000E+00)		7%			(0.000E+00)	4.003306		
3	02/02/07 06:06	RA-228	26	264	GPC1C	1	N	N	5.1132E-01	1.0000E+00	N	88%	N		1.0409E+01	4.5045E-01	1.0186E+00	
			50	400			N		(1.845E-02)	(0.000E+00)		7%			(0.000E+00)	4.003306		

() - (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: 7029198

Alpha Beta, Ra-228 by GPC , Calculated Results

2/2/2007 7:27:33 AM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	02/02/07	RA-228	R	**1.634797**		2.62500E-01	0.890013	0.890013	1.00 SA	88%		3.607508		
				(0.887354)		(1.3998E-01)	(0.480873)	(0.480873)	(0.014142)			1.635952		
	02/02/07	RA-228	R	**0.290972**	U4	4.25000E-02	0.15841	0.15841	1.00 SA	88%		3.965838		
				(0.844422)		(1.2326E-01)	(0.459645)	(0.459645)	(0.014142)			1.798449		
	02/02/07	RA-228	R	**0.778764**	U4	1.02500E-01	0.423973	0.423973	1.00 SA	88%		4.401036		
				(0.975991)		(1.2804E-01)	(0.53089)	(0.53089)	(0.014142)			1.995805		
	02/02/07	RA-228	A	**0.901511**		1.35833E-01	0.490799	0.490799	1.00 SA	88%		2.304471		
				(0.522069)		(7.5411E-02)	(0.283697)	(0.283697)	(0.008165)			1.045044		
	02/02/07	RA-228	R	**-5.951925**	U4	-1.40000E-01	-3.240336	-3.240336	1.00 SA	88%		25.016974		
				(4.706154)		(1.0977E-01)	(2.556577)	(2.556577)	(0.014142)			11.363112		

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	**JMLT22AD**	**PCI/SA**		12/11/06 11:40	02/02/07 06:06	01/30/07 08:41	RATA25425	1	1.00 SA	
536403,P-0816					,J7A100115-1 v4.8.26		FILTER			30.0	02/01/07 09:00	RATA25425 Alq	93%	0.238454 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	02/01/07 13:12	RA-228	19	97	GPC3A	1	N	N	4.6168E-01	1.0000E+00	N	81%	N		1.5410E+00	4.5045E-01	1.0166E+00	
			50	394			Y		(4.105E-02)	(0.000E+00)		6%			(0.000E+00)	4.193685		
1	02/01/07 14:07	RA-228	21	97	GPC3A	1	N	N	4.6168E-01	1.0000E+00	N	81%	N		1.7102E+00	4.5045E-01	1.0166E+00	
			50	394			Y		(4.105E-02)	(0.000E+00)		6%			(0.000E+00)	4.193685		
2	02/01/07 15:02	RA-228	8	97	GPC3A	1	N	N	4.6168E-01	1.0000E+00	N	81%	N		1.8979E+00	4.5045E-01	1.0166E+00	
			50	394			Y		(4.105E-02)	(0.000E+00)		6%			(0.000E+00)	4.193685		
3	02/02/07 06:06	RA-228	50	240	GPC1D	1	N	N	5.2186E-01	1.0000E+00	N	81%	N		1.0409E+01	4.5045E-01	1.0166E+00	
			50	400			N		(1.784E-02)	(0.000E+00)		6%			(0.000E+00)	4.193685		

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
	02/02/07	RA-228	R	**1.059491**	U4	1.33807E-01	0.551704	0.551704	1.00 SA	81%		3.012748		
				(0.731265)		(9.0691E-02)	(0.379708)	(0.379708)	(0.014142)			1.292563		
	02/02/07	RA-228	R	**1.527281**		1.73807E-01	0.795294	0.795294	1.00 SA	81%		3.343462		
				(0.858209)		(9.4999E-02)	(0.444976)	(0.444976)	(0.014142)			1.434449		
	02/02/07	RA-228	R	**-0.840537**	U4	-8.61929E-02	-0.437689	-0.437689	1.00 SA	81%		3.71048		
				(0.612984)		(6.1845E-02)	(0.318385)	(0.318385)	(0.014142)			1.591911		
	02/02/07	RA-228	A	**0.582078**	U4	7.38071E-02	0.303103	0.303103	1.00 SA	81%		1.937335		
				(0.427788)		(4.8390E-02)	(0.221999)	(0.221999)	(0.008165)			0.831177		
	02/02/07	RA-228	R	**18.925731**		4.00000E-01	9.855107	9.855107	1.00 SA	81%		26.665503		
				(7.19785)		(1.4663E-01)	(3.712956)	(3.712956)	(0.014142)			12.057692		

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

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

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

RecCnt:7

RADCALC v4.8.26

STL Richland

Batch Nbr: 7029198

Alpha Beta, Ra-228 by GPC , Calculated Results

2/2/2007 7:27:33 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
7	Calc	TF	FILTER	*STLE	Ra228WoBS	JMLT62AD	PCI/SA		12/11/06 12:00	02/02/07 06:06	01/30/07 08:41	RATA25426	1	1.00 SA	
536403,P-0817					,J7A100115-2 v4.8.26		FILTER			29.0	02/01/07 09:00	RATA25426 Alq	107%	0.235342 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	02/01/07 13:12	RA-228	17	101	GPC3B	1	N	N	4.7670E-01	1.0000E+00	N	90%	N		1.5410E+00	4.5045E-01	1.0166E+00	
			50	394			Y		(5.325E-02)	(0.000E+00)		7%			(0.000E+00)	4.249136		
1	02/01/07 14:07	RA-228	16	101	GPC3B	1	N	N	4.7670E-01	1.0000E+00	N	90%	N		1.7102E+00	4.5045E-01	1.0166E+00	
			50	394			Y		(5.325E-02)	(0.000E+00)		7%			(0.000E+00)	4.249136		
2	02/01/07 15:02	RA-228	7	101	GPC3B	1	N	N	4.7670E-01	1.0000E+00	N	90%	N		1.8979E+00	4.5045E-01	1.0166E+00	
			50	394			Y		(5.325E-02)	(0.000E+00)		7%			(0.000E+00)	4.249136		
3	02/02/07 06:06	RA-228	17	88	GPC3A	1	N	N	4.5874E-01	1.0000E+00	N	90%	N		1.0412E+01	4.5045E-01	1.0166E+00	
			50	394			N		(4.079E-02)	(0.000E+00)		7%			(0.000E+00)	4.249136		

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
	02/02/07	RA-228	R	**0.585102**	U4	8.36548E-02	0.300703	0.300703	1.00 SA	90%		2.707829		
				(0.609809)		(8.6317E-02)	(0.313011)	(0.313011)	(0.014142)			1.165062		
	02/02/07	RA-228	R	**0.494089**	U4	6.36548E-02	0.253928	0.253928	1.00 SA	90%		3.005071		
				(0.655789)		(8.3968E-02)	(0.336773)	(0.336773)	(0.014142)			1.292953		
	02/02/07	RA-228	R	**-1.002204**	U4	-1.16345E-01	-0.515065	-0.515065	1.00 SA	90%		3.334943		
				(0.526987)		(5.8742E-02)	(0.26951)	(0.26951)	(0.014142)			1.434882		
	02/02/07	RA-228	A	**0.025662**	U4	1.03215E-02	0.013189	0.013189	1.00 SA	90%		1.741258		
				(0.346353)		(4.4662E-02)	(0.177647)	(0.177647)	(0.008165)			0.749188		
	02/02/07	RA-228	R	**5.728247**	U4	1.16650E-01	2.94393	2.94393	1.00 SA	90%		17.923132		
				(4.280507)		(8.5831E-02)	(2.194566)	(2.194566)	(0.014142)			7.635317		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	TF	FILTER	*STLE	Ra228WoBS	JMLT72AD	PCI/SA		12/11/06 12:15	02/02/07 06:06	01/30/07 08:41	RATA25427	1	1.00 SA	
536403,P-0818					,J7A100115-3 v4.8.26		FILTER			29.2	02/01/07 09:00	RATA25427 Alq	93%	0.237037 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	02/01/07 13:12	RA-228	27	98	GPC3C	1	N	N	4.6229E-01	1.0000E+00	N	79%	N		1.5410E+00	4.5045E-01	1.0166E+00	
			50	394			Y		(4.546E-02)	(0.000E+00)		6%			(0.000E+00)	4.218746		
1	02/01/07 14:07	RA-228	21	98	GPC3C	1	N	N	4.6229E-01	1.0000E+00	N	79%	N		1.7102E+00	4.5045E-01	1.0166E+00	
			50	394			Y		(4.546E-02)	(0.000E+00)		6%			(0.000E+00)	4.218746		
2	02/01/07 15:02	RA-228	19	98	GPC3C	1	N	N	4.6229E-01	1.0000E+00	N	79%	N		1.8979E+00	4.5045E-01	1.0166E+00	
			50	394			Y		(4.546E-02)	(0.000E+00)		6%			(0.000E+00)	4.218746		
3	02/02/07 06:06	RA-228	13	109	GPC3B	1	N	N	4.7748E-01	1.0000E+00	N	79%	N		1.0412E+01	4.5045E-01	1.0166E+00	
			50	394			N		(5.333E-02)	(0.000E+00)		6%			(0.000E+00)	4.218746		

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

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

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

RecCnt:8

RADCALC v4.8.26

STL Richland

Batch Nbr: 7029198

Alpha Beta, Ra-228 by GPC , Calculated Results

2/2/2007 7:27:33 AM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	02/02/07	RA-228	R	**2.37842**		2.91269E-01	1.231156	1.231156	1.00 SA	79%		3.120683		
				(0.931885)		(1.0692E-01)	(0.478117)	(0.478117)	(0.014142)			1.339846		
	02/02/07	RA-228	R	**1.552053**		1.71269E-01	0.803399	0.803399	1.00 SA	79%		3.463246		
				(0.887061)		(9.5033E-02)	(0.457273)	(0.457273)	(0.014142)			1.486923		
	02/02/07	RA-228	R	**1.320151**	U4	1.31269E-01	0.683358	0.683358	1.00 SA	79%		3.843412		
				(0.930176)		(9.0726E-02)	(0.480181)	(0.480181)	(0.014142)			1.650145		
	02/02/07	RA-228	A	**1.750208**		1.97936E-01	0.905971	0.905971	1.00 SA	79%		2.006743		
				(0.529204)		(5.6464E-02)	(0.272492)	(0.272492)	(0.008165)			0.861583		
	02/02/07	RA-228	R	**-0.889344**	U4	-1.66497E-02	-0.460357	-0.460357	1.00 SA	79%		21.37055		
				(4.105704)		(7.6825E-02)	(2.125126)	(2.125126)	(0.014142)			9.24322		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
9	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLT82AD**	**PCI/SA**		12/11/06 11:45	02/02/07 06:06	01/30/07 08:41	RATA25428	1	1.00 SA	
536403,P-0819					,J7A100115-4 v4.8.26		FILTER			30.9	02/01/07 09:00	RATA25428 Alq	96%	0.248638 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	02/01/07 13:12	RA-228	21	90	GPC3D	1	N	N	4.8076E-01	1.0000E+00	N	87%	N		1.5410E+00	4.5045E-01	1.0166E+00	
			50	394			Y		(4.546E-02)	(0.000E+00)		7%			(0.000E+00)	4.021908		
1	02/01/07 14:07	RA-228	9	90	GPC3D	1	N	N	4.8076E-01	1.0000E+00	N	87%	N		1.7102E+00	4.5045E-01	1.0166E+00	
			50	394			Y		(4.546E-02)	(0.000E+00)		7%			(0.000E+00)	4.021908		
2	02/01/07 15:02	RA-228	11	90	GPC3D	1	N	N	4.8076E-01	1.0000E+00	N	87%	N		1.8979E+00	4.5045E-01	1.0166E+00	
			50	394			Y		(4.546E-02)	(0.000E+00)		7%			(0.000E+00)	4.021908		
3	02/02/07 06:06	RA-228	19	109	GPC3C	1	N	N	4.6947E-01	1.0000E+00	N	87%	N		1.0412E+01	4.5045E-01	1.0166E+00	
			50	394			N		(4.617E-02)	(0.000E+00)		7%			(0.000E+00)	4.021908		

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
	02/02/07	RA-228	R	**1.30486**		1.91574E-01	0.708495	0.708495	1.00 SA	87%		2.509938		
				(0.66882)		(9.4762E-02)	(0.361276)	(0.361276)	(0.014142)			1.071019		
	02/02/07	RA-228	R	**-0.366053**	U4	-4.84264E-02	-0.198754	-0.198754	1.00 SA	87%		2.785458		
				(0.491162)		(6.4651E-02)	(0.266484)	(0.266484)	(0.014142)			1.188587		
	02/02/07	RA-228	R	**-0.070687**	U4	-8.42640E-03	-0.03838	-0.03838	1.00 SA	87%		3.091222		
				(0.592046)		(7.0567E-02)	(0.321455)	(0.321455)	(0.014142)			1.31906		
	02/02/07	RA-228	A	**0.289373**	U4	4.49069E-02	0.15712	0.15712	1.00 SA	87%		1.614005		
				(0.339784)		(4.4894E-02)	(0.184049)	(0.184049)	(0.008165)			0.688715		
	02/02/07	RA-228	R	**4.870581**	U4	1.03350E-01	2.644561	2.644561	1.00 SA	87%		18.854833		
				(4.345567)		(9.1116E-02)	(2.355491)	(2.355491)	(0.014142)			8.155119		

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

RecCnt:10 RADCALC v4.8.26

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

STL Richland

Batch Nbr: 7029198

Alpha Beta, Ra-228 by GPC , Calculated Results

2/2/2007 7:27:33 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	TF	FILTER	*STLE	Ra228WoBS	JMLVA2AD	PCI/SA		12/11/06 12:20	02/02/07 06:06	01/30/07 08:41	RATA25429	1	1.00 SA	
536403,000581					,J7A100115-5 v4.8.26		FILTER			27.4	02/01/07 09:00	RATA25429 Alq	105%	0.244508 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	02/01/07 13:12	RA-228	19	104	GPC4A	1	N	N	4.8423E-01	1.0000E+00	N	83%	N		1.5416E+00	4.5045E-01	1.0166E+00	
			50	400			Y		(2.054E-02)	(0.000E+00)		7%			(0.000E+00)	4.089853		
1	02/01/07 14:07	RA-228	17	104	GPC4A	1	N	N	4.8423E-01	1.0000E+00	N	83%	N		1.7109E+00	4.5045E-01	1.0166E+00	
			50	400			Y		(2.054E-02)	(0.000E+00)		7%			(0.000E+00)	4.089853		
2	02/01/07 15:03	RA-228	18	104	GPC4A	1	N	N	4.8423E-01	1.0000E+00	N	83%	N		1.8987E+00	4.5045E-01	1.0166E+00	
			50	400			Y		(2.054E-02)	(0.000E+00)		7%			(0.000E+00)	4.089853		
3	02/02/07 06:06	RA-228	17	140	GPC4A	1	N	N	4.8423E-01	1.0000E+00	N	83%	N		1.0416E+01	4.5045E-01	1.0166E+00	
			50	400			N		(2.054E-02)	(0.000E+00)		7%			(0.000E+00)	4.089853		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/lLcC	BlkLcC/MDC	StdDvMdC/LcC
	02/02/07	RA-228	R	**0.85722**	U4	1.20000E-01	0.457713	0.457713	1.00 SA	83%		2.782511		
				(0.655282)		(9.0830E-02)	(0.348919)	(0.348919)	(0.027062)			1.198378		
	02/02/07	RA-228	R	**0.634213**	U4	8.00000E-02	0.338638	0.338638	1.00 SA	83%		3.087951		
				(0.687614)		(8.6313E-02)	(0.366647)	(0.366647)	(0.027062)			1.329926		
	02/02/07	RA-228	R	**0.879789**	U4	1.00000E-01	0.469763	0.469763	1.00 SA	83%		3.426921		
				(0.78515)		(8.8600E-02)	(0.418379)	(0.418379)	(0.027062)			1.475914		
	02/02/07	RA-228	A	**0.790407**		1.00000E-01	0.422038	0.422038	1.00 SA	83%		1.789282		
				(0.410781)		(5.1153E-02)	(0.21889)	(0.21889)	(0.015624)			0.770612		
	02/02/07	RA-228	R	**-0.482643**	U4	-1.00000E-02	-0.257707	-0.257707	1.00 SA	83%		21.393011		
				(4.228611)		(8.7607E-02)	(2.25782)	(2.25782)	(0.027062)			9.39412		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
11	Calc	TF	FILTER	*STLE	Ra228WoBS	JMLVW2AD	PCI/SA		12/13/06 12:10	02/02/07 06:06	01/30/07 08:41	RATA25430	1	1.00 SA	
536403,P-0820					,J7A100118-1 v4.8.26		FILTER			30.1	02/01/07 09:00	RATA25430 Alq	101%	0.248729 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	02/01/07 13:12	RA-228	16	89	GPC4B	1	N	N	4.7236E-01	1.0000E+00	N	88%	N		1.5416E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(9.013E-03)	(0.000E+00)		7%			(0.000E+00)	4.020445		
1	02/01/07 14:07	RA-228	16	89	GPC4B	1	N	N	4.7236E-01	1.0000E+00	N	88%	N		1.7109E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(9.013E-03)	(0.000E+00)		7%			(0.000E+00)	4.020445		
2	02/01/07 15:03	RA-228	8	89	GPC4B	1	N	N	4.7236E-01	1.0000E+00	N	88%	N		1.8987E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(9.013E-03)	(0.000E+00)		7%			(0.000E+00)	4.020445		
3	02/02/07 06:06	RA-228	29	120	GPC4B	1	N	N	4.7236E-01	1.0000E+00	N	88%	N		1.0416E+01	4.5045E-01	1.0159E+00	
			50	400			N		(9.013E-03)	(0.000E+00)		7%			(0.000E+00)	4.020445		

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

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

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

RecCnt:11

RADCALC v4.8.26

STL Richland

Batch Nbr: 7029198

Alpha Beta, Ra-228 by GPC , Calculated Results

2/2/2007 7:27:33 AM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	02/02/07	RA-228	R	**0.663444**	U4	9.75000E-02	0.360599	0.360599	1.00 SA	88%		2.479535		
				(0.571391)		(8.3404E-02)	(0.309888)	(0.309888)	(0.027062)			1.055991		
	02/02/07	RA-228	R	**0.736271**	U4	9.75000E-02	0.400182	0.400182	1.00 SA	88%		2.751717		
				(0.634113)		(8.3404E-02)	(0.343905)	(0.343905)	(0.027062)			1.171909		
	02/02/07	RA-228	R	**-0.523777**	U4	-6.25000E-02	-0.284686	-0.284686	1.00 SA	88%		3.053778		
				(0.516285)		(6.1288E-02)	(0.280147)	(0.280147)	(0.027062)			1.300551		
	02/02/07	RA-228	A	**0.291979**	U4	4.41667E-02	0.158698	0.158698	1.00 SA	88%		1.594455		
				(0.332522)		(4.4308E-02)	(0.180365)	(0.180365)	(0.015624)			0.679051		
	02/02/07	RA-228	R	**12.87278**		2.80000E-01	6.996685	6.996685	1.00 SA	88%		19.051137		
				(5.268757)		(1.1113E-01)	(2.835942)	(2.835942)	(0.027062)			8.284586		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
12	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLV32AD**	**PCI/SA**		12/13/06 12:43	02/02/07 06:06	01/30/07 08:41	RATA25431	1	1.00 SA	
536403,P-0821					,J7A100118-2 v4.8.26		FILTER			28.9	02/01/07 09:00	RATA25431 Alq	101%	0.246333 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	02/01/07 13:12	RA-228	21	107	GPC4C	1	N	N	4.8143E-01	1.0000E+00	N	85%	N		1.5416E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(1.240E-02)	(0.000E+00)		7%			(0.000E+00)	4.05954		
1	02/01/07 14:07	RA-228	15	107	GPC4C	1	N	N	4.8143E-01	1.0000E+00	N	85%	N		1.7109E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(1.240E-02)	(0.000E+00)		7%			(0.000E+00)	4.05954		
2	02/01/07 15:03	RA-228	21	107	GPC4C	1	N	N	4.8143E-01	1.0000E+00	N	85%	N		1.8987E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(1.240E-02)	(0.000E+00)		7%			(0.000E+00)	4.05954		
3	02/02/07 06:06	RA-228	25	116	GPC4C	1	N	N	4.8143E-01	1.0000E+00	N	85%	N		1.0416E+01	4.5045E-01	1.0159E+00	
			50	400			N		(1.240E-02)	(0.000E+00)		7%			(0.000E+00)	4.05954		

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
	02/02/07	RA-228	R	**1.071252**	U4	1.52500E-01	0.57665	0.57665	1.00 SA	85%		2.769928		
				(0.677275)		(9.5230E-02)	(0.363341)	(0.363341)	(0.014142)			1.195307		
	02/02/07	RA-228	R	**0.25336**	U4	3.25000E-02	0.136383	0.136383	1.00 SA	85%		3.073987		
				(0.637108)		(8.1662E-02)	(0.342879)	(0.342879)	(0.014142)			1.326518		
	02/02/07	RA-228	R	**1.319346**	U4	1.52500E-01	0.710198	0.710198	1.00 SA	85%		3.411424		
				(0.834128)		(9.5230E-02)	(0.447488)	(0.447488)	(0.014142)			1.472132		
	02/02/07	RA-228	A	**0.881319**		1.12500E-01	0.47441	0.47441	1.00 SA	85%		1.781191		
				(0.416384)		(5.2500E-02)	(0.223564)	(0.223564)	(0.008165)			0.768637		
	02/02/07	RA-228	R	**9.966803**		2.10000E-01	5.365084	5.365084	1.00 SA	85%		19.379901		
				(5.012825)		(1.0356E-01)	(2.683941)	(2.683941)	(0.014142)			8.408751		

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

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

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

RecCnt:13

RADCALC v4.8.26

STL Richland

Batch Nbr: 7029198

Alpha Beta, Ra-228 by GPC , Calculated Results

2/2/2007 7:27:34 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
13	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLV52AD**	**PCI/SA**		12/13/06 13:15	02/02/07 06:06	01/30/07 08:41	RATA25432	1	1.00 SA	
536403,P-0822					,J7A100118-3 v4.8.26		FILTER			30.0	02/01/07 09:00	RATA25432 Alq	106%	0.244767 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	02/01/07 13:12	RA-228	18	109	GPC4D	1	N	N	4.6322E-01	1.0000E+00	N	93%	N		1.5416E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(2.145E-02)	(0.000E+00)		7%			(0.000E+00)	4.085519		
1	02/01/07 14:07	RA-228	15	109	GPC4D	1	N	N	4.6322E-01	1.0000E+00	N	93%	N		1.7109E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(2.145E-02)	(0.000E+00)		7%			(0.000E+00)	4.085519		
2	02/01/07 15:03	RA-228	17	109	GPC4D	1	N	N	4.6322E-01	1.0000E+00	N	93%	N		1.8987E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(2.145E-02)	(0.000E+00)		7%			(0.000E+00)	4.085519		
3	02/02/07 06:06	RA-228	22	115	GPC4D	1	N	N	4.6322E-01	1.0000E+00	N	93%	N		1.0416E+01	4.5045E-01	1.0159E+00	
			50	400			N		(2.145E-02)	(0.000E+00)		7%			(0.000E+00)	4.085519		

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
	02/02/07	RA-228	R	**0.586682**	U4	8.75000E-02	0.313802	0.313802	1.00 SA	93%		2.665093		
				(0.598482)		(8.8776E-02)	(0.319698)	(0.319698)	(0.014142)			1.151526		
	02/02/07	RA-228	R	**0.204626**	U4	2.75000E-02	0.10945	0.10945	1.00 SA	93%		2.957645		
				(0.608602)		(8.1739E-02)	(0.325477)	(0.325477)	(0.014142)			1.277931		
	02/02/07	RA-228	R	**0.557398**	U4	6.75000E-02	0.298139	0.298139	1.00 SA	93%		3.28231		
				(0.716689)		(8.6494E-02)	(0.383027)	(0.383027)	(0.014142)			1.418212		
	02/02/07	RA-228	A	**0.449569**	U4	6.08333E-02	0.240464	0.240464	1.00 SA	93%		1.713777		
				(0.371517)		(4.9490E-02)	(0.198565)	(0.198565)	(0.008165)			0.740484		
	02/02/07	RA-228	R	**6.908433**	U4	1.52500E-01	3.695157	3.695157	1.00 SA	93%		18.428696		
				(4.480066)		(9.7564E-02)	(2.388576)	(2.388576)	(0.014142)			7.99143		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
14	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLV82AD**	**PCI/SA**		12/13/06 13:18	02/02/07 06:06	01/30/07 08:41	RATA25434	1	1.00 SA	
536403,P-0824					,J7A100118-4 v4.8.26		FILTER			30.2	02/01/07 09:00	RATA25434 Alq	105%	0.248009 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	02/01/07 13:17	RA-228	43	256	GPC5A	1.5	N	N	5.8536E-01	1.0000E+00	N	92%	N		1.5571E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(1.191E-02)	(0.000E+00)		7%			(0.000E+00)	4.032106		
1	02/01/07 14:13	RA-228	33	256	GPC5A	1.5	N	N	5.8536E-01	1.0000E+00	N	92%	N		1.7280E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(1.191E-02)	(0.000E+00)		7%			(0.000E+00)	4.032106		
2	02/01/07 15:08	RA-228	30	256	GPC5A	1.5	N	N	5.8536E-01	1.0000E+00	N	92%	N		1.9177E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(1.191E-02)	(0.000E+00)		7%			(0.000E+00)	4.032106		
3	02/02/07 06:06	RA-228	42	231	GPC5A	1.5	N	N	5.8536E-01	1.0000E+00	N	92%	N		1.0420E+01	4.5045E-01	1.0159E+00	
			50	334			N		(1.191E-02)	(0.000E+00)		7%			(0.000E+00)	4.032106		

() - (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:14

RADCALC v4.8.26

STL Richland

Batch Nbr: 7029198

Alpha Beta, Ra-228 by GPC , Calculated Results

2/2/2007 7:27:34 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
	02/02/07	RA-228	R	**1.169084**	U4	2.20000E-01	0.633599	0.633599	1.00 SA	92%		3.083658		
				(0.737491)		(1.3711E-01)	(0.398334)	(0.398334)	(0.014142)			1.39865		
	02/02/07	RA-228	R	**0.117943**	U4	2.00000E-02	0.063921	0.063921	1.00 SA	92%		3.422049		
				(0.717513)		(1.2166E-01)	(0.388851)	(0.388851)	(0.014142)			1.552133		
	02/02/07	RA-228	R	**-0.26178**	U4	-4.00000E-02	-0.141875	-0.141875	1.00 SA	92%		3.797693		
				(0.763641)		(1.1662E-01)	(0.413799)	(0.413799)	(0.014142)			1.722513		
	02/02/07	RA-228	A	**0.341749**	U4	6.66667E-02	0.185215	0.185215	1.00 SA	92%		1.98289		
				(0.427118)		(7.2419E-02)	(0.231206)	(0.231206)	(0.008165)			0.899376		
	02/02/07	RA-228	R	**5.276533**	U4	1.48383E-01	2.859682	2.859682	1.00 SA	92%		21.374896		
				(4.911964)		(1.3737E-01)	(2.657948)	(2.657948)	(0.014142)			9.729544		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
15	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLV92AD**	**PCI/SA**		12/13/06 13:21	02/02/07 06:06	01/30/07 08:41	RATA25435	1	1.00 SA	
536403,P-0582					,J7A100118-5 v4.8.26		FILTER			31.2	02/01/07 09:00	RATA25435 Alq	106%	0.244768 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	02/01/07 13:17	RA-228	53	298	GPC5B	1.5	N	N	5.8763E-01	1.0000E+00	N	96%	N		1.5571E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(1.382E-02)	(0.000E+00)		8%			(0.000E+00)	4.085496		
1	02/01/07 14:13	RA-228	38	298	GPC5B	1.5	N	N	5.8763E-01	1.0000E+00	N	96%	N		1.7280E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(1.382E-02)	(0.000E+00)		8%			(0.000E+00)	4.085496		
2	02/01/07 15:08	RA-228	30	298	GPC5B	1.5	N	N	5.8763E-01	1.0000E+00	N	96%	N		1.9177E+00	4.5045E-01	1.0159E+00	
			50	400			Y		(1.382E-02)	(0.000E+00)		8%			(0.000E+00)	4.085496		
3	02/02/07 06:06	RA-228	37	269	GPC5B	1.5	N	N	5.8763E-01	1.0000E+00	N	96%	N		1.0420E+01	4.5045E-01	1.0159E+00	
			50	334			N		(1.382E-02)	(0.000E+00)		8%			(0.000E+00)	4.085496		

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
	02/02/07	RA-228	R	**1.622398**		3.15000E-01	0.867788	0.867788	1.00 SA	96%		3.202588		
				(0.798245)		(1.5186E-01)	(0.424578)	(0.424578)	(0.014142)			1.462584		
	02/02/07	RA-228	R	**0.085735**	U4	1.50000E-02	0.045858	0.045858	1.00 SA	96%		3.554029		
				(0.746648)		(1.3062E-01)	(0.39936)	(0.39936)	(0.014142)			1.623084		
	02/02/07	RA-228	R	**-0.919747**	U4	-1.45000E-01	-0.491954	-0.491954	1.00 SA	96%		3.944161		
				(0.752276)		(1.1774E-01)	(0.401565)	(0.401565)	(0.014142)			1.801252		
	02/02/07	RA-228	A	**0.262795**	U4	6.16667E-02	0.140564	0.140564	1.00 SA	96%		2.059366		
				(0.442292)		(7.7451E-02)	(0.23594)	(0.23594)	(0.008165)			0.940488		
	02/02/07	RA-228	R	**-2.253689**	U4	-6.53892E-02	-1.205453	-1.205453	1.00 SA	96%		22.208402		
				(4.52705)		(1.3119E-01)	(2.420618)	(2.420618)	(0.014142)			10.176221		

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

RecCnt:16

RADCALC v4.8.26

STL Richland

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

Batch Nbr: 7029198

Alpha Beta, Ra-228 by GPC , Calculated Results

2/2/2007 7:27:34 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
16	Calc	TF	FILTER	*STLE	Ra228WoBS	JMN9F2AA	PCI/SA	B	12/05/06 12:25	02/02/07 06:06	01/30/07 08:41	RATA25436	1	1.00 SA	
0,INTRA-LAB BLANK					,J7A110000-229		FILTER			30.6	02/01/07 09:00	RATA25436 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
0	02/01/07 13:17	RA-228	58	301	GPC5C	1.5	N	N	5.8995E-01	1.0000E+00	N	99%	N		1.5571E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.180E-02)	(0.000E+00)		8%			(0.000E+00)	1.00		
1	02/01/07 14:13	RA-228	29	301	GPC5C	1.5	N	N	5.8995E-01	1.0000E+00	N	99%	N		1.7280E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.180E-02)	(0.000E+00)		8%			(0.000E+00)	1.00		
2	02/01/07 15:08	RA-228	39	301	GPC5C	1.5	N	N	5.8995E-01	1.0000E+00	N	99%	N		1.9177E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.180E-02)	(0.000E+00)		8%			(0.000E+00)	1.00		
3	02/02/07 06:06	RA-228	43	212	GPC5C	1.5	N	N	5.8995E-01	1.0000E+00	N	99%	N		1.0420E+01	4.5045E-01	1.0186E+00	
			50	334			N		(1.180E-02)	(0.000E+00)		8%			(0.000E+00)	1.00		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	02/02/07	RA-228	R	**0.49836**		4.07500E-01	1.086157	1.086157	1.00 SA	99%		0.763934		
				(0.199743)		(1.5837E-01)	(0.431522)	(0.431522)	(0.017321)			0.349032		
	02/02/07	RA-228	R	**-0.234113**	U4	-1.72500E-01	-0.510239	-0.510239	1.00 SA	99%		0.847766		
				(0.159241)		(1.1611E-01)	(0.346007)	(0.346007)	(0.017321)			0.387334		
	02/02/07	RA-228	R	**0.041419**	U4	2.75000E-02	0.090272	0.090272	1.00 SA	99%		0.940827		
				(0.19918)		(1.3222E-01)	(0.434079)	(0.434079)	(0.017321)			0.429852		
	02/02/07	RA-228	A	**0.101889**	U4	8.75000E-02	0.222063	0.222063	1.00 SA	99%		0.491234		
				(0.107975)		(7.8912E-02)	(0.234368)	(0.234368)	(0.01)			0.224439		
	02/02/07	RA-228	R	**1.843568**	U4	2.25269E-01	4.017983	4.017983	1.00 SA	99%		4.731215		
				(1.145373)		(1.3820E-01)	(2.487225)	(2.487225)	(0.017321)			2.145099		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
17	Calc	TF	FILTER	*STLE	Ra228WoBS	JMN9F2AC	PCI/SA	S	12/05/06 12:25	02/02/07 06:06	01/30/07 08:41	RASC4328	1	1.00 SA	
0,INTRA-LAB CHECK					,J7A110000-229		FILTER			29.9	02/01/07 09:00	RASC4328 Alq	99%	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	02/01/07 13:17	RA-228	211	248	GPC5D	1.5	N	N	5.6215E-01	1.0000E+00	N	86%	N		1.5571E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.259E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		
1	02/01/07 14:13	RA-228	208	248	GPC5D	1.5	N	N	5.6215E-01	1.0000E+00	N	86%	N		1.7280E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.259E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		
2	02/01/07 15:08	RA-228	179	248	GPC5D	1.5	N	N	5.6215E-01	1.0000E+00	N	86%	N		1.9177E+00	4.5045E-01	1.0186E+00	
			50	400			Y		(1.259E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		
3	02/02/07 06:06	RA-228	73	189	GPC5D	1.5	N	N	5.6215E-01	1.0000E+00	N	86%	N		1.0420E+01	4.5045E-01	1.0186E+00	
			50	334			N		(1.259E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		

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

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

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

RecCnt:17

RADCALC v4.8.26

STL Richland

Batch Nbr: 7029198

Alpha Beta, Ra-228 by GPC , Calculated Results

2/2/2007 7:27:34 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
	02/02/07	RA-228	R	**5.306322**		3.60000E+00	11.564917	11.564917	1.00 SA	86%	103%	0.843119		
				(0.678157)		(2.9317E-01)	(1.345376)	(1.345376)	(0.017321)			0.381841		
	02/02/07	RA-228	R	**5.790476**		3.54000E+00	12.620113	12.620113	1.00 SA	86%	112%	0.93564		
				(0.742993)		(2.9112E-01)	(1.475216)	(1.475216)	(0.017321)			0.423743		
	02/02/07	RA-228	R	**5.373242**		2.96000E+00	11.710767	11.710767	1.00 SA	86%	104%	1.038346		
				(0.721901)		(2.7046E-01)	(1.446185)	(1.446185)	(0.017321)			0.470258		
	02/02/07	RA-228	A	**5.490013**		3.36667E+00	11.965266	11.965266	1.00 SA	86%	107%	0.542152		
				(0.412725)		(1.6460E-01)	(0.82177)	(0.82177)	(0.01)			0.245536		
	02/02/07	RA-228	R	**8.819285**		8.94132E-01	19.221282	19.221282	1.00 SA	86%	171%	5.413902		
				(1.939132)		(1.7577E-01)	(4.102049)	(4.102049)	(0.017321)			2.441099		

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

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

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

RecCnt:17

RADCALC v4.8.26

STL Richland

UST Number: JMK812AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-A File: [quad7.sample.A]JMK812AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.A_1;3155

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00045	0050	01152	1700	1-FEB-2007 13:17:00.74
2	00000	00042	0050	01148	1700	1-FEB-2007 14:12:16.57
3	00000	00048	0050	01156	1700	1-FEB-2007 15:07:32.24

Bkg File: [quad7.bkgrnd]2007-02-01_0241.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00297	0400	0.74	09286	1700	1-FEB-2007 02:41:46.07

OK
AL 2/2/07

UST Number: JMK812AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-A File: [quad7.sample.A]JMK812AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.A_1;3156

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00036	0050	01175	1700	2-FEB-2007 06:05:51.68

Bkg File: [quad7.bkgrnd]2007-02-02_0236.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00311	0400	0.78	09302	1700	2-FEB-2007 02:36:59.96

UST Number: JMLA12AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-B File: [quad7.sample.B]JMLA12AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.B_1;3142

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00049	0050	01152	1700	1-FEB-2007 13:17:00.74
2	00000	00043	0050	01148	1700	1-FEB-2007 14:12:16.57
3	00000	00026	0050	01156	1700	1-FEB-2007 15:07:32.24

Bkg File: [quad7.bkgrnd]2007-02-01_0241.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00280	0400	0.70	09286	1700	1-FEB-2007 02:41:46.07

UST Number: JMLA12AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-B File: [quad7.sample.B]JMLA12AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.B_1;3143

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00038	0050	01175	1700	2-FEB-2007 06:05:51.68

Bkg File: [quad7.bkgrnd]2007-02-02_0236.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00271	0400	0.68	09302	1700	2-FEB-2007 02:36:59.96

UST Number: JMLA42AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-B File: [quad1.sample.B]JMLA42AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.B_1;3204

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00036	0050	01153	1650	1-FEB-2007 13:17:11.24
2	00000	00047	0050	01147	1650	1-FEB-2007 14:07:26.04
3	00000	00048	0050	01161	1650	1-FEB-2007 15:02:41.71

Bkg File: [quad1.bkgrnd]2007-02-01_0240.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00304	0400	0.76	09323	1650	1-FEB-2007 02:40:11.35

UST Number: JMLA42AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-C File: [quad7.sample.C]JMLA42AD.430
Disk Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.C_1;3148

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00047	0050	01175	1700	2-FEB-2007 06:05:51.68

Bkg File: [quad7.bkgrnd]2007-02-02_0236.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00307	0400	0.77	09302	1700	2-FEB-2007 02:36:59.96

UST Number: JMLA72AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-C File: [quad1.sample.C]JMLA72AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.C_1;3201

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00041	0050	01153	1650	1-FEB-2007 13:17:11.24
2	00000	00030	0050	01147	1650	1-FEB-2007 14:07:26.04
3	00000	00027	0050	01161	1650	1-FEB-2007 15:02:41.71

Bkg File: [quad1.bkgrnd]2007-02-01_0240.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00241	0400	0.60	09323	1650	1-FEB-2007 02:40:11.35

UST Number: JMLA72AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-B File: [quad1.sample.B]JMLA72AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.B_1;3205

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00037	0050	01171	1650	2-FEB-2007 06:06:01.22

Bkg File: [quad1.bkgrnd]2007-02-02_0233.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00266	0400	0.67	09339	1650	2-FEB-2007 02:33:16.10

UST Number: JMLA82AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-D File: [quad1.sample.D]JMLA82AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.D_1;3204

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00045	0050	01153	1650	1-FEB-2007 13:17:11.24
2	00000	00034	0050	01147	1650	1-FEB-2007 14:07:26.04
3	00000	00037	0050	01161	1650	1-FEB-2007 15:02:41.71

Bkg File: [quad1.bkgrnd]2007-02-01_0240.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00255	0400	0.64	09323	1650	1-FEB-2007 02:40:11.35

UST Number: JMLA82AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-C File: [quad1.sample.C]JMLA82AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.C_1;3202

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00026	0050	01171	1650	2-FEB-2007 06:06:01.22

Bkg File: [quad1.bkgrnd]2007-02-02_0233.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00264	0400	0.66	09339	1650	2-FEB-2007 02:33:16.10

UST Number: JMLT22AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JMLT22AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.A_1;5659

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01231	1920	1-FEB-2007 13:12:25.56
2	00000	00021	0050	01235	1920	1-FEB-2007 14:07:41.39
3	00000	00008	0050	01227	1920	1-FEB-2007 15:02:57.07

Bkg File: [quad3.bkgrnd]2007-02-01_0230.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00097	0394	0.25	09752	1920	1-FEB-2007 02:30:18.97

UST Number: JMLT22AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-D File: [quad1.sample.D]JMLT22AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.D_1;3205

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00050	0050	01171	1650	2-FEB-2007 06:06:01.22

Bkg File: [quad1.bkgrnd]2007-02-02_0233.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00240	0400	0.60	09339	1650	2-FEB-2007 02:33:16.10

UST Number: JMLT62AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JMLT62AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.B_1;5667

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00017	0050	01231	1920	1-FEB-2007 13:12:25.56
2	00000	00016	0050	01235	1920	1-FEB-2007 14:07:41.39
3	00000	00007	0050	01227	1920	1-FEB-2007 15:02:57.07

Bkg File: [quad3.bkgrnd]2007-02-01_0230.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00101	0394	0.26	09752	1920	1-FEB-2007 02:30:18.97

UST Number: JMLT62AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JMLT62AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.A_1;5660

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00017	0050	01317	1920	2-FEB-2007 06:06:10.01

Bkg File: [quad3.bkgrnd]2007-02-02_0227.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00088	0394	0.22	10397	1920	2-FEB-2007 02:27:42.49

UST Number: JMLT72AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JMLT72AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.C_1;5672

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00027	0050	01231	1920	1-FEB-2007 13:12:25.56
2	00000	00021	0050	01235	1920	1-FEB-2007 14:07:41.39
3	00000	00019	0050	01227	1920	1-FEB-2007 15:02:57.07

Bkg File: [quad3.bkgrnd]2007-02-01_0230.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00098	0394	0.25	09752	1920	1-FEB-2007 02:30:18.97

UST Number: JMLT72AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JMLT72AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.B_1;5668

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00013	0050	01317	1920	2-FEB-2007 06:06:10.01

Bkg File: [quad3.bkgrnd]2007-02-02_0227.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00109	0394	0.28	10397	1920	2-FEB-2007 02:27:42.49

UST Number: JMLT82AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JMLT82AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.D_1;5657

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00021	0050	01231	1920	1-FEB-2007 13:12:25.56
2	00000	00009	0050	01235	1920	1-FEB-2007 14:07:41.39
3	00000	00011	0050	01227	1920	1-FEB-2007 15:02:57.07

Bkg File: [quad3.bkgrnd]2007-02-01_0230.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00090	0394	0.23	09752	1920	1-FEB-2007 02:30:18.97

UST Number: JMLT82AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JMLT82AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.C_1;5673

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01317	1920	2-FEB-2007 06:06:10.01

Bkg File: [quad3.bkgrnd]2007-02-02_0227.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00109	0394	0.28	10397	1920	2-FEB-2007 02:27:42.49

UST Number: JMLVA2AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JMLVA2AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.A_1;5675

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01200	1850	1-FEB-2007 13:12:37.59
2	00000	00017	0050	01193	1850	1-FEB-2007 14:07:53.40
3	00000	00018	0050	01205	1850	1-FEB-2007 15:03:09.11

Bkg File: [quad4.bkgrnd]2007-02-01_0235.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00104	0400	0.26	09654	1850	1-FEB-2007 02:35:56.32

UST Number: JMLVA2AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JMLVA2AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.A_1;5676

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00017	0050	01227	1850	2-FEB-2007 06:06:22.70

Bkg File: [quad4.bkgrnd]2007-02-02_0241.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00140	0400	0.35	09798	1850	2-FEB-2007 02:41:11.47

UST Number: JMLVW2AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JMLVW2AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.B_1;5674

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00016	0050	01200	1850	1-FEB-2007 13:12:37.59
2	00000	00016	0050	01193	1850	1-FEB-2007 14:07:53.40
3	00000	00008	0050	01205	1850	1-FEB-2007 15:03:09.11

Bkg File: [quad4.bkgrnd]2007-02-01_0235.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00089	0400	0.22	09654	1850	1-FEB-2007 02:35:56.32

UST Number: JMLVW2AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JMLVW2AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.B_1;5675

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00029	0050	01227	1850	2-FEB-2007 06:06:22.70

Bkg File: [quad4.bkgrnd]2007-02-02_0241.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00120	0400	0.30	09798	1850	2-FEB-2007 02:41:11.47

UST Number: JMLV32AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JMLV32AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.C_1;5677

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00021	0050	01200	1850	1-FEB-2007 13:12:37.59
2	00000	00015	0050	01193	1850	1-FEB-2007 14:07:53.40
3	00000	00021	0050	01205	1850	1-FEB-2007 15:03:09.11

Bkg File: [quad4.bkgrnd]2007-02-01_0235.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00107	0400	0.27	09654	1850	1-FEB-2007 02:35:56.32

UST Number: JMLV32AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JMLV32AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.C_1;5678

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00025	0050	01227	1850	2-FEB-2007 06:06:22.70

Bkg File: [quad4.bkgrnd]2007-02-02_0241.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00116	0400	0.29	09798	1850	2-FEB-2007 02:41:11.47

UST Number: JMLV52AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-D File: [quad4.sample.D]JMLV52AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.D_1;5691

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00018	0050	01200	1850	1-FEB-2007 13:12:37.59
2	00000	00015	0050	01193	1850	1-FEB-2007 14:07:53.40
3	00000	00017	0050	01205	1850	1-FEB-2007 15:03:09.11

Bkg File: [quad4.bkgrnd]2007-02-01_0235.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00109	0400	0.27	09654	1850	1-FEB-2007 02:35:56.32

UST Number: JMLV52AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-D File: [quad4.sample.D]JMLV52AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.D_1;5692

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00022	0050	01227	1850	2-FEB-2007 06:06:22.70

Bkg File: [quad4.bkgrnd]2007-02-02_0241.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00115	0400	0.29	09798	1850	2-FEB-2007 02:41:11.47

UST Number: JMLV82AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 5-A File: [quad5.sample.A]JMLV82AD.180
Dish Size: 15 Bkg File: $DISK1:[QUAD5.BKGRND]CURRENT.A_15;5720

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00043	0050	01281	1800	1-FEB-2007 13:17:55.03
2	00000	00033	0050	01272	1800	1-FEB-2007 14:13:10.75
3	00000	00030	0050	01275	1800	1-FEB-2007 15:08:26.47

Bkg File: [quad5.bkgrnd]2007-02-01_0235.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00256	0400	0.64	10175	1800	1-FEB-2007 02:35:53.78

UST Number: JMLV82AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 5-A File: [quad5.sample.A]JMLV82AD.430
Dish Size: 15 Bkg File: $DISK1:[QUAD5.BKGRND]CURRENT.A_15;5721

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00042	0050	01312	1800	2-FEB-2007 06:06:34.35

Bkg File: [quad5.bkgrnd]2007-02-02_0131.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00231	0334	0.69	08721	1800	2-FEB-2007 01:31:08.61

UST Number: JMLV92AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 5-B File: [quad5.sample.B]JMLV92AD.180
Dish Size: 15 Bkg File: $DISK1:[QUAD5.BKGRND]CURRENT.B_15;5713

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00053	0050	01281	1800	1-FEB-2007 13:17:55.03
2	00000	00038	0050	01272	1800	1-FEB-2007 14:13:10.75
3	00000	00030	0050	01275	1800	1-FEB-2007 15:08:26.47

Bkg File: [quad5.bkgrnd]2007-02-01_0235.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00298	0400	0.75	10175	1800	1-FEB-2007 02:35:53.78

UST Number: JMLV92AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 5-B File: [quad5.sample.B]JMLV92AD.430
Dish Size: 15 Bkg File: $DISK1:[QUAD5.BKGRND]CURRENT.B_15;5714

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00037	0050	01312	1800	2-FEB-2007 06:06:34.35

Bkg File: [quad5.bkgrnd]2007-02-02_0131.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00269	0334	0.81	08721	1800	2-FEB-2007 01:31:08.61

UST Number: JMN9F2AA Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 5-C File: [quad5.sample.C]JMN9F2AA.180
Dish Size: 15 Bkg File: $DISK1:[QUAD5.BKGRND]CURRENT.C_15;5733

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00058	0050	01281	1800	1-FEB-2007 13:17:55.03
2	00000	00029	0050	01272	1800	1-FEB-2007 14:13:10.75
3	00000	00039	0050	01275	1800	1-FEB-2007 15:08:26.47

Bkg File: [quad5.bkgrnd]2007-02-01_0235.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00301	0400	0.75	10175	1800	1-FEB-2007 02:35:53.78

UST Number: JMN9F2AA Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 5-C File: [quad5.sample.C]JMN9F2AA.430
Dish Size: 15 Bkg File: $DISK1:[QUAD5.BKGRND]CURRENT.C_15;5734

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00043	0050	01312	1800	2-FEB-2007 06:06:34.35

Bkg File: [quad5.bkgrnd]2007-02-02_0131.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00212	0334	0.64	08721	1800	2-FEB-2007 01:31:08.61

UST Number: JMN9F2AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 5-D File: [quad5.sample.D]JMN9F2AC.180
Dish Size: 15 Bkg File: $DISK1:[QUAD5.BKGRND]CURRENT.D_15;5786

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00211	0050	01281	1800	1-FEB-2007 13:17:55.03
2	00000	00208	0050	01272	1800	1-FEB-2007 14:13:10.75
3	00000	00179	0050	01275	1800	1-FEB-2007 15:08:26.47

Bkg File: [quad5.bkgrnd]2007-02-01_0235.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00248	0400	0.62	10175	1800	1-FEB-2007 02:35:53.78

UST Number: JMN9F2AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 5-D File: [quad5.sample.D]JMN9F2AC.430
Dish Size: 15 Bkg File: $DISK1:[QUAD5.BKGRND]CURRENT.D_15;5787

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00073	0050	01312	1800	2-FEB-2007 06:06:34.35

Bkg File: [quad5.bkgrnd]2007-02-02_0131.D_15 (QREPORT Rev 11-OCT-98)

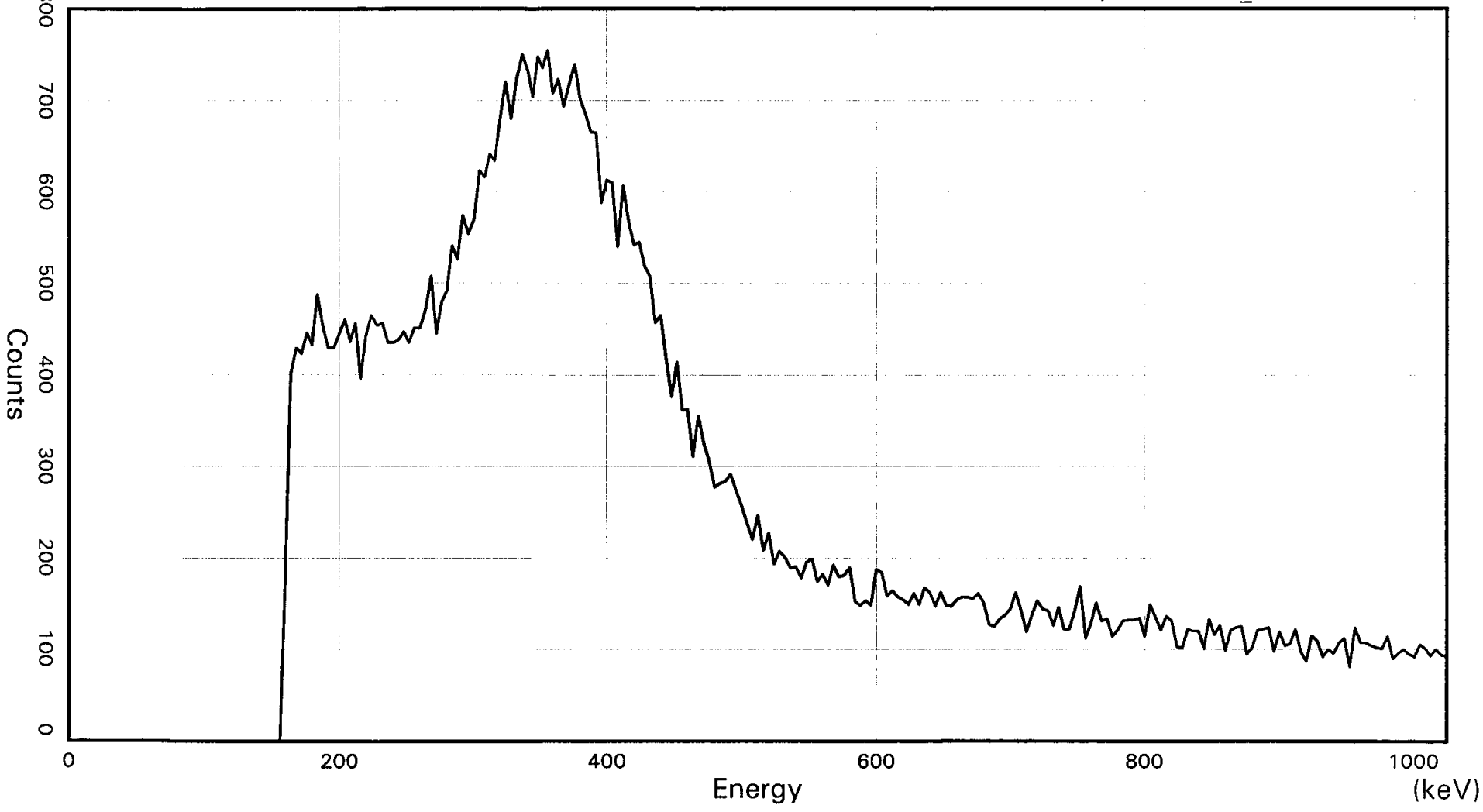
Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00189	0334	0.57	08721	1800	2-FEB-2007 01:31:08.61

STL Richland WA.

BA133

Sample ID: JMK812AD
Detector ID: NAI1 1

BatchID: 7029198
Library: [NUC_LIBR]BA133.NLB



Acquisition Start:	30-JAN-2007 09:23:25	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: JMK812AD

CONFIGURATION ID: NAI1:JMK812AD_300170923
TITLE : BA133
SAMPLE ID : JMK812AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 09:23:25
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/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 30-JAN-2007 09:53:30

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JMK812AD_300170923.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 10-JAN-2007 12:00:00	Acquisition date	: 30-JAN-2007 09:23:25
Sample ID	: JMK812AD	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.66 0.0%
Sample Multiplier	: 1.00	Rejection Coeff.	: 0.00
Gain shift type	: ITER	Threshold Shift	: No
Weighting type	: DERIVED	Calculated counts	: No
Iterations	: 5		

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	5.2	6.2	2.9	4.2	4.7	3.3	1.8	2.4
88:	1.4	2.3	-0.7	-0.2	-0.4	-1.1	2.3	0.8
96:	-0.7	-1.9	-1.5	-3.4	-3.3	-1.5	-3.7	-0.1
104:	-3.0	-3.5	-2.0	-2.8	-2.6	-3.4	-2.7	-4.1
112:	-4.6	-2.6						

List of Suspicious Channels

81 82 83 84

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	7.85E+00	0.00E+00	1.02E+00
2	2.67E+00	0.00E+00	1.04E+00
3	1.37E+00	0.00E+00	1.05E+00
4	8.43E-01	0.00E+00	1.06E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	757.	8.45

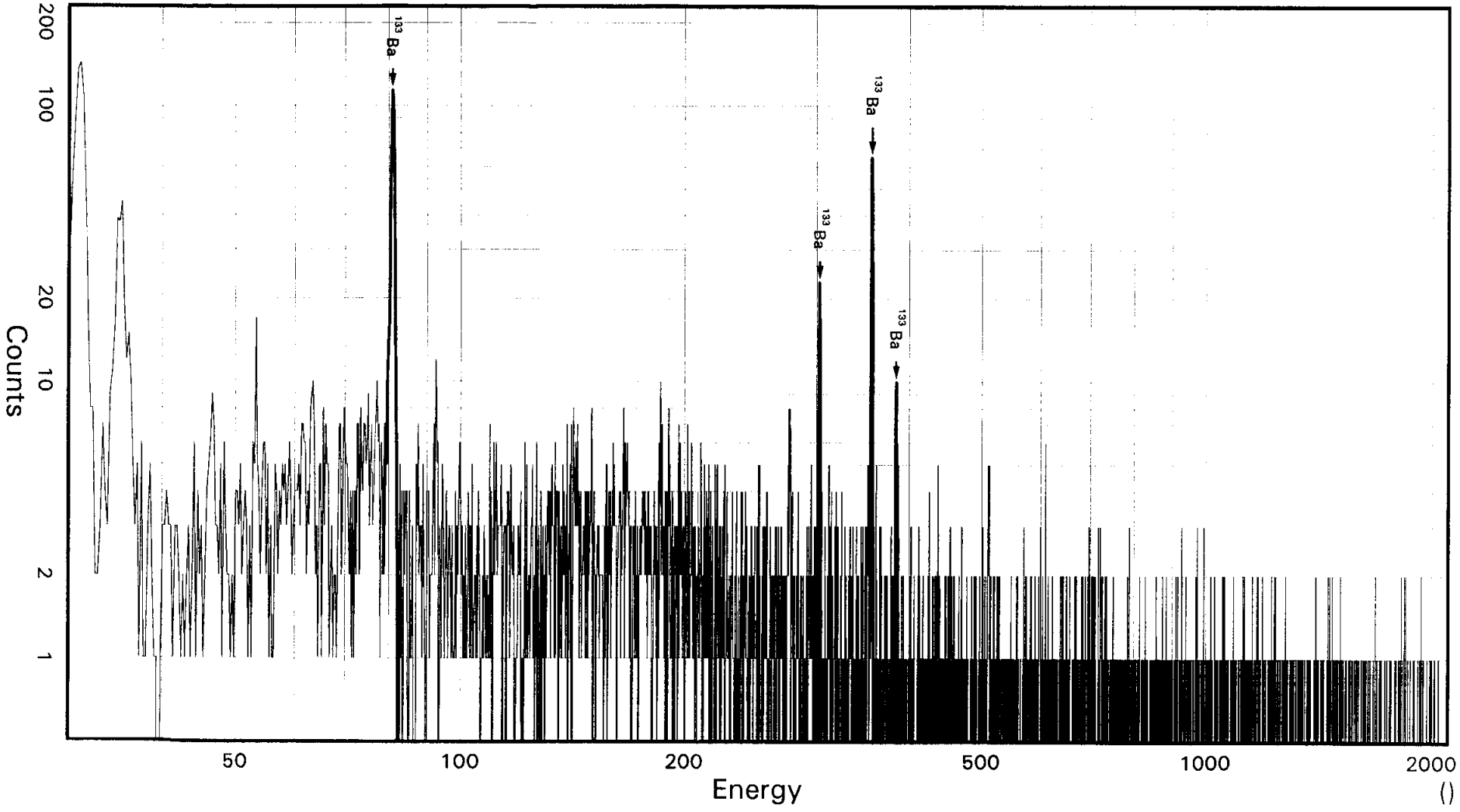
Total Activity :	757.	

STL Richland WA.

BA133

Sample ID: JMLA12AD
Detector ID: GER5 1

Batch ID: 7029198



Acquisition Start: 30-JAN-2007 09:23:33.34
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -3.40346E-01
Slope: 2.49441E-01
Quadrature: -9.48919E-11

SAMPLE IDENTIFICATION: JMLA12AD

CONFIGURATION ID: GER5:JMLA12AD_300170923
TITLE : BA133
SAMPLE ID : JMLA12AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 09:23:33
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:10:35.72
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.3403E+00 keV
ENERGY SLOPE: 2.4944E-01 keV/C
ENERGY Q COEFF: -.9489E-10 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.6897E-01 keV
FWHM SLOPE: 3.3744E-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 30-JAN-2007 09:53:45

```
Configuration     : RDND06$DKA100:[GER5.SAMPLE]JMLA12AD_300170923.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:23:33
Sample ID         : JMLA12AD             Sample quantity  : 1.0000 SAMPL
Sample type       :                      Sample geometry  : BA133T15
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.23   0.0%
Start energy      :    19.61             End energy       :  2043.07
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.97	617	106	1.00	125.53	116	17	3.43E-01	5.5	
2	0	35.16	190	55	0.85	142.34	134	18	1.06E-01	11.6	
3	0	80.95	440	33	0.90	325.90	317	16	2.44E-01	5.6	
4	0	302.82	101	8	1.05	1215.38	1207	16	5.61E-02	11.8	
5	0	355.99	322	23	1.12	1428.53	1421	17	1.79E-01	6.6	
6	0	383.56	41	0	0.92	1539.02	1533	11	2.28E-02	15.6	

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

VMS Nuclide Identification Report V3.1 Generated 30-JAN-2007 09:53:45

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLA12AD_300170923.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:23:33
Sample ID : JMLA12AD 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	440	33.00	1.924E+00	2.309E+03	2.317E+03	7.80
	276.40	------	6.90	2.077E+00	------ Line Not Found		------
	302.84	101	17.80	2.080E+00	9.095E+02	9.127E+02	12.93
	356.00	322	62.05*	2.082E+00	8.305E+02	8.335E+02	8.53
	383.85	41	8.70	2.081E+00	7.548E+02	7.575E+02	16.52

Flag: "*" = Keyline

Unidentified Energy Lines
Page : 2
Sample ID : JMLA12AD
Acquisition date : 30-JAN-2007 09:23:33

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.97	617	106	1.00	125.53	116	17	3.43E-01	5.5	1.68E+00	
0	35.16	190	55	0.85	142.34	134	18	1.06E-01	11.6	1.72E+00	

Flags: "T" = Tentatively associated

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 30-JAN-2007 09:53:47

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLA12AD_300170923.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,WTMEAN/KEY V1.8
Analyses by : MINACT V2.8
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:23:33
Sample ID : JMLA12AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	8.335E+02	7.110E+01	6.545E+01	1.309E+00	12.735

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.539E+01		6.142E+01	2.614E+02	5.245E+00	0.059
NA-22	-1.891E+00		4.625E+00	1.854E+01	3.931E-01	-0.102
NA-24	6.279E+03		8.272E+03	Half-Life too short		
K-40	-4.846E+01		5.953E+01	2.922E+02	6.278E+00	-0.166
SC-46	1.204E+01		7.902E+00	3.587E+01	7.521E-01	0.336
CR-51	7.200E+01		1.618E+02	6.288E+02	1.258E+01	0.115
MN-54	1.207E+01		5.724E+00	2.861E+01	5.873E-01	0.422
CO-57	-4.053E+01		1.398E+02	4.883E+02	1.009E+01	-0.083
CO-58	4.171E+00		6.296E+00	2.827E+01	5.792E-01	0.148
FE-59	-3.858E+00		6.897E+00	2.971E+01	6.220E-01	-0.130
CO-60	-1.343E-01		3.502E+00	1.593E+01	3.392E-01	-0.008
ZN-65	-1.139E+01		1.229E+01	4.435E+01	9.295E-01	-0.257
SE-75	-9.392E+00		1.900E+01	6.729E+01	1.350E+00	-0.140
SR-85	-2.869E+01		1.308E+01	4.085E+01	8.209E-01	-0.702
Y-88	4.040E+00		2.865E+00	1.874E+01	4.129E-01	0.216
NB-94	-8.216E+00		5.495E+00	1.778E+01	3.660E-01	-0.462
NB-95	-1.989E+00		7.141E+00	2.915E+01	5.954E-01	-0.068
TC-95M	2.793E+00		2.525E+01	9.208E+01	1.862E+00	0.030
ZR-95	8.436E-01		1.021E+01	4.431E+01	9.044E-01	0.019
ZRNB-95	-3.325E+00		1.194E+01	4.873E+01	9.953E-01	-0.068
MO-99	-1.133E+03		2.524E+03	8.679E+03	1.791E+02	-0.131
RH-101	4.602E+01		1.859E+01	7.542E+01	1.527E+00	0.610
RH-102M	-2.285E+00		5.857E+00	2.244E+01	4.501E-01	-0.102
RU-103	3.826E+00		9.107E+00	3.891E+01	7.814E-01	0.098
RU-106DA	-1.424E+00		7.311E+01	2.857E+02	5.777E+00	-0.005
AG-108M	-2.200E+01		1.135E+01	3.525E+01	7.060E-01	-0.624
AG-110M	2.359E+00		6.370E+00	2.882E+01	5.938E-01	0.082

Sample ID : JMLA12AD Acquisition date : 30-JAN-2007 09:23:33

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

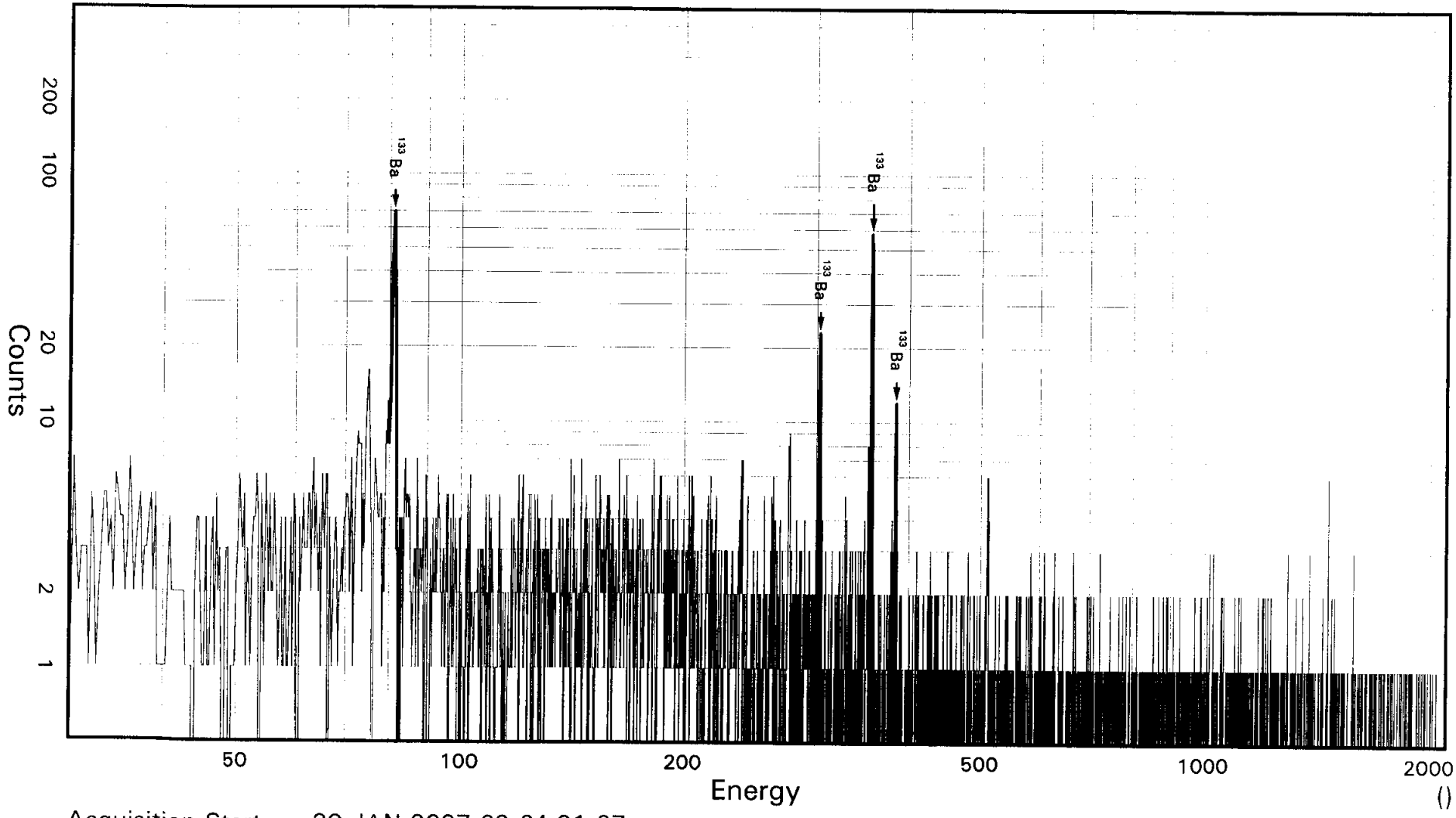
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	2.863E+00		1.280E+01	5.058E+01	1.012E+00	0.057
SB-124	5.945E+00		7.462E+00	3.271E+01	6.608E-01	0.182
SB-125	-3.042E+01		2.817E+01	9.614E+01	1.925E+00	-0.316
SN-126DA	2.876E+00		6.146E+00	2.569E+01	5.210E-01	0.112
I-131	-4.482E+01		5.937E+01	2.113E+02	4.227E+00	-0.212
CS-134	2.803E+00		4.495E+00	2.200E+01	4.504E-01	0.127
CS-137DA	-8.380E-01		4.603E+00	1.960E+01	3.975E-01	-0.043
LA-138	2.636E+00		4.426E+00	2.389E+01	5.123E-01	0.110
CE-139	2.312E+01		2.113E+01	8.014E+01	1.637E+00	0.288
BA-140	-1.836E+00		6.903E+01	2.791E+02	5.617E+00	-0.007
BALA-140	-1.092E+01		1.866E+01	7.862E+01	1.705E+00	-0.139
LA-140	-3.145E-03		5.372E-03	Half-Life too short		
CE-141	-3.969E+01		4.783E+01	1.605E+02	3.303E+00	-0.247
CE-144	1.078E+02		1.412E+02	5.212E+02	1.079E+01	0.207
CEPR-144	2.129E+02		2.823E+02	1.041E+03	2.156E+01	0.204
PM-144	-6.915E+00		6.830E+00	2.391E+01	4.835E-01	-0.289
PM-146	-6.538E+00		1.133E+01	4.102E+01	8.222E-01	-0.159
EU-152	-1.982E+01		3.065E+01	1.112E+02	2.225E+00	-0.178
EU-154	4.475E-01		1.207E+01	5.272E+01	1.118E+00	0.008
EU-155	-5.845E+01		5.724E+01	1.947E+02	4.108E+00	-0.300
HF-181	-1.979E+01		9.474E+00	2.567E+01	5.150E-01	-0.771
BI-207	5.108E+00		6.372E+00	2.754E+01	5.551E-01	0.186
TL-208	-2.111E+00		7.480E+00	3.279E+01	6.616E-01	-0.064
BI-210M	6.290E+00		2.046E+01	7.683E+01	1.541E+00	0.082
BI-212	1.354E+02		7.799E+01	3.842E+02	1.174E+01	0.352
PB-212	-2.709E+01		2.500E+01	9.139E+01	1.838E+00	-0.296
BI-214	3.186E+01		1.660E+01	7.565E+01	1.529E+00	0.421
PB-214	3.711E+01		3.355E+01	1.201E+02	2.403E+00	0.309
RA-223	4.838E+01		7.748E+01	2.957E+02	5.931E+00	0.164
RA-224DA	-2.763E+01		2.550E+01	9.321E+01	1.875E+00	-0.296
RA-226DA	3.200E+01		1.661E+01	7.574E+01	1.531E+00	0.423
AC-227DA	-1.036E+02		8.795E+01	2.961E+02	5.958E+00	-0.350
AC-228	-1.678E+01		2.341E+01	9.377E+01	1.936E+00	-0.179
RA-228DA	-1.689E+01		2.357E+01	9.438E+01	1.949E+00	-0.179
TH-228DA	-5.995E+00		2.124E+01	9.310E+01	1.878E+00	-0.064
TH-232DA	-1.924E+01		6.962E+01	2.598E+02	5.196E+00	-0.074
TH-234DA	2.333E+02		5.828E+02	2.754E+03	5.723E+01	0.085
U-234DA	8.803E+01		5.850E+01	2.361E+02	4.729E+00	0.373
U-235HP	1.878E+02		1.468E+02	5.521E+02	1.137E+01	0.340
NP-237DA	-3.357E+00		2.751E+01	1.027E+02	2.056E+00	-0.033
U-238DA	3.711E+01		3.355E+01	1.201E+02	2.403E+00	0.309
U-238DHP	-1.024E+03		4.966E+02	1.751E+03	3.898E+01	-0.585
AM-241HP	-3.336E+01		4.810E+01	1.688E+02	3.788E+00	-0.198

STL Richland WA.

BA133

Sample ID: JMLA42AD
Detector ID: GER4 1

Batch ID: 7029198



Acquisition Start: 30-JAN-2007 09:24:01.27
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -1.18422E-02
Slope: 2.49012E-01
Quadrature: 1.21167E-08

SAMPLE IDENTIFICATION: JMLA42AD

CONFIGURATION ID: GER4:JMLA42AD_300170924
TITLE : BA133
SAMPLE ID : JMLA42AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 09:24:01
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:10:40.76
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: -.1184E-01 keV
ENERGY SLOPE: 2.4901E-01 keV/C
ENERGY Q COEFF: 1.2117E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.0063E-01 keV
FWHM SLOPE: 4.3008E-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 30-JAN-2007 09:54:19

```
Configuration     : $DISK1:[GER4.SAMPLE]JMLA42AD_300170924.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:24:01
Sample ID         : JMLA42AD             Sample quantity  : 1.0000 SAMPL
Sample type       :                      Sample geometry  : BA133T15
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.41   0.0%
Start energy      :    19.91             End energy       :  2040.71
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.25*	10	32	0.78	302.22	296	10	5.44E-03	128.5	
2	0	81.11	209	59	0.79	325.76	321	12	1.16E-01	10.5	
3	0	302.97	92	16	1.17	1216.66	1209	13	5.12E-02	13.8	
4	0	356.00	306	11	1.32	1429.62	1422	18	1.70E-01	6.4	
5	0	383.90	48	6	1.07	1541.61	1535	13	2.66E-02	18.1	

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

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 09:54:20

Configuration : $DISK1:[GER4.SAMPLE]JMLA42AD_300170924.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:24:01
Sample ID : JMLA42AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.41 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	209	33.00	2.043E+00	1.033E+03	1.037E+03	11.92
	276.40	------	6.90	2.202E+00	------	Line Not Found	------
	302.84	92	17.80	2.205E+00	7.825E+02	7.853E+02	14.82
	356.00	306	62.05*	2.207E+00	7.442E+02	7.468E+02	9.35
	383.85	48	8.70	2.207E+00	8.304E+02	8.334E+02	19.15

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JMLA42AD

Acquisition date : 30-JAN-2007 09:24:01

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.25	10	32	0.78	302.22	296	10	5.44E-03	****	2.03E+00	

Flags: "T" = Tentatively associated

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 09:54:22

Configuration : $DISK1:[GER4.SAMPLE]JMLA42AD_300170924.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 : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:24:01
Sample ID : JMLA42AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.41 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.468E+02	6.985E+01	4.817E+01	2.258E+00	15.504

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.243E+02		6.894E+01	2.024E+02	7.390E+00	-0.614
NA-22	2.784E+00		3.897E+00	1.896E+01	7.311E-01	0.147
K-40	6.704E+01		7.892E+01	4.011E+02	1.567E+01	0.167
SC-46	5.087E+00		5.656E+00	2.606E+01	9.936E-01	0.195
CR-51	1.212E+02		1.144E+02	4.810E+02	1.116E+01	0.252
MN-54	-1.886E+00		4.949E+00	1.944E+01	7.260E-01	-0.097
CO-57	1.066E+02		1.018E+02	4.038E+02	9.679E+00	0.264
CO-58	1.012E+01		5.188E+00	2.731E+01	1.018E+00	0.371
FE-59	7.006E+00		1.225E+01	5.367E+01	2.043E+00	0.131
CO-60	-1.736E+00		3.672E+00	1.501E+01	5.810E-01	-0.116
ZN-65	-1.406E+01		1.186E+01	3.997E+01	1.524E+00	-0.352
SE-75	-1.352E+01		1.920E+01	6.730E+01	1.566E+00	-0.201
SR-85	-4.821E+01		1.292E+01	3.298E+01	1.206E+00	-1.462
Y-88	3.483E+00		3.720E+00	2.000E+01	8.008E-01	0.174
NB-94	4.344E+00		5.256E+00	2.331E+01	8.728E-01	0.186
NB-95	1.375E+01		7.972E+00	3.812E+01	1.417E+00	0.361
TC-95M	3.334E+01		2.129E+01	8.572E+01	2.011E+00	0.389
ZR-95	-3.541E+00		9.076E+00	3.693E+01	1.372E+00	-0.096
ZRNB-95	2.299E+01		1.333E+01	6.373E+01	2.369E+00	0.361
MO-99	-4.309E+02		1.728E+03	6.308E+03	1.509E+02	-0.068
RH-101	-1.060E+01		1.389E+01	4.741E+01	1.113E+00	-0.224
RH-102M	-2.726E+00		5.984E+00	2.241E+01	8.179E-01	-0.122
RU-103	2.918E+00		7.094E+00	3.168E+01	1.158E+00	0.092
RU-106DA	-6.908E+01		5.746E+01	1.941E+02	7.144E+00	-0.356
AG-108M	3.352E+00		6.863E+00	2.828E+01	1.031E+00	0.119
AG-110M	-1.607E+00		7.312E+00	2.965E+01	1.111E+00	-0.054
SN-113DA	1.079E+01		9.833E+00	4.383E+01	1.596E+00	0.246

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	5.268E-01		8.507E+00	3.332E+01	1.225E+00	0.016
SB-125	3.543E+01		2.645E+01	1.113E+02	4.057E+00	0.318
SN-126DA	1.574E+01		5.946E+00	2.923E+01	1.079E+00	0.539
I-131	-7.112E+00		4.187E+01	1.640E+02	5.969E+00	-0.043
CS-134	-1.640E+00		4.969E+00	2.022E+01	7.530E-01	-0.081
CS-137DA	-5.938E+00		4.982E+00	1.671E+01	6.166E-01	-0.355
LA-138	3.008E-01		6.754E+00	2.911E+01	1.135E+00	0.010
CE-139	-9.735E+00		1.618E+01	5.632E+01	1.334E+00	-0.173
BA-140	2.019E+01		7.277E+01	2.968E+02	1.087E+01	0.068
BALA-140	-1.021E+01		1.023E+01	2.722E+01	1.073E+00	-0.375
CE-141	-1.127E+01		3.211E+01	1.163E+02	2.777E+00	-0.097
CE-144	-2.305E+01		9.821E+01	3.614E+02	8.675E+00	-0.064
CEPR-144	-7.450E+01		1.987E+02	7.232E+02	1.736E+01	-0.103
PM-144	-1.801E+00		4.311E+00	1.721E+01	6.332E-01	-0.105
PM-146	-1.239E+01		9.435E+00	3.109E+01	1.134E+00	-0.398
EU-152	9.249E+00		2.990E+01	1.179E+02	2.735E+00	0.078
EU-154	6.117E+00		1.051E+01	5.081E+01	1.959E+00	0.120
EU-155	2.429E+01		4.667E+01	1.770E+02	4.329E+00	0.137
HF-181	9.401E+00		9.007E+00	4.016E+01	1.466E+00	0.234
BI-207	1.546E+00		4.674E+00	2.041E+01	7.486E-01	0.076
TL-208	-1.127E+01		6.837E+00	2.549E+01	9.359E-01	-0.442
BI-210M	-1.012E+01		1.942E+01	6.925E+01	1.612E+00	-0.146
BI-212	7.115E+01		6.161E+01	3.061E+02	1.332E+01	0.232
PB-212	2.617E+01		2.611E+01	1.076E+02	2.511E+00	0.243
BI-214	1.119E+01		1.606E+01	7.097E+01	2.610E+00	0.158
PB-214	1.956E+01		2.978E+01	1.018E+02	2.362E+00	0.192
RA-223	-1.151E+01		6.053E+01	2.251E+02	5.237E+00	-0.051
RA-224DA	2.669E+01		2.663E+01	1.098E+02	2.561E+00	0.243
RA-226DA	7.814E+00		1.641E+01	7.098E+01	2.610E+00	0.110
AC-227DA	-2.220E+02		9.902E+01	3.094E+02	7.222E+00	-0.718
AC-228	-6.838E-01		1.802E+01	8.436E+01	3.168E+00	-0.008
RA-228DA	-6.883E-01		1.813E+01	8.491E+01	3.189E+00	-0.008
TH-228DA	-3.199E+01		1.941E+01	7.237E+01	2.657E+00	-0.442
TH-232DA	4.192E-01		5.457E+01	2.153E+02	4.995E+00	0.002
TH-234DA	-2.418E+02		5.399E+02	2.239E+03	8.462E+01	-0.108
U-234DA	-2.049E+01		4.454E+01	1.614E+02	3.751E+00	-0.127
U-235HP	-5.898E+01		9.009E+01	3.211E+02	7.670E+00	-0.184
NP-237DA	-1.593E+01		2.091E+01	7.319E+01	1.699E+00	-0.218
U-238DA	1.956E+01		2.978E+01	1.018E+02	2.362E+00	0.192
U-238DHP	2.130E+02		3.439E+02	1.321E+03	3.406E+01	0.161
AM-241HP	-2.214E+01		2.979E+01	1.061E+02	2.756E+00	-0.209

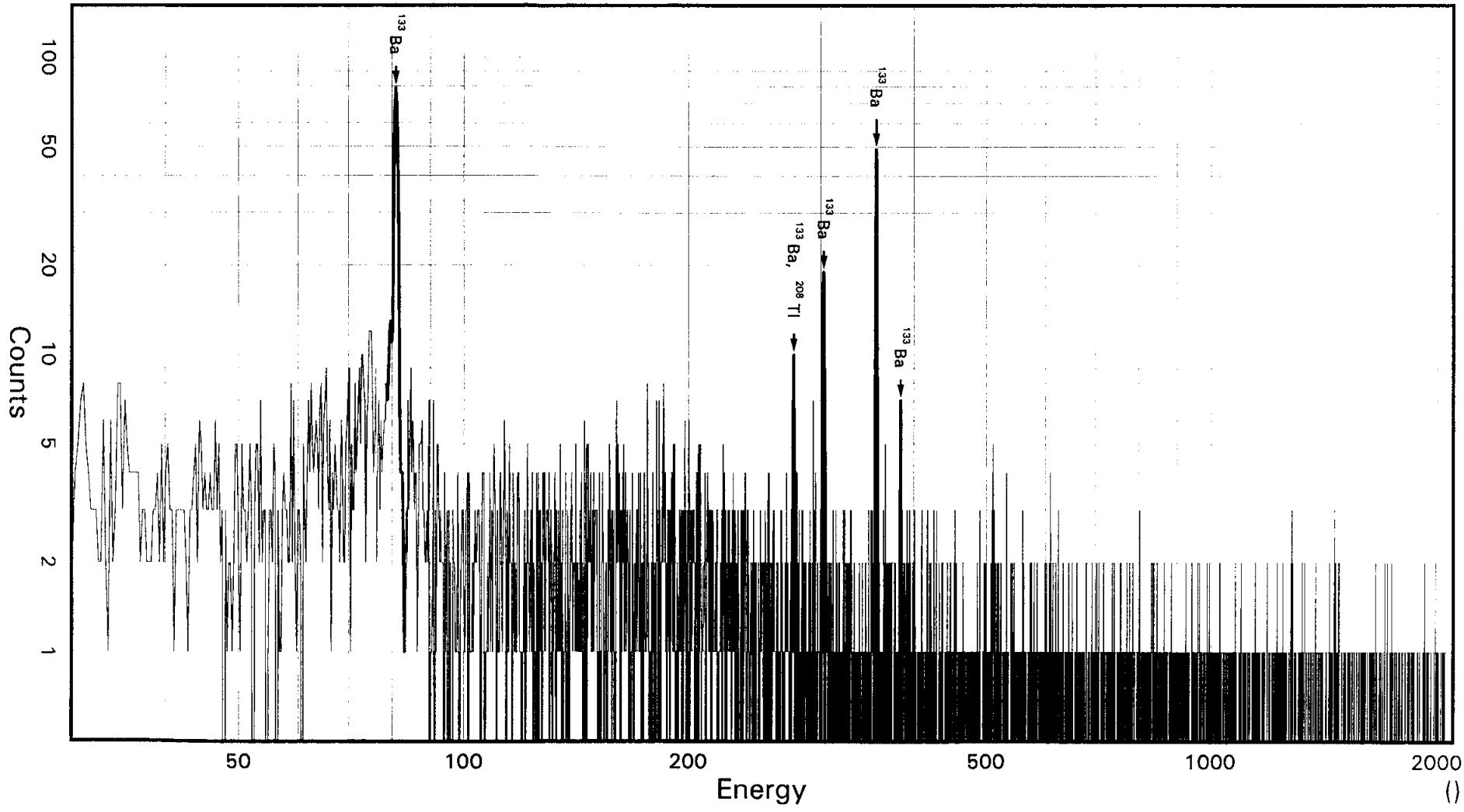
STL Richland WA.

BA133

Sample ID: JMLA72AD

Detector ID: GER7 1

Batch ID: 7029198



Acquisition Start: 30-JAN-2007 09:24:05.95

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: 6.75511E-01

Slope: 2.49212E-01

Quadrature: 1.32194E-07

SAMPLE IDENTIFICATION: JMLA72AD

CONFIGURATION ID: GER7:JMLA72AD_300170924
TITLE : BA133
SAMPLE ID : JMLA72AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 09:24:05
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:11:17.37
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 6.7551E-01 keV
ENERGY SLOPE: 2.4921E-01 keV/C
ENERGY Q COEFF: 1.3219E-07 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.4851E-01 keV
FWHM SLOPE: 4.0543E-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 30-JAN-2007 09:54:35

```
Configuration     : $DISK1:[GER7.SAMPLE]JMLA72AD_300170924.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:24:05
Sample ID         : JMLA72AD             Sample quantity  : 1.0000 SAMPL
Sample type       :                      Sample geometry  : BA133T15
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.20   0.0%
Start energy      :    20.61             End energy       :  2051.09
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.98	344	76	1.04	322.19	313	19	1.91E-01	8.2	
2	0	276.34	45	13	1.19	1105.50	1095	18	2.50E-02	24.2	
3	0	302.87	108	9	0.96	1211.82	1202	17	5.98E-02	11.5	
4	0	355.98	281	10	1.24	1424.65	1417	18	1.56E-01	6.5	
5	0	383.91	28	7	0.81	1536.55	1529	13	1.53E-02	27.0	

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

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 09:54:35

Configuration : $DISK1:[GER7.SAMPLE]JMLA72AD_300170924.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:24:05
Sample ID : JMLA72AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	344	33.00	1.923E+00	1.808E+03	1.814E+03	9.88
	276.40	45	6.90	2.076E+00	1.048E+03	1.052E+03	24.79
	302.84	108	17.80	2.078E+00	9.694E+02	9.729E+02	12.70
	356.00	281	62.05*	2.080E+00	7.249E+02	7.276E+02	8.43
	383.85	28	8.70	2.080E+00	5.066E+02	5.084E+02	27.53

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Sample ID : JMLA72AD Acquisition date : 30-JAN-2007 09:24:05

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	1.063E+03	24.79	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 09:54:37

Configuration : $DISK1:[GER7.SAMPLE]JMLA72AD_300170924.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 : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:24:05
Sample ID : JMLA72AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.276E+02	6.133E+01	5.139E+01	1.028E+00	14.159

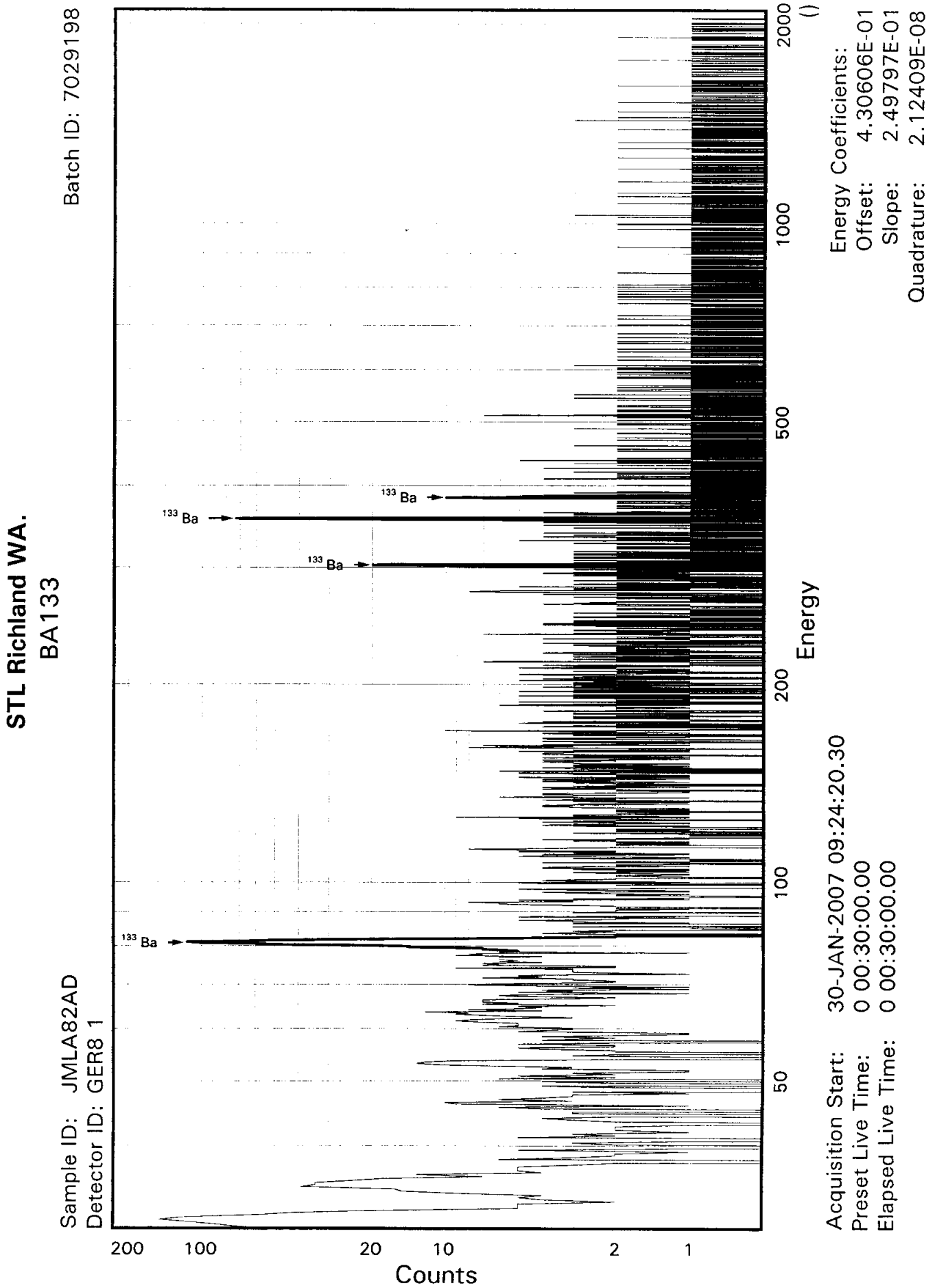
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	7.971E+01		5.670E+01	2.814E+02	5.645E+00	0.283
NA-22	-5.432E+00		3.983E+00	1.268E+01	2.689E-01	-0.428
K-40	-5.014E+01		6.400E+01	3.034E+02	6.519E+00	-0.165
SC-46	3.984E+00		3.955E+00	2.130E+01	4.466E-01	0.187
CR-51	-1.086E+02		1.210E+02	4.268E+02	8.540E+00	-0.254
MN-54	-4.036E+00		5.221E+00	1.961E+01	4.025E-01	-0.206
CO-57	-6.814E+01		9.230E+01	3.341E+02	6.906E+00	-0.204
CO-58	-5.363E+00		5.244E+00	1.911E+01	3.917E-01	-0.281
FE-59	1.022E+01		1.170E+01	5.490E+01	1.149E+00	0.186
CO-60	3.492E+00		3.413E+00	1.848E+01	3.935E-01	0.189
ZN-65	-6.858E+00		6.940E+00	2.574E+01	5.395E-01	-0.266
SE-75	1.065E+01		1.535E+01	6.240E+01	1.252E+00	0.171
SR-85	-2.005E+01		1.242E+01	3.992E+01	8.023E-01	-0.502
Y-88	8.085E+00		4.066E+00	2.426E+01	5.344E-01	0.333
NB-94	9.926E+00		5.232E+00	2.615E+01	5.382E-01	0.380
NB-95	-3.664E-01		6.104E+00	2.614E+01	5.339E-01	-0.014
TC-95M	1.042E+00		2.227E+01	8.121E+01	1.642E+00	0.013
ZR-95	6.496E+00		1.296E+01	5.504E+01	1.124E+00	0.118
ZRNB-95	-6.129E-01		1.020E+01	4.370E+01	8.926E-01	-0.014
MO-99	2.820E+03		1.723E+03	7.148E+03	1.475E+02	0.394
RH-101	-6.244E+00		1.605E+01	5.707E+01	1.156E+00	-0.109
RH-102M	-5.619E+00		5.082E+00	1.781E+01	3.573E-01	-0.315
RU-103	7.385E+00		1.067E+01	4.468E+01	8.971E-01	0.165
RU-106DA	4.706E+01		6.046E+01	2.667E+02	5.395E+00	0.176
AG-108M	3.462E+00		7.003E+00	2.938E+01	5.884E-01	0.118
AG-110M	4.846E+00		7.590E+00	3.386E+01	6.977E-01	0.143
SN-113DA	-1.638E+01		1.497E+01	5.237E+01	1.048E+00	-0.313

Sample ID : JMLA72AD Acquisition date : 30-JAN-2007 09:24:05

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-3.587E+00		7.631E+00	2.930E+01	5.919E-01	-0.122
SB-125	1.530E+01		2.227E+01	9.462E+01	1.895E+00	0.162
SN-126DA	4.878E+00		4.884E+00	2.291E+01	4.648E-01	0.213
I-131	5.869E+01		5.226E+01	2.189E+02	4.379E+00	0.268
CS-134	3.993E+00		3.878E+00	2.104E+01	4.307E-01	0.190
CS-137DA	-9.877E-02		6.017E+00	2.491E+01	5.051E-01	-0.004
LA-138	5.745E+00		5.299E+00	2.848E+01	6.107E-01	0.202
CE-139	3.793E+00		1.557E+01	5.849E+01	1.195E+00	0.065
BA-140	-9.987E+01		5.236E+01	1.394E+02	2.805E+00	-0.716
BALA-140	-1.270E+01		3.278E+01	1.284E+02	2.785E+00	-0.099
CE-141	-1.465E+01		3.551E+01	1.292E+02	2.659E+00	-0.113
CE-144	8.679E+01		9.362E+01	3.797E+02	7.860E+00	0.229
CEPR-144	5.519E+01		1.962E+02	7.595E+02	1.572E+01	0.073
PM-144	-6.307E+00		7.098E+00	2.548E+01	5.152E-01	-0.248
PM-146	1.562E+01		9.376E+00	4.367E+01	8.752E-01	0.358
EU-152	-1.424E+01		2.762E+01	1.010E+02	2.020E+00	-0.141
EU-154	-1.513E+01		1.110E+01	3.533E+01	7.492E-01	-0.428
EU-155	5.417E+01		5.383E+01	2.107E+02	4.445E+00	0.257
HF-181	-1.628E+01		8.595E+00	2.494E+01	5.005E-01	-0.653
BI-207	-5.705E-01		4.388E+00	1.875E+01	3.780E-01	-0.030
TL-208	4.448E+00		7.532E+00	3.197E+01	6.450E-01	0.139
BI-210M	1.088E+01		1.633E+01	6.626E+01	1.329E+00	0.164
BI-212	2.248E+01		6.652E+01	2.977E+02	9.101E+00	0.076
PB-212	1.493E+01		2.268E+01	9.293E+01	1.869E+00	0.161
BI-214	2.195E+01		1.819E+01	8.032E+01	1.623E+00	0.273
PB-214	3.254E+01		2.428E+01	1.012E+02	2.024E+00	0.322
RA-223	1.233E+01		6.393E+01	2.480E+02	4.974E+00	0.050
RA-224DA	1.523E+01		2.313E+01	9.478E+01	1.907E+00	0.161
RA-226DA	2.195E+01		1.819E+01	8.033E+01	1.623E+00	0.273
AC-227DA	-6.647E+01		8.750E+01	3.013E+02	6.062E+00	-0.221
AC-228	-2.397E+01		1.403E+01	5.540E+01	1.144E+00	-0.433
RA-228DA	-2.412E+01		1.413E+01	5.577E+01	1.151E+00	-0.433
TH-228DA	1.263E+01		2.138E+01	9.076E+01	1.831E+00	0.139
TH-232DA	-1.605E+01		5.405E+01	2.049E+02	4.098E+00	-0.078
TH-234DA	3.377E+02		8.033E+02	3.482E+03	7.237E+01	0.097
U-234DA	6.483E+01		4.533E+01	1.901E+02	3.807E+00	0.341
U-235HP	-7.472E+01		9.804E+01	3.504E+02	7.217E+00	-0.213
NP-237DA	-3.725E+00		2.051E+01	7.811E+01	1.563E+00	-0.048
U-238DA	3.254E+01		2.428E+01	1.012E+02	2.024E+00	0.322
U-238DHP	-1.321E+02		4.558E+02	1.661E+03	3.697E+01	-0.080
AM-241HP	-1.590E+01		3.881E+01	1.407E+02	3.156E+00	-0.113


STL Richland WA.
BA133
Batch ID: 7029198
Sample ID: JMLA82AD
Detector ID: GER8 1
133 Ba
133 Ba
133 Ba
133 Ba
Counts
200
100
20
10
2
1
Energy
50
100
200
500
1000
2000
()
Acquisition Start: 30-JAN-2007 09:24:20.30
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00
Energy Coefficients:
Offset: 4.30606E-01
Slope: 2.49797E-01
Quadrature: 2.12409E-08

SAMPLE IDENTIFICATION: JMLA82AD

CONFIGURATION ID: GER8:JMLA82AD_300170924
TITLE : BA133
SAMPLE ID : JMLA82AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 09:24:20
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:21:53.07
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: 4.3061E-01 keV
ENERGY SLOPE: 2.4980E-01 keV/C
ENERGY Q COEFF: 2.1241E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.3619E-01 keV
FWHM SLOPE: 2.2819E-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 30-JAN-2007 09:54:50

Configuration : $DISK1:[GER8.SAMPLE]JMLA82AD_300170924.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:24:20
Sample ID : JMLA82AD 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 : 20.41 End energy : 2048.19
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.78	687	86	1.05	121.49	111	20	3.82E-01	5.0	
2	0	35.14	211	35	1.08	138.95	131	19	1.17E-01	9.8	
3	0	53.12	54	7	1.03	210.94	206	10	2.98E-02	16.6	
4	0	80.94	516	45	0.86	322.29	312	20	2.87E-01	5.4	
5	0	302.92	93	12	1.37	1210.81	1205	12	5.19E-02	12.7	
6	0	356.01	347	10	1.04	1423.28	1414	19	1.92E-01	5.8	
7	0	383.70	53	0	1.23	1534.11	1528	14	2.94E-02	13.7	

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

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 09:54:50

Configuration : $DISK1:[GER8.SAMPLE]JMLA82AD_300170924.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:24:20
Sample ID : JMLA82AD 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	516	33.00	2.202E+00	2.367E+03	2.376E+03	7.69
	276.40	------	6.90	2.371E+00	------	Line Not Found	------
	302.84	93	17.80	2.374E+00	7.372E+02	7.398E+02	13.80
	356.00	347	62.05*	2.376E+00	7.835E+02	7.863E+02	7.90
	383.85	53	8.70	2.375E+00	8.549E+02	8.580E+02	14.75

Flag: "*" = Keyline

Unidentified Energy Lines
Page : 2
Sample ID : JMLA82AD
Acquisition date : 30-JAN-2007 09:24:20

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.78	687	86	1.05	121.49	111	20	3.82E-01	5.0	1.93E+00	
0	35.14	211	35	1.08	138.95	131	19	1.17E-01	9.8	1.97E+00	
0	53.12	54	7	1.03	210.94	206	10	2.98E-02	16.6	2.10E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLA82AD Acquisition date : 30-JAN-2007 09:24:20

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 09:54:52

Configuration : $DISK1:[GER8.SAMPLE]JMLA82AD_300170924.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 : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:24:20
Sample ID : JMLA82AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.863E+02	6.212E+01	5.393E+01	1.079E+00	14.580

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.477E+02		7.020E+01	2.098E+02	4.209E+00	-0.704
NA-22	0.000E+00		0.000E+00	4.073E+00	8.620E-02	0.000
K-40	-6.933E+01		3.799E+01	1.516E+02	3.248E+00	-0.457
SC-46	8.620E+00		4.618E+00	2.440E+01	5.107E-01	0.353
CR-51	-1.395E+02		1.257E+02	4.294E+02	8.591E+00	-0.325
MN-54	-2.026E+00		4.264E+00	1.704E+01	3.495E-01	-0.119
CO-57	3.070E+01		1.232E+02	4.468E+02	9.225E+00	0.069
CO-58	2.091E+00		5.159E+00	2.300E+01	4.710E-01	0.091
FE-59	-3.768E+00		9.444E+00	3.803E+01	7.948E-01	-0.099
CO-60	-1.398E+00		2.542E+00	1.104E+01	2.345E-01	-0.127
ZN-65	-1.567E+01		8.279E+00	2.250E+01	4.709E-01	-0.696
SE-75	3.502E+01		1.691E+01	7.094E+01	1.423E+00	0.494
SR-85	-3.321E+01		1.230E+01	3.643E+01	7.319E-01	-0.912
Y-88	3.528E+00		2.502E+00	1.637E+01	3.594E-01	0.216
NB-94	1.445E-01		3.475E+00	1.552E+01	3.191E-01	0.009
NB-95	8.310E+00		6.101E+00	2.997E+01	6.116E-01	0.277
TC-95M	-4.468E+00		2.067E+01	7.521E+01	1.520E+00	-0.059
ZR-95	1.287E+01		7.986E+00	4.223E+01	8.614E-01	0.305
ZRNB-95	1.389E+01		1.020E+01	5.010E+01	1.023E+00	0.277
MO-99	1.052E+02		1.916E+03	6.915E+03	1.425E+02	0.015
RH-101	-6.354E-02		1.483E+01	5.477E+01	1.109E+00	-0.001
RH-102M	1.214E+01		5.202E+00	2.612E+01	5.239E-01	0.465
RU-103	-1.682E+00		7.947E+00	3.167E+01	6.358E-01	-0.053
RU-106DA	1.490E+01		3.366E+01	1.616E+02	3.267E+00	0.092
AG-108M	-2.061E+01		9.291E+00	2.736E+01	5.479E-01	-0.753
AG-110M	-3.949E+00		5.050E+00	1.950E+01	4.014E-01	-0.202
SN-113DA	8.184E+00		1.157E+01	4.704E+01	9.411E-01	0.174

Sample ID : JMLA82AD Acquisition date : 30-JAN-2007 09:24:20

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

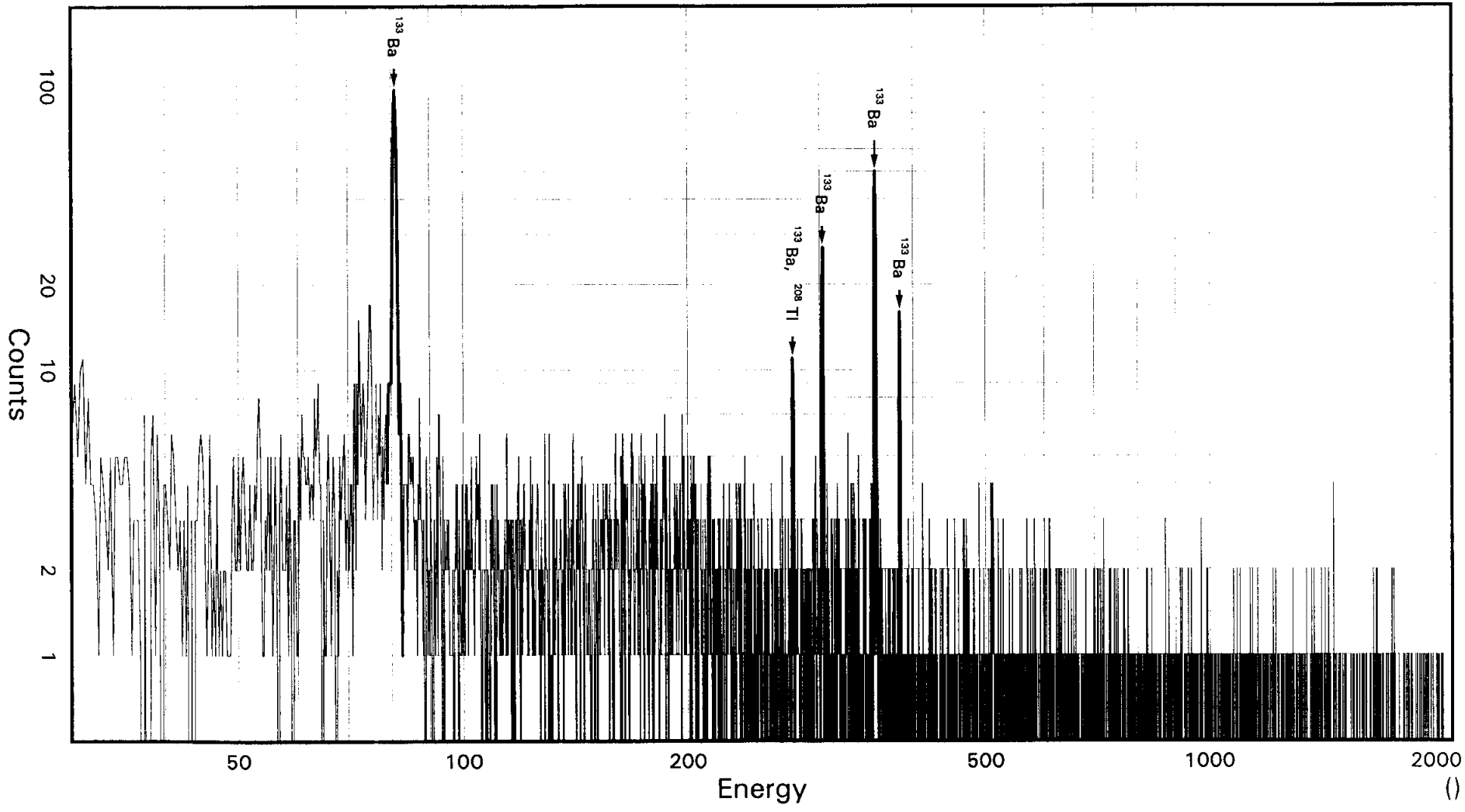
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	9.118E+00		7.517E+00	3.299E+01	6.662E-01	0.276
SB-125	-8.562E+00		2.500E+01	9.125E+01	1.827E+00	-0.094
SN-126DA	-2.235E+00		3.669E+00	1.431E+01	2.901E-01	-0.156
I-131	8.332E+01		5.057E+01	2.152E+02	4.305E+00	0.387
CS-134	1.433E+00		4.635E+00	2.054E+01	4.201E-01	0.070
CS-137DA	-9.881E-01		5.723E+00	2.278E+01	4.616E-01	-0.043
LA-138	-1.320E+01		7.057E+00	2.088E+01	4.467E-01	-0.632
CE-139	-1.306E+01		1.508E+01	5.116E+01	1.044E+00	-0.255
BA-140	-4.474E+00		5.587E+01	2.275E+02	4.576E+00	-0.020
BALA-140	-9.506E+00		1.629E+01	6.870E+01	1.486E+00	-0.138
CE-141	-2.269E+01		3.850E+01	1.330E+02	2.734E+00	-0.171
CE-144	-1.418E+02		1.278E+02	4.273E+02	8.835E+00	-0.332
CEPR-144	-2.836E+02		2.556E+02	8.545E+02	1.767E+01	-0.332
PM-144	-1.505E+00		3.940E+00	1.599E+01	3.231E-01	-0.094
PM-146	-3.533E+00		7.319E+00	2.853E+01	5.717E-01	-0.124
EU-152	2.178E-01		2.855E+01	1.078E+02	2.156E+00	0.002
EU-154	0.000E+00		0.000E+00	1.135E+01	2.402E-01	0.000
EU-155	5.732E+01		5.105E+01	1.997E+02	4.204E+00	0.287
HF-181	5.013E+00		7.314E+00	3.309E+01	6.640E-01	0.151
BI-207	3.020E+00		5.001E+00	2.177E+01	4.387E-01	0.139
TL-208	4.873E+00		6.014E+00	2.645E+01	5.335E-01	0.184
BI-210M	4.211E+01		1.843E+01	7.773E+01	1.559E+00	0.542
BI-212	-2.426E+01		6.662E+01	2.620E+02	8.007E+00	-0.093
PB-212	6.332E+00		2.159E+01	8.422E+01	1.694E+00	0.075
BI-214	1.074E+01		1.469E+01	6.696E+01	1.353E+00	0.160
PB-214	-1.657E+01		2.880E+01	9.568E+01	1.914E+00	-0.173
RA-223	-5.833E+01		6.501E+01	2.267E+02	4.546E+00	-0.257
RA-224DA	6.459E+00		2.202E+01	8.591E+01	1.728E+00	0.075
RA-226DA	1.074E+01		1.469E+01	6.696E+01	1.353E+00	0.160
AC-227DA	-9.104E+01		7.915E+01	2.716E+02	5.464E+00	-0.335
AC-228	4.789E+00		1.141E+01	5.525E+01	1.139E+00	0.087
RA-228DA	4.820E+00		1.149E+01	5.561E+01	1.147E+00	0.087
TH-228DA	1.383E+01		1.707E+01	7.510E+01	1.515E+00	0.184
TH-232DA	-1.110E+01		6.180E+01	2.295E+02	4.590E+00	-0.048
TH-234DA	-4.432E+02		6.323E+02	2.410E+03	5.001E+01	-0.184
U-234DA	-1.740E+01		5.362E+01	2.013E+02	4.031E+00	-0.086
U-235HP	8.921E+01		1.115E+02	4.183E+02	8.609E+00	0.213
NP-237DA	1.660E+01		2.154E+01	8.602E+01	1.721E+00	0.193
U-238DA	-1.657E+01		2.880E+01	9.568E+01	1.914E+00	-0.173
U-238DHP	8.443E+01		5.135E+02	1.903E+03	4.220E+01	0.044
AM-241HP	-6.698E+01		4.508E+01	1.505E+02	3.364E+00	-0.445

STL Richland WA.

BA133

Sample ID: JMLT22AD
Detector ID: GER6 1

Batch ID: 7029198



Acquisition Start: 30-JAN-2007 09:24:25.62
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.55585E-01
Slope: 2.49376E-01
Quadrature: 1.30930E-08

SAMPLE IDENTIFICATION: JMLT22AD

CONFIGURATION ID: GER6:JMLT22AD_300170924
TITLE : BA133
SAMPLE ID : JMLT22AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 09:24:25
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:11:01.89
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 1.5559E-01 keV
ENERGY SLOPE: 2.4938E-01 keV/C
ENERGY Q COEFF: 1.3093E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.7802E-02 keV
FWHM SLOPE: 7.0363E-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 30-JAN-2007 09:55:04

```
Configuration     : $DISK1:[GER6.SAMPLE]JMLT22AD_300170924.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:24:25
Sample ID         : JMLT22AD             Sample quantity  : 1.0000 SAMPL
Sample type       :                      Sample geometry  : BA133T15
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.25   0.0%
Start energy      :    20.11             End energy       :  2043.92
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.99	397	51	0.97	324.13	316	16	2.21E-01	6.5	
2	0	276.31	51	9	1.18	1107.33	1098	16	2.86E-02	18.7	
3	0	302.66	132	7	1.07	1212.98	1202	18	7.33E-02	10.2	
4	0	355.99	302	24	1.49	1426.78	1417	24	1.68E-01	7.2	
5	0	383.77	65	8	0.83	1538.19	1529	16	3.61E-02	15.8	

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

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 09:55:05

Configuration : $DISK1:[GER6.SAMPLE]JMLT22AD_300170924.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:24:25
Sample ID : JMLT22AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.25 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	397	33.00	2.167E+00	1.851E+03	1.858E+03	8.44
	276.40	51	6.90	2.334E+00	1.064E+03	1.068E+03	19.42
	302.84	132	17.80	2.337E+00	1.058E+03	1.062E+03	11.49
	356.00	302	62.05*	2.339E+00	6.937E+02	6.962E+02	8.97
	383.85	65	8.70	2.338E+00	1.065E+03	1.069E+03	16.66

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Sample ID : JMLT22AD Acquisition date : 30-JAN-2007 09:24:25

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.080E+03	19.42	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 09:55:06

Configuration : $DISK1:[GER6.SAMPLE]JMLT22AD_300170924.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 : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:24:25
Sample ID : JMLT22AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.25 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.962E+02	6.248E+01	6.060E+01	1.212E+00	11.489

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.203E+02		8.077E+01	2.665E+02	5.346E+00	-0.451
NA-22	1.155E-01		4.291E+00	1.838E+01	3.890E-01	0.006
K-40	-1.670E+01		6.844E+01	3.289E+02	7.051E+00	-0.051
SC-46	-3.611E+00		5.996E+00	2.274E+01	4.761E-01	-0.159
CR-51	-2.777E+02		1.475E+02	4.623E+02	9.249E+00	-0.601
MN-54	1.426E+00		5.442E+00	2.272E+01	4.661E-01	0.063
CO-57	4.718E+01		9.496E+01	3.689E+02	7.618E+00	0.128
CO-58	-1.178E+01		6.357E+00	1.947E+01	3.988E-01	-0.605
FE-59	-2.956E+00		1.278E+01	5.062E+01	1.058E+00	-0.058
CO-60	-1.536E+00		3.417E+00	1.415E+01	3.008E-01	-0.109
ZN-65	-8.871E+00		1.110E+01	4.074E+01	8.526E-01	-0.218
SE-75	-1.160E+01		1.598E+01	5.539E+01	1.111E+00	-0.209
SR-85	-7.510E+00		1.172E+01	4.120E+01	8.278E-01	-0.182
Y-88	3.937E+00		3.659E+00	1.971E+01	4.330E-01	0.200
NB-94	-5.961E+00		6.250E+00	2.199E+01	4.523E-01	-0.271
NB-95	6.264E+00		7.238E+00	3.241E+01	6.617E-01	0.193
TC-95M	4.909E+01		2.005E+01	8.350E+01	1.688E+00	0.588
ZR-95	-6.899E+00		1.044E+01	3.914E+01	7.985E-01	-0.176
ZRNB-95	1.047E+01		1.210E+01	5.419E+01	1.106E+00	0.193
MO-99	-2.271E+02		1.688E+03	6.251E+03	1.288E+02	-0.036
RH-101	1.353E+01		1.586E+01	6.097E+01	1.234E+00	0.222
RH-102M	-1.268E+00		6.224E+00	2.417E+01	4.848E-01	-0.052
RU-103	7.802E-02		7.933E+00	3.228E+01	6.480E-01	0.002
RU-106DA	1.408E+01		5.537E+01	2.290E+02	4.631E+00	0.061
AG-108M	-6.471E+00		6.613E+00	2.294E+01	4.594E-01	-0.282
AG-110M	-2.339E+00		7.757E+00	3.009E+01	6.195E-01	-0.078
SN-113DA	2.067E+00		1.231E+01	4.787E+01	9.578E-01	0.043

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

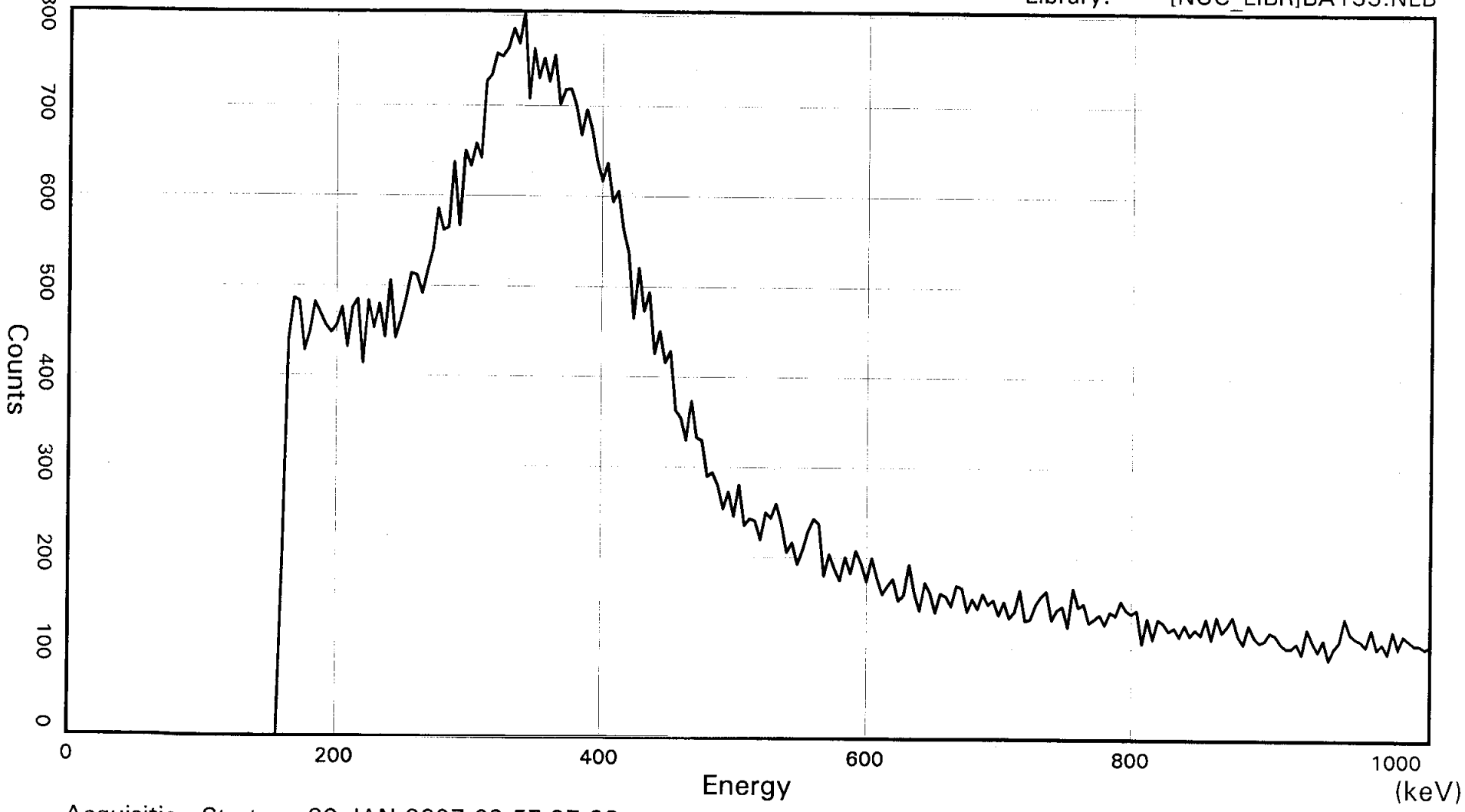
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	1.201E+01		8.785E+00	3.772E+01	7.617E-01	0.318
SB-125	1.879E+01		1.874E+01	8.213E+01	1.645E+00	0.229
SN-126DA	-3.840E+00		5.091E+00	1.897E+01	3.846E-01	-0.202
I-131	-2.130E+01		4.621E+01	1.723E+02	3.447E+00	-0.124
CS-134	4.013E+00		4.918E+00	2.313E+01	4.732E-01	0.173
CS-137DA	-3.780E+00		7.428E+00	2.723E+01	5.520E-01	-0.139
LA-138	4.538E+00		6.386E+00	2.976E+01	6.369E-01	0.152
CE-139	-3.767E+01		1.639E+01	5.049E+01	1.030E+00	-0.746
BA-140	7.755E+01		6.589E+01	2.910E+02	5.855E+00	0.266
BALA-140	1.843E+01		2.351E+01	1.140E+02	2.465E+00	0.162
CE-141	1.272E+01		3.051E+01	1.171E+02	2.409E+00	0.109
CE-144	6.900E+01		8.718E+01	3.378E+02	6.986E+00	0.204
CEPR-144	1.403E+02		1.746E+02	6.768E+02	1.400E+01	0.207
PM-144	-1.074E+01		5.919E+00	1.812E+01	3.663E-01	-0.592
PM-146	1.343E+01		6.968E+00	3.502E+01	7.019E-01	0.383
EU-152	7.387E+01		3.031E+01	1.326E+02	2.652E+00	0.557
EU-154	-6.777E-01		1.178E+01	5.004E+01	1.059E+00	-0.014
EU-155	1.898E+01		4.833E+01	1.838E+02	3.870E+00	0.103
HF-181	1.573E+01		1.028E+01	4.578E+01	9.186E-01	0.344
BI-207	1.055E+01		6.383E+00	2.865E+01	5.774E-01	0.368
TL-208	1.178E+01		7.388E+00	3.301E+01	6.659E-01	0.357
BI-210M	1.308E+01		1.707E+01	6.652E+01	1.334E+00	0.197
BI-212	-4.413E+01		7.643E+01	2.889E+02	8.829E+00	-0.153
PB-212	-4.764E+00		2.058E+01	7.694E+01	1.547E+00	-0.062
BI-214	5.123E+00		1.452E+01	6.054E+01	1.223E+00	0.085
PB-214	4.544E+01		2.687E+01	1.003E+02	2.007E+00	0.453
RA-223	-2.571E+00		5.847E+01	2.228E+02	4.469E+00	-0.012
RA-224DA	-4.860E+00		2.099E+01	7.848E+01	1.578E+00	-0.062
RA-226DA	5.122E+00		1.453E+01	6.054E+01	1.223E+00	0.085
AC-227DA	-2.247E+02		9.175E+01	2.748E+02	5.529E+00	-0.818
AC-228	4.268E+00		2.082E+01	8.413E+01	1.735E+00	0.051
RA-228DA	4.296E+00		2.096E+01	8.468E+01	1.747E+00	0.051
TH-228DA	3.345E+01		2.097E+01	9.372E+01	1.890E+00	0.357
TH-232DA	6.061E+01		6.834E+01	2.697E+02	5.394E+00	0.225
TH-234DA	4.565E+02		7.197E+02	3.207E+03	6.658E+01	0.142
U-234DA	5.972E+01		4.890E+01	1.954E+02	3.912E+00	0.306
U-235HP	1.045E+02		9.491E+01	3.771E+02	7.762E+00	0.277
NP-237DA	2.779E+01		2.360E+01	9.538E+01	1.909E+00	0.291
U-238DA	4.544E+01		2.687E+01	1.003E+02	2.007E+00	0.453
U-238DHP	4.438E+02		3.481E+02	1.371E+03	3.043E+01	0.324
AM-241HP	-5.029E+01		3.004E+01	9.851E+01	2.202E+00	-0.511

STL Richland WA.

BA133

Sample ID: JMLT62AD
Detector ID: NAI1 1

BatchID: 7029198
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 30-JAN-2007 09:57:07.93
Preset Live Time: 0 00:30:00
Elapsed Live Time: 0 00:30:00
Weighting: DERIVED

Start Channel: 80
End Channel: 113
Iterations: 5
Gain shift: Iter

SAMPLE IDENTIFICATION: JMLT62AD

CONFIGURATION ID: NAI1:JMLT62AD_300170957
TITLE : BA133
SAMPLE ID : JMLT62AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 09:57:07
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/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 30-JAN-2007 10:27:12

```
Configuration     : RDND06$DKA100:[NAI1.SAMPLE]JMLT62AD_300170957.CNF;1
Analyses by       : NAI V3.0
Sample title      : BA133
Sample date       : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:07
Sample ID         : JMLT62AD             Sample quantity  : 1.0000 sampl
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.69   0.0%
Sample Multiplier:     1.00              Rejection Coeff. :     0.00
Gain shift type   : ITER                 Threshold Shift  : No
Weighting type    : DERIVED              Calculated counts: No
Iterations        :  5
```

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	8.1	7.1	5.4	5.8	4.9	5.2	1.2	2.5
88:	0.5	1.0	-1.0	0.7	-0.6	-2.1	0.3	-0.4
96:	-2.3	-1.5	-1.6	-2.4	-4.6	-1.4	-2.4	-1.7
104:	-4.4	-4.2	-6.1	-3.2	-4.4	-2.9	-5.1	-3.0
112:	-3.1	-2.6						

List of Suspicious Channels

81 82 83 84

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	1.19E+01	0.00E+00	1.03E+00
2	4.88E+00	0.00E+00	1.05E+00
3	1.69E+00	0.00E+00	1.07E+00
4	1.02E+00	0.00E+00	1.07E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	797.	9.34
Total Activity :	797.	

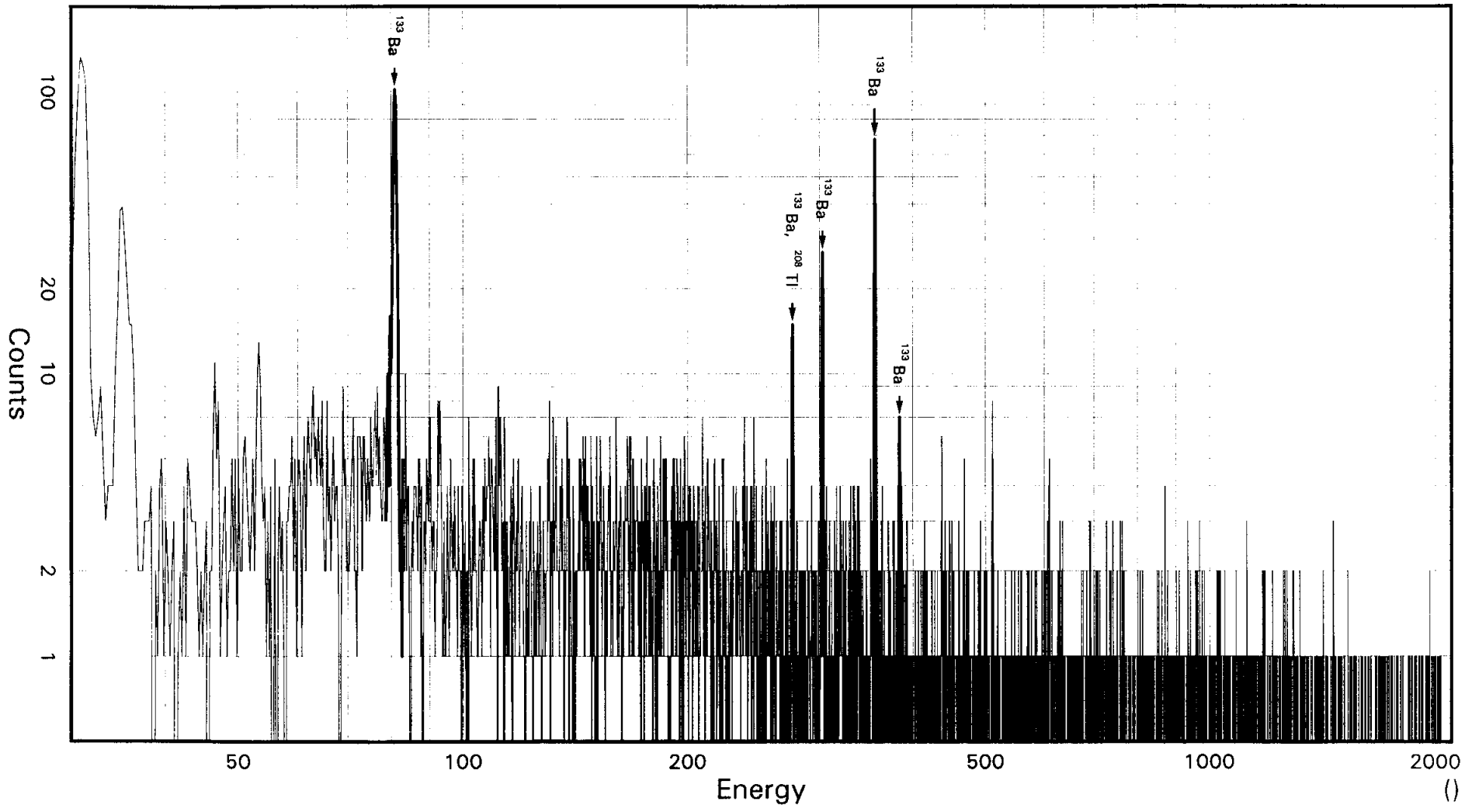
STL Richland WA.

BA133

Sample ID: JMLT72AD

Detector ID: GER5 1

Batch ID: 7029198



Acquisition Start: 30-JAN-2007 09:57:13.78

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: -3.40346E-01

Slope: 2.49441E-01

Quadrature: -9.48919E-11

SAMPLE IDENTIFICATION: JMLT72AD

CONFIGURATION ID: GER5:JMLT72AD_300170957
TITLE : BA133
SAMPLE ID : JMLT72AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 09:57:13
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:10:35.72
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.3403E+00 keV
ENERGY SLOPE: 2.4944E-01 keV/C
ENERGY Q COEFF: -.9489E-10 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.6897E-01 keV
FWHM SLOPE: 3.3744E-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 30-JAN-2007 10:27:29

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLT72AD_300170957.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:13
Sample ID : JMLT72AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
Start energy : 19.61 End energy : 2043.07
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.90	563	113	1.06	125.24	116	16	3.13E-01	6.0	
2	0	35.29	160	62	0.93	142.83	135	18	8.91E-02	14.0	
3	0	53.49	36	31	0.68	215.82	210	14	2.01E-02	36.8	
4	0	80.95	388	64	0.87	325.87	317	17	2.16E-01	6.9	
5	0	276.26	40	6	0.43	1108.89	1103	11	2.19E-02	19.6	
6	0	302.89	117	8	1.09	1215.63	1210	15	6.49E-02	11.1	
7	0	355.94	269	4	0.85	1428.33	1421	16	1.49E-01	6.3	
8	0	383.95	30	6	1.40	1540.63	1535	11	1.64E-02	24.0	

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

VMS Nuclide Identification Report V3.1 Generated 30-JAN-2007 10:27:29

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLT72AD_300170957.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:13
Sample ID : JMLT72AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	388	33.00	1.924E+00	2.038E+03	2.045E+03	8.81
	276.40	40	6.90	2.077E+00	9.188E+02	9.221E+02	20.36
	302.84	117	17.80	2.080E+00	1.052E+03	1.056E+03	12.31
	356.00	269	62.05*	2.082E+00	6.934E+02	6.959E+02	8.31
	383.85	30	8.70	2.081E+00	5.431E+02	5.450E+02	24.60

Flag: "*" = Keyline

Unidentified Energy Lines
Page : 2
Sample ID : JMLT72AD
Acquisition date : 30-JAN-2007 09:57:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.90	563	113	1.06	125.24	116	16	3.13E-01	6.0	1.68E+00	
0	35.29	160	62	0.93	142.83	135	18	8.91E-02	14.0	1.72E+00	
0	53.49	36	31	0.68	215.82	210	14	2.01E-02	36.8	1.83E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLT72AD Acquisition date : 30-JAN-2007 09:57:13

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	9.323E+02	20.36	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		

% Abundances Found = 5.44

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 30-JAN-2007 10:27:30

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLT72AD_300170957.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,WTMEAN/KEY V1.8
Analyses by : MINACT V2.8
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:13
Sample ID : JMLT72AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.959E+02	5.782E+01	5.472E+01	1.094E+00	12.716

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-2.782E+01		6.816E+01	2.605E+02	5.225E+00	-0.107
NA-22	1.598E+00		4.609E+00	2.069E+01	4.386E-01	0.077
NA-24	3.043E+03		3.047E+03	Half-Life too short		
K-40	3.234E+01		7.313E+01	3.526E+02	7.575E+00	0.092
SC-46	1.006E+01		7.643E+00	3.446E+01	7.225E-01	0.292
CR-51	9.941E+01		1.835E+02	7.051E+02	1.411E+01	0.141
MN-54	-3.299E+00		5.915E+00	2.251E+01	4.621E-01	-0.147
CO-57	-6.733E+01		1.404E+02	4.846E+02	1.002E+01	-0.139
CO-58	2.246E+00		7.168E+00	3.010E+01	6.169E-01	0.075
FE-59	-7.231E+00		8.103E+00	3.102E+01	6.494E-01	-0.233
CO-60	-2.014E-01		4.289E+00	1.847E+01	3.932E-01	-0.011
ZN-65	-1.005E+01		1.148E+01	4.200E+01	8.802E-01	-0.239
SE-75	9.169E+00		1.842E+01	7.049E+01	1.414E+00	0.130
SR-85	-3.746E+01		1.334E+01	3.897E+01	7.833E-01	-0.961
Y-88	4.386E-02		2.826E+00	1.485E+01	3.272E-01	0.003
NB-94	3.290E+00		4.667E+00	2.159E+01	4.444E-01	0.152
NB-95	6.943E+00		1.084E+01	4.493E+01	9.178E-01	0.155
TC-95M	-9.701E-01		2.389E+01	8.685E+01	1.756E+00	-0.011
ZR-95	1.144E+01		1.088E+01	5.168E+01	1.055E+00	0.221
ZRNB-95	1.209E+01		1.818E+01	7.543E+01	1.541E+00	0.160
MO-99	-4.439E+03		2.255E+03	6.973E+03	1.439E+02	-0.637
RH-101	-2.188E+00		1.815E+01	6.556E+01	1.328E+00	-0.033
RH-102M	8.590E-01		6.785E+00	2.700E+01	5.417E-01	0.032
RU-103	-1.391E+00		1.143E+01	4.449E+01	8.933E-01	-0.031
RU-106DA	-3.722E+01		5.428E+01	2.036E+02	4.118E+00	-0.183
AG-108M	-1.685E+01		1.020E+01	3.256E+01	6.521E-01	-0.518
AG-110M	-2.471E+00		7.229E+00	2.882E+01	5.939E-01	-0.086

Sample ID : JMLT72AD Acquisition date : 30-JAN-2007 09:57:13

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

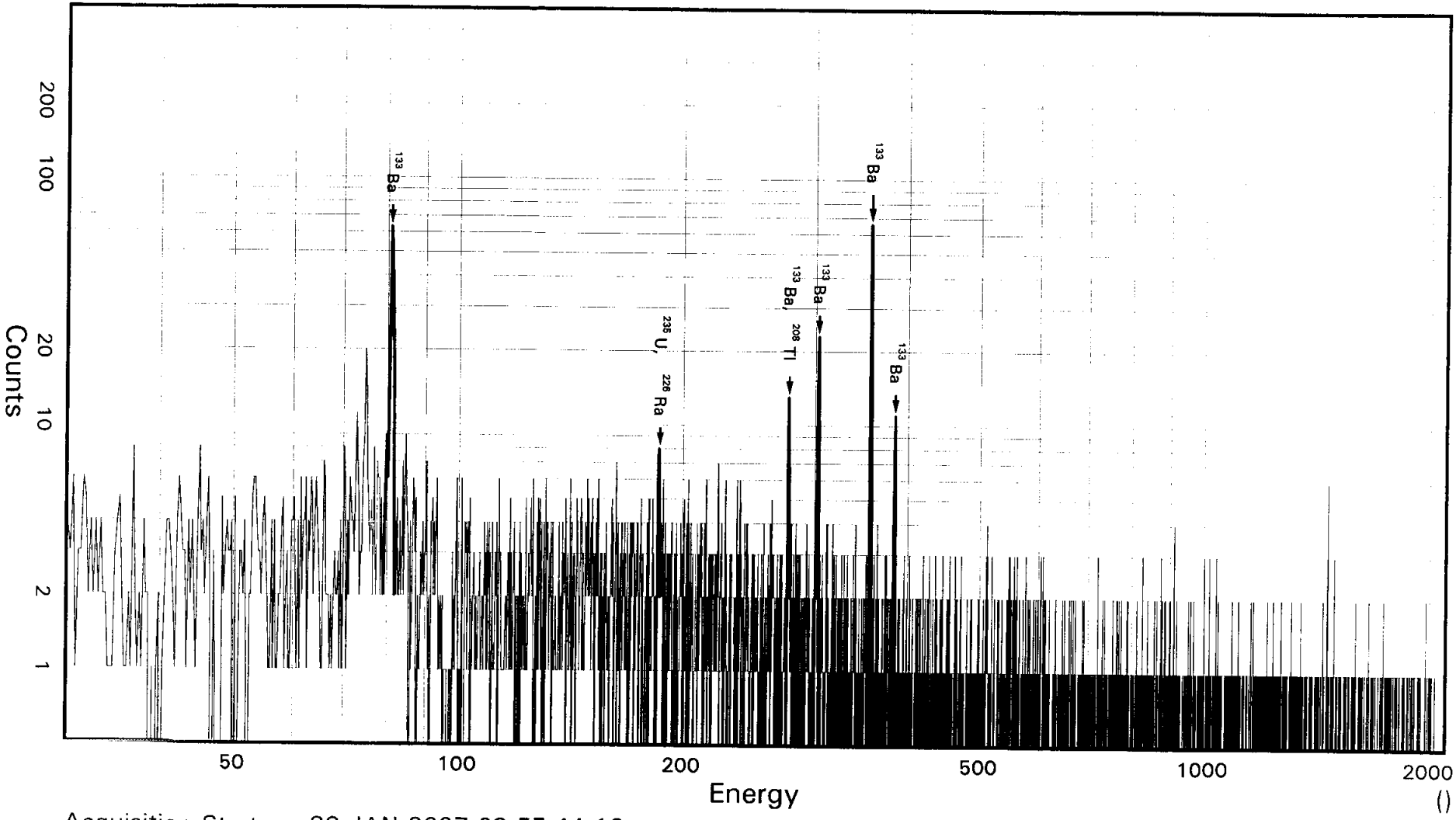
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	8.690E+00		1.400E+01	5.624E+01	1.125E+00	0.155
SB-124	-1.767E+00		9.100E+00	3.486E+01	7.043E-01	-0.051
SB-125	2.939E+01		2.203E+01	9.824E+01	1.967E+00	0.299
SN-126DA	-1.840E+00		6.412E+00	2.452E+01	4.974E-01	-0.075
I-131	9.860E+01		5.899E+01	2.515E+02	5.030E+00	0.392
CS-134	-1.519E+01		6.096E+00	1.437E+01	2.942E-01	-1.057
CS-137DA	1.027E+01		7.093E+00	3.252E+01	6.594E-01	0.316
LA-138	2.636E+00		4.426E+00	2.389E+01	5.123E-01	0.110
CE-139	7.055E+00		1.903E+01	7.078E+01	1.445E+00	0.100
BA-140	-3.391E+01		6.459E+01	2.486E+02	5.002E+00	-0.136
BALA-140	-1.105E+01		2.410E+01	9.934E+01	2.154E+00	-0.111
LA-140	3.887E-03		5.635E-03	Half-Life too short		
CE-141	5.405E+01		4.792E+01	1.783E+02	3.669E+00	0.303
CE-144	-5.692E+01		1.438E+02	4.980E+02	1.031E+01	-0.114
CEPR-144	-1.151E+02		2.875E+02	9.955E+02	2.061E+01	-0.116
PM-144	-3.445E+00		4.182E+00	1.575E+01	3.184E-01	-0.219
PM-146	1.516E+00		1.104E+01	4.320E+01	8.659E-01	0.035
EU-152	-2.417E+01		2.903E+01	1.039E+02	2.077E+00	-0.233
EU-154	4.453E+00		1.284E+01	5.764E+01	1.222E+00	0.077
EU-155	-9.984E+01		6.998E+01	2.301E+02	4.854E+00	-0.434
HF-181	1.724E+00		9.962E+00	4.033E+01	8.093E-01	0.043
BI-207	6.737E+00		6.165E+00	2.754E+01	5.551E-01	0.245
TL-208	-1.033E+01		7.891E+00	3.084E+01	6.221E-01	-0.335
BI-210M	1.532E+01		1.954E+01	7.628E+01	1.530E+00	0.201
BI-212	8.976E+01		7.905E+01	3.672E+02	1.123E+01	0.244
PB-212	3.323E+01		2.951E+01	1.177E+02	2.369E+00	0.282
BI-214	4.713E+01		2.299E+01	9.695E+01	1.959E+00	0.486
PB-214	5.141E+01		2.737E+01	1.097E+02	2.194E+00	0.469
RA-223	-1.122E+02		7.510E+01	2.426E+02	4.866E+00	-0.463
RA-224DA	3.390E+01		3.010E+01	1.201E+02	2.416E+00	0.282
RA-226DA	4.713E+01		2.299E+01	9.695E+01	1.959E+00	0.486
AC-227DA	-1.557E+02		1.153E+02	3.810E+02	7.667E+00	-0.409
AC-228	-3.954E+01		1.853E+01	6.419E+01	1.325E+00	-0.616
RA-228DA	-3.980E+01		1.865E+01	6.461E+01	1.334E+00	-0.616
TH-228DA	-2.933E+01		2.240E+01	8.755E+01	1.766E+00	-0.335
TH-232DA	1.339E+02		7.485E+01	3.166E+02	6.332E+00	0.423
TH-234DA	-2.267E+01		5.234E+02	2.375E+03	4.937E+01	-0.010
U-234DA	-3.002E+01		4.916E+01	1.785E+02	3.574E+00	-0.168
U-235HP	3.177E+01		1.417E+02	5.096E+02	1.050E+01	0.062
NP-237DA	-2.733E+01		2.248E+01	7.756E+01	1.552E+00	-0.352
U-238DA	5.141E+01		2.737E+01	1.097E+02	2.194E+00	0.469
U-238DHP	8.144E+01		4.850E+02	1.884E+03	4.195E+01	0.043
AM-241HP	7.454E+00		4.341E+01	1.601E+02	3.591E+00	0.047

STL Richland WA.

BA133

Sample ID: JMLT82AD
Detector ID: GER4 1

Batch ID: 7029198



Acquisition Start: 30-JAN-2007 09:57:44.13
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -1.18422E-02
Slope: 2.49012E-01
Quadrature: 1.21167E-08

SAMPLE IDENTIFICATION: JMLT82AD

CONFIGURATION ID: GER4:JMLT82AD_300170957
TITLE : BA133
SAMPLE ID : JMLT82AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 09:57:44
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:10:40.76
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: -.1184E-01 keV
ENERGY SLOPE: 2.4901E-01 keV/C
ENERGY Q COEFF: 1.2117E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.0063E-01 keV
FWHM SLOPE: 4.3008E-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 30-JAN-2007 10:28:01

Configuration : $DISK1:[GER4.SAMPLE]JMLT82AD_300170957.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:44
Sample ID : JMLT82AD 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 : 19.91 End energy : 2040.71
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	74.97*	10	27	0.51	301.11	297	9	5.44E-03	117.8	
2	0	80.96	202	29	0.71	325.15	318	12	1.12E-01	8.9	
3	0	186.03*	1	25	0.78	747.10	740	10	7.92E-04	708.7	
4	0	276.65	33	22	0.62	1110.97	1104	13	1.81E-02	34.8	
5	0	302.89	97	25	0.98	1216.34	1205	19	5.39E-02	15.8	
6	0	356.06	293	8	1.02	1429.84	1422	15	1.63E-01	6.2	
7	0	383.98	47	7	0.96	1541.95	1534	16	2.59E-02	19.9	

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

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 10:28:02

Configuration : $DISK1:[GER4.SAMPLE]JMLT82AD_300170957.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:44
Sample ID : JMLT82AD 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	202	33.00	2.043E+00	9.987E+02	1.002E+03	10.49
	276.40	33	6.90	2.203E+00	7.160E+02	7.186E+02	35.22
	302.84	97	17.80	2.205E+00	8.240E+02	8.270E+02	16.72
	356.00	293	62.05*	2.207E+00	7.137E+02	7.163E+02	9.23
	383.85	47	8.70	2.207E+00	8.095E+02	8.124E+02	20.83

Flag: "*" = Keyline

Sample ID : JMLT82AD Acquisition date : 30-JAN-2007 09:57:44

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	74.97	10	27	0.51	301.11	297	9	5.44E-03	****	2.03E+00	
0	186.03	1	25	0.78	747.10	740	10	7.92E-04	****	2.17E+00	T

Flags: "T" = Tentatively associated

Sample ID : JMLT82AD Acquisition date : 30-JAN-2007 09:57:44

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	7.266E+02	35.22	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			
RA-226DA	1600.00Y	0.00	186.21	3.50	6.239E+01	708.69	Abun.
			241.98	7.49	--- Not Found ---		
			295.22	19.20	--- Not Found ---		
			351.92	37.20	--- Not Found ---		
			609.32*	46.30	--- Not Found ---		
			1120.28	15.10	--- Not Found ---		
			1238.11	5.94	--- Not Found ---		
			1764.49	15.80	--- Not Found ---		
		% Abundances Found =		2.33			
U-235HP	7.04E+08Y	0.00	143.76*	10.50	--- Not Found ---		Abun.
			185.71	54.00	4.044E+00	708.69	
			205.31	4.70	--- Not Found ---		
		% Abundances Found =		78.03			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 10:28:05

Configuration : $DISK1:[GER4.SAMPLE]JMLT82AD_300170957.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 : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:44
Sample ID : JMLT82AD 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%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.163E+02	6.613E+01	4.345E+01	2.036E+00	16.485

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.012E+02		6.626E+01	2.065E+02	7.541E+00	-0.490
NA-22	-3.274E+00		3.268E+00	1.194E+01	4.603E-01	-0.274
K-40	1.133E+02		8.863E+01	4.342E+02	1.696E+01	0.261
SC-46	3.640E+00		3.783E+00	2.006E+01	7.651E-01	0.181
CR-51	-4.793E+00		1.507E+02	5.535E+02	1.285E+01	-0.009
MN-54	-2.133E-01		4.657E+00	1.944E+01	7.260E-01	-0.011
CO-57	-5.353E+01		9.116E+01	3.289E+02	7.885E+00	-0.163
CO-58	-5.422E+00		5.842E+00	2.098E+01	7.823E-01	-0.258
FE-59	3.352E+00		1.026E+01	4.572E+01	1.741E+00	0.073
CO-60	-1.693E+00		2.850E+00	1.190E+01	4.607E-01	-0.142
ZN-65	-1.156E+00		1.166E+01	4.624E+01	1.763E+00	-0.025
SE-75	-1.229E+01		1.929E+01	6.794E+01	1.581E+00	-0.181
SR-85	-1.418E+01		1.074E+01	3.642E+01	1.332E+00	-0.389
Y-88	-3.779E+00		2.683E+00	5.142E+00	2.058E-01	-0.735
NB-94	-1.869E+00		4.232E+00	1.671E+01	6.257E-01	-0.112
NB-95	1.147E+01		8.283E+00	3.814E+01	1.417E+00	0.301
TC-95M	2.989E+00		1.784E+01	6.845E+01	1.606E+00	0.044
ZR-95	1.713E+01		9.165E+00	4.855E+01	1.803E+00	0.353
ZRNB-95	1.917E+01		1.385E+01	6.375E+01	2.369E+00	0.301
MO-99	7.988E+02		1.792E+03	6.814E+03	1.630E+02	0.117
RH-101	-4.195E+00		1.325E+01	4.711E+01	1.107E+00	-0.089
RH-102M	3.945E+00		5.927E+00	2.530E+01	9.236E-01	0.156
RU-103	7.939E+00		8.575E+00	3.841E+01	1.404E+00	0.207
RU-106DA	3.125E+01		4.012E+01	1.941E+02	7.145E+00	0.161
AG-108M	1.075E+00		6.575E+00	2.646E+01	9.646E-01	0.041
AG-110M	-1.106E+00		8.007E+00	3.227E+01	1.209E+00	-0.034
SN-113DA	6.310E+00		1.058E+01	4.439E+01	1.616E+00	0.142

Sample ID : JMLT82AD Acquisition date : 30-JAN-2007 09:57:44

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

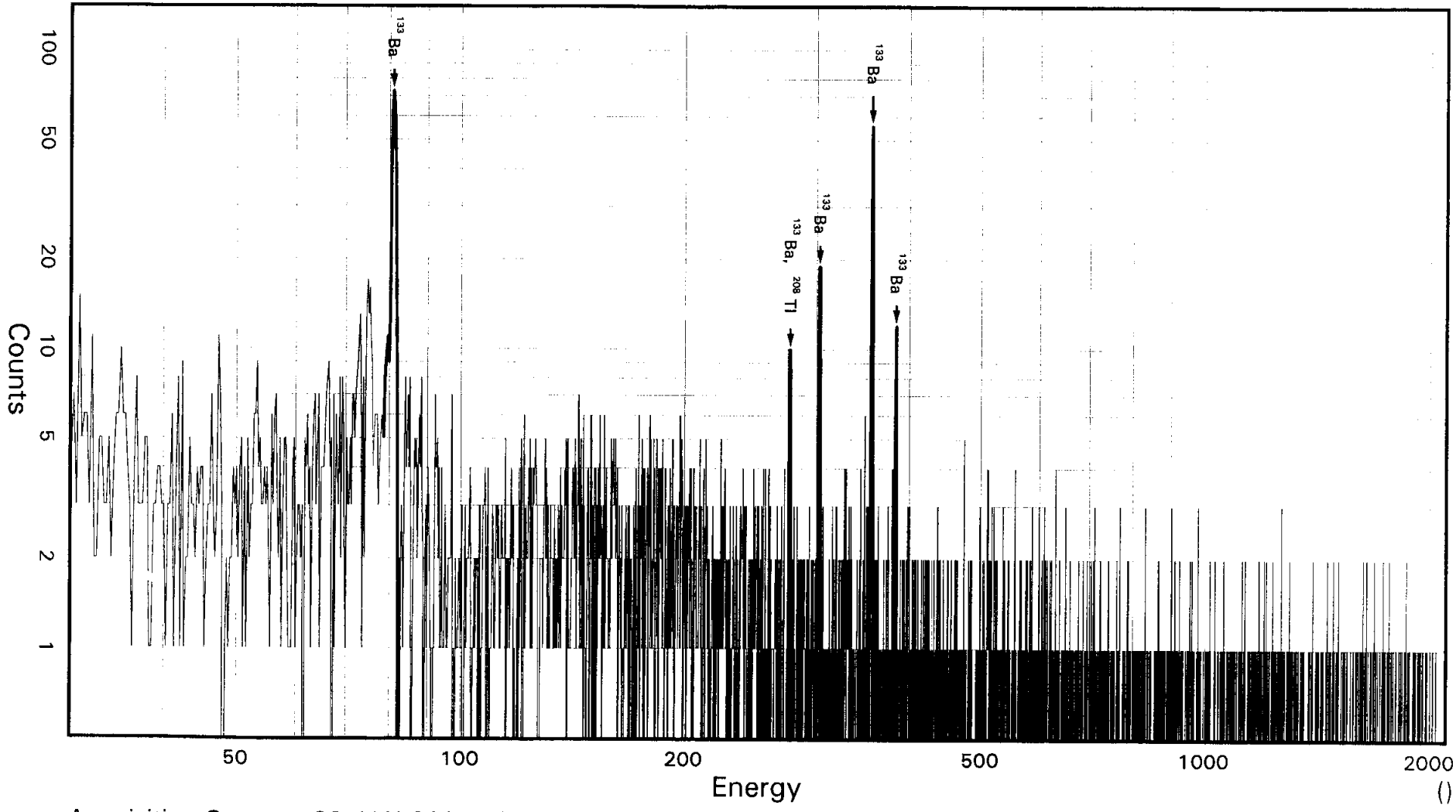
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	1.751E+01		7.700E+00	3.687E+01	1.355E+00	0.475
SB-125	3.263E+01		2.389E+01	1.031E+02	3.758E+00	0.316
SN-126DA	8.905E+00		5.420E+00	2.551E+01	9.416E-01	0.349
I-131	7.571E+01		4.936E+01	2.148E+02	7.819E+00	0.352
CS-134	-5.650E+00		4.934E+00	1.710E+01	6.367E-01	-0.330
CS-137DA	2.585E+00		6.329E+00	2.660E+01	9.813E-01	0.097
LA-138	-4.549E+00		5.825E+00	2.250E+01	8.774E-01	-0.202
CE-139	6.848E-01		1.476E+01	5.407E+01	1.281E+00	0.013
BA-140	2.035E+01		6.384E+01	2.685E+02	9.830E+00	0.076
BALA-140	-1.063E+01		2.689E+01	1.085E+02	4.275E+00	-0.098
CE-141	6.565E+01		3.444E+01	1.407E+02	3.357E+00	0.467
CE-144	-8.235E+01		9.815E+01	3.456E+02	8.296E+00	-0.238
CEPR-144	-7.496E+01		1.897E+02	6.924E+02	1.662E+01	-0.108
PM-144	-1.046E+00		5.015E+00	2.011E+01	7.400E-01	-0.052
PM-146	1.083E+00		9.822E+00	3.868E+01	1.411E+00	0.028
EU-152	-6.650E+00		2.496E+01	9.620E+01	2.232E+00	-0.069
EU-154	-9.123E+00		9.105E+00	3.327E+01	1.283E+00	-0.274
EU-155	-2.430E+01		4.719E+01	1.644E+02	4.020E+00	-0.148
HF-181	1.069E+01		7.486E+00	3.657E+01	1.336E+00	0.292
BI-207	4.708E+00		2.725E+00	1.681E+01	6.168E-01	0.280
TL-208	-9.177E+00		7.549E+00	2.892E+01	1.062E+00	-0.317
BI-210M	-2.689E+00		1.804E+01	6.664E+01	1.551E+00	-0.040
BI-212	-9.032E+01		6.526E+01	2.168E+02	9.434E+00	-0.417
PB-212	-2.991E+01		2.453E+01	9.148E+01	2.135E+00	-0.327
BI-214	3.416E+00		1.367E+01	6.198E+01	2.279E+00	0.055
PB-214	1.646E+01		2.410E+01	8.583E+01	1.992E+00	0.192
RA-223	-1.932E+01		6.389E+01	2.340E+02	5.444E+00	-0.083
RA-224DA	-3.051E+01		2.502E+01	9.331E+01	2.177E+00	-0.327
RA-226DA	3.416E+00		1.367E+01	6.198E+01	2.279E+00	0.055
AC-227DA	-1.383E+02		9.732E+01	3.258E+02	7.606E+00	-0.425
AC-228	1.123E+01		2.391E+01	1.058E+02	3.973E+00	0.106
RA-228DA	1.130E+01		2.406E+01	1.065E+02	3.999E+00	0.106
TH-228DA	-2.606E+01		2.143E+01	8.212E+01	3.015E+00	-0.317
TH-232DA	-1.144E+01		6.257E+01	2.383E+02	5.530E+00	-0.048
TH-234DA	1.447E+03		6.885E+02	3.620E+03	1.369E+02	0.400
U-234DA	-3.247E+01		4.644E+01	1.641E+02	3.813E+00	-0.198
U-235HP	-1.863E+01		1.041E+02	3.795E+02	9.065E+00	-0.049
NP-237DA	4.138E+01		2.379E+01	9.972E+01	2.315E+00	0.415
U-238DA	1.646E+01		2.410E+01	8.583E+01	1.992E+00	0.192
U-238DHP	-1.775E+01		3.342E+02	1.244E+03	3.207E+01	-0.014
AM-241HP	-1.287E+01		3.117E+01	1.133E+02	2.944E+00	-0.114

STL Richland WA.

BA133

Sample ID: JMLVA2AD
Detector ID: GER7 1

Batch ID: 7029198



Acquisition Start: 30-JAN-2007 09:57:48.79
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 6.75511E-01
Slope: 2.49212E-01
Quadrature: 1.32194E-07

SAMPLE IDENTIFICATION: JMLVA2AD

CONFIGURATION ID: GER7:JMLVA2AD_300170957
TITLE : BA133
SAMPLE ID : JMLVA2AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 09:57:48
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:11:17.37
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 6.7551E-01 keV
ENERGY SLOPE: 2.4921E-01 keV/C
ENERGY Q COEFF: 1.3219E-07 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.4851E-01 keV
FWHM SLOPE: 4.0543E-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 30-JAN-2007 10:28:21

Configuration : $DISK1:[GER7.SAMPLE]JMLVA2AD_300170957.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:48
Sample ID : JMLVA2AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Start energy : 20.61 End energy : 2051.09
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	48.23	28	47	1.31	190.78	180	23	1.54E-02	66.4	
2	0	75.25*	18	47	1.14	299.19	293	11	1.02E-02	83.2	
3	0	80.93	344	50	1.15	321.97	313	16	1.91E-01	7.0	
4	0	276.43	45	3	1.37	1105.87	1100	13	2.51E-02	16.9	
5	0	302.74	104	12	1.28	1211.28	1203	16	5.78E-02	12.3	
6	0	349.06	7	6	0.28	1396.93	1386	12	3.89E-03	79.5	
7	0	355.92	302	4	1.16	1424.39	1415	18	1.68E-01	6.0	
8	0	383.50	52	5	0.93	1534.87	1526	18	2.86E-02	17.0	

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

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 10:28:22

Configuration : $DISK1:[GER7.SAMPLE]JMLVA2AD_300170957.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:48
Sample ID : JMLVA2AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	344	33.00	1.923E+00	1.808E+03	1.815E+03	8.90
	276.40	45	6.90	2.076E+00	1.051E+03	1.055E+03	17.78
	302.84	104	17.80	2.078E+00	9.379E+02	9.413E+02	13.43
	356.00	302	62.05*	2.080E+00	7.791E+02	7.819E+02	8.05
	383.85	52	8.70	2.080E+00	9.487E+02	9.521E+02	17.79

Flag: "*" = Keyline

Unidentified Energy Lines
Page : 2
Sample ID : JMLVA2AD
Acquisition date : 30-JAN-2007 09:57:48

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	48.23	28	47	1.31	190.78	180	23	1.54E-02	66.4	1.80E+00	
0	75.25	18	47	1.14	299.19	293	11	1.02E-02	83.2	1.91E+00	
0	349.06	7	6	0.28	1396.93	1386	12	3.89E-03	79.5	2.08E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JMLVA2AD

Acquisition date : 30-JAN-2007 09:57:48

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	1.066E+03	17.78	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 30-JAN-2007 10:28:24

Configuration : $DISK1:[GER7.SAMPLE]JMLVA2AD_300170957.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 : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:48
Sample ID : JMLVA2AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.819E+02	6.296E+01	6.066E+01	1.213E+00	12.890

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.207E+02		7.523E+01	2.397E+02	4.810E+00	-0.503
NA-22	1.531E+00		4.637E+00	2.070E+01	4.389E-01	0.074
K-40	-1.146E+02		5.064E+01	2.421E+02	5.200E+00	-0.474
SC-46	7.947E+00		4.861E+00	2.595E+01	5.441E-01	0.306
CR-51	5.771E+01		1.382E+02	5.440E+02	1.088E+01	0.106
MN-54	-1.074E+01		6.228E+00	1.961E+01	4.025E-01	-0.548
CO-57	2.464E+00		1.120E+02	4.205E+02	8.693E+00	0.006
CO-58	2.827E-01		5.579E+00	2.409E+01	4.938E-01	0.012
FE-59	-1.183E+01		8.930E+00	2.974E+01	6.226E-01	-0.398
CO-60	2.096E+00		3.853E+00	1.883E+01	4.010E-01	0.111
ZN-65	-1.221E+01		1.009E+01	3.484E+01	7.302E-01	-0.351
SE-75	8.065E+00		1.669E+01	6.592E+01	1.323E+00	0.122
SR-85	-2.829E+01		1.314E+01	3.995E+01	8.029E-01	-0.708
Y-88	-2.422E-02		2.876E+00	1.486E+01	3.274E-01	-0.002
NB-94	-1.343E+00		4.958E+00	2.005E+01	4.127E-01	-0.067
NB-95	-8.554E-01		9.328E+00	3.648E+01	7.451E-01	-0.023
TC-95M	-7.385E+00		2.258E+01	8.027E+01	1.623E+00	-0.092
ZR-95	3.501E+00		6.456E+00	3.405E+01	6.950E-01	0.103
ZRNB-95	-1.430E+00		1.559E+01	6.097E+01	1.245E+00	-0.023
MO-99	-2.506E+03		2.033E+03	6.977E+03	1.439E+02	-0.359
RH-101	2.003E+01		1.840E+01	7.011E+01	1.420E+00	0.286
RH-102M	8.096E+00		6.598E+00	2.950E+01	5.917E-01	0.274
RU-103	2.972E+00		1.012E+01	4.129E+01	8.292E-01	0.072
RU-106DA	3.872E+00		5.393E+01	2.268E+02	4.586E+00	0.017
AG-108M	-1.360E+01		7.867E+00	2.516E+01	5.039E-01	-0.541
AG-110M	2.030E-02		4.796E+00	2.230E+01	4.594E-01	0.001
SN-113DA	1.147E+00		1.012E+01	4.178E+01	8.359E-01	0.027

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-7.604E+00		8.152E+00	2.931E+01	5.921E-01	-0.259
SB-125	-9.430E+00		1.893E+01	7.309E+01	1.464E+00	-0.129
SN-126DA	1.627E+00		4.302E+00	1.951E+01	3.958E-01	0.083
I-131	3.324E+01		4.397E+01	1.859E+02	3.718E+00	0.179
CS-134	2.200E+00		5.085E+00	2.348E+01	4.806E-01	0.094
CS-137DA	-1.881E+00		6.331E+00	2.504E+01	5.077E-01	-0.075
LA-138	-1.832E+00		4.653E+00	2.051E+01	4.399E-01	-0.089
CE-139	-1.102E+01		1.306E+01	4.607E+01	9.410E-01	-0.239
BA-140	1.088E+02		8.197E+01	3.571E+02	7.186E+00	0.305
BALA-140	9.911E+00		2.432E+01	1.152E+02	2.499E+00	0.086
CE-141	4.789E+01		3.993E+01	1.566E+02	3.223E+00	0.306
CE-144	-7.723E+01		1.057E+02	3.792E+02	7.851E+00	-0.204
CEPR-144	-9.540E+01		2.070E+02	7.583E+02	1.570E+01	-0.126
PM-144	-4.741E+00		6.030E+00	2.224E+01	4.498E-01	-0.213
PM-146	-1.150E+01		9.634E+00	3.315E+01	6.644E-01	-0.347
EU-152	1.468E+01		3.197E+01	1.118E+02	2.236E+00	0.131
EU-154	4.267E+00		1.292E+01	5.768E+01	1.223E+00	0.074
EU-155	-5.392E+01		5.222E+01	1.769E+02	3.731E+00	-0.305
HF-181	3.776E-01		9.420E+00	3.836E+01	7.698E-01	0.010
BI-207	-4.176E+00		6.211E+00	2.332E+01	4.701E-01	-0.179
TL-208	1.021E+01		8.248E+00	3.611E+01	7.285E-01	0.283
BI-210M	2.082E+01		1.785E+01	7.364E+01	1.477E+00	0.283
BI-212	-4.025E+00		8.735E+01	3.501E+02	1.070E+01	-0.011
PB-212	1.567E+00		2.473E+01	9.575E+01	1.926E+00	0.016
BI-214	1.254E+01		1.723E+01	7.511E+01	1.518E+00	0.167
PB-214	2.598E+01		3.002E+01	1.019E+02	2.037E+00	0.255
RA-223	-3.501E+01		5.941E+01	2.179E+02	4.370E+00	-0.161
RA-224DA	1.598E+00		2.522E+01	9.767E+01	1.965E+00	0.016
RA-226DA	1.268E+01		1.725E+01	7.519E+01	1.520E+00	0.169
AC-227DA	-4.193E+01		8.686E+01	3.066E+02	6.170E+00	-0.137
AC-228	1.190E+01		1.838E+01	8.959E+01	1.850E+00	0.133
RA-228DA	1.198E+01		1.850E+01	9.018E+01	1.862E+00	0.133
TH-228DA	2.898E+01		2.342E+01	1.025E+02	2.068E+00	0.283
TH-232DA	-6.392E+01		5.794E+01	1.981E+02	3.963E+00	-0.323
TH-234DA	1.139E+02		4.109E+02	2.145E+03	4.457E+01	0.053
U-234DA	-4.699E+01		4.397E+01	1.521E+02	3.046E+00	-0.309
U-235HP	1.677E+02		1.272E+02	4.977E+02	1.025E+01	0.337
NP-237DA	8.147E+00		1.883E+01	7.700E+01	1.541E+00	0.106
U-238DA	2.598E+01		3.002E+01	1.019E+02	2.037E+00	0.255
U-238DHP	2.147E+02		3.964E+02	1.524E+03	3.394E+01	0.141
AM-241HP	-4.836E+01		3.490E+01	1.192E+02	2.673E+00	-0.406

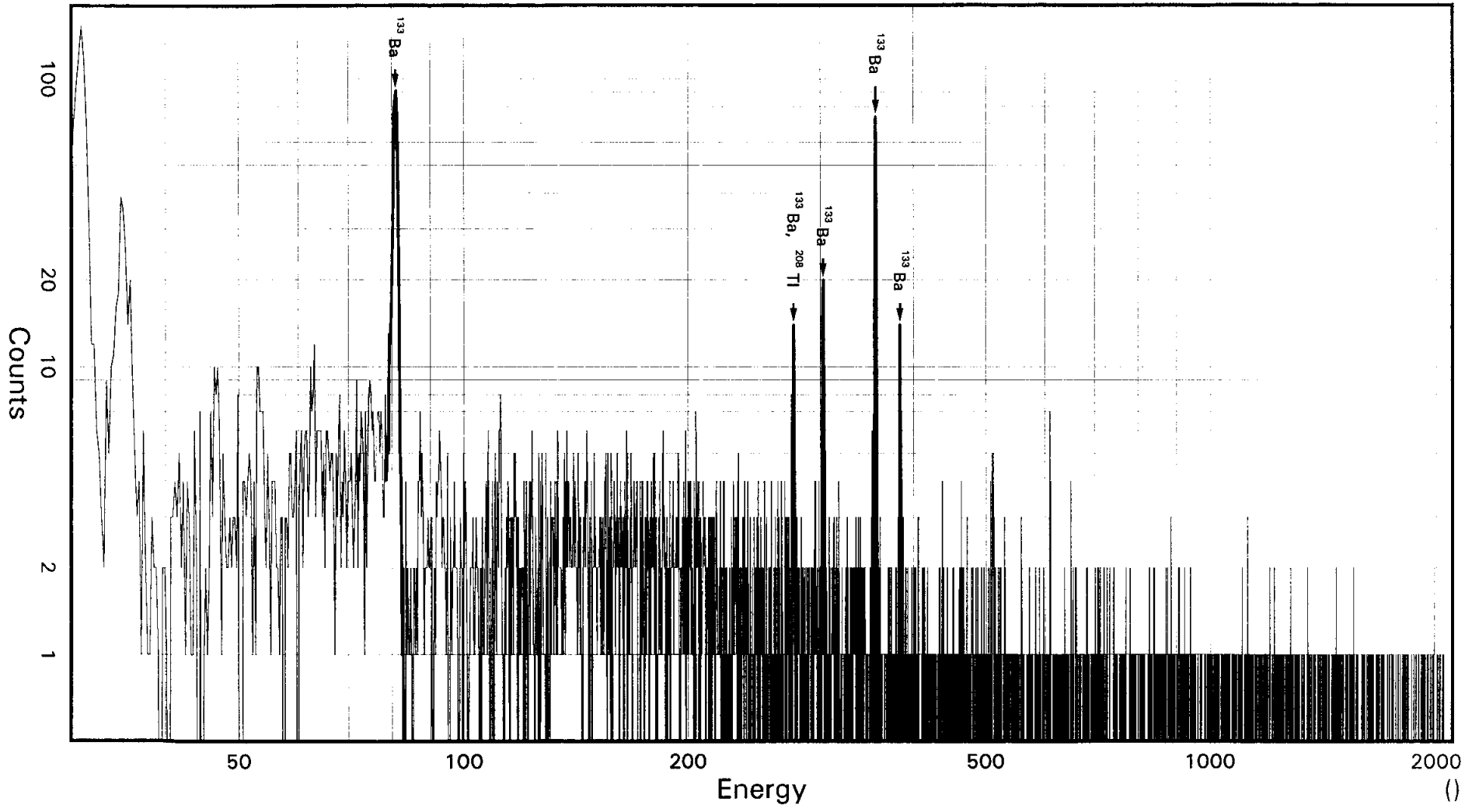
STL Richland WA.

BA133

Sample ID: JMLVW2AD

Detector ID: GER8 1

Batch ID: 7029198



Acquisition Start: 30-JAN-2007 09:57:56.51

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: 4.30606E-01

Slope: 2.49797E-01

Quadrature: 2.12409E-08

SAMPLE IDENTIFICATION: JMLVW2AD

CONFIGURATION ID: GER8:JMLVW2AD_300170957
TITLE : BA133
SAMPLE ID : JMLVW2AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 09:57:56
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:21:53.07
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: 4.3061E-01 keV
ENERGY SLOPE: 2.4980E-01 keV/C
ENERGY Q COEFF: 2.1241E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.3619E-01 keV
FWHM SLOPE: 2.2819E-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 30-JAN-2007 10:28:50

Configuration : $DISK1:[GER8.SAMPLE]JMLVW2AD_300170957.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:56
Sample ID : JMLVW2AD 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 : 20.41 End energy : 2048.19
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	30.84	656	101	1.19	121.73	114	33	3.65E-01	5.0	1.56E+00
2	2	35.12	151	54	1.30	138.85	114	33	8.36E-02	16.8	
3	0	80.99	463	54	1.14	322.49	313	19	2.57E-01	6.1	
4	0	223.93	6	12	0.61	894.67	885	12	3.33E-03	122.5	
5	0	276.63	50	16	1.25	1105.58	1097	17	2.76E-02	23.7	
6	0	302.71	121	0	1.14	1209.98	1200	19	6.72E-02	9.1	
7	0	356.02	333	13	0.90	1423.33	1415	18	1.85E-01	6.1	
8	0	383.70	55	8	0.62	1534.13	1527	15	3.07E-02	17.3	

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

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 10:28:51

Configuration : $DISK1:[GER8.SAMPLE]JMLVW2AD_300170957.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:56
Sample ID : JMLVW2AD 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	463	33.00	2.202E+00	2.125E+03	2.133E+03	8.15
	276.40	50	6.90	2.371E+00	1.012E+03	1.016E+03	24.27
	302.84	121	17.80	2.374E+00	9.546E+02	9.581E+02	10.57
	356.00	333	62.05*	2.376E+00	7.527E+02	7.554E+02	8.11
	383.85	55	8.70	2.375E+00	8.918E+02	8.950E+02	18.09

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JMLVW2AD

Acquisition date : 30-JAN-2007 09:57:56

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	30.84	656	101	1.19	121.73	114	33	3.65E-01	5.0	1.93E+00	
2	35.12	151	54	1.30	138.85	114	33	8.36E-02	16.8	1.97E+00	
0	223.93	6	12	0.61	894.67	885	12	3.33E-03	****	2.36E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLVW2AD
Acquisition date : 30-JAN-2007 09:57:56

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	1.027E+03	24.27	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 30-JAN-2007 10:28:52

Configuration : $DISK1:[GER8.SAMPLE]JMLVW2AD_300170957.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 : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:57:56
Sample ID : JMLVW2AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.554E+02	6.123E+01	5.957E+01	1.191E+00	12.680

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-6.175E+01		7.236E+01	2.624E+02	5.264E+00	-0.235
NA-22	-1.307E+00		3.282E+00	1.398E+01	2.959E-01	-0.093
K-40	4.285E+01		4.298E+01	2.234E+02	4.788E+00	0.192
SC-46	1.035E+01		4.943E+00	2.598E+01	5.439E-01	0.398
CR-51	-2.350E+02		1.121E+02	3.347E+02	6.696E+00	-0.702
MN-54	-3.179E+00		3.496E+00	1.323E+01	2.714E-01	-0.240
CO-57	-3.801E+01		1.262E+02	4.432E+02	9.151E+00	-0.086
CO-58	-1.422E+00		4.522E+00	1.889E+01	3.868E-01	-0.075
FE-59	5.192E+00		8.349E+00	4.033E+01	8.429E-01	0.129
CO-60	-1.347E+00		3.289E+00	1.393E+01	2.959E-01	-0.097
ZN-65	-9.486E+00		8.229E+00	2.840E+01	5.943E-01	-0.334
SE-75	1.407E+01		1.679E+01	6.602E+01	1.325E+00	0.213
SR-85	-4.634E+01		1.313E+01	3.571E+01	7.176E-01	-1.298
Y-88	3.529E+00		2.503E+00	1.637E+01	3.594E-01	0.216
NB-94	1.635E+00		4.265E+00	1.890E+01	3.886E-01	0.087
NB-95	-6.782E+00		5.842E+00	1.988E+01	4.059E-01	-0.341
TC-95M	-4.523E+00		2.131E+01	7.735E+01	1.564E+00	-0.058
ZR-95	-2.791E-01		6.562E+00	2.979E+01	6.077E-01	-0.009
ZRNB-95	-1.091E+01		9.840E+00	3.392E+01	6.923E-01	-0.322
MO-99	-1.158E+03		2.154E+03	7.449E+03	1.535E+02	-0.155
RH-101	-3.249E+00		1.579E+01	5.733E+01	1.160E+00	-0.057
RH-102M	-2.380E+00		5.863E+00	2.255E+01	4.522E-01	-0.106
RU-103	-1.402E+00		9.109E+00	3.574E+01	7.176E-01	-0.039
RU-106DA	-3.220E-01		4.762E+01	1.968E+02	3.979E+00	-0.002
AG-108M	-1.591E+01		8.785E+00	2.716E+01	5.439E-01	-0.586
AG-110M	4.522E+00		7.194E+00	3.154E+01	6.492E-01	0.143
SN-113DA	1.565E+01		1.071E+01	4.694E+01	9.391E-01	0.333

Sample ID : JMLVW2AD Acquisition date : 30-JAN-2007 09:57:56

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-1.806E+00		5.458E+00	2.185E+01	4.413E-01	-0.083
SB-125	-2.219E+01		2.015E+01	6.842E+01	1.370E+00	-0.324
SN-126DA	-2.971E+00		4.073E+00	1.531E+01	3.103E-01	-0.194
I-131	-5.100E+01		3.813E+01	1.261E+02	2.523E+00	-0.404
CS-134	-5.597E+00		4.714E+00	1.588E+01	3.248E-01	-0.352
CS-137DA	1.506E+01		5.084E+00	2.786E+01	5.646E-01	0.540
LA-138	6.712E+00		3.904E+00	2.415E+01	5.168E-01	0.278
CE-139	-9.083E+00		1.665E+01	5.742E+01	1.172E+00	-0.158
BA-140	-1.513E+01		4.342E+01	1.788E+02	3.597E+00	-0.085
BALA-140	-2.064E+00		1.831E+01	8.359E+01	1.808E+00	-0.025
CE-141	3.585E+01		3.622E+01	1.375E+02	2.828E+00	0.261
CE-144	1.112E+02		1.132E+02	4.298E+02	8.887E+00	0.259
CEPR-144	2.236E+02		2.265E+02	8.600E+02	1.778E+01	0.260
PM-144	-1.421E+00		3.956E+00	1.610E+01	3.254E-01	-0.088
PM-146	-1.311E+00		7.045E+00	2.869E+01	5.750E-01	-0.046
EU-152	3.780E+00		2.785E+01	1.067E+02	2.133E+00	0.035
EU-154	3.881E-01		8.220E+00	3.899E+01	8.252E-01	0.010
EU-155	-4.913E+00		5.266E+01	1.913E+02	4.028E+00	-0.026
HF-181	2.508E+00		8.878E+00	3.690E+01	7.403E-01	0.068
BI-207	5.846E+00		4.575E+00	2.173E+01	4.380E-01	0.269
TL-208	8.428E+00		5.053E+00	2.522E+01	5.086E-01	0.334
BI-210M	-9.713E+00		1.810E+01	6.486E+01	1.301E+00	-0.150
BI-212	6.435E+01		4.902E+01	2.605E+02	7.962E+00	0.247
PB-212	7.204E+00		2.251E+01	8.732E+01	1.756E+00	0.082
BI-214	4.442E+01		1.693E+01	8.085E+01	1.633E+00	0.549
PB-214	3.921E+01		2.460E+01	1.024E+02	2.047E+00	0.383
RA-223	1.952E+01		6.786E+01	2.568E+02	5.150E+00	0.076
RA-224DA	7.348E+00		2.296E+01	8.907E+01	1.791E+00	0.082
RA-226DA	4.442E+01		1.693E+01	8.085E+01	1.633E+00	0.549
AC-227DA	-1.014E+02		8.728E+01	2.983E+02	6.002E+00	-0.340
AC-228	5.168E+00		1.703E+01	7.295E+01	1.504E+00	0.071
RA-228DA	5.203E+00		1.714E+01	7.343E+01	1.514E+00	0.071
TH-228DA	2.393E+01		1.435E+01	7.159E+01	1.444E+00	0.334
TH-232DA	1.253E+01		6.982E+01	2.625E+02	5.251E+00	0.048
TH-234DA	2.279E+02		6.708E+02	2.935E+03	6.091E+01	0.078
U-234DA	2.249E+01		4.699E+01	1.897E+02	3.799E+00	0.119
U-235HP	-1.707E+02		1.172E+02	3.820E+02	7.862E+00	-0.447
NP-237DA	2.010E+00		2.492E+01	9.288E+01	1.859E+00	0.022
U-238DA	3.921E+01		2.460E+01	1.024E+02	2.047E+00	0.383
U-238DHP	2.753E+02		4.836E+02	1.832E+03	4.064E+01	0.150
AM-241HP	-2.471E+01		4.423E+01	1.549E+02	3.462E+00	-0.159

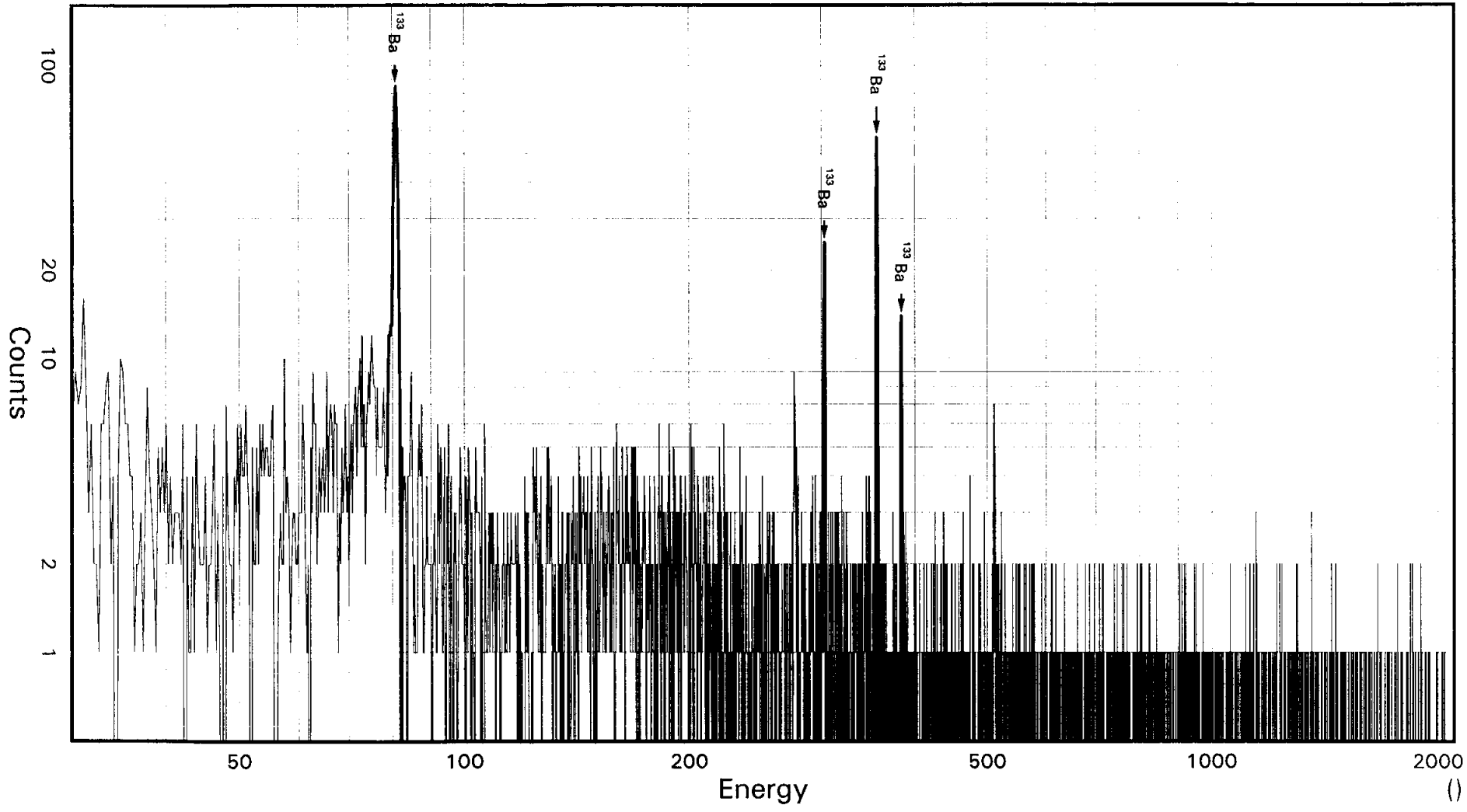
STL Richland WA.

BA133

Sample ID: JMLV32AD

Detector ID: GER6 1

Batch ID: 7029198



Acquisition Start: 30-JAN-2007 09:58:04.54

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: 1.55585E-01

Slope: 2.49376E-01

Quadrature: 1.30930E-08

SAMPLE IDENTIFICATION: JMLV32AD

CONFIGURATION ID: GER6:JMLV32AD_300170958
TITLE : BA133
SAMPLE ID : JMLV32AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 09:58:04
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:11:01.89
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 1.5559E-01 keV
ENERGY SLOPE: 2.4938E-01 keV/C
ENERGY Q COEFF: 1.3093E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.7802E-02 keV
FWHM SLOPE: 7.0363E-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 30-JAN-2007 10:28:36

```
Configuration     : $DISK1:[GER6.SAMPLE]JMLV32AD_300170958.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:58:04
Sample ID         : JMLV32AD             Sample quantity  : 1.0000 SAMPL
Sample type       :                      Sample geometry  : BA133T15
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.23   0.0%
Start energy      :    20.11             End energy       :  2043.92
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.81	385	50	0.98	323.42	315	15	2.14E-01	6.5	
2	0	223.27	7	11	0.30	894.65	887	11	3.92E-03	98.5	
3	0	302.99	88	27	1.00	1214.28	1204	17	4.91E-02	16.9	
4	0	355.93	325	0	1.40	1426.57	1417	18	1.81E-01	5.5	
5	0	383.82	54	13	0.99	1538.39	1528	18	2.99E-02	21.0	

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

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 10:28:36

Configuration : $DISK1:[GER6.SAMPLE]JMLV32AD_300170958.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:58:04
Sample ID : JMLV32AD 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	385	33.00	2.166E+00	1.797E+03	1.803E+03	8.44
	276.40	------	6.90	2.334E+00	------	Line Not Found	------
	302.84	88	17.80	2.337E+00	7.077E+02	7.103E+02	17.76
	356.00	325	62.05*	2.339E+00	7.465E+02	7.492E+02	7.73
	383.85	54	8.70	2.338E+00	8.831E+02	8.863E+02	21.65

Flag: "*" = Keyline

Sample ID : JMLV32AD
Acquisition date : 30-JAN-2007 09:58:04

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	223.27	7	11	0.30	894.65	887	11	3.92E-03	98.5	2.32E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLV32AD
Acquisition date : 30-JAN-2007 09:58:04

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 10:28:38

Configuration : $DISK1:[GER6.SAMPLE]JMLV32AD_300170958.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 : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 09:58:04
Sample ID : JMLV32AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.492E+02	5.792E+01	3.762E+01	7.524E-01	19.916

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.029E+02		8.238E+01	3.534E+02	7.089E+00	0.291
NA-22	-7.289E+00		4.043E+00	1.170E+01	2.476E-01	-0.623
K-40	-4.970E+01		6.178E+01	3.026E+02	6.487E+00	-0.164
SC-46	8.590E+00		5.784E+00	2.765E+01	5.790E-01	0.311
CR-51	-1.053E+02		1.366E+02	4.793E+02	9.590E+00	-0.220
MN-54	2.954E+00		5.654E+00	2.404E+01	4.931E-01	0.123
CO-57	8.725E+00		8.771E+01	3.359E+02	6.937E+00	0.026
CO-58	-3.008E+00		6.115E+00	2.360E+01	4.832E-01	-0.127
FE-59	-1.706E+01		1.371E+01	4.707E+01	9.841E-01	-0.362
CO-60	1.518E+00		3.415E+00	1.641E+01	3.487E-01	0.093
ZN-65	-8.929E+00		1.021E+01	3.733E+01	7.812E-01	-0.239
SE-75	-4.639E+00		1.555E+01	5.613E+01	1.126E+00	-0.083
SR-85	-4.102E+01		1.505E+01	4.450E+01	8.941E-01	-0.922
Y-88	4.060E+00		2.707E+00	1.739E+01	3.820E-01	0.233
NB-94	-3.600E-02		4.158E+00	1.759E+01	3.618E-01	-0.002
NB-95	-2.540E+00		7.899E+00	3.046E+01	6.217E-01	-0.083
TC-95M	3.014E+00		2.051E+01	7.635E+01	1.544E+00	0.039
ZR-95	-3.639E+00		1.093E+01	4.273E+01	8.717E-01	-0.085
ZRNB-95	-4.245E+00		1.320E+01	5.091E+01	1.039E+00	-0.083
MO-99	-8.347E+02		1.621E+03	5.879E+03	1.212E+02	-0.142
RH-101	-1.233E+01		1.439E+01	5.069E+01	1.026E+00	-0.243
RH-102M	-7.269E+00		7.234E+00	2.535E+01	5.085E-01	-0.287
RU-103	-2.339E+00		9.968E+00	3.803E+01	7.635E-01	-0.062
RU-106DA	1.874E+01		4.677E+01	2.043E+02	4.131E+00	0.092
AG-108M	-7.797E+00		8.603E+00	2.967E+01	5.942E-01	-0.263
AG-110M	1.873E+00		6.422E+00	2.782E+01	5.728E-01	0.067
SN-113DA	8.768E-02		1.049E+01	4.125E+01	8.252E-01	0.002

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

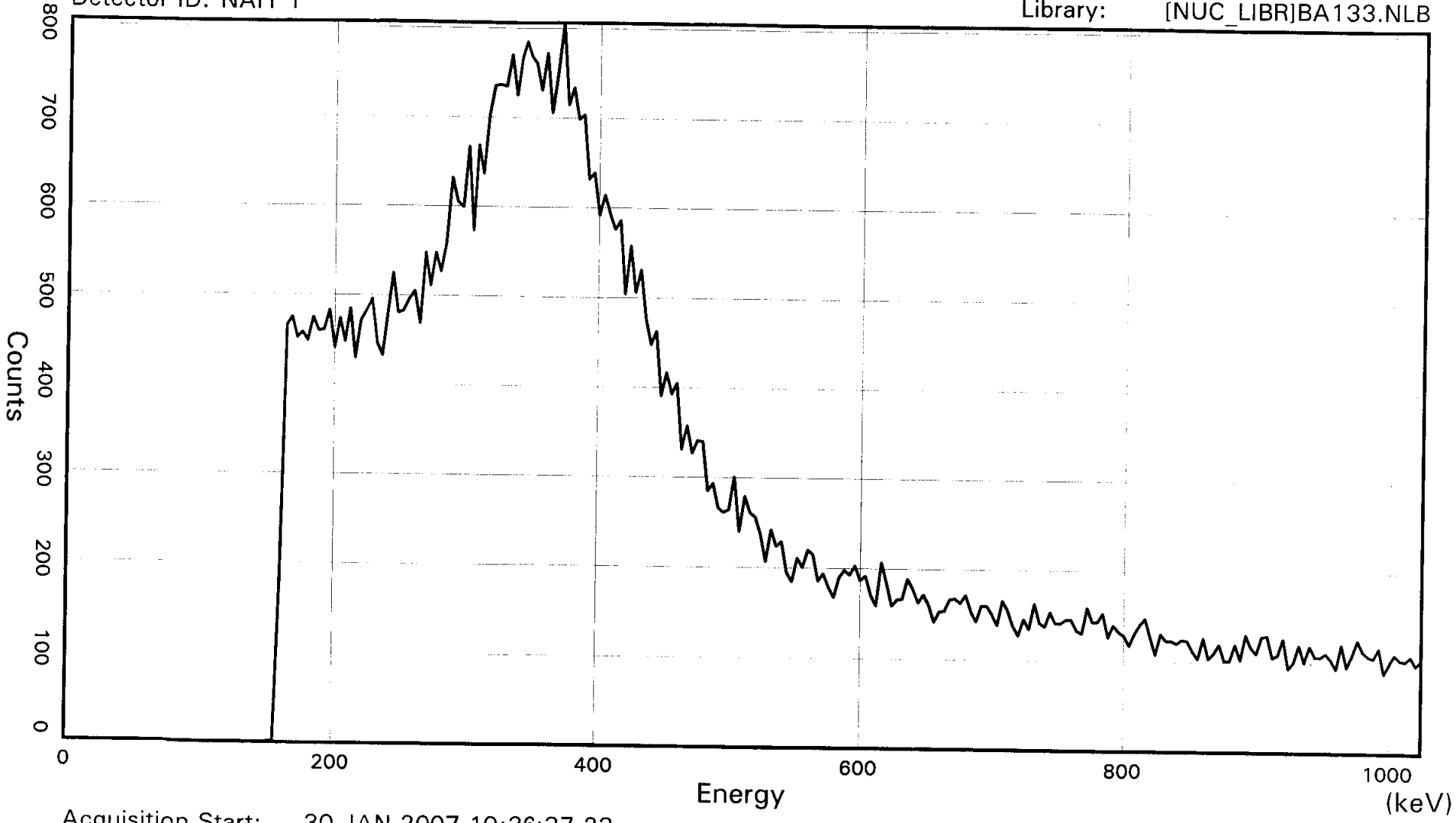
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-2.823E+00		5.377E+00	2.101E+01	4.242E-01	-0.134
SB-125	-1.404E+01		2.553E+01	9.173E+01	1.837E+00	-0.153
SN-126DA	-1.094E+00		4.690E+00	1.894E+01	3.840E-01	-0.058
I-131	1.087E+01		4.772E+01	1.883E+02	3.767E+00	0.058
CS-134	-1.297E+00		6.148E+00	2.450E+01	5.012E-01	-0.053
CS-137DA	6.431E+00		6.468E+00	2.830E+01	5.737E-01	0.227
LA-138	3.022E-01		7.834E+00	3.222E+01	6.897E-01	0.009
CE-139	5.181E-02		1.610E+01	5.826E+01	1.189E+00	0.001
BA-140	-3.848E+01		5.990E+01	2.212E+02	4.450E+00	-0.174
BALA-140	2.768E+01		2.884E+01	1.340E+02	2.898E+00	0.207
CE-141	-8.897E+00		3.561E+01	1.293E+02	2.659E+00	-0.069
CE-144	-3.922E+01		8.357E+01	2.950E+02	6.100E+00	-0.133
CEPR-144	-7.958E+01		1.670E+02	5.892E+02	1.219E+01	-0.135
PM-144	1.434E+00		5.031E+00	2.128E+01	4.301E-01	0.067
PM-146	5.580E+00		9.269E+00	3.879E+01	7.774E-01	0.144
EU-152	3.623E+01		3.739E+01	1.443E+02	2.887E+00	0.251
EU-154	-2.504E+01		1.195E+01	3.138E+01	6.641E-01	-0.798
EU-155	-2.157E+00		4.780E+01	1.769E+02	3.726E+00	-0.012
HF-181	-3.776E+01		1.078E+01	2.219E+01	4.453E-01	-1.701
BI-207	-1.494E+00		6.269E+00	2.416E+01	4.870E-01	-0.062
TL-208	-9.946E+00		6.331E+00	2.049E+01	4.133E-01	-0.485
BI-210M	3.125E+00		1.675E+01	6.278E+01	1.259E+00	0.050
BI-212	1.316E+02		7.667E+01	3.667E+02	1.121E+01	0.359
PB-212	-7.064E-02		1.880E+01	7.253E+01	1.459E+00	-0.001
BI-214	2.694E+01		1.355E+01	6.440E+01	1.301E+00	0.418
PB-214	-1.441E+01		2.628E+01	7.936E+01	1.587E+00	-0.182
RA-223	1.297E+01		5.986E+01	2.317E+02	4.647E+00	0.056
RA-224DA	-7.205E-02		1.918E+01	7.398E+01	1.488E+00	-0.001
RA-226DA	2.694E+01		1.355E+01	6.441E+01	1.301E+00	0.418
AC-227DA	-8.279E+01		7.851E+01	2.679E+02	5.389E+00	-0.309
AC-228	-1.324E+01		2.274E+01	8.318E+01	1.716E+00	-0.159
RA-228DA	-1.333E+01		2.289E+01	8.373E+01	1.727E+00	-0.159
TH-228DA	-2.824E+01		1.797E+01	5.817E+01	1.173E+00	-0.485
TH-232DA	3.165E+01		6.135E+01	2.402E+02	4.805E+00	0.132
TH-234DA	6.838E+02		6.834E+02	3.207E+03	6.658E+01	0.213
U-234DA	-4.327E+00		5.050E+01	1.858E+02	3.721E+00	-0.023
U-235HP	1.620E+02		1.028E+02	4.126E+02	8.491E+00	0.393
NP-237DA	1.411E+01		2.506E+01	9.653E+01	1.932E+00	0.146
U-238DA	-1.441E+01		2.628E+01	7.936E+01	1.587E+00	-0.182
U-238DHP	4.446E+02		3.228E+02	1.296E+03	2.875E+01	0.343
AM-241HP	-6.235E+01		3.224E+01	1.035E+02	2.315E+00	-0.602

STL Richland WA.

BA133

Sample ID: JMLV52AD
Detector ID: NAI1 1

BatchID: 7029198
Library: [NUC_LIBR]BA133.NLB



Acquisition Start: 30-JAN-2007 10:36:37.23
Preset Live Time: 0 00:30:00
Elapsed Live Time: 0 00:30:00
Weighting: DERIVED

Start Channel: 80
End Channel: 113
Iterations: 5
Gain shift: Iter

SAMPLE IDENTIFICATION: JMLV52AD

CONFIGURATION ID: NAI1:JMLV52AD_300171036
TITLE : BA133
SAMPLE ID : JMLV52AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 10:36:37
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/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 30-JAN-2007 11:06:42

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JMLV52AD_300171036.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 10-JAN-2007 12:00:00	Acquisition date	: 30-JAN-2007 10:36:37
Sample ID	: JMLV52AD	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.69 0.0%
Sample Multiplier	: 1.00	Rejection Coeff.	: 0.00
Gain shift type	: ITER	Threshold Shift	: No
Weighting type	: DERIVED	Calculated counts	: No
Iterations	: 5		

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	6.9	5.1	3.8	4.1	2.6	4.0	3.7	2.6
88:	1.7	-0.4	0.3	-1.2	1.6	1.1	0.2	1.2
96:	-2.0	-1.8	-2.6	-1.6	-4.9	-1.7	-1.6	-1.8
104:	-2.7	-5.3	-2.6	-3.7	-1.5	-2.6	-3.6	-2.8
112:	-4.5	-3.1						

List of Suspicious Channels

81 82 83 84 85 86

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	9.40E+00	0.00E+00	1.03E+00
2	2.92E+00	0.00E+00	1.05E+00
3	1.10E+00	0.00E+00	1.06E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	798.	9.81

Total Activity :	798.	

Not Used

Recounted 1/31/07 AL

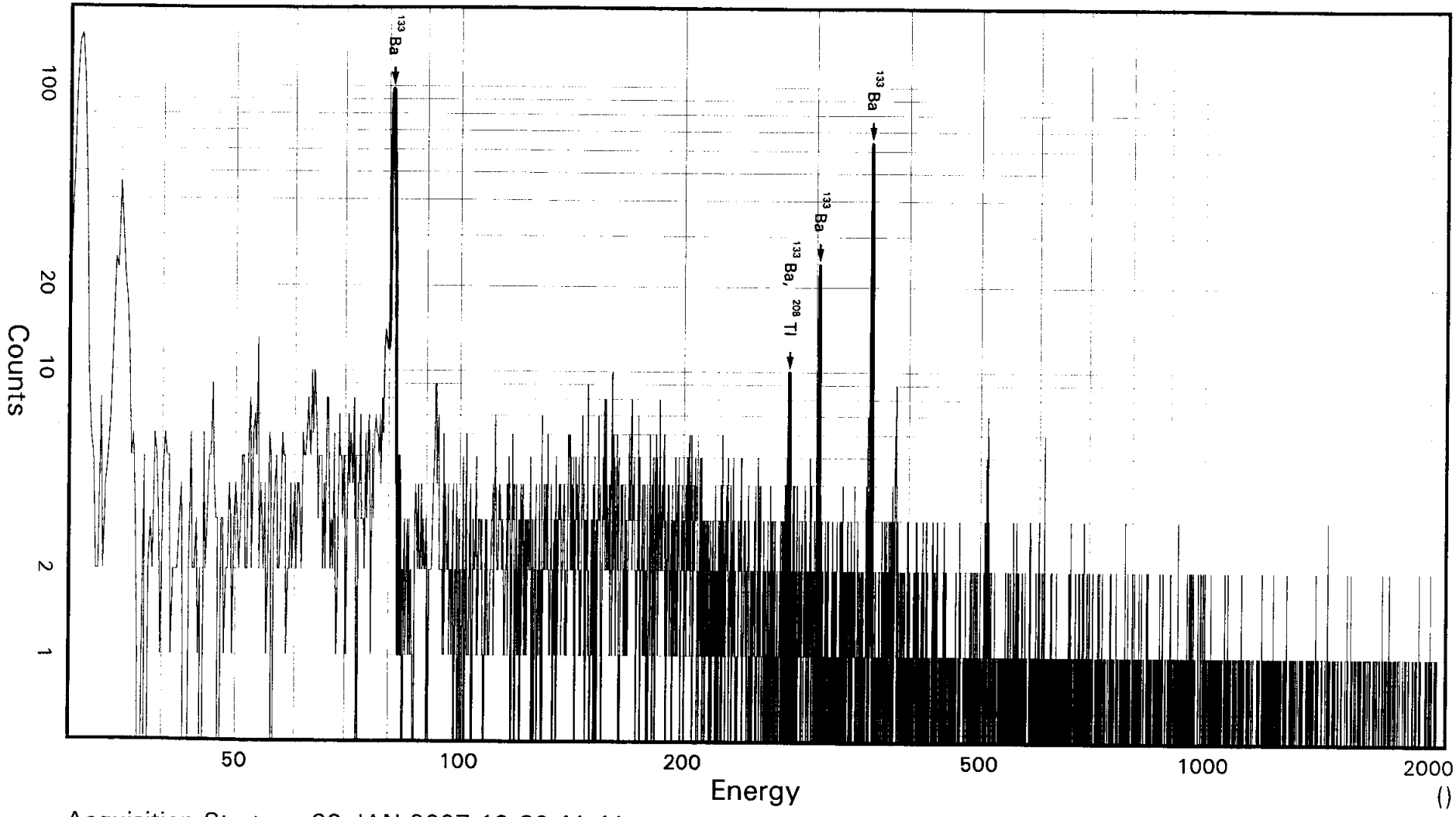
STL Richland WA.

BA133

Sample ID: JMLV82AD

Detector ID: GER5 1

Batch ID: 7029198



Acquisition Start: 30-JAN-2007 10:36:41.41

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: -3.40346E-01

Slope: 2.49441E-01

Quadrature: -9.48919E-11

SAMPLE IDENTIFICATION: JMLV82AD

CONFIGURATION ID: GER5:JMLV82AD_300171036
TITLE : BA133
SAMPLE ID : JMLV82AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 10:36:41
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:10:35.72
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: -.3403E+00 keV
ENERGY SLOPE: 2.4944E-01 keV/C
ENERGY Q COEFF: -.9489E-10 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.6897E-01 keV
FWHM SLOPE: 3.3744E-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 30-JAN-2007 11:06:56

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLV82AD_300171036.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 10:36:41
Sample ID : JMLV82AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
Start energy : 19.61 End energy : 2043.07
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.88	617	114	0.93	125.17	117	18	3.43E-01	5.7	
2	0	35.31	183	41	0.69	142.93	135	16	1.02E-01	10.9	
3	0	81.09	376	79	0.88	326.43	321	15	2.09E-01	7.7	
4	0	276.31	49	20	1.17	1109.10	1097	19	2.73E-02	25.7	
5	0	302.85	103	11	1.02	1215.49	1208	15	5.72E-02	12.1	
6	0	355.96	345	12	1.31	1428.40	1417	23	1.91E-01	6.0	

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

VMS Nuclide Identification Report V3.1 Generated 30-JAN-2007 11:06:56

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLV82AD_300171036.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 10:36:41
Sample ID : JMLV82AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	376	33.00	1.924E+00	1.975E+03	1.982E+03	9.47
	276.40	49	6.90	2.077E+00	1.142E+03	1.146E+03	26.26
	302.84	103	17.80	2.080E+00	9.264E+02	9.297E+02	13.29
	356.00	345	62.05*	2.082E+00	8.890E+02	8.922E+02	8.04
	383.85	------	8.70	2.081E+00	------	Line Not Found	------

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JMLV82AD

Acquisition date : 30-JAN-2007 10:36:41

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.88	617	114	0.93	125.17	117	18	3.43E-01	5.7	1.68E+00	
0	35.31	183	41	0.69	142.93	135	16	1.02E-01	10.9	1.72E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JMLV82AD

Acquisition date : 30-JAN-2007 10:36:41

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	1.159E+03	26.26	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 30-JAN-2007 11:06:58

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLV82AD_300171036.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,WTMEAN/KEY V1.8
Analyses by : MINACT V2.8
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 10:36:41
Sample ID : JMLV82AD Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

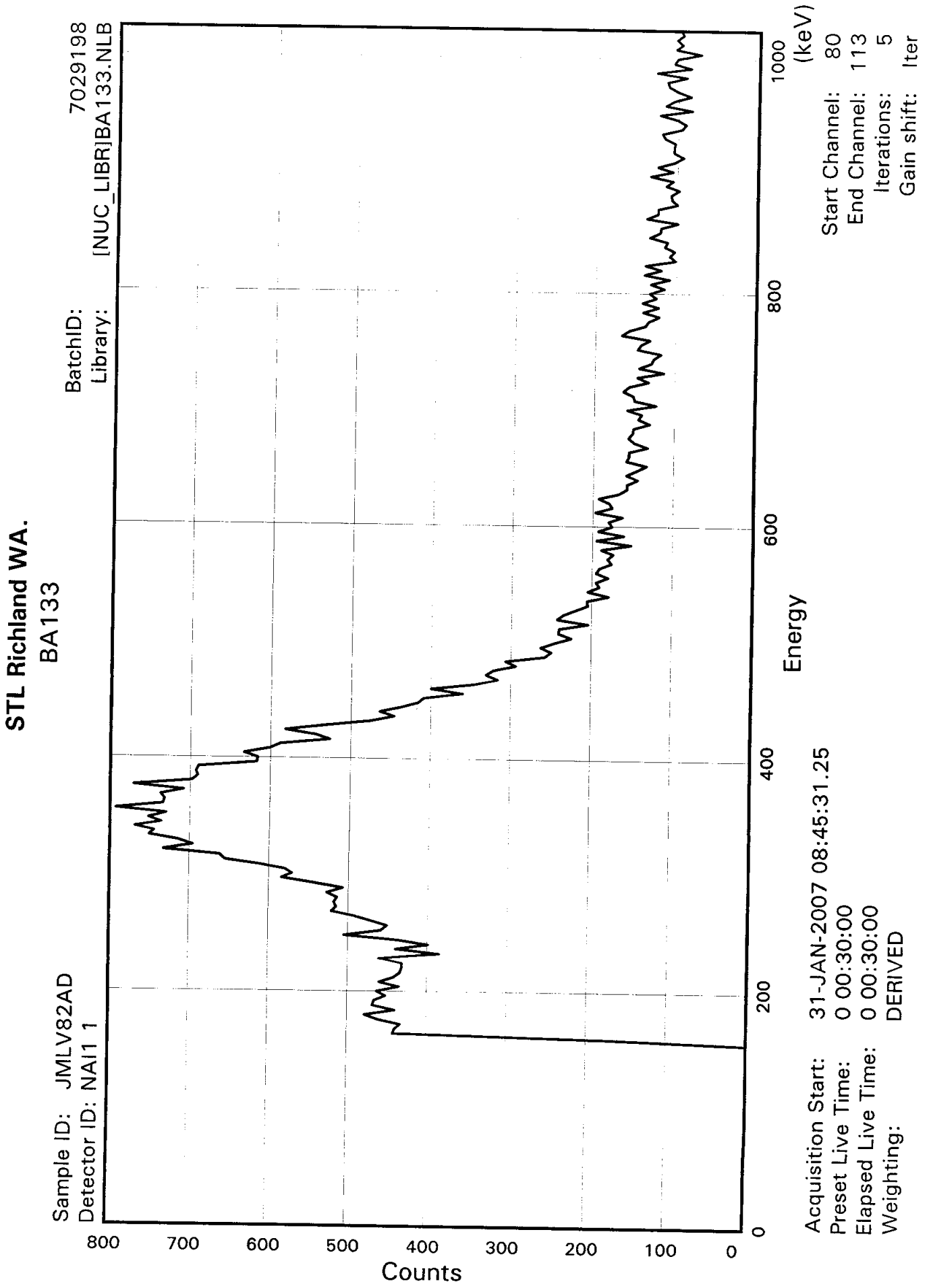
Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	8.922E+02	7.170E+01	6.296E+01	1.259E+00	14.171

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-4.679E+01		6.538E+01	2.397E+02	4.808E+00	-0.195
NA-22	-4.185E-02		2.467E+00	1.267E+01	2.687E-01	-0.003
NA-24	3.260E+03		5.366E+03	Half-Life too short		
K-40	8.987E+01		7.935E+01	3.835E+02	8.239E+00	0.234
SC-46	8.019E+00		6.245E+00	2.971E+01	6.229E-01	0.270
CR-51	-1.055E+01		1.364E+02	5.227E+02	1.046E+01	-0.020
MN-54	-5.037E+00		5.123E+00	1.848E+01	3.794E-01	-0.273
CO-57	1.658E+02		1.260E+02	4.869E+02	1.006E+01	0.341
CO-58	-1.807E+00		5.955E+00	2.409E+01	4.936E-01	-0.075
FE-59	1.232E+01		1.065E+01	5.298E+01	1.109E+00	0.232
CO-60	-6.715E-02		2.476E+00	1.262E+01	2.688E-01	-0.005
ZN-65	-7.413E+00		1.187E+01	4.494E+01	9.418E-01	-0.165
SE-75	5.611E+00		1.865E+01	7.029E+01	1.410E+00	0.080
SR-85	-3.475E+01		1.460E+01	4.515E+01	9.073E-01	-0.770
Y-88	-3.953E+00		2.804E+00	5.461E+00	1.203E-01	-0.724
NB-94	8.236E+00		4.965E+00	2.473E+01	5.090E-01	0.333
NB-95	7.556E+00		7.217E+00	3.426E+01	6.998E-01	0.221
TC-95M	8.787E-01		2.891E+01	1.038E+02	2.099E+00	0.008
ZR-95	-6.202E+00		1.137E+01	4.433E+01	9.049E-01	-0.140
ZRNB-95	1.263E+01		1.206E+01	5.725E+01	1.169E+00	0.221
MO-99	2.802E+03		2.507E+03	9.357E+03	1.930E+02	0.300
RH-101	-1.935E+00		1.816E+01	6.567E+01	1.330E+00	-0.029
RH-102M	1.522E+00		3.918E+00	1.842E+01	3.696E-01	0.083
RU-103	-6.539E+00		9.652E+00	3.618E+01	7.265E-01	-0.181
RU-106DA	3.589E+01		7.344E+01	3.007E+02	6.082E+00	0.119
AG-108M	-1.461E+01		1.101E+01	3.642E+01	7.293E-01	-0.401
AG-110M	-1.148E+00		5.671E+00	2.429E+01	5.004E-01	-0.047

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	8.705E+00		1.344E+01	5.450E+01	1.090E+00	0.160
SB-124	-1.041E+01		9.548E+00	3.297E+01	6.659E-01	-0.316
SB-125	-6.072E+01		2.642E+01	7.531E+01	1.508E+00	-0.806
SN-126DA	-6.829E+00		5.256E+00	1.748E+01	3.545E-01	-0.391
I-131	-4.276E+01		5.126E+01	1.830E+02	3.660E+00	-0.234
CS-134	8.974E-01		4.881E+00	2.200E+01	4.504E-01	0.041
CS-137DA	-2.270E+00		6.989E+00	2.692E+01	5.459E-01	-0.084
LA-138	1.030E+01		5.179E+00	3.090E+01	6.627E-01	0.333
CE-139	-1.094E+01		1.820E+01	6.451E+01	1.318E+00	-0.170
BA-140	-1.611E+01		5.606E+01	2.281E+02	4.589E+00	-0.071
BALA-140	1.072E+01		1.074E+01	7.884E+01	1.709E+00	0.136
LA-140	3.143E-03		3.148E-03	Half-Life too short		
CE-141	1.471E+01		4.698E+01	1.684E+02	3.467E+00	0.087
CE-144	-2.262E+02		1.345E+02	4.277E+02	8.855E+00	-0.529
CEPR-144	-4.498E+02		2.691E+02	8.566E+02	1.773E+01	-0.525
PM-144	1.139E+00		6.073E+00	2.504E+01	5.062E-01	0.045
PM-146	-1.625E+01		8.866E+00	2.616E+01	5.243E-01	-0.621
EU-152	-7.152E+00		3.295E+01	1.233E+02	2.466E+00	-0.058
EU-154	-1.166E-01		6.875E+00	3.531E+01	7.487E-01	-0.003
EU-155	8.882E+01		5.940E+01	2.356E+02	4.970E+00	0.377
HF-181	7.263E+00		9.929E+00	4.263E+01	8.554E-01	0.170
BI-207	3.455E+00		6.151E+00	2.622E+01	5.285E-01	0.132
TL-208	1.016E+01		7.614E+00	3.735E+01	7.536E-01	0.272
BI-210M	-2.753E+00		1.974E+01	7.206E+01	1.446E+00	-0.038
BI-212	1.393E+02		8.670E+01	4.086E+02	1.249E+01	0.341
PB-212	-6.572E+00		2.641E+01	1.007E+02	2.025E+00	-0.065
BI-214	1.927E+01		1.515E+01	6.803E+01	1.375E+00	0.283
PB-214	7.660E+01		3.090E+01	1.241E+02	2.483E+00	0.617
RA-223	-4.478E+01		7.418E+01	2.602E+02	5.219E+00	-0.172
RA-224DA	-6.703E+00		2.693E+01	1.027E+02	2.066E+00	-0.065
RA-226DA	1.927E+01		1.515E+01	6.804E+01	1.375E+00	0.283
AC-227DA	-2.874E+02		1.057E+02	3.074E+02	6.186E+00	-0.935
AC-228	1.739E+01		1.776E+01	9.194E+01	1.898E+00	0.189
RA-228DA	1.750E+01		1.788E+01	9.255E+01	1.911E+00	0.189
TH-228DA	2.885E+01		2.162E+01	1.060E+02	2.140E+00	0.272
TH-232DA	2.003E+01		7.741E+01	2.967E+02	5.934E+00	0.068
TH-234DA	7.671E+01		7.611E+02	3.211E+03	6.672E+01	0.024
U-234DA	4.097E+00		5.550E+01	2.089E+02	4.183E+00	0.020
U-235HP	-2.531E+02		1.479E+02	4.722E+02	9.726E+00	-0.536
NP-237DA	1.631E+01		2.347E+01	9.488E+01	1.899E+00	0.172
U-238DA	7.660E+01		3.090E+01	1.241E+02	2.483E+00	0.617
U-238DHP	3.917E+02		5.121E+02	2.008E+03	4.470E+01	0.195
AM-241HP	-8.359E+01		4.511E+01	1.484E+02	3.329E+00	-0.563


STL Richland WA.
BA133
Sample ID: JMLV82AD
Detector ID: NAI1 1
BatchID: 7029198
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: 31-JAN-2007 08:45:31.25
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: JMLV82AD

CONFIGURATION ID: NAI1:JMLV82AD_310170845
TITLE : BA133
SAMPLE ID : JMLV82AD

REPORT DATE: 31-JAN-07
ACQUIRE DATE: 31-JAN-07 08:45:31
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/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 31-JAN-2007 09:15:36

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JMLV82AD_310170845.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 10-JAN-2007 12:00:00	Acquisition date	: 31-JAN-2007 08:45:31
Sample ID	: JMLV82AD	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:	5.4	3.1	3.4	4.3	4.1	2.9	2.5	2.1
88:	0.9	2.9	-0.4	-0.9	0.4	-1.5	2.5	0.1
96:	-1.0	-1.7	-0.1	-2.2	-4.1	0.1	-1.1	-1.7
104:	-5.4	-3.6	-0.3	-1.0	-3.7	-5.2	-3.5	-2.4
112:	-1.9	-2.9						

List of Suspicious Channels

81	82	83	84	85	86

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	8.89E+00	0.00E+00	1.02E+00
2	3.37E+00	0.00E+00	1.04E+00
3	1.13E+00	0.00E+00	1.05E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	782.	9.87

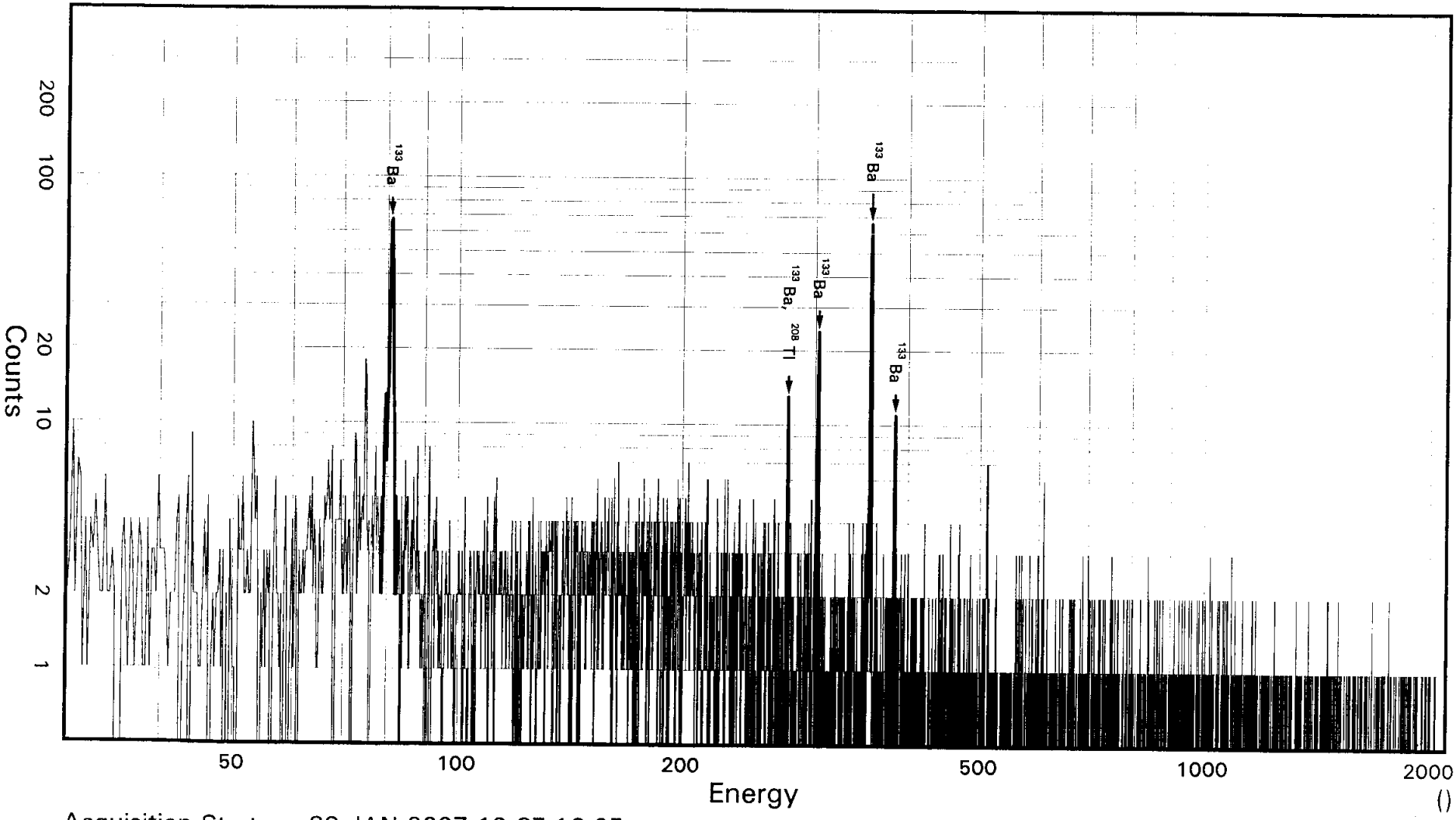
Total Activity :	782.	

STL Richland WA.

BA133

Sample ID: JMLV92AD
Detector ID: GER4 1

Batch ID: 7029198



Acquisition Start: 30-JAN-2007 10:37:16.95
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -1.18422E-02
Slope: 2.49012E-01
Quadrature: 1.21167E-08

SAMPLE IDENTIFICATION: JMLV92AD

CONFIGURATION ID: GER4:JMLV92AD_300171037
TITLE : BA133
SAMPLE ID : JMLV92AD

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 10:37:16
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:10:40.76
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: -.1184E-01 keV
ENERGY SLOPE: 2.4901E-01 keV/C
ENERGY Q COEFF: 1.2117E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.0063E-01 keV
FWHM SLOPE: 4.3008E-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 30-JAN-2007 11:07:33

Configuration : $DISK1:[GER4.SAMPLE]JMLV92AD_300171037.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 10:37:16
Sample ID : JMLV92AD 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 : 19.91 End energy : 2040.71
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.97	249	60	0.79	325.21	317	17	1.38E-01	9.5	
2	0	276.38	43	10	0.65	1109.90	1102	13	2.38E-02	21.4	
3	0	302.99	89	15	0.92	1216.75	1211	13	4.96E-02	14.0	
4	0	355.99	326	31	1.26	1429.57	1419	21	1.81E-01	7.0	
5	0	383.89	64	0	1.37	1541.58	1533	17	3.56E-02	12.5	

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

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 11:07:34

Configuration : $DISK1:[GER4.SAMPLE]JMLV92AD_300171037.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 10:37:16
Sample ID : JMLV92AD 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	249	33.00	2.043E+00	1.229E+03	1.233E+03	11.05
	276.40	43	6.90	2.202E+00	9.413E+02	9.447E+02	22.14
	302.84	89	17.80	2.205E+00	7.586E+02	7.613E+02	15.06
	356.00	326	62.05*	2.207E+00	7.924E+02	7.953E+02	9.80
	383.85	64	8.70	2.207E+00	1.111E+03	1.115E+03	13.95

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JMLV92AD

Acquisition date : 30-JAN-2007 10:37:16

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by Abun.
TL-208	1.41E+10Y	0.00	277.35	6.80	9.551E+02	22.14	
			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 30-JAN-2007 11:07:36

Configuration : $DISK1:[GER4.SAMPLE]JMLV92AD_300171037.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 : 10-JAN-2007 12:00:00
Sample ID : JMLV92AD
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 : 30-JAN-2007 10:37:16
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 ----

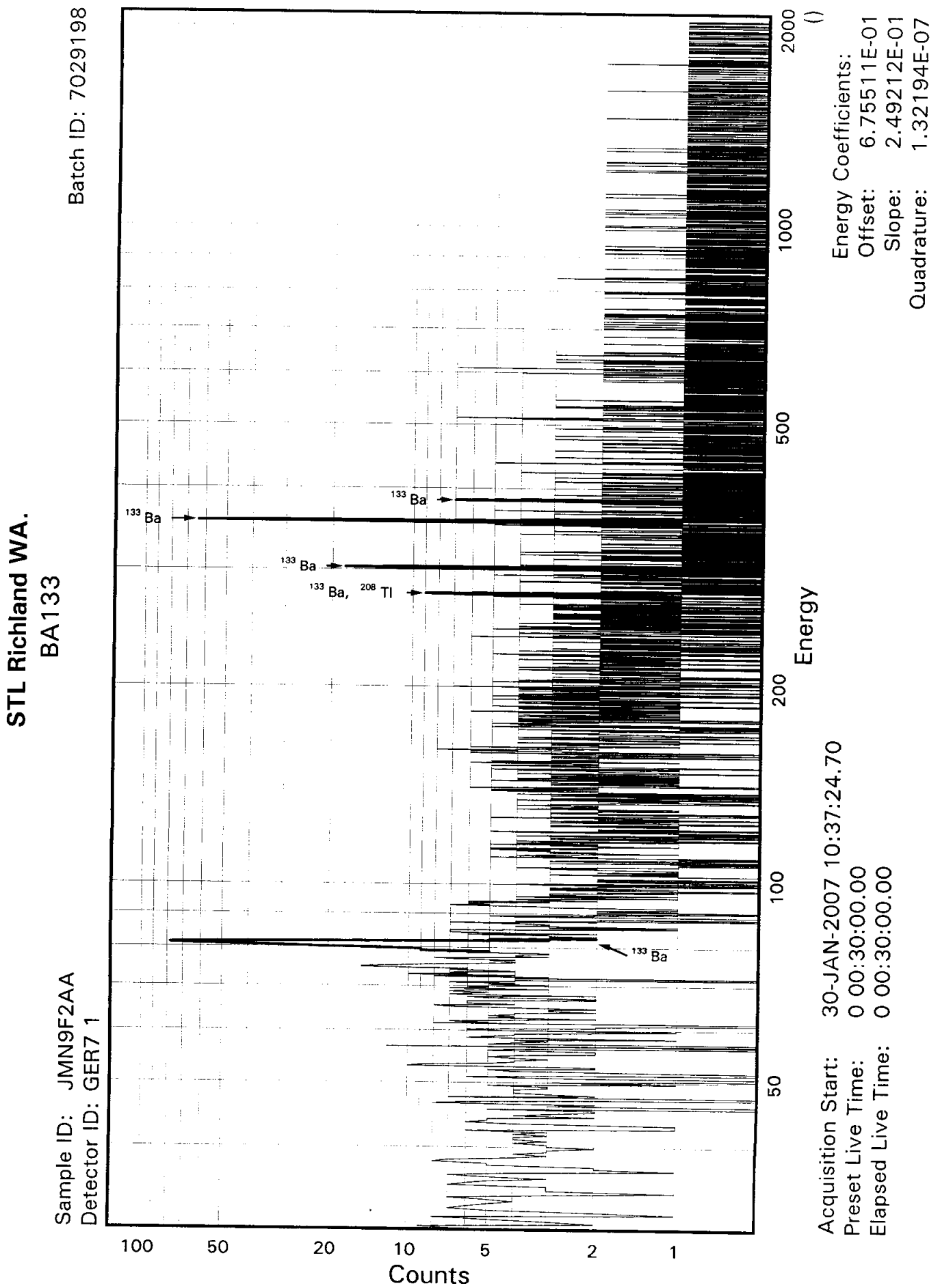
Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.953E+02	7.796E+01	6.103E+01	2.861E+00	13.031

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	4.886E+01		7.500E+01	3.136E+02	1.145E+01	0.156
NA-22	2.256E+00		3.000E+00	1.607E+01	6.198E-01	0.140
K-40	-1.589E+02		7.145E+01	3.235E+02	1.264E+01	-0.491
SC-46	7.283E+00		5.362E+00	2.629E+01	1.003E+00	0.277
CR-51	8.799E+00		1.371E+02	5.139E+02	1.193E+01	0.017
MN-54	-2.280E+00		4.285E+00	1.681E+01	6.277E-01	-0.136
CO-57	-4.700E+01		9.890E+01	3.576E+02	8.571E+00	-0.131
CO-58	1.892E+00		1.895E+00	1.391E+01	5.185E-01	0.136
FE-59	-8.232E+00		9.600E+00	3.536E+01	1.346E+00	-0.233
CO-60	-6.667E+00		4.065E+00	1.189E+01	4.604E-01	-0.561
ZN-65	-2.657E-01		9.605E+00	3.998E+01	1.524E+00	-0.007
SE-75	1.415E+01		1.782E+01	6.976E+01	1.624E+00	0.203
SR-85	-3.182E+01		1.389E+01	4.318E+01	1.579E+00	-0.737
Y-88	2.573E-02		3.792E+00	1.765E+01	7.068E-01	0.001
NB-94	5.819E+00		5.931E+00	2.587E+01	9.686E-01	0.225
NB-95	1.147E+01		7.629E+00	3.633E+01	1.350E+00	0.316
TC-95M	-9.814E+00		2.308E+01	8.334E+01	1.955E+00	-0.118
ZR-95	-1.054E+01		1.238E+01	4.492E+01	1.668E+00	-0.235
ZRNB-95	1.917E+01		1.275E+01	6.071E+01	2.256E+00	0.316
MO-99	9.907E+02		1.819E+03	6.946E+03	1.662E+02	0.143
RH-101	3.498E+01		1.587E+01	6.404E+01	1.504E+00	0.546
RH-102M	-3.098E+00		5.934E+00	2.204E+01	8.047E-01	-0.141
RU-103	-1.309E+01		9.384E+00	3.177E+01	1.161E+00	-0.412
RU-106DA	-3.919E+01		4.608E+01	1.684E+02	6.196E+00	-0.233
AG-108M	-3.192E+00		7.337E+00	2.722E+01	9.922E-01	-0.117
AG-110M	-6.025E+00		7.289E+00	2.717E+01	1.018E+00	-0.222
SN-113DA	-6.519E+00		1.209E+01	4.453E+01	1.621E+00	-0.146

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-1.242E+01		8.455E+00	2.749E+01	1.010E+00	-0.452
SB-125	3.110E+01		1.672E+01	8.285E+01	3.019E+00	0.375
SN-126DA	7.278E+00		5.650E+00	2.551E+01	9.416E-01	0.285
I-131	-5.701E+00		5.101E+01	1.954E+02	7.112E+00	-0.029
CS-134	1.720E+00		6.149E+00	2.597E+01	9.671E-01	0.066
CS-137DA	-1.558E+01		7.121E+00	1.937E+01	7.148E-01	-0.804
LA-138	-2.200E+00		5.324E+00	2.250E+01	8.774E-01	-0.098
CE-139	-1.379E+01		1.501E+01	5.127E+01	1.214E+00	-0.269
BA-140	3.186E+01		5.527E+01	2.471E+02	9.048E+00	0.129
BALA-140	-2.720E-01		2.033E+01	9.370E+01	3.693E+00	-0.003
CE-141	-1.071E+01		3.432E+01	1.240E+02	2.959E+00	-0.086
CE-144	-4.940E-01		1.042E+02	3.869E+02	9.289E+00	-0.001
CEPR-144	-2.798E+01		2.106E+02	7.749E+02	1.860E+01	-0.036
PM-144	1.449E+00		4.292E+00	1.920E+01	7.066E-01	0.075
PM-146	-1.749E+01		8.813E+00	2.517E+01	9.183E-01	-0.695
EU-152	1.976E+00		2.349E+01	9.451E+01	2.193E+00	0.021
EU-154	7.923E+00		8.797E+00	4.716E+01	1.818E+00	0.168
EU-155	-6.837E+00		4.557E+01	1.645E+02	4.022E+00	-0.042
HF-181	-7.983E+00		1.170E+01	4.150E+01	1.515E+00	-0.192
BI-207	5.377E-03		5.831E+00	2.339E+01	8.582E-01	0.000
TL-208	-3.997E-01		7.700E+00	3.279E+01	1.204E+00	-0.012
BI-210M	3.048E+01		1.883E+01	7.741E+01	1.801E+00	0.394
BI-212	6.285E+01		7.555E+01	3.423E+02	1.489E+01	0.184
PB-212	-7.893E+00		2.374E+01	9.392E+01	2.192E+00	-0.084
BI-214	3.611E+01		1.916E+01	8.551E+01	3.144E+00	0.422
PB-214	4.991E+01		2.823E+01	1.065E+02	2.472E+00	0.468
RA-223	9.495E+00		6.037E+01	2.310E+02	5.375E+00	0.041
RA-224DA	-8.052E+00		2.422E+01	9.580E+01	2.235E+00	-0.084
RA-226DA	3.611E+01		1.916E+01	8.551E+01	3.145E+00	0.422
AC-227DA	-9.830E+01		9.281E+01	3.199E+02	7.467E+00	-0.307
AC-228	2.878E+01		2.083E+01	1.030E+02	3.868E+00	0.279
RA-228DA	2.897E+01		2.096E+01	1.037E+02	3.893E+00	0.279
TH-228DA	-1.135E+00		2.186E+01	9.309E+01	3.418E+00	-0.012
TH-232DA	-1.108E+01		6.877E+01	2.594E+02	6.020E+00	-0.043
TH-234DA	6.698E+02		7.934E+02	3.573E+03	1.351E+02	0.187
U-234DA	-1.190E+00		4.898E+01	1.817E+02	4.221E+00	-0.007
U-235HP	1.396E+02		9.693E+01	3.920E+02	9.365E+00	0.356
NP-237DA	-1.466E+01		1.696E+01	5.950E+01	1.381E+00	-0.246
U-238DA	4.991E+01		2.823E+01	1.065E+02	2.472E+00	0.468
U-238DHP	3.049E+02		3.046E+02	1.217E+03	3.138E+01	0.251
AM-241HP	2.018E+01		2.596E+01	1.047E+02	2.720E+00	0.193


STL Richland WA.
BA133
Batch ID: 7029198
Sample ID: JMN9F2AA
Detector ID: GER7 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: 30-JAN-2007 10:37:24.70
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00
Energy Coefficients:
Offset: 6.75511E-01
Slope: 2.49212E-01
Quadrature: 1.32194E-07

SAMPLE IDENTIFICATION: JMN9F2AA

CONFIGURATION ID: GER7:JMN9F2AA_300171037
TITLE : BA133
SAMPLE ID : JMN9F2AA

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 10:37:24
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 10-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:11:17.37
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 6.7551E-01 keV
ENERGY SLOPE: 2.4921E-01 keV/C
ENERGY Q COEFF: 1.3219E-07 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 4.4851E-01 keV
FWHM SLOPE: 4.0543E-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 30-JAN-2007 11:07:48

Configuration : $DISK1:[GER7.SAMPLE]JMN9F2AA_300171037.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 10:37:24
Sample ID : JMN9F2AA Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Start energy : 20.61 End energy : 2051.09
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	74.95*	3	38	0.80	297.97	294	9	1.72E-03	418.6	
2	0	80.94	322	60	0.88	322.03	313	17	1.79E-01	7.8	
3	0	276.57	61	5	2.38	1106.42	1097	20	3.41E-02	15.5	
4	0	302.83	79	21	1.41	1211.66	1202	17	4.36E-02	17.6	
5	0	356.04	321	11	1.19	1424.88	1415	21	1.78E-01	6.1	
6	0	383.44	26	12	1.18	1534.67	1525	15	1.47E-02	36.7	

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

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 11:07:49

Configuration : $DISK1:[GER7.SAMPLE]JMN9F2AA_300171037.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 10-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 10:37:24
Sample ID : JMN9F2AA Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	322	33.00	1.923E+00	1.692E+03	1.698E+03	9.53
	276.40	61	6.90	2.076E+00	1.430E+03	1.435E+03	16.43
	302.84	79	17.80	2.078E+00	7.077E+02	7.102E+02	18.37
	356.00	321	62.05*	2.080E+00	8.276E+02	8.306E+02	8.16
	383.85	26	8.70	2.080E+00	4.877E+02	4.894E+02	37.06

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JMN9F2AA

Acquisition date : 30-JAN-2007 10:37:24

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	74.95	3	38	0.80	297.97	294	9	1.72E-03	****	1.91E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JMN9F2AA

Acquisition date : 30-JAN-2007 10:37:24

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.451E+03	16.43	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 11:07:52

Configuration : $DISK1:[GER7.SAMPLE]JMN9F2AA_300171037.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 : 10-JAN-2007 12:00:00
Sample ID : JMN9F2AA
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 : 30-JAN-2007 10:37:24
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.20 0.0%
Confidence level : 5.00 %
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy
WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

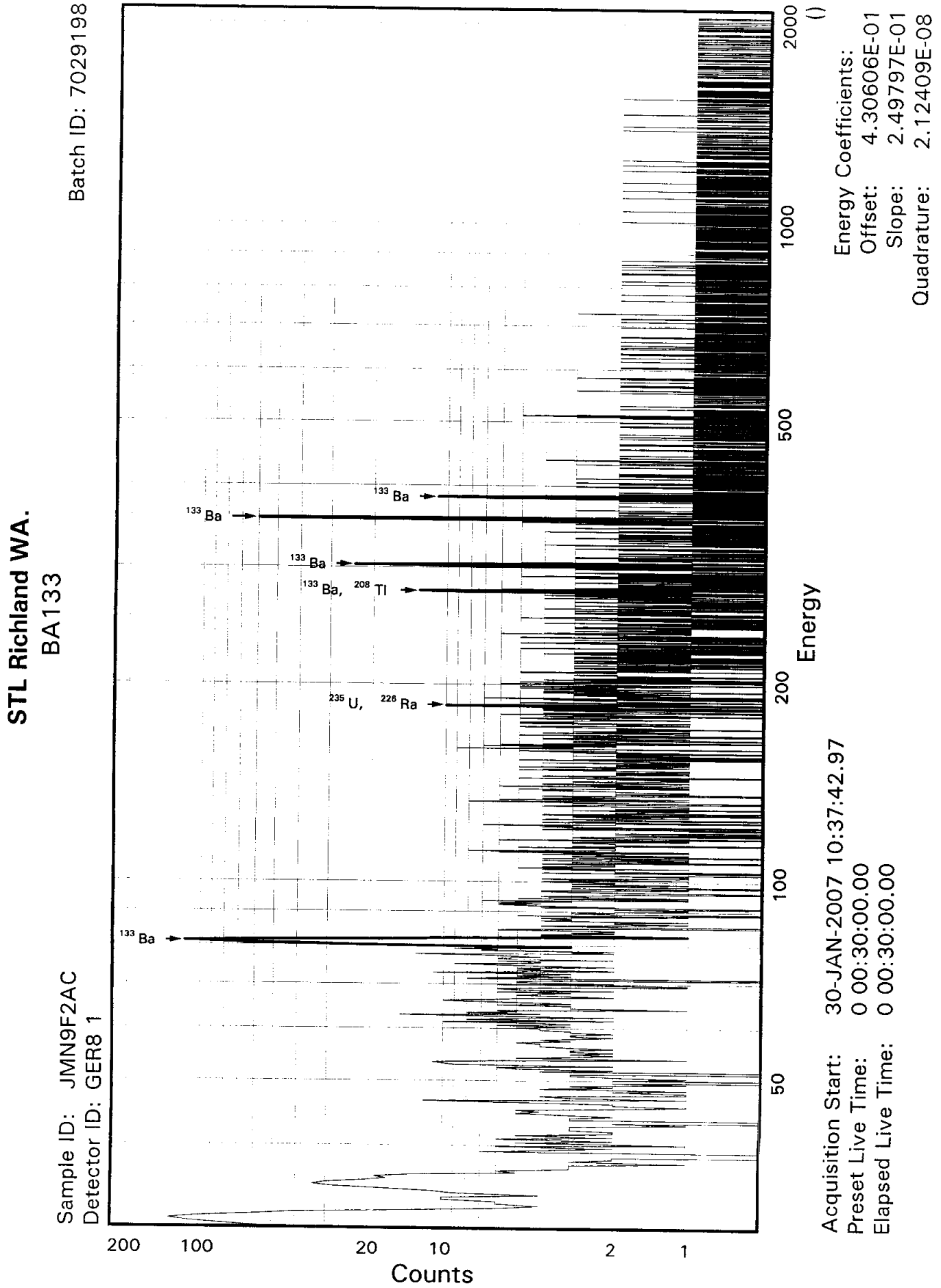
Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	8.306E+02	6.778E+01	6.604E+01	1.321E+00	12.577

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	5.948E+00		8.572E+01	3.379E+02	6.778E+00	0.018
NA-22	3.449E+00		2.446E+00	1.600E+01	3.393E-01	0.216
K-40	-5.010E+01		5.978E+01	2.924E+02	6.281E+00	-0.171
SC-46	-1.815E+00		7.098E+00	2.792E+01	5.854E-01	-0.065
CR-51	2.255E+02		1.444E+02	6.097E+02	1.220E+01	0.370
MN-54	-3.181E+00		5.359E+00	2.064E+01	4.236E-01	-0.154
CO-57	1.606E+01		1.019E+02	3.898E+02	8.057E+00	0.041
CO-58	2.828E-01		5.580E+00	2.410E+01	4.939E-01	0.012
FE-59	2.317E-01		9.818E+00	4.353E+01	9.112E-01	0.005
CO-60	5.620E-02		2.390E+00	1.263E+01	2.690E-01	0.004
ZN-65	-1.027E+01		9.190E+00	3.249E+01	6.809E-01	-0.316
SE-75	-9.354E+00		1.901E+01	6.900E+01	1.384E+00	-0.136
SR-85	-3.468E+01		1.334E+01	3.852E+01	7.741E-01	-0.900
Y-88	4.044E+00		2.868E+00	1.876E+01	4.133E-01	0.216
NB-94	-6.290E+00		4.066E+00	1.263E+01	2.600E-01	-0.498
NB-95	-2.677E+00		4.358E+00	1.788E+01	3.653E-01	-0.150
TC-95M	3.876E+01		1.999E+01	8.256E+01	1.670E+00	0.469
ZR-95	-4.847E+00		1.357E+01	5.172E+01	1.056E+00	-0.094
ZRNB-95	-4.473E+00		7.282E+00	2.989E+01	6.104E-01	-0.150
MO-99	2.354E+03		2.037E+03	8.039E+03	1.658E+02	0.293
RH-101	-6.771E+00		1.696E+01	6.002E+01	1.215E+00	-0.113
RH-102M	8.545E+00		7.087E+00	3.106E+01	6.231E-01	0.275
RU-103	-1.224E+00		1.090E+01	4.214E+01	8.461E-01	-0.029
RU-106DA	7.999E+01		6.930E+01	3.053E+02	6.174E+00	0.262
AG-108M	-1.544E+01		7.257E+00	2.143E+01	4.292E-01	-0.720
AG-110M	2.444E+00		7.197E+00	3.148E+01	6.486E-01	0.078
SN-113DA	2.022E+01		1.360E+01	5.889E+01	1.178E+00	0.343

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-1.349E+01		9.783E+00	3.299E+01	6.663E-01	-0.409
SB-125	-5.162E+00		1.626E+01	6.598E+01	1.321E+00	-0.078
SN-126DA	1.627E+00		5.393E+00	2.291E+01	4.648E-01	0.071
I-131	-3.887E+01		4.685E+01	1.652E+02	3.305E+00	-0.235
CS-134	1.318E+01		8.329E+00	3.743E+01	7.662E-01	0.352
CS-137DA	-5.699E+00		6.336E+00	2.294E+01	4.652E-01	-0.248
LA-138	-2.553E+00		4.451E+00	1.894E+01	4.062E-01	-0.135
CE-139	-3.965E+00		1.532E+01	5.586E+01	1.141E+00	-0.071
BA-140	7.887E+00		7.954E+01	3.132E+02	6.303E+00	0.025
BALA-140	6.477E+00		1.769E+01	9.291E+01	2.015E+00	0.070
CE-141	2.275E+01		3.551E+01	1.377E+02	2.835E+00	0.165
CE-144	-4.811E+01		1.012E+02	3.712E+02	7.684E+00	-0.130
CEPR-144	-1.857E+02		2.090E+02	7.421E+02	1.536E+01	-0.250
PM-144	-1.995E+00		4.934E+00	1.977E+01	3.997E-01	-0.101
PM-146	-1.100E+01		7.598E+00	2.490E+01	4.991E-01	-0.442
EU-152	-3.914E+01		2.911E+01	9.613E+01	1.923E+00	-0.407
EU-154	9.611E+00		6.816E+00	4.459E+01	9.455E-01	0.216
EU-155	4.816E+01		4.613E+01	1.861E+02	3.925E+00	0.259
HF-181	5.304E+00		8.537E+00	3.792E+01	7.608E-01	0.140
BI-207	5.226E+00		4.886E+00	2.332E+01	4.701E-01	0.224
TL-208	2.441E+00		6.780E+00	2.881E+01	5.812E-01	0.085
BI-210M	7.173E+00		1.924E+01	7.454E+01	1.495E+00	0.096
BI-212	-3.095E+00		7.125E+01	2.977E+02	9.101E+00	-0.010
PB-212	-1.689E+01		2.739E+01	9.967E+01	2.005E+00	-0.169
BI-214	1.079E+00		1.672E+01	7.029E+01	1.420E+00	0.015
PB-214	3.104E+01		2.947E+01	1.120E+02	2.240E+00	0.277
RA-223	-1.036E+02		6.962E+01	2.325E+02	4.663E+00	-0.446
RA-224DA	-1.723E+01		2.794E+01	1.017E+02	2.045E+00	-0.169
RA-226DA	1.079E+00		1.672E+01	7.029E+01	1.420E+00	0.015
AC-227DA	-8.124E+01		9.385E+01	3.189E+02	6.417E+00	-0.255
AC-228	2.380E+01		2.196E+01	1.039E+02	2.146E+00	0.229
RA-228DA	2.396E+01		2.210E+01	1.046E+02	2.160E+00	0.229
TH-228DA	6.932E+00		1.925E+01	8.178E+01	1.650E+00	0.085
TH-232DA	-3.631E+01		6.634E+01	2.393E+02	4.786E+00	-0.152
TH-234DA	-2.992E+02		6.943E+02	2.755E+03	5.726E+01	-0.109
U-234DA	5.698E+01		5.296E+01	2.112E+02	4.229E+00	0.270
U-235HP	2.784E+00		1.082E+02	4.046E+02	8.335E+00	0.007
NP-237DA	-8.191E+00		2.192E+01	8.128E+01	1.627E+00	-0.101
U-238DA	3.104E+01		2.947E+01	1.120E+02	2.240E+00	0.277
U-238DHP	-7.330E+02		4.114E+02	1.396E+03	3.108E+01	-0.525
AM-241HP	7.004E-01		4.095E+01	1.512E+02	3.392E+00	0.005


STL Richland WA.
BA133
Batch ID: 7029198
Sample ID: JMN9F2AC
Detector ID: GER8 1
133 Ba
133 Ba
133 Ba
133 Ba, 208 Tl
235 U, 226 Ra
133 Ba
200
100
20
10
2
1
Counts
50
100
200
500
1000
2000
()
Energy
Energy Coefficients:
Offset: 4.30606E-01
Slope: 2.49797E-01
Quadrature: 2.12409E-08
Acquisition Start: 30-JAN-2007 10:37:42.97
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

SAMPLE IDENTIFICATION: JMN9F2AC

CONFIGURATION ID: GER8:JMN9F2AC_300171037
TITLE : BA133
SAMPLE ID : JMN9F2AC

REPORT DATE: 30-JAN-07
ACQUIRE DATE: 30-JAN-07 10:37:42
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 11-JAN-2007 12:00:00.00
CALIB DATE: 30-JAN-2007 05:21:53.07
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: 4.3061E-01 keV
ENERGY SLOPE: 2.4980E-01 keV/C
ENERGY Q COEFF: 2.1241E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.3619E-01 keV
FWHM SLOPE: 2.2819E-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 30-JAN-2007 11:08:05

Configuration : $DISK1:[GER8.SAMPLE]JMN9F2AC_300171037.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 11-JAN-2007 12:00:00 Acquisition date : 30-JAN-2007 10:37:42
Sample ID : JMN9F2AC 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 : 20.41 End energy : 2048.19
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.82	594	125	1.06	121.65	113	16	3.30E-01	5.9	
2	0	35.02	177	75	1.47	138.46	129	19	9.83E-02	14.0	
3	0	53.07	32	24	0.78	210.72	204	11	1.77E-02	34.9	
4	0	81.05	420	64	0.88	322.71	316	14	2.33E-01	6.4	
5	0	186.26*	7	21	0.38	743.88	734	12	3.89E-03	143.0	
6	0	276.38	61	9	1.17	1104.59	1097	17	3.36E-02	16.9	
7	0	303.02	117	10	0.96	1211.22	1201	21	6.51E-02	11.5	
8	0	356.03	328	4	1.26	1423.36	1415	20	1.82E-01	5.8	
9	0	383.99	49	3	1.42	1535.29	1529	14	2.72E-02	16.4	

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

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 11:08:05

Configuration : $DISK1:[GER8.SAMPLE]JMN9F2AC_300171037.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 11-JAN-2007 12:00:00
Sample ID : JMN9F2AC
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 : 30-JAN-2007 10:37:42
Sample quantity : 1.0000 SAMPL
Sample geometry : BA133T15
Elapsed real time: 0 00:30:00.22 0.0%
Half life ratio : 8.00
Systematic Error : 5.00 %
Efficiencies at : Peak Energy

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	420	33.00	2.202E+00	1.927E+03	1.934E+03	8.38
	276.40	61	6.90	2.371E+00	1.233E+03	1.237E+03	17.78
	302.84	117	17.80	2.374E+00	9.249E+02	9.281E+02	12.71
	356.00	328	62.05*	2.376E+00	7.413E+02	7.439E+02	7.89
	383.85	49	8.70	2.375E+00	7.896E+02	7.923E+02	17.24

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JMN9F2AC

Acquisition date : 30-JAN-2007 10:37:42

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.82	594	125	1.06	121.65	113	16	3.30E-01	5.9	1.93E+00	
0	35.02	177	75	1.47	138.46	129	19	9.83E-02	14.0	1.97E+00	
0	53.07	32	24	0.78	210.72	204	11	1.77E-02	34.9	2.10E+00	
0	186.26	7	21	0.38	743.88	734	12	3.89E-03	****	2.34E+00	T

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JMN9F2AC

Acquisition date : 30-JAN-2007 10:37:42

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.251E+03	17.78	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			
RA-226DA	1600.00Y	0.00	186.21	3.50	2.849E+02	143.11	Abun.
			241.98	7.49	--- Not Found ---		
			295.22	19.20	--- Not Found ---		
			351.92	37.20	--- Not Found ---		
			609.32*	46.30	--- Not Found ---		
			1120.28	15.10	--- Not Found ---		
			1238.11	5.94	--- Not Found ---		
			1764.49	15.80	--- Not Found ---		
		% Abundances Found =		2.33			
U-235HP	7.04E+08Y	0.00	143.76*	10.50	--- Not Found ---		Abun.
			185.71	54.00	1.847E+01	143.11	
			205.31	4.70	--- Not Found ---		
		% Abundances Found =		78.03			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 30-JAN-2007 11:08:07

Configuration : $DISK1:[GER8.SAMPLE]JMN9F2AC_300171037.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 : 11-JAN-2007 12:00:00
Sample ID : JMN9F2AC
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 : 30-JAN-2007 10:37:42
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	7.439E+02	5.867E+01	5.271E+01	1.054E+00	14.112

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-7.278E+00		6.592E+01	2.627E+02	5.270E+00	-0.028
NA-22	1.573E+00		2.572E+00	1.397E+01	2.957E-01	0.113
K-40	4.285E+01		4.298E+01	2.234E+02	4.788E+00	0.192
SC-46	-3.579E+00		4.271E+00	1.594E+01	3.337E-01	-0.225
CR-51	2.286E+02		9.831E+01	4.612E+02	9.228E+00	0.496
MN-54	2.831E+00		4.602E+00	2.075E+01	4.255E-01	0.136
CO-57	-1.792E+02		1.216E+02	3.966E+02	8.189E+00	-0.452
CO-58	3.811E+00		5.402E+00	2.452E+01	5.020E-01	0.155
FE-59	-1.062E+01		6.160E+00	9.415E+00	1.968E-01	-1.128
CO-60	-2.899E+00		2.056E+00	4.056E+00	8.617E-02	-0.715
ZN-65	6.044E+00		6.144E+00	3.283E+01	6.871E-01	0.184
SE-75	1.296E+01		1.445E+01	5.847E+01	1.173E+00	0.222
SR-85	-3.668E+01		1.065E+01	2.757E+01	5.540E-01	-1.330
Y-88	1.753E+00		1.756E+00	1.289E+01	2.830E-01	0.136
NB-94	-4.039E+00		4.237E+00	1.552E+01	3.191E-01	-0.260
NB-95	8.434E+00		4.220E+00	2.515E+01	5.133E-01	0.335
TC-95M	-3.961E+01		2.113E+01	6.882E+01	1.391E+00	-0.576
ZR-95	-6.903E-01		1.027E+01	4.162E+01	8.490E-01	-0.017
ZRNB-95	1.464E+01		7.221E+00	4.289E+01	8.754E-01	0.341
MO-99	1.729E+03		1.489E+03	5.714E+03	1.177E+02	0.303
RH-101	5.278E+00		1.673E+01	6.208E+01	1.257E+00	0.085
RH-102M	-3.555E+00		6.066E+00	2.276E+01	4.565E-01	-0.156
RU-103	-9.110E-01		8.483E+00	3.374E+01	6.773E-01	-0.027
RU-106DA	9.608E+00		5.756E+01	2.337E+02	4.724E+00	0.041
AG-108M	-2.032E+01		9.023E+00	2.634E+01	5.275E-01	-0.771
AG-110M	-1.423E+01		5.433E+00	5.666E+00	1.166E-01	-2.511
SN-113DA	-3.982E+00		1.014E+01	3.789E+01	7.581E-01	-0.105

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-3.624E+00		7.628E+00	2.850E+01	5.756E-01	-0.127
SB-125	-2.490E+00		2.118E+01	8.080E+01	1.618E+00	-0.031
SN-126DA	-2.997E+00		4.551E+00	1.708E+01	3.463E-01	-0.175
I-131	-2.894E+00		4.215E+01	1.605E+02	3.210E+00	-0.018
CS-134	4.944E+00		4.603E+00	2.240E+01	4.582E-01	0.221
CS-137DA	3.210E+00		5.837E+00	2.510E+01	5.088E-01	0.128
LA-138	7.612E-02		4.463E+00	2.088E+01	4.467E-01	0.004
CE-139	-3.651E+00		1.532E+01	5.418E+01	1.106E+00	-0.067
BA-140	-5.801E+01		3.871E+01	1.232E+02	2.479E+00	-0.471
BALA-140	-1.798E+01		1.789E+01	6.525E+01	1.411E+00	-0.276
CE-141	3.154E+00		3.460E+01	1.254E+02	2.579E+00	0.025
CE-144	1.914E+02		1.164E+02	4.536E+02	9.380E+00	0.422
CEPR-144	3.818E+02		2.327E+02	9.069E+02	1.875E+01	0.421
PM-144	5.920E+00		4.707E+00	2.226E+01	4.499E-01	0.266
PM-146	1.560E+01		7.217E+00	3.632E+01	7.279E-01	0.429
EU-152	-2.839E+01		2.897E+01	9.986E+01	1.997E+00	-0.284
EU-154	4.385E+00		7.171E+00	3.896E+01	8.244E-01	0.113
EU-155	1.035E+02		5.534E+01	2.213E+02	4.660E+00	0.468
HF-181	-7.389E+00		7.984E+00	2.908E+01	5.834E-01	-0.254
BI-207	1.389E-01		5.759E+00	2.296E+01	4.628E-01	0.006
TL-208	6.774E+00		5.818E+00	2.664E+01	5.374E-01	0.254
BI-210M	-1.101E+01		1.712E+01	6.111E+01	1.226E+00	-0.180
BI-212	-1.356E+02		6.378E+01	1.596E+02	4.877E+00	-0.850
PB-212	-3.108E+00		2.426E+01	9.074E+01	1.825E+00	-0.034
BI-214	-2.599E+01		1.409E+01	5.328E+01	1.076E+00	-0.488
PB-214	1.912E+01		2.729E+01	1.026E+02	2.052E+00	0.186
RA-223	-5.234E+01		6.859E+01	2.410E+02	4.833E+00	-0.217
RA-224DA	-3.167E+00		2.472E+01	9.246E+01	1.860E+00	-0.034
RA-226DA	-2.599E+01		1.409E+01	5.328E+01	1.076E+00	-0.488
AC-227DA	-8.124E+01		9.190E+01	3.199E+02	6.436E+00	-0.254
AC-228	2.624E+01		1.384E+01	7.360E+01	1.518E+00	0.357
RA-228DA	2.640E+01		1.393E+01	7.406E+01	1.527E+00	0.357
TH-228DA	1.921E+01		1.650E+01	7.557E+01	1.524E+00	0.254
TH-232DA	-5.356E+01		6.223E+01	2.171E+02	4.343E+00	-0.247
TH-234DA	2.629E+02		3.985E+02	2.140E+03	4.441E+01	0.123
U-234DA	-6.521E+01		4.709E+01	1.679E+02	3.362E+00	-0.388
U-235HP	-5.664E+01		1.097E+02	3.820E+02	7.861E+00	-0.148
NP-237DA	-2.092E+00		2.196E+01	8.204E+01	1.642E+00	-0.025
U-238DA	1.912E+01		2.729E+01	1.026E+02	2.052E+00	0.186
U-238DHP	-8.867E+02		4.919E+02	1.700E+03	3.770E+01	-0.522
AM-241HP	-1.122E+02		4.706E+01	1.493E+02	3.337E+00	-0.751

Rerun

SEVERN TRENT STL

*** RE-ANALYSIS REQUEST ***

DUE DATE 2/5/07

CUSTOMER Brown & Caldwell

ANALYSIS Ra 228

MATRIX Filter

LOT NUMBER J7A090287, J7A100115, J7A100118

SAMPLE DELIVERY GROUP N/A

OLD BATCH NUMBER 7011229

NEW BATCH NUMBER 7029198

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

RC-048, 10/03, Rev 7

1/16/2007 7:10:55 AM

Sample Preparation/Analysis

Balance Id:1120373922,1120373922,1120

536403, Brown and Caldwell , Brown & Caldwell

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

Pipet #:

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech: AL 1/17/07 9:47

Batch: 7011229 FILTER pCi/sampl PM, Quote: SA , 63174

Sep2 DT/Tm Tech: JH 1/25/07 0925

SEQ Batch, Test: 7011225, BXTE

Prep Tech: WoodT,HarrisonJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 JMK81-1-AD J7A090287-1-SAMP	0.833sa,g	531.15sa,g	150.19g,in	0.2355g 1.0090	RATA25303 01/03/07	150 1in 29.0	7A 7A	156 0549	1/25/07 1/26/07	
12/05/2006 12:25		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:	
2 JMLA1-1-AD J7A090287-2-SAMP	0.833sa,g	502.71sa,g	150.39g,in	0.2492g 1.0130	RATA25304 01/03/07	27.3	7B 7B	156 0549	1/25/07 1/26/07	
12/05/2006 12:10		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:	
3 JMLA4-1-AD J7A090287-3-SAMP	0.833sa,g	516.54sa,g	150.15g,in	0.2421g 1.0564	RATA25305 01/03/07	29.2	7C 1B	156 0549	1/25/07 1/26/07	
12/05/2006 12:45		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:	
4 JMLA7-1-AD J7A090287-4-SAMP	0.833sa,g	519.32sa,g	150.24g,in	0.241g 1.0593	RATA25306 01/03/07	29.6	1B 1C	156 0549	1/25/07 1/26/07	
12/05/2006 12:30		AmtRec: FILTER	#Containers: 1				Scr:	Alpha:	Beta:	

01/16/07 JH

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

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

STL RICHLAND

1/16/2007 7:10:57 AM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011229 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 7011225, BXTE

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
5 JMLA8-1-AD J7A090287-5-SAMP	0.833sa,g	500.78sa,g	150.69g,in	0.2507g .9104	RATA25307 01/03/07	150 in 29.5	K ID	1516 0549	1/25/07 1/26/07	
12/05/2006 12:50		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
6 JMLT2-1-AD J7A100115-1-SAMP	0.833sa,g	524.49sa,g	150.01g,in	0.2382g .9678	RATA25308 01/03/07	29.9	ID JA	1516 0549	1/25/07 1/26/07	
12/11/2006 11:40		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
7 JMLT6-1-AD J7A100115-2-SAMP	0.833sa,g	532.31sa,g	150.08g,in	0.2349g .9473	RATA25309 01/03/07	29.7	JA JC	1516 0549	1/25/07 1/26/07	
12/11/2006 12:00		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
8 JMLT7-1-AD J7A100115-3-SAMP	0.833sa,g	527.80sa,g	150.17g,in	0.237g 1.0209	RATA25310 01/03/07	30.2	JB JD	1516 0549	1/25/07 1/26/07	
12/11/2006 12:15		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:

1/16/2007 7:10:57 AM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011229 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 7011225, BXTE

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
9 JMLT8-1-AD J7A100115-4-SAMP	0.833sa,g	503.04sa,g	150.10g,in	0.2486g .8426	RATA25311 01/03/07	150 lin 30.9	2C 3A	1516 0549	1/25/07 1/26/07	
12/11/2006 11:45		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
10 JMLVA-1-AD J7A100115-5-SAMP	0.833g	511.47g	150.26g,in	0.2447g 1.1149	RATA25312 01/03/07	28.7	2D 3B	1516 0549	1/25/07 1/26/07	
12/11/2006 12:20		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
11 JMLVW-1-AD J7A100118-1-SAMP	0.833g	502.79g	150.23g,in	0.2489g 1.0640	RATA25313 01/03/07	29.1	3A 3C	1516 0549	1/25/07 1/26/07	
12/13/2006 12:10		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
12 JMLV3-1-AD J7A100118-2-SAMP	0.833sa,g	507.51sa,g	150.25g,in	0.2466g 1.0081	RATA25314 01/03/07	29.3	3B 4A	1516 0549	1/25/07 1/26/07	
12/13/2006 12:43		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:

STL RICHLAND

1/16/2007 7:10:57 AM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011229 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch. Test: 7011225, BXTE

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
13 JMLV5-1-AD J7A100118-3-SAMP	0.833sa,g	510.86sa,g	150.11g,in	0.2448g .9395	RATA25315 01/03/07	150 in 29.6	3C 4B	1516 0549	1/25/07 1/26/07	
12/13/2006 13:15			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
14 JMLV8-1-AD J7A100118-4-SAMP	0.833sa,g	504.92sa,g	150.22g,in	0.2478g .9011	RATA25316 01/03/07	30.0	3D 4C	1516 0549	1/25/07 1/26/07	
12/13/2006 13:18			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
15 JMLV9-1-AD J7A100118-5-SAMP	0.833sa,g	511.81sa,g	150.27g,in	0.2446g .9916	RATA25317 01/03/07	30.4	4A 4D	1516 0549	1/25/07 1/26/07	
12/13/2006 13:21			AmtRec: FILTER	#Containers: 1			Scr:	Alpha:		Beta:
16 JMN9F-1-AA-B J7A110000-229-BLK			152.17g,in	152.17g .9276	RATA25318 01/03/07	29.6	4B 7A	1516 0646	1/25/07 1/26/07	
12/05/2006 12:25			AmtRec:	#Containers: 1			Scr:	Alpha:		Beta:

1/16/2007 7:10:59 AM

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: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011229 pCi/sampl

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

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:
17 JMN9F-1-AC-C			150.10g,in	150.10g	RASC4320	150				
J7A110000-229-LCS				1.0435	11/22/06	lin 30.8	4C	15/6	1/05/07	
							7B	clay	1/26/07	

12/05/2006 12:25 AmtRec: #Containers: 1 Scr: Alpha: Beta:

Comments:

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

JMK811AD-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:						

JMN9F1AA-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:						

JMN9F1AC-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

JMK811AD-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

JMN9F1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

JMN9F1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

Batch Nbr: 7011229

Alpha Beta, Ra-228 by GPC , Results

1/26/2007 7:10:43 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	JMK811AD	RA-228	1.51E+00	(9.82E-01)	U4	PCI/SA	R	1.89E+00	4.14E+00		85%	
Calc	TF	FILTER	JMK811AD	RA-228	2.39E+00	(1.15E+00)		PCI/SA	R	2.10E+00	4.59E+00		85%	
Calc	TF	FILTER	JMK811AD	RA-228	2.60E-01	(1.08E+00)	U4	PCI/SA	R	2.33E+00	5.10E+00		85%	
Calc	TF	FILTER	JMK811AD	RA-228	1.39E+00	(6.20E-01)		PCI/SA	A	1.22E+00	2.66E+00		85%	
Calc	TF	FILTER	JMK811AD	RA-228	1.01E-01	(5.31E+00)	U4	PCI/SA	R	1.16E+01	2.54E+01		85%	
Calc	TF	FILTER	JMLA11AD	RA-228	1.44E+00	(9.22E-01)	U4	PCI/SA	R	1.76E+00	3.87E+00		80%	
Calc	TF	FILTER	JMLA11AD	RA-228	4.17E+00	(1.25E+00)		PCI/SA	R	1.95E+00	4.29E+00		80%	
Calc	TF	FILTER	JMLA11AD	RA-228	2.41E+00	(1.19E+00)		PCI/SA	R	2.17E+00	4.76E+00		80%	
Calc	TF	FILTER	JMLA11AD	RA-228	2.67E+00	(6.52E-01)		PCI/SA	A	1.13E+00	2.49E+00		80%	
Calc	TF	FILTER	JMLA11AD	RA-228	4.01E+00	(5.43E+00)	U4	PCI/SA	R	1.12E+01	2.46E+01		80%	
Calc	TF	FILTER	JMLA41AD	RA-228	7.06E-01	(9.00E-01)	U4	PCI/SA	R	1.86E+00	4.05E+00		90%	
Calc	TF	FILTER	JMLA41AD	RA-228	-3.31E-01	(9.15E-01)	U4	PCI/SA	R	2.06E+00	4.49E+00		90%	
Calc	TF	FILTER	JMLA41AD	RA-228	1.18E+00	(1.13E+00)	U4	PCI/SA	R	2.29E+00	4.99E+00		90%	
Calc	TF	FILTER	JMLA41AD	RA-228	5.18E-01	(5.71E-01)	U4	PCI/SA	A	1.19E+00	2.60E+00		90%	
Calc	TF	FILTER	JMLA41AD	RA-228	-4.85E+00	(4.94E+00)	U4	PCI/SA	R	1.16E+01	2.53E+01		90%	
Calc	TF	FILTER	JMLA71AD	RA-228	2.98E+00	(9.96E-01)		PCI/SA	R	1.61E+00	3.55E+00		91%	
Calc	TF	FILTER	JMLA71AD	RA-228	8.43E-01	(8.78E-01)	U4	PCI/SA	R	1.77E+00	3.90E+00		91%	
Calc	TF	FILTER	JMLA71AD	RA-228	1.09E+00	(9.88E-01)	U4	PCI/SA	R	1.96E+00	4.33E+00		91%	
Calc	TF	FILTER	JMLA71AD	RA-228	1.64E+00	(5.52E-01)		PCI/SA	A	1.03E+00	2.27E+00		91%	
Calc	TF	FILTER	JMLA71AD	RA-228	-1.47E+00	(4.43E+00)	U4	PCI/SA	R	9.99E+00	2.21E+01		91%	
Calc	TF	FILTER	JMLA81AD	RA-228	2.47E+00	(1.01E+00)		PCI/SA	R	1.72E+00	3.82E+00		78%	
Calc	TF	FILTER	JMLA81AD	RA-228	-2.32E-01	(8.41E-01)	U4	PCI/SA	R	1.89E+00	4.20E+00		78%	
Calc	TF	FILTER	JMLA81AD	RA-228	1.12E+00	(1.06E+00)	U4	PCI/SA	R	2.10E+00	4.66E+00		78%	
Calc	TF	FILTER	JMLA81AD	RA-228	1.12E+00	(5.63E-01)		PCI/SA	A	1.10E+00	2.44E+00		78%	
Calc	TF	FILTER	JMLA81AD	RA-228	9.52E+00	(6.01E+00)	U4	PCI/SA	R	1.14E+01	2.51E+01		78%	
Calc	TF	FILTER	JMLT21AD	RA-228	5.04E+00	(1.25E+00)		PCI/SA	R	1.73E+00	3.83E+00		84%	
Calc	TF	FILTER	JMLT21AD	RA-228	1.83E+00	(1.03E+00)		PCI/SA	R	1.91E+00	4.21E+00		84%	
Calc	TF	FILTER	JMLT21AD	RA-228	2.86E+00	(1.22E+00)		PCI/SA	R	2.12E+00	4.68E+00		84%	
Calc	TF	FILTER	JMLT21AD	RA-228	3.24E+00	(6.76E-01)		PCI/SA	A	1.11E+00	2.45E+00		84%	
Calc	TF	FILTER	JMLT21AD	RA-228	1.34E+01	(5.64E+00)		PCI/SA	R	8.86E+00	2.05E+01		84%	
Calc	TF	FILTER	JMLT61AD	RA-228	3.98E+00	(1.06E+00)		PCI/SA	R	1.16E+00	2.79E+00		82%	
Calc	TF	FILTER	JMLT61AD	RA-228	2.15E+00	(8.94E-01)		PCI/SA	R	1.29E+00	3.09E+00		82%	
Calc	TF	FILTER	JMLT61AD	RA-228	7.08E-01	(7.62E-01)	U4	PCI/SA	R	1.43E+00	3.43E+00		82%	
Calc	TF	FILTER	JMLT61AD	RA-228	2.28E+00	(5.26E-01)		PCI/SA	A	7.48E-01	1.79E+00		82%	
Calc	TF	FILTER	JMLT61AD	RA-228	1.58E+00	(4.17E+00)	U4	PCI/SA	R	8.69E+00	2.02E+01		82%	
Calc	TF	FILTER	JMLT71AD	RA-228	3.33E+00	(9.70E-01)		PCI/SA	R	1.28E+00	2.96E+00		90%	
Calc	TF	FILTER	JMLT71AD	RA-228	1.05E+00	(7.76E-01)	U4	PCI/SA	R	1.42E+00	3.28E+00		90%	
Calc	TF	FILTER	JMLT71AD	RA-228	1.35E+00	(8.83E-01)	U4	PCI/SA	R	1.57E+00	3.64E+00		90%	

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

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

RecCnt:39
RADCALC v4.8.26
STL Richland

Batch Nbr: 7011229

Alpha Beta, Ra-228 by GPC , Results

1/26/2007 7:10:44 AM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	TF	FILTER	JMLT71AD	RA-228	1.91E+00	(5.08E-01)		PCI/SA	A	8.21E-01	1.90E+00		90%	
Calc	TF	FILTER	JMLT71AD	RA-228	-2.60E+00	(3.38E+00)	U4	PCI/SA	R	8.16E+00	1.89E+01		90%	
Calc	TF	FILTER	JMLT81AD	RA-228	2.54E+00	(9.44E-01)		PCI/SA	R	1.37E+00	3.20E+00		76%	
Calc	TF	FILTER	JMLT81AD	RA-228	2.05E+00	(9.56E-01)		PCI/SA	R	1.51E+00	3.55E+00		76%	
Calc	TF	FILTER	JMLT81AD	RA-228	2.06E+00	(1.03E+00)		PCI/SA	R	1.68E+00	3.94E+00		76%	
Calc	TF	FILTER	JMLT81AD	RA-228	2.22E+00	(5.65E-01)		PCI/SA	A	8.78E-01	2.06E+00		76%	
Calc	TF	FILTER	JMLT81AD	RA-228	-7.12E+00	(3.75E+00)	U4	PCI/SA	R	9.89E+00	2.25E+01		76%	
Calc	TF	FILTER	JMLVA1AD	RA-228	2.32E+00	(7.70E-01)		PCI/SA	R	1.01E+00	2.39E+00		93%	
Calc	TF	FILTER	JMLVA1AD	RA-228	2.57E+00	(8.55E-01)		PCI/SA	R	1.12E+00	2.66E+00		93%	
Calc	TF	FILTER	JMLVA1AD	RA-228	1.82E+00	(8.18E-01)		PCI/SA	R	1.24E+00	2.95E+00		93%	
Calc	TF	FILTER	JMLVA1AD	RA-228	2.24E+00	(4.71E-01)		PCI/SA	A	6.48E-01	1.54E+00		93%	
Calc	TF	FILTER	JMLVA1AD	RA-228	-4.44E+00	(3.34E+00)	U4	PCI/SA	R	8.29E+00	1.88E+01		93%	
Calc	TF	FILTER	JMLVW1AD	RA-228	3.46E+00	(9.47E-01)		PCI/SA	R	1.02E+00	2.41E+00		90%	
Calc	TF	FILTER	JMLVW1AD	RA-228	8.29E-01	(6.36E-01)	U4	PCI/SA	R	1.14E+00	2.68E+00		90%	
Calc	TF	FILTER	JMLVW1AD	RA-228	5.80E-01	(6.53E-01)	U4	PCI/SA	R	1.25E+00	2.94E+00		90%	
Calc	TF	FILTER	JMLVW1AD	RA-228	1.62E+00	(4.38E-01)		PCI/SA	A	6.56E-01	1.55E+00		90%	
Calc	TF	FILTER	JMLVW1AD	RA-228	7.38E-01	(3.79E+00)	U4	PCI/SA	R	8.12E+00	1.85E+01		90%	
Calc	TF	FILTER	JMLV31AD	RA-228	4.12E+00	(1.09E+00)		PCI/SA	R	1.12E+00	2.61E+00		86%	
Calc	TF	FILTER	JMLV31AD	RA-228	7.46E-01	(6.68E-01)	U4	PCI/SA	R	1.24E+00	2.89E+00		86%	
Calc	TF	FILTER	JMLV31AD	RA-228	1.49E+00	(8.28E-01)		PCI/SA	R	1.36E+00	3.18E+00		86%	
Calc	TF	FILTER	JMLV31AD	RA-228	2.12E+00	(5.08E-01)		PCI/SA	A	7.16E-01	1.67E+00		86%	
Calc	TF	FILTER	JMLV31AD	RA-228	2.77E+00	(3.91E+00)	U4	PCI/SA	R	7.86E+00	1.80E+01		86%	
Calc	TF	FILTER	JMLV51AD	RA-228	3.10E+00	(9.91E-01)		PCI/SA	R	1.26E+00	2.93E+00		81%	
Calc	TF	FILTER	JMLV51AD	RA-228	1.58E+00	(8.48E-01)		PCI/SA	R	1.40E+00	3.25E+00		81%	
Calc	TF	FILTER	JMLV51AD	RA-228	8.12E-01	(8.08E-01)	U4	PCI/SA	R	1.53E+00	3.57E+00		81%	
Calc	TF	FILTER	JMLV51AD	RA-228	1.83E+00	(5.11E-01)		PCI/SA	A	8.06E-01	1.88E+00		81%	
Calc	TF	FILTER	JMLV51AD	RA-228	3.50E+00	(4.17E+00)	U4	PCI/SA	R	8.21E+00	1.89E+01		81%	
Calc	TF	FILTER	JMLV81AD	RA-228	1.43E+00	(7.87E-01)		PCI/SA	R	1.33E+00	3.07E+00		79%	
Calc	TF	FILTER	JMLV81AD	RA-228	9.17E-01	(7.88E-01)	U4	PCI/SA	R	1.48E+00	3.40E+00		79%	
Calc	TF	FILTER	JMLV81AD	RA-228	-2.75E-01	(7.06E-01)	U4	PCI/SA	R	1.62E+00	3.74E+00		79%	
Calc	TF	FILTER	JMLV81AD	RA-228	6.90E-01	(4.40E-01)	U4	PCI/SA	A	8.53E-01	1.97E+00		79%	
Calc	TF	FILTER	JMLV81AD	RA-228	-6.75E+00	(3.31E+00)	U4	PCI/SA	R	9.00E+00	2.05E+01		79%	
Calc	TF	FILTER	JMLV91AD	RA-228	1.98E+00	(7.20E-01)		PCI/SA	R	1.00E+00	2.37E+00		88%	
Calc	TF	FILTER	JMLV91AD	RA-228	1.31E+00	(6.86E-01)		PCI/SA	R	1.11E+00	2.63E+00		88%	
Calc	TF	FILTER	JMLV91AD	RA-228	1.76E+00	(7.96E-01)		PCI/SA	R	1.22E+00	2.89E+00		88%	
Calc	TF	FILTER	JMLV91AD	RA-228	1.68E+00	(4.24E-01)		PCI/SA	A	6.42E-01	1.52E+00		88%	
Calc	TF	FILTER	JMLV91AD	RA-228	-5.61E+00	(2.97E+00)	U4	PCI/SA	R	8.02E+00	1.84E+01		88%	
Calc	TF	FILTER	JMN9F1AA	RA-228	3.99E-01	(1.96E-01)		PCI/SA	R	3.26E-01	7.53E-01	B	80%	
Calc	TF	FILTER	JMN9F1AA	RA-228	2.78E-01	(1.99E-01)	U4	PCI/SA	R	3.62E-01	8.35E-01	B	80%	

() - (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:78
RADCALC v4.8.26
STL Richland

Batch Nbr: 7011229

Alpha Beta, Ra-228 by GPC , Results

1/26/2007 7:10:44 AM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	TF	FILTER	**JMN9F1AA**	RA-228	**2.15E-01**	**(2.08E-01)**	**U4**	PCI/SA	R	3.98E-01	9.18E-01	**B**	80%	
Calc	TF	FILTER	**JMN9F1AA**	RA-228	**2.98E-01**	**(1.16E-01)**		PCI/SA	A	2.09E-01	4.82E-01	**B**	80%	
Calc	TF	FILTER	**JMN9F1AA**	RA-228	**1.17E+00**	**(1.58E+00)**	**U4**	PCI/SA	R	3.26E+00	7.14E+00	**B**	80%	
Calc	TF	FILTER	**JMN9F1AC**	RA-228	**4.20E+00**	**(5.67E-01)**		PCI/SA	R	2.91E-01	6.65E-01	**S**	93%	83%
Calc	TF	FILTER	**JMN9F1AC**	RA-228	**3.38E+00**	**(5.01E-01)**		PCI/SA	R	3.23E-01	7.38E-01	**S**	93%	67%
Calc	TF	FILTER	**JMN9F1AC**	RA-228	**3.30E+00**	**(5.08E-01)**		PCI/SA	R	3.55E-01	8.12E-01	**S**	93%	65%
Calc	TF	FILTER	**JMN9F1AC**	RA-228	**3.62E+00**	**(3.04E-01)**		PCI/SA	A	1.86E-01	4.26E-01	**S**	93%	72% N
Calc	TF	FILTER	**JMN9F1AC**	RA-228	**3.14E+00**	**(1.51E+00)**		PCI/SA	R	2.74E+00	6.00E+00	**S**	93%	62%

Angela Long
1/26/07

P Anderson
1.29.07

() - (1s Uncertainities)
IDC - Instrument Detection Level in Conc Units
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*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:85
RADCALC v4.8.26
STL Richland

Batch Nbr: 7011229

Alpha Beta, Ra-228 by GPC , Calculated Results

1/26/2007 7:10:44 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	**JMK811AD**	**PCI/SA**		12/05/06 12:25	01/26/07 05:53	01/17/07 09:47	RATA25303	1	1.00 SA	
536403,P-0812					,J7A090287-1 v4.8.26		FILTER			29.0	01/25/07 09:25	RATA25303 Alq	101%	0.235542 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	01/25/07 13:40	RA-228	51	315	GPC7A	1	N	N	5.4275E-01	1.0000E+00	N	85%	N		1.5445E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.626E-02)	(0.000E+00)		7%			(0.000E+00)	4.245523		
1	01/25/07 14:36	RA-228	56	315	GPC7A	1	N	N	5.4275E-01	1.0000E+00	N	85%	N		1.7140E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.626E-02)	(0.000E+00)		7%			(0.000E+00)	4.245523		
2	01/25/07 15:31	RA-228	41	315	GPC7A	1	N	N	5.4275E-01	1.0000E+00	N	85%	N		1.9022E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.626E-02)	(0.000E+00)		7%			(0.000E+00)	4.245523		
3	01/26/07 05:53	RA-228	38	303	GPC7A	1	N	N	5.4275E-01	1.0000E+00	N	85%	N		9.6607E+00	4.5045E-01	1.0143E+00	
			50	400			N		(1.626E-02)	(0.000E+00)		7%			(0.000E+00)	4.245523		

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
	01/26/07	RA-228	R	**1.508698**	**U4**	2.32500E-01	0.777816	0.777816	1.00 SA	85%		4.138507		
				(0.982164)		(1.4956E-01)	(0.504743)	(0.504743)	(0.014142)			1.894526		
	01/26/07	RA-228	R	**2.394443**		3.32500E-01	1.234466	1.234466	1.00 SA	85%		4.592797		
				(1.149374)		(1.5610E-01)	(0.589083)	(0.589083)	(0.014142)			2.102491		
	01/26/07	RA-228	R	**0.259735**	**U4**	3.25000E-02	0.133907	0.133907	1.00 SA	85%		5.096956		
				(1.083456)		(1.3553E-01)	(0.558537)	(0.558537)	(0.014142)			2.333285		
	01/26/07	RA-228	A	**1.387625**		1.99167E-01	0.715396	0.715396	1.00 SA	85%		2.66125		
				(0.619998)		(8.5053E-02)	(0.318634)	(0.318634)	(0.008165)			1.218267		
	01/26/07	RA-228	R	**0.101472**	**U4**	2.50000E-03	0.052314	0.052314	1.00 SA	85%		25.430746		
				(5.306706)		(1.3074E-01)	(2.735895)	(2.735895)	(0.014142)			11.622319		

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	**JMLA11AD**	**PCI/SA**		12/05/06 12:10	01/26/07 05:53	01/17/07 09:47	RATA25304	1	1.00 SA	
536403,P-0813					,J7A090287-2 v4.8.26		FILTER			27.3	01/25/07 09:25	RATA25304 Alq	101%	0.249199 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	01/25/07 13:40	RA-228	46	278	GPC7B	1	N	N	5.4886E-01	1.0000E+00	N	80%	N		1.5445E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.577E-02)	(0.000E+00)		6%			(0.000E+00)	4.012856		
1	01/25/07 14:36	RA-228	64	278	GPC7B	1	N	N	5.4886E-01	1.0000E+00	N	80%	N		1.7140E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.577E-02)	(0.000E+00)		6%			(0.000E+00)	4.012856		
2	01/25/07 15:31	RA-228	50	278	GPC7B	1	N	N	5.4886E-01	1.0000E+00	N	80%	N		1.9022E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.577E-02)	(0.000E+00)		6%			(0.000E+00)	4.012856		

() - (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: 7011229

Alpha Beta, Ra-228 by GPC , Calculated Results

1/26/2007 7:10:45 AM

3	01/26/07 05:53	RA-228	41	288	GPC7B	1	N	N	5.4886E-01	1.0000E+00	N	80%	N	9.6607E+00	4.5045E-01	1.0143E+00	
			50	400			N		(1.577E-02)	(0.000E+00)		6%		(0.000E+00)	4.012856		

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
	01/26/07	RA-228	R	**1.443904**	U4	2.25000E-01	0.787569	0.787569	1.00 SA	80%		3.865984		
				(0.921957)		(1.4191E-01)	(0.501208)	(0.501208)	(0.014142)			1.760127		
	01/26/07	RA-228	R	**4.166248**		5.85000E-01	2.272458	2.272458	1.00 SA	80%		4.290359		
				(1.248538)		(1.6534E-01)	(0.670693)	(0.670693)	(0.014142)			1.953339		
	01/26/07	RA-228	R	**2.410587**		3.05000E-01	1.314842	1.314842	1.00 SA	80%		4.761319		
				(1.189765)		(1.4744E-01)	(0.645344)	(0.645344)	(0.014142)			2.16776		
	01/26/07	RA-228	A	**2.673579**		3.71667E-01	1.45829	1.45829	1.00 SA	80%		2.486005		
				(0.651868)		(8.7694E-02)	(0.352374)	(0.352374)	(0.008165)			1.131842		
	01/26/07	RA-228	R	**4.014042**	U4	1.00000E-01	2.189438	2.189438	1.00 SA	80%		24.573965		
				(5.429986)		(1.3491E-01)	(2.959571)	(2.959571)	(0.014142)			11.205831		

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	**JMLA41AD**	**PCI/SA**		12/05/06 12:45	01/26/07 05:53	01/17/07 09:47	RATA25305	1	1.00 SA	
536403,P-0814					,J7A090287-3 v4.8.26		FILTER			29.2	01/25/07 09:25	RATA25305 Alq	106%	0.24214 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	01/25/07 13:40	RA-228	46	323	GPC7C	1	N	N	5.1764E-01	1.0000E+00	N	90%	N		1.5445E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.657E-02)	(0.000E+00)		7%			(0.000E+00)	4.129844		
1	01/25/07 14:36	RA-228	38	323	GPC7C	1	N	N	5.1764E-01	1.0000E+00	N	90%	N		1.7140E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.657E-02)	(0.000E+00)		7%			(0.000E+00)	4.129844		
2	01/25/07 15:31	RA-228	48	323	GPC7C	1	N	N	5.1764E-01	1.0000E+00	N	90%	N		1.9022E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.657E-02)	(0.000E+00)		7%			(0.000E+00)	4.129844		
3	01/26/07 05:53	RA-228	35	330	GPC1B	1	N	N	5.2380E-01	1.0000E+00	N	90%	N		9.6640E+00	4.5045E-01	1.0143E+00	
			50	400			N		(1.539E-02)	(0.000E+00)		7%			(0.000E+00)	4.129844		

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
	01/26/07	RA-228	R	**0.706282**	U4	1.12500E-01	0.374328	0.374328	1.00 SA	90%		4.050193		
				(0.899909)		(1.4289E-01)	(0.476553)	(0.476553)	(0.014142)			1.856063		
	01/26/07	RA-228	R	**-0.330943**	U4	-4.75000E-02	-0.175399	-0.175399	1.00 SA	90%		4.49479		
				(0.914846)		(1.3122E-01)	(0.484781)	(0.484781)	(0.014142)			2.059806		
	01/26/07	RA-228	R	**1.179133**	U4	1.52500E-01	0.624938	0.624938	1.00 SA	90%		4.98819		
				(1.132528)		(1.4567E-01)	(0.599359)	(0.599359)	(0.014142)			2.285915		
	01/26/07	RA-228	A	**0.518157**	U4	7.25000E-02	0.274622	0.274622	1.00 SA	90%		2.60446		
				(0.570516)		(8.0868E-02)	(0.302094)	(0.302094)	(0.008165)			1.193534		
	01/26/07	RA-228	R	**-4.852576**	U4	-1.25000E-01	-2.571855	-2.571855	1.00 SA	90%		25.291755		
				(4.943828)		(1.2674E-01)	(2.616808)	(2.616808)	(0.014142)			11.600727		

() - (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: 7011229 — Alpha Beta, Ra-228 by GPC , Calculated Results — 1/26/2007 7:10:45 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	JMLA71AD	PCI/SA		12/05/06 12:30	01/26/07 05:53	01/17/07 09:47	RATA25306	1	1.00 SA	
536403,P-0815					,J7A090287-4 v4.8.26		FILTER			29.6	01/25/07 09:25	RATA25306 Alq	106%	0.240988 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	01/25/07 13:41	RA-228	56	254	GPC1B	1	N	N	5.2361E-01	1.0000E+00	N	91%	N		1.5451E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.538E-02)	(0.000E+00)		7%			(0.000E+00)	4.149583		
1	01/25/07 14:31	RA-228	38	254	GPC1B	1	N	N	5.2361E-01	1.0000E+00	N	91%	N		1.6985E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.538E-02)	(0.000E+00)		7%			(0.000E+00)	4.149583		
2	01/25/07 15:26	RA-228	39	254	GPC1B	1	N	N	5.2361E-01	1.0000E+00	N	91%	N		1.8850E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.538E-02)	(0.000E+00)		7%			(0.000E+00)	4.149583		
3	01/26/07 05:53	RA-228	28	239	GPC1C	1	N	N	5.1189E-01	1.0000E+00	N	91%	N		9.6640E+00	4.5045E-01	1.0143E+00	
			50	400			N		(1.847E-02)	(0.000E+00)		7%			(0.000E+00)	4.149583		

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
	01/26/07	RA-228	R	**2.976638**		4.85000E-01	1.570102	1.570102	1.00 SA	91%		3.548818		
				(0.995907)		(1.5488E-01)	(0.518942)	(0.518942)	(0.014142)			1.609041		
	01/26/07	RA-228	R	**0.843378**	U4	1.25000E-01	0.44486	0.44486	1.00 SA	91%		3.901319		
				(0.878232)		(1.2957E-01)	(0.462668)	(0.462668)	(0.014142)			1.768865		
	01/26/07	RA-228	R	**1.085709**	U4	1.45000E-01	0.572684	0.572684	1.00 SA	91%		4.329573		
				(0.987603)		(1.3110E-01)	(0.520085)	(0.520085)	(0.014142)			1.963037		
	01/26/07	RA-228	A	**1.635242**		2.51667E-01	0.862549	0.862549	1.00 SA	91%		2.267006		
				(0.551612)		(8.0251E-02)	(0.289415)	(0.289415)	(0.008165)			1.027865		
	01/26/07	RA-228	R	**-1.472511**	U4	-3.75000E-02	-0.776713	-0.776713	1.00 SA	91%		22.088442		
				(4.426622)		(1.1267E-01)	(2.334583)	(2.334583)	(0.014142)			9.986015		

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	JMLA81AD	PCI/SA		12/05/06 12:50	01/26/07 05:53	01/17/07 09:47	RATA25307	1	1.00 SA	
536403,000580					,J7A090287-5 v4.8.26		FILTER			29.5	01/25/07 09:25	RATA25307 Alq	91%	0.250659 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	01/25/07 13:41	RA-228	45	220	GPC1C	1	N	N	5.1183E-01	1.0000E+00	N	78%	N		1.5451E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.847E-02)	(0.000E+00)		6%			(0.000E+00)	3.989491		
1	01/25/07 14:31	RA-228	26	220	GPC1C	1	N	N	5.1183E-01	1.0000E+00	N	78%	N		1.6985E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.847E-02)	(0.000E+00)		6%			(0.000E+00)	3.989491		
2	01/25/07 15:26	RA-228	34	220	GPC1C	1	N	N	5.1183E-01	1.0000E+00	N	78%	N		1.8850E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.847E-02)	(0.000E+00)		6%			(0.000E+00)	3.989491		
3	01/26/07 05:53	RA-228	43	256	GPC1D	1	N	N	5.2165E-01	1.0000E+00	N	78%	N		9.6640E+00	4.5045E-01	1.0143E+00	
			50	400			N		(1.784E-02)	(0.000E+00)		6%			(0.000E+00)	3.989491		

() - (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: 7011229

Alpha Beta, Ra-228 by GPC , Calculated Results

1/26/2007 7:10:45 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
	01/26/07	RA-228	R	**2.466633**		3.50000E-01	1.353303	1.353303	1.00 SA	78%		3.819025		
				(1.012717)		(1.3919E-01)	(0.551154)	(0.551154)	(0.014142)			1.719546		
	01/26/07	RA-228	R	**-0.232426**	U4	-3.00000E-02	-0.127519	-0.127519	1.00 SA	78%		4.198364		
				(0.841041)		(1.0851E-01)	(0.461385)	(0.461385)	(0.014142)			1.890346		
	01/26/07	RA-228	R	**1.117741**	U4	1.30000E-01	0.613242	0.613242	1.00 SA	78%		4.659226		
				(1.058316)		(1.2237E-01)	(0.579764)	(0.579764)	(0.014142)			2.097853		
	01/26/07	RA-228	A	**1.117316**		1.50000E-01	0.613009	0.613009	1.00 SA	78%		2.439616		
				(0.563025)		(7.1589E-02)	(0.307819)	(0.307819)	(0.008165)			1.098456		
	01/26/07	RA-228	R	**9.515184**	U4	2.20000E-01	5.220449	5.220449	1.00 SA	78%		25.097916		
				(6.008134)		(1.3711E-01)	(3.285146)	(3.285146)	(0.014142)			11.38362		

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	**JMLT21AD**	**PCI/SA**		12/11/06 11:40	01/26/07 05:54	01/17/07 09:47	RATA25308	1	1.00 SA	
536403,P-0816					,J7A100115-1 v4.8.26		FILTER			29.9	01/25/07 09:25	RATA25308 Alq	97%	0.238247 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	01/25/07 13:41	RA-228	68	245	GPC1D	1	N	N	5.2181E-01	1.0000E+00	N	84%	N		1.5451E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(1.784E-02)	(0.000E+00)		7%			(0.000E+00)	4.197319		
1	01/25/07 14:31	RA-228	43	245	GPC1D	1	N	N	5.2181E-01	1.0000E+00	N	84%	N		1.6985E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(1.784E-02)	(0.000E+00)		7%			(0.000E+00)	4.197319		
2	01/25/07 15:26	RA-228	48	245	GPC1D	1	N	N	5.2181E-01	1.0000E+00	N	84%	N		1.8850E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(1.784E-02)	(0.000E+00)		7%			(0.000E+00)	4.197319		
3	01/26/07 05:54	RA-228	27	111	GPC2A	1	N	N	4.3033E-01	1.0000E+00	N	84%	N		9.6667E+00	4.5045E-01	1.0123E+00	
			50	400			N		(1.191E-02)	(0.000E+00)		7%			(0.000E+00)	4.197319		

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
	01/26/07	RA-228	R	**5.035622**		7.47500E-01	2.631131	2.631131	1.00 SA	84%		3.832197		
				(1.250711)		(1.6950E-01)	(0.63904)	(0.63904)	(0.014142)			1.734566		
	01/26/07	RA-228	R	**1.832926**		2.47500E-01	0.95771	0.95771	1.00 SA	84%		4.212846		
				(1.030447)		(1.3686E-01)	(0.536107)	(0.536107)	(0.014142)			1.906859		
	01/26/07	RA-228	R	**2.855999**		3.47500E-01	1.49227	1.49227	1.00 SA	84%		4.675297		
				(1.218235)		(1.4398E-01)	(0.631792)	(0.631792)	(0.014142)			2.116178		
	01/26/07	RA-228	A	**3.241516**		4.47500E-01	1.693704	1.693704	1.00 SA	84%		2.448031		
				(0.675787)		(8.7046E-02)	(0.348798)	(0.348798)	(0.008165)			1.108051		
	01/26/07	RA-228	R	**13.415996**		2.62500E-01	7.009906	7.009906	1.00 SA	84%		20.474967		
				(5.639012)		(1.0721E-01)	(2.923802)	(2.923802)	(0.014142)			8.857701		

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

RecCnt:7

RADCALC v4.8.26
STL Richland

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

Batch Nbr: 7011229

Alpha Beta, Ra-228 by GPC , Calculated Results

1/26/2007 7:10:46 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
7	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLT61AD**	**PCI/SA**		12/11/06 12:00	01/26/07 05:54	01/17/07 09:47	RATA25309	1	1.00 SA	
536403,P-0817					,J7A100115-2 v4.8.26		FILTER			29.7	01/25/07 09:25	RATA25309 Alq	95%	0.234857 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	01/25/07 13:41	RA-228	32	69	GPC2A	1	N	N	4.3089E-01	1.0000E+00	N	82%	N		1.5457E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(1.193E-02)	(0.000E+00)		7%			(0.000E+00)	4.257913		
1	01/25/07 14:36	RA-228	20	69	GPC2A	1	N	N	4.3089E-01	1.0000E+00	N	82%	N		1.7154E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(1.193E-02)	(0.000E+00)		7%			(0.000E+00)	4.257913		
2	01/25/07 15:31	RA-228	12	69	GPC2A	1	N	N	4.3089E-01	1.0000E+00	N	82%	N		1.9037E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(1.193E-02)	(0.000E+00)		7%			(0.000E+00)	4.257913		
3	01/26/07 05:54	RA-228	14	100	GPC2C	1	N	N	4.3450E-01	1.0000E+00	N	82%	N		9.6667E+00	4.5045E-01	1.0123E+00	
			50	400			N		(9.450E-03)	(0.000E+00)		7%			(0.000E+00)	4.257913		

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
	01/26/07	RA-228	R	**3.981042**		4.67500E-01	2.050516	2.050516	1.00 SA	82%		2.787373		
				(1.056331)		(1.1503E-01)	(0.53355)	(0.53355)	(0.014142)			1.163605		
	01/26/07	RA-228	R	**2.149891**		2.27500E-01	1.107345	1.107345	1.00 SA	82%		3.093251		
				(0.893613)		(9.1822E-02)	(0.456663)	(0.456663)	(0.014142)			1.291295		
	01/26/07	RA-228	R	**0.707901**	U4	6.75000E-02	0.364619	0.364619	1.00 SA	82%		3.432802		
				(0.76178)		(7.2327E-02)	(0.391912)	(0.391912)	(0.014142)			1.433043		
	01/26/07	RA-228	A	**2.279611**		2.54167E-01	1.17416	1.17416	1.00 SA	82%		1.79237		
				(0.526486)		(5.4664E-02)	(0.268082)	(0.268082)	(0.008165)			0.748235		
	01/26/07	RA-228	R	**1.584385**	U4	3.00000E-02	0.816069	0.816069	1.00 SA	82%		20.227557		
				(4.169744)		(7.8899E-02)	(2.147292)	(2.147292)	(0.014142)			8.687709		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLT71AD**	**PCI/SA**		12/11/06 12:15	01/26/07 05:54	01/17/07 09:47	RATA25310	1	1.00 SA	
536403,P-0818					,J7A100115-3 v4.8.26		FILTER			30.2	01/25/07 09:25	RATA25310 Alq	102%	0.237006 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	01/25/07 13:41	RA-228	36	109	GPC2B	1	N	N	4.4612E-01	1.0000E+00	N	90%	N		1.5457E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(1.052E-02)	(0.000E+00)		7%			(0.000E+00)	4.219308		
1	01/25/07 14:36	RA-228	20	109	GPC2B	1	N	N	4.4612E-01	1.0000E+00	N	90%	N		1.7154E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(1.052E-02)	(0.000E+00)		7%			(0.000E+00)	4.219308		
2	01/25/07 15:31	RA-228	21	109	GPC2B	1	N	N	4.4612E-01	1.0000E+00	N	90%	N		1.9037E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(1.052E-02)	(0.000E+00)		7%			(0.000E+00)	4.219308		
3	01/26/07 05:54	RA-228	11	110	GPC2D	1	N	N	4.3880E-01	1.0000E+00	N	90%	N		9.6667E+00	4.5045E-01	1.0123E+00	
			50	400			N		(1.312E-02)	(0.000E+00)		7%			(0.000E+00)	4.219308		

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

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

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

RecCnt:8

RADCALC v4.8.26

STL Richland

Batch Nbr: 7011229 — Alpha Beta, Ra-228 by GPC , Calculated Results — 1/26/2007 7:10:46 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
	01/26/07	RA-228	R	**3.328299**		4.47500E-01	1.729999	1.729999	1.00 SA	90%		2.956289		
				(0.970165)		(1.2281E-01)	(0.4962)	(0.4962)	(0.014142)			1.277346		
	01/26/07	RA-228	R	**1.052348**	U4	1.27500E-01	0.546995	0.546995	1.00 SA	90%		3.280703		
				(0.775947)		(9.3173E-02)	(0.402323)	(0.402323)	(0.014142)			1.417518		
	01/26/07	RA-228	R	**1.351061**	U4	1.47500E-01	0.702261	0.702261	1.00 SA	90%		3.640831		
				(0.882921)		(9.5296E-02)	(0.457476)	(0.457476)	(0.014142)			1.573121		
	01/26/07	RA-228	A	**1.91057**		2.40833E-01	0.993085	0.993085	1.00 SA	90%		1.900988		
				(0.508031)		(6.0409E-02)	(0.261908)	(0.261908)	(0.008165)			0.821374		
	01/26/07	RA-228	R	**-2.600866**	U4	-5.50000E-02	-1.351891	-1.351891	1.00 SA	90%		18.870621		
				(3.382938)		(7.1327E-02)	(1.756996)	(1.756996)	(0.014142)			8.158637		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
9	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLT81AD**	**PCI/SA**		12/11/06 11:45	01/26/07 05:49	01/17/07 09:47	RATA25311	1	1.00 SA	
536403,P-0819					,J7A100115-4 v4.8.26		FILTER			30.9	01/25/07 09:25	RATA25311 Alq	84%	0.248555 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	01/25/07 13:41	RA-228	26	91	GPC2C	1	N	N	4.3069E-01	1.0000E+00	N	76%	N		1.5457E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(9.367E-03)	(0.000E+00)		6%			(0.000E+00)	4.023248		
1	01/25/07 14:36	RA-228	22	91	GPC2C	1	N	N	4.3069E-01	1.0000E+00	N	76%	N		1.7154E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(9.367E-03)	(0.000E+00)		6%			(0.000E+00)	4.023248		
2	01/25/07 15:31	RA-228	21	91	GPC2C	1	N	N	4.3069E-01	1.0000E+00	N	76%	N		1.9037E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(9.367E-03)	(0.000E+00)		6%			(0.000E+00)	4.023248		
3	01/26/07 05:49	RA-228	11	145	GPC3A	1	N	N	4.6493E-01	1.0000E+00	N	76%	N		9.5782E+00	4.5045E-01	1.0123E+00	
			50	400			N		(4.134E-02)	(0.000E+00)		6%			(0.000E+00)	4.023248		

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
	01/26/07	RA-228	R	**2.544444**		2.92500E-01	1.387004	1.387004	1.00 SA	76%		3.199994		
				(0.944459)		(1.0473E-01)	(0.509766)	(0.509766)	(0.014142)			1.365066		
	01/26/07	RA-228	R	**2.051379**		2.12500E-01	1.118229	1.118229	1.00 SA	76%		3.551151		
				(0.955703)		(9.6792E-02)	(0.517714)	(0.517714)	(0.014142)			1.514864		
	01/26/07	RA-228	R	**2.062298**		1.92500E-01	1.124181	1.124181	1.00 SA	76%		3.940967		
				(1.034451)		(9.4703E-02)	(0.560857)	(0.560857)	(0.014142)			1.681153		
	01/26/07	RA-228	A	**2.219374**		2.32500E-01	1.209805	1.209805	1.00 SA	76%		2.057698		
				(0.565239)		(5.7064E-02)	(0.30595)	(0.30595)	(0.008165)			0.877781		
	01/26/07	RA-228	R	**-7.1155**	U4	-1.42500E-01	-3.878737	-3.878737	1.00 SA	76%		22.476652		
				(3.75383)		(7.2844E-02)	(2.036304)	(2.036304)	(0.014142)			9.891005		

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

RecCnt:10

RADCALC v4.8.26
STL Richland

Batch Nbr: 7011229

Alpha Beta, Ra-228 by GPC , Calculated Results

1/26/2007 7:10:46 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLVA1AD**	**PCI/SA**		12/11/06 12:20	01/26/07 05:49	01/17/07 09:47	RATA25312	1	1.00 SA	
536403,000581					,J7A100115-5 v4.8.26		FILTER			28.7	01/25/07 09:25	RATA25312 Alq	111%	0.244719 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	01/25/07 13:41	RA-228	26	76	GPC2D	1	N	N	4.4067E-01	1.0000E+00	N	93%	N		1.5457E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(1.317E-02)	(0.000E+00)		7%			(0.000E+00)	4.086314		
1	01/25/07 14:36	RA-228	26	76	GPC2D	1	N	N	4.4067E-01	1.0000E+00	N	93%	N		1.7154E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(1.317E-02)	(0.000E+00)		7%			(0.000E+00)	4.086314		
2	01/25/07 15:31	RA-228	20	76	GPC2D	1	N	N	4.4067E-01	1.0000E+00	N	93%	N		1.9037E+00	4.5045E-01	1.0123E+00	
			50	400			Y		(1.317E-02)	(0.000E+00)		7%			(0.000E+00)	4.086314		
3	01/26/07 05:49	RA-228	14	156	GPC3B	1	N	N	4.7564E-01	1.0000E+00	N	93%	N		9.5782E+00	4.5045E-01	1.0123E+00	
			50	400			N		(5.313E-02)	(0.000E+00)		7%			(0.000E+00)	4.086314		

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
	01/26/07	RA-228	R	**2.318705**		3.30000E-01	1.244454	1.244454	1.00 SA	93%		2.394907		
				(0.770383)		(1.0428E-01)	(0.407368)	(0.407368)	(0.027062)			1.007637		
	01/26/07	RA-228	R	**2.573152**		3.30000E-01	1.381016	1.381016	1.00 SA	93%		2.657717		
				(0.854922)		(1.0428E-01)	(0.452071)	(0.452071)	(0.027062)			1.118212		
	01/26/07	RA-228	R	**1.817207**		2.10000E-01	0.975299	0.975299	1.00 SA	93%		2.949459		
				(0.818152)		(9.2060E-02)	(0.435589)	(0.435589)	(0.027062)			1.24096		
	01/26/07	RA-228	A	**2.236354**		2.90000E-01	1.200257	1.200257	1.00 SA	93%		1.540002		
				(0.470668)		(5.7951E-02)	(0.249456)	(0.249456)	(0.015624)			0.647943		
	01/26/07	RA-228	R	**-4.437201**	**U4**	-1.10000E-01	-2.381456	-2.381456	1.00 SA	93%		18.752291		
				(3.336756)		(8.1086E-02)	(1.785719)	(1.785719)	(0.027062)			8.287901		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
11	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLVW1AD**	**PCI/SA**		12/13/06 12:10	01/26/07 05:49	01/17/07 09:47	RATA25313	1	1.00 SA	
536403,P-0820					,J7A100118-1 v4.8.26		FILTER			29.1	01/25/07 09:25	RATA25313 Alq	106%	0.248894 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	01/25/07 13:36	RA-228	36	84	GPC3A	1	N	N	4.5900E-01	1.0000E+00	N	90%	N		1.5317E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.081E-02)	(0.000E+00)		7%			(0.000E+00)	4.017769		
1	01/25/07 14:31	RA-228	16	84	GPC3A	1	N	N	4.5900E-01	1.0000E+00	N	90%	N		1.6998E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.081E-02)	(0.000E+00)		7%			(0.000E+00)	4.017769		
2	01/25/07 15:21	RA-228	14	84	GPC3A	1	N	N	4.5900E-01	1.0000E+00	N	90%	N		1.8686E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.081E-02)	(0.000E+00)		7%			(0.000E+00)	4.017769		
3	01/26/07 05:49	RA-228	18	137	GPC3C	1	N	N	4.6202E-01	1.0000E+00	N	90%	N		9.5782E+00	4.5045E-01	1.0116E+00	
			50	400			N		(4.544E-02)	(0.000E+00)		7%			(0.000E+00)	4.017769		

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

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

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

RecCnt:11

RADCALC v4.8.26

STL Richland

Batch Nbr: 7011229

Alpha Beta, Ra-228 by GPC , Calculated Results

1/26/2007 7:10:47 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
	01/26/07	RA-228	R	**3.461631**		5.10000E-01	1.890805	1.890805	1.00 SA	90%		2.41333		
				(0.947495)		(1.2217E-01)	(0.506251)	(0.506251)	(0.027062)			1.023331		
	01/26/07	RA-228	R	**0.828559**	U4	1.10000E-01	0.452574	0.452574	1.00 SA	90%		2.678161		
				(0.636348)		(8.3217E-02)	(0.346631)	(0.346631)	(0.027062)			1.135628		
	01/26/07	RA-228	R	**0.579637**	U4	7.00000E-02	0.316608	0.316608	1.00 SA	90%		2.94418		
				(0.652584)		(7.8262E-02)	(0.355999)	(0.355999)	(0.027062)			1.248429		
	01/26/07	RA-228	A	**1.623276**		2.30000E-01	0.886662	0.886662	1.00 SA	90%		1.546466		
				(0.438248)		(5.5752E-02)	(0.23645)	(0.23645)	(0.015624)			0.655752		
	01/26/07	RA-228	R	**0.737933**	U4	1.75000E-02	0.403072	0.403072	1.00 SA	90%		18.51393		
				(3.786208)		(8.9757E-02)	(2.067968)	(2.067968)	(0.027062)			8.119044		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
12	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLV31AD**	**PCI/SA**		12/13/06 12:43	01/26/07 05:49	01/17/07 09:47	RATA25314	1	1.00 SA	
536403,P-0821					,J7A100118-2 v4.8.26		FILTER			29.3	01/25/07 09:25	RATA25314 Alq	101%	0.246612 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	01/25/07 13:36	RA-228	42	97	GPC3B	1	N	N	4.7789E-01	1.0000E+00	N	86%	N		1.5317E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(5.338E-02)	(0.000E+00)		7%			(0.000E+00)	4.054946		
1	01/25/07 14:31	RA-228	17	97	GPC3B	1	N	N	4.7789E-01	1.0000E+00	N	86%	N		1.6998E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(5.338E-02)	(0.000E+00)		7%			(0.000E+00)	4.054946		
2	01/25/07 15:21	RA-228	21	97	GPC3B	1	N	N	4.7789E-01	1.0000E+00	N	86%	N		1.8686E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(5.338E-02)	(0.000E+00)		7%			(0.000E+00)	4.054946		
3	01/26/07 05:49	RA-228	19	126	GPC4A	1	N	N	4.8435E-01	1.0000E+00	N	86%	N		9.5809E+00	4.5045E-01	1.0116E+00	
			50	400			N		(2.054E-02)	(0.000E+00)		7%			(0.000E+00)	4.054946		

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
	01/26/07	RA-228	R	**4.120891**		5.97500E-01	2.230284	2.230284	1.00 SA	86%		2.607266		
				(1.092876)		(1.3193E-01)	(0.580016)	(0.580016)	(0.014142)			1.117391		
	01/26/07	RA-228	R	**0.746239**	U4	9.75000E-02	0.403875	0.403875	1.00 SA	86%		2.893378		
				(0.667736)		(8.6060E-02)	(0.360778)	(0.360778)	(0.014142)			1.240009		
	01/26/07	RA-228	R	**1.493479**		1.77500E-01	0.808292	0.808292	1.00 SA	86%		3.180775		
				(0.828084)		(9.4901E-02)	(0.446198)	(0.446198)	(0.014142)			1.363178		
	01/26/07	RA-228	A	**2.120203**		2.90833E-01	1.147484	1.147484	1.00 SA	86%		1.67074		
				(0.508371)		(6.1300E-02)	(0.271962)	(0.271962)	(0.008165)			0.716026		
	01/26/07	RA-228	R	**2.76683**	U4	6.50000E-02	1.497447	1.497447	1.00 SA	86%		18.017696		
				(3.909077)		(9.1583E-02)	(2.114216)	(2.114216)	(0.014142)			7.85996		

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

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

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

RecCnt:13

RADCALC v4.8.26

STL Richland

Batch Nbr: 7011229 — Alpha Beta, Ra-228 by GPC , Calculated Results — 1/26/2007 7:10:47 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
13	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLV51AD**	**PCI/SA**		12/13/06 13:15	01/26/07 05:49	01/17/07 09:47	RATA25315	1	1.00 SA	
536403,P-0822					,J7A100118-3 v4.8.26		FILTER			29.6	01/25/07 09:25	RATA25315 Alq	94%	0.244767 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	01/25/07 13:36	RA-228	33	101	GPC3C	1	N	N	4.6351E-01	1.0000E+00	N	81%	N		1.5317E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.558E-02)	(0.000E+00)		6%			(0.000E+00)	4.085519		
1	01/25/07 14:31	RA-228	22	101	GPC3C	1	N	N	4.6351E-01	1.0000E+00	N	81%	N		1.6998E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.558E-02)	(0.000E+00)		6%			(0.000E+00)	4.085519		
2	01/25/07 15:21	RA-228	17	101	GPC3C	1	N	N	4.6351E-01	1.0000E+00	N	81%	N		1.8686E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.558E-02)	(0.000E+00)		6%			(0.000E+00)	4.085519		
3	01/26/07 05:49	RA-228	18	114	GPC4B	1	N	N	4.7227E-01	1.0000E+00	N	81%	N		9.5809E+00	4.5045E-01	1.0116E+00	
			50	400			N		(9.011E-03)	(0.000E+00)		6%			(0.000E+00)	4.085519		

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
	01/26/07	RA-228	R	**3.100957**		4.07500E-01	1.665735	1.665735	1.00 SA	81%		2.927034		
				(0.990673)		(1.1761E-01)	(0.525072)	(0.525072)	(0.014142)			1.258041		
	01/26/07	RA-228	R	**1.583395**		1.87500E-01	0.850549	0.850549	1.00 SA	81%		3.248237		
				(0.848318)		(9.7115E-02)	(0.453541)	(0.453541)	(0.014142)			1.396094		
	01/26/07	RA-228	R	**0.812314**	**U4**	8.75000E-02	0.436349	0.436349	1.00 SA	81%		3.570881		
				(0.80799)		(8.6205E-02)	(0.433434)	(0.433434)	(0.014142)			1.534767		
	01/26/07	RA-228	A	**1.832222**		2.27500E-01	0.984211	0.984211	1.00 SA	81%		1.875648		
				(0.511417)		(5.8399E-02)	(0.272695)	(0.272695)	(0.008165)			0.806154		
	01/26/07	RA-228	R	**3.503806**	**U4**	7.50000E-02	1.882132	1.882132	1.00 SA	81%		18.933039		
				(4.169574)		(8.8952E-02)	(2.237626)	(2.237626)	(0.014142)			8.20535		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
14	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLV81AD**	**PCI/SA**		12/13/06 13:18	01/26/07 05:49	01/17/07 09:47	RATA25316	1	1.00 SA	
536403,P-0824					,J7A100118-4 v4.8.26		FILTER			30.0	01/25/07 09:25	RATA25316 Alq	90%	0.247828 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	01/25/07 13:36	RA-228	24	116	GPC3D	1	N	N	4.7710E-01	1.0000E+00	N	79%	N		1.5317E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.511E-02)	(0.000E+00)		6%			(0.000E+00)	4.035058		
1	01/25/07 14:31	RA-228	20	116	GPC3D	1	N	N	4.7710E-01	1.0000E+00	N	79%	N		1.6998E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.511E-02)	(0.000E+00)		6%			(0.000E+00)	4.035058		
2	01/25/07 15:21	RA-228	13	116	GPC3D	1	N	N	4.7710E-01	1.0000E+00	N	79%	N		1.8686E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(4.511E-02)	(0.000E+00)		6%			(0.000E+00)	4.035058		
3	01/26/07 05:49	RA-228	10	138	GPC4C	1	N	N	4.8152E-01	1.0000E+00	N	79%	N		9.5809E+00	4.5045E-01	1.0116E+00	
			50	400			N		(1.240E-02)	(0.000E+00)		6%			(0.000E+00)	4.035058		

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

Batch Nbr: 7011229 — Alpha Beta, Ra-228 by GPC , Calculated Results — 1/26/2007 7:10:47 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
	01/26/07	RA-228	R	**1.42714**		1.90000E-01	0.776202	0.776202	1.00 SA	79%		3.067101		
				(0.786939)		(1.0161E-01)	(0.426101)	(0.426101)	(0.014142)			1.330785		
	01/26/07	RA-228	R	**0.916908**	U4	1.10000E-01	0.498693	0.498693	1.00 SA	79%		3.403675		
				(0.788283)		(9.3408E-02)	(0.427952)	(0.427952)	(0.014142)			1.476821		
	01/26/07	RA-228	R	**-0.274905**	U4	-3.00000E-02	-0.149517	-0.149517	1.00 SA	79%		3.741758		
				(0.706316)		(7.6974E-02)	(0.384077)	(0.384077)	(0.014142)			1.623513		
	01/26/07	RA-228	A	**0.689715**	U4	9.00000E-02	0.375126	0.375126	1.00 SA	79%		1.965403		
				(0.439639)		(5.2678E-02)	(0.238565)	(0.238565)	(0.008165)			0.852769		
	01/26/07	RA-228	R	**-6.75015**	U4	-1.45000E-01	-3.671312	-3.671312	1.00 SA	79%		20.504535		
				(3.314013)		(6.9732E-02)	(1.792322)	(1.792322)	(0.014142)			8.996029		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
15	Calc	TF	FILTER	*STLE	Ra228WoBS	**JMLV91AD**	**PCI/SA**		12/13/06 13:21	01/26/07 05:49	01/17/07 09:47	RATA25317	1	1.00 SA	
536403,P-0582					,J7A100118-5 v4.8.26		FILTER			30.4	01/25/07 09:25	RATA25317 Alq	99%	0.244573 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	01/25/07 13:36	RA-228	25	82	GPC4A	1	N	N	4.8454E-01	1.0000E+00	N	88%	N		1.5321E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(2.055E-02)	(0.000E+00)		7%			(0.000E+00)	4.088759		
1	01/25/07 14:31	RA-228	19	82	GPC4A	1	N	N	4.8454E-01	1.0000E+00	N	88%	N		1.7002E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(2.055E-02)	(0.000E+00)		7%			(0.000E+00)	4.088759		
2	01/25/07 15:22	RA-228	21	82	GPC4A	1	N	N	4.8454E-01	1.0000E+00	N	88%	N		1.8691E+00	4.5045E-01	1.0116E+00	
			50	400			Y		(2.055E-02)	(0.000E+00)		7%			(0.000E+00)	4.088759		
3	01/26/07 05:49	RA-228	9	123	GPC4D	1	N	N	4.6309E-01	1.0000E+00	N	88%	N		9.5809E+00	4.5045E-01	1.0116E+00	
			50	400			N		(2.144E-02)	(0.000E+00)		7%			(0.000E+00)	4.088759		

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
	01/26/07	RA-228	R	**1.983174**		2.95000E-01	1.064455	1.064455	1.00 SA	88%		2.365996		
				(0.719696)		(1.0253E-01)	(0.382312)	(0.382312)	(0.014142)			1.001409		
	01/26/07	RA-228	R	**1.30556**		1.75000E-01	0.70075	0.70075	1.00 SA	88%		2.625633		
				(0.685632)		(9.0069E-02)	(0.366203)	(0.366203)	(0.014142)			1.111301		
	01/26/07	RA-228	R	**1.763295**		2.15000E-01	0.946436	0.946436	1.00 SA	88%		2.886434		
				(0.795841)		(9.4406E-02)	(0.424322)	(0.424322)	(0.014142)			1.221685		
	01/26/07	RA-228	A	**1.68401**		2.28333E-01	0.903881	0.903881	1.00 SA	88%		1.516134		
				(0.42445)		(5.5315E-02)	(0.226155)	(0.226155)	(0.008165)			0.641705		
	01/26/07	RA-228	R	**-5.60828**	U4	-1.27500E-01	-3.010206	-3.010206	1.00 SA	88%		18.424277		
				(2.967551)		(6.6097E-02)	(1.585114)	(1.585114)	(0.014142)			8.024869		

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

RecCnt:16 — RADCALC v4.8.26 — STL Richland

Batch Nbr: 7011229 — Alpha Beta, Ra-228 by GPC , Calculated Results — 1/26/2007 7:10:47 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
16	Calc	TF	FILTER	*STLE	Ra228WoBS	JMN9F1AA	PCI/SA	B	12/05/06 12:25	01/26/07 06:51	01/17/07 09:47	RATA25318	1	1.00 SA	
0,INTRA-LAB BLANK					,J7A110000-229		FILTER			29.6	01/25/07 09:25	RATA25318 Alq	93%	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	01/25/07 13:36	RA-228	25	114	GPC4B	1	N	N	4.7227E-01	1.0000E+00	N	80%	N		1.5321E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(9.011E-03)	(0.000E+00)		6%			(0.000E+00)	1.00		
1	01/25/07 14:31	RA-228	21	114	GPC4B	1	N	N	4.7227E-01	1.0000E+00	N	80%	N		1.7002E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(9.011E-03)	(0.000E+00)		6%			(0.000E+00)	1.00		
2	01/25/07 15:22	RA-228	19	114	GPC4B	1	N	N	4.7227E-01	1.0000E+00	N	80%	N		1.8691E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(9.011E-03)	(0.000E+00)		6%			(0.000E+00)	1.00		
3	01/26/07 06:51	RA-228	43	303	GPC7A	1	N	N	5.4089E-01	1.0000E+00	N	80%	N		1.0765E+01	4.5045E-01	1.0143E+00	
			50	400			N		(1.620E-02)	(0.000E+00)		6%			(0.000E+00)	1.00		

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	01/26/07	RA-228	R	**0.399246**		2.15000E-01	0.873869	0.873869	1.00 SA	80%		0.752564		
				(0.196123)		(1.0350E-01)	(0.426776)	(0.426776)	(0.017321)			0.326152		
	01/26/07	RA-228	R	**0.278199**	U4	1.35000E-01	0.608922	0.608922	1.00 SA	80%		0.835148		
				(0.198589)		(9.5459E-02)	(0.433475)	(0.433475)	(0.017321)			0.361943		
	01/26/07	RA-228	R	**0.215215**	U4	9.50000E-02	0.471063	0.471063	1.00 SA	80%		0.918103		
				(0.207615)		(9.1173E-02)	(0.453743)	(0.453743)	(0.017321)			0.397895		
	01/26/07	RA-228	A	**0.297554**		1.48333E-01	0.651285	0.651285	1.00 SA	80%		0.482244		
				(0.115953)		(5.5914E-02)	(0.252965)	(0.252965)	(0.01)			0.208999		
	01/26/07	RA-228	R	**1.16769**	U4	1.02500E-01	2.555839	2.555839	1.00 SA	80%		7.137685		
				(1.578529)		(1.3818E-01)	(3.452434)	(3.452434)	(0.017321)			3.262053		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
17	Calc	TF	FILTER	*STLE	Ra228WoBS	JMN9F1AC	PCI/SA	S	12/05/06 12:25	01/26/07 06:51	01/17/07 09:47	RASC4320	1	1.00 SA	
0,INTRA-LAB CHECK					,J7A110000-229		FILTER			30.8	01/25/07 09:25	RASC4320 Alq	104%	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	01/25/07 13:36	RA-228	151	129	GPC4C	1	N	N	4.8160E-01	1.0000E+00	N	93%	N		1.5321E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.241E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		
1	01/25/07 14:31	RA-228	114	129	GPC4C	1	N	N	4.8160E-01	1.0000E+00	N	93%	N		1.7002E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.241E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		
2	01/25/07 15:22	RA-228	103	129	GPC4C	1	N	N	4.8160E-01	1.0000E+00	N	93%	N		1.8691E+00	4.5045E-01	1.0143E+00	
			50	400			Y		(1.241E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		
3	01/26/07 06:51	RA-228	52	288	GPC7B	1	N	N	5.3695E-01	1.0000E+00	N	93%	N		1.0765E+01	4.5045E-01	1.0143E+00	
			50	400			N		(1.543E-02)	(0.000E+00)		7%			(0.000E+00)	1.00		

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

RecCnt:17 RADCALC v4.8.26
STL Richland

Batch Nbr: 7011229

Alpha Beta, Ra-228 by GPC , Calculated Results

1/26/2007 7:10:47 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
	01/26/07	RA-228	R	**4.196371**		2.69750E+00	9.185009	9.185009	1.00 SA	93%	83%	0.665275		
				(0.567288)		(2.4740E-01)	(1.142604)	(1.142604)	(0.017321)			0.290652		
	01/26/07	RA-228	R	**3.379358**		1.95750E+00	7.396732	7.396732	1.00 SA	93%	67%	0.73828		
				(0.500948)		(2.1542E-01)	(1.024237)	(1.024237)	(0.017321)			0.322547		
	01/26/07	RA-228	R	**3.2975**		1.73750E+00	7.217563	7.217563	1.00 SA	93%	65%	0.811613		
				(0.508478)		(2.0495E-01)	(1.045376)	(1.045376)	(0.017321)			0.354585		
	01/26/07	RA-228	A	**3.62441**		2.13083E+00	7.933101	7.933101	1.00 SA	93%	72%	0.426309		
				(0.303921)		(1.2894E-01)	(0.618907)	(0.618907)	(0.01)			0.18625		
	01/26/07	RA-228	R	**3.137171**		3.20000E-01	6.866635	6.866635	1.00 SA	93%	62%	6.0018		
				(1.506917)		(1.5033E-01)	(3.278263)	(3.278263)	(0.017321)			2.736846		

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

RecCnt:17

RADCALC v4.8.26

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

STL Richland

UST Number: JMK811AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-A File: [quad7.sample.A]JMK811AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.A_1;3147

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00051	0050	01140	1700	25-JAN-2007 13:40:51.75
2	00000	00056	0050	01151	1700	25-JAN-2007 14:36:07.54
3	00000	00041	0050	01144	1700	25-JAN-2007 15:31:23.30

Bkg File: [quad7.bkgrnd]2007-01-25_0240.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00315	0400	0.79	09196	1700	25-JAN-2007 02:40:34.48

OK
AL
1/26/07

UST Number: JMK811AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-A File: [quad7.sample.A]JMK811AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.A_1;3149

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00038	0050	01146	1700	26-JAN-2007 05:53:41.16

Bkg File: [quad7.bkgrnd]2007-01-25_2356.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00303	0400	0.76	09263	1700	25-JAN-2007 23:56:15.07

UST Number: JMLA11AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-B File: [quad7.sample.B]JMLA11AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.B_1;3134

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00046	0050	01140	1700	25-JAN-2007 13:40:51.75
2	00000	00064	0050	01151	1700	25-JAN-2007 14:36:07.54
3	00000	00050	0050	01144	1700	25-JAN-2007 15:31:23.30

Bkg File: [quad7.bkgrnd]2007-01-25_0240.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00278	0400	0.70	09196	1700	25-JAN-2007 02:40:34.48

UST Number: JMLA11AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-B File: [quad7.sample.B]JMLA11AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.B_1;3136

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00041	0050	01146	1700	26-JAN-2007 05:53:41.16

Bkg File: [quad7.bkgrnd]2007-01-25_2356.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00288	0400	0.72	09263	1700	25-JAN-2007 23:56:15.07

UST Number: JMLA41AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 7-C File: [quad7.sample.C]JMLA41AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.C_1;3139

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00046	0050	01140	1700	25-JAN-2007 13:40:51.75
2	00000	00038	0050	01151	1700	25-JAN-2007 14:36:07.54
3	00000	00048	0050	01144	1700	25-JAN-2007 15:31:23.30

Bkg File: [quad7.bkgrnd]2007-01-25_0240.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00323	0400	0.81	09196	1700	25-JAN-2007 02:40:34.48

UST Number: JMLA41AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-B File: [quad1.sample.B]JMLA41AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.B_1;3198

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00035	0050	01155	1650	26-JAN-2007 05:53:52.38

Bkg File: [quad1.bkgrnd]2007-01-26_0218.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00330	0400	0.83	09308	1650	26-JAN-2007 02:18:26.84

UST Number: JMLA71AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-B File: [quad1.sample.B]JMLA71AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.B_1;3197

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00056	0050	01161	1650	25-JAN-2007 13:41:03.28
2	00000	00038	0050	01147	1650	25-JAN-2007 14:31:18.38
3	00000	00039	0050	01160	1650	25-JAN-2007 15:26:34.00

Bkg File: [quad1.bkgrnd]2007-01-25_0236.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00254	0400	0.64	09272	1650	25-JAN-2007 02:36:11.56

UST Number: JMLA71AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-C File: [quad1.sample.C]JMLA71AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.C_1;3195

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00028	0050	01155	1650	26-JAN-2007 05:53:52.38

Bkg File: [quad1.bkgrnd]2007-01-26_0218.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00239	0400	0.60	09308	1650	26-JAN-2007 02:18:26.84

UST Number: JMLA81AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-C File: [quad1.sample.C]JMLA81AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.C_1;3194

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00045	0050	01161	1650	25-JAN-2007 13:41:03.28
2	00000	00026	0050	01147	1650	25-JAN-2007 14:31:18.38
3	00000	00034	0050	01160	1650	25-JAN-2007 15:26:34.00

Bkg File: [quad1.bkgrnd]2007-01-25_0236.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00220	0400	0.55	09272	1650	25-JAN-2007 02:36:11.56

UST Number: JMLA81AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 1-D File: [quad1.sample.D]JMLA81AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.D_1;3198

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00043	0050	01155	1650	26-JAN-2007 05:53:52.38

Bkg File: [quad1.bkgrnd]2007-01-26_0218.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00256	0400	0.64	09308	1650	26-JAN-2007 02:18:26.84

UST Number: JMLT21AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 1-D File: [quad1.sample.D]JMLT21AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD1.BKGRND]CURRENT.D_1;3197

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00068	0050	01161	1650	25-JAN-2007 13:41:03.28
2	00000	00043	0050	01147	1650	25-JAN-2007 14:31:18.38
3	00000	00048	0050	01160	1650	25-JAN-2007 15:26:34.00

Bkg File: [quad1.bkgrnd]2007-01-25_0236.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00245	0400	0.61	09272	1650	25-JAN-2007 02:36:11.56

UST Number: JMLT21AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-A File: [quad2.sample.A]JMLT21AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.A_1;3737

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00027	0050	01159	1810	26-JAN-2007 05:54:01.12

Bkg File: [quad2.bkgrnd]2007-01-26_0218.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00111	0400	0.28	09324	1810	26-JAN-2007 02:18:37.01

UST Number: JMLT61AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-A File: [quad2.sample.A]JMLT61AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.A_1;3736

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00032	0050	01169	1810	25-JAN-2007 13:41:17.04
2	00000	00020	0050	01158	1810	25-JAN-2007 14:36:32.77
3	00000	00012	0050	01176	1810	25-JAN-2007 15:31:48.38

Bkg File: [quad2.bkgrnd]2007-01-25_0236.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00069	0400	0.17	09319	1810	25-JAN-2007 02:36:16.24

UST Number: JMLT61AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-C File: [quad2.sample.C]JMLT61AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.C_1;3735

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00014	0050	01159	1810	26-JAN-2007 05:54:01.12

Bkg File: [quad2.bkgrnd]2007-01-26_0218.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00100	0400	0.25	09324	1810	26-JAN-2007 02:18:37.01

UST Number: JMLT71AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-B File: [quad2.sample.B]JMLT71AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.B_1;3733

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00036	0050	01169	1810	25-JAN-2007 13:41:17.04
2	00000	00020	0050	01158	1810	25-JAN-2007 14:36:32.77
3	00000	00021	0050	01176	1810	25-JAN-2007 15:31:48.38

Bkg File: [quad2.bkgrnd]2007-01-25_0236.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00109	0400	0.27	09319	1810	25-JAN-2007 02:36:16.24

UST Number: JMLT71AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 2-D File: [quad2.sample.D]JMLT71AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.D_1;3734

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00011	0050	01159	1810	26-JAN-2007 05:54:01.12

Bkg File: [quad2.bkgrnd]2007-01-26_0218.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00110	0400	0.28	09324	1810	26-JAN-2007 02:18:37.01

UST Number: JMLT81AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-C File: [quad2.sample.C]JMLT81AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.C_1;3734

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00026	0050	01169	1810	25-JAN-2007 13:41:17.04
2	00000	00022	0050	01158	1810	25-JAN-2007 14:36:32.77
3	00000	00021	0050	01176	1810	25-JAN-2007 15:31:48.38

Bkg File: [quad2.bkgrnd]2007-01-25_0236.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00091	0400	0.23	09319	1810	25-JAN-2007 02:36:16.24

UST Number: JMLT81AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JMLT81AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.A_1;5652

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00011	0050	01244	1920	26-JAN-2007 05:49:08.07

Bkg File: [quad3.bkgrnd]2007-01-26_0218.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00145	0400	0.36	09912	1920	26-JAN-2007 02:18:43.74

UST Number: JMLVA1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-D File: [quad2.sample.D]JMLVA1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD2.BKGRND]CURRENT.D_1;3733

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00026	0050	01169	1810	25-JAN-2007 13:41:17.04
2	00000	00026	0050	01158	1810	25-JAN-2007 14:36:32.77
3	00000	00020	0050	01176	1810	25-JAN-2007 15:31:48.38

Bkg File: [quad2.bkgrnd]2007-01-25_0236.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00076	0400	0.19	09319	1810	25-JAN-2007 02:36:16.24

UST Number: JMLVA1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JMLVA1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.B_1;5660

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00014	0050	01244	1920	26-JAN-2007 05:49:08.07

Bkg File: [quad3.bkgrnd]2007-01-26_0218.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00156	0400	0.39	09912	1920	26-JAN-2007 02:18:43.74

UST Number: JMLVW1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-A File: [quad3.sample.A]JMLVW1AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.A_1;5651

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00036	0050	01232	1920	25-JAN-2007 13:36:26.09
2	00000	00016	0050	01254	1920	25-JAN-2007 14:31:41.77
3	00000	00014	0050	01256	1920	25-JAN-2007 15:21:56.62

Bkg File: [quad3.bkgrnd]2007-01-25_0236.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00084	0400	0.21	09928	1920	25-JAN-2007 02:36:25.37

UST Number: JMLVW1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JMLVW1AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.C_1;5665

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00018	0050	01244	1920	26-JAN-2007 05:49:08.07

Bkg File: [quad3.bkgrnd]2007-01-26_0218.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00137	0400	0.34	09912	1920	26-JAN-2007 02:18:43.74

UST Number: JMLV31AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-B File: [quad3.sample.B]JMLV31AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.B_1;5659

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00042	0050	01232	1920	25-JAN-2007 13:36:26.09
2	00000	00017	0050	01254	1920	25-JAN-2007 14:31:41.77
3	00000	00021	0050	01256	1920	25-JAN-2007 15:21:56.62

Bkg File: [quad3.bkgrnd]2007-01-25_0236.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00097	0400	0.24	09928	1920	25-JAN-2007 02:36:25.37

UST Number: JMLV31AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JMLV31AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.A_1;5669

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01191	1850	26-JAN-2007 05:49:17.55

Bkg File: [quad4.bkgrnd]2007-01-26_0218.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00126	0400	0.32	09630	1850	26-JAN-2007 02:18:53.12

UST Number: JMLV51AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-C File: [quad3.sample.C]JMLV51AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.C_1;5664

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00033	0050	01232	1920	25-JAN-2007 13:36:26.09
2	00000	00022	0050	01254	1920	25-JAN-2007 14:31:41.77
3	00000	00017	0050	01256	1920	25-JAN-2007 15:21:56.62

Bkg File: [quad3.bkgrnd]2007-01-25_0236.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00101	0400	0.25	09928	1920	25-JAN-2007 02:36:25.37

UST Number: JMLV51AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JMLV51AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.B_1;5668

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00018	0050	01191	1850	26-JAN-2007 05:49:17.55

Bkg File: [quad4.bkgrnd]2007-01-26_0218.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00114	0400	0.29	09630	1850	26-JAN-2007 02:18:53.12

UST Number: JMLV81AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-D File: [quad3.sample.D]JMLV81AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD3.BKGRND]CURRENT.D_1;5649

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00024	0050	01232	1920	25-JAN-2007 13:36:26.09
2	00000	00020	0050	01254	1920	25-JAN-2007 14:31:41.77
3	00000	00013	0050	01256	1920	25-JAN-2007 15:21:56.62

Bkg File: [quad3.bkgrnd]2007-01-25_0236.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00116	0400	0.29	09928	1920	25-JAN-2007 02:36:25.37

UST Number: JMLV81AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JMLV81AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.C_1;5671

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00010	0050	01191	1850	26-JAN-2007 05:49:17.55

Bkg File: [quad4.bkgrnd]2007-01-26_0218.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00138	0400	0.35	09630	1850	26-JAN-2007 02:18:53.12

UST Number: JMLV91AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-A File: [quad4.sample.A]JMLV91AD.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.A_1;5668

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00025	0050	01206	1850	25-JAN-2007 13:36:35.15
2	00000	00019	0050	01200	1850	25-JAN-2007 14:31:50.96
3	00000	00021	0050	01220	1850	25-JAN-2007 15:22:05.79

Bkg File: [quad4.bkgrnd]2007-01-25_0231.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00082	0400	0.21	09589	1850	25-JAN-2007 02:31:30.09

UST Number: JMLV91AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-D File: [quad4.sample.D]JMLV91AD.430
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.D_1;5685

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00009	0050	01191	1850	26-JAN-2007 05:49:17.55

Bkg File: [quad4.bkgrnd]2007-01-26_0218.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00123	0400	0.31	09630	1850	26-JAN-2007 02:18:53.12

UST Number: JMN9F1AA Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-B File: [quad4.sample.B]JMN9F1AA.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.B_1;5667

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00025	0050	01206	1850	25-JAN-2007 13:36:35.15
2	00000	00021	0050	01200	1850	25-JAN-2007 14:31:50.96
3	00000	00019	0050	01220	1850	25-JAN-2007 15:22:05.79

Bkg File: [quad4.bkgrnd]2007-01-25_0231.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00114	0400	0.29	09589	1850	25-JAN-2007 02:31:30.09

UST Number: JMN9F1AA Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-A File: [quad7.sample.A]JMN9F1AA.430
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.A_1;3149

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00043	0050	01141	1700	26-JAN-2007 06:51:07.04

Bkg File: [quad7.bkgrnd]2007-01-25_2356.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00303	0400	0.76	09263	1700	25-JAN-2007 23:56:15.07

UST Number: JMN9F1AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-C File: [quad4.sample.C]JMN9F1AC.180
Dish Size: 1 Bkg File: $DISK1:[QUAD4.BKGRND]CURRENT.C_1;5670

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00151	0050	01206	1850	25-JAN-2007 13:36:35.15
2	00000	00114	0050	01200	1850	25-JAN-2007 14:31:50.96
3	00000	00103	0050	01220	1850	25-JAN-2007 15:22:05.79

Bkg File: [quad4.bkgrnd]2007-01-25_0231.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00129	0400	0.32	09589	1850	25-JAN-2007 02:31:30.09

UST Number: JMN9F1AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 7-B File: [quad7.sample.B]JMN9F1AC.430
Dish Size: 1 Bkg File: $DISK1:[QUAD7.BKGRND]CURRENT.B_1;3136

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00052	0050	01141	1700	26-JAN-2007 06:51:07.04

Bkg File: [quad7.bkgrnd]2007-01-25_2356.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00288	0400	0.72	09263	1700	25-JAN-2007 23:56:15.07

RADIUM 226

SAMPLE AND QC DATA

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

1/29/2007 11:14:17 AM

Lot No., Due Date: J7A090287,J7A100115,J7A100118; 02/06/2007

Client, Site: 536403; AIR MONITORING Yerington Mine

QC Batch No., Method Test: 7011225; RRA2267 Ra-226 by ASC-7

SDG, Matrix: 33442,33443,33444; 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 **Date** 1/29/07

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 7011225

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: Sherry L R Adam Date: 1-29-07

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

STL RICHLAND

1/16/2007 7:10:47 AM

536403, Brown and Caldwell , Brown & Caldwell

AnalyDueDate: 02/05/2007

Sample Preparation/Analysis

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

Balance Id:1120373922,1120403183

Pipet #:

Sep1 DT/Tm Tech: XL 1/17/07 9:47

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Batch: 7011225 FILTER pCi/sampl PM, Quote: SA , 63174
SEQ Batch, Test: 7011229, BXTF
All Tests: 7011219 9NS1, 7011221 BAS7, 7011225 BXTE, 7011229 BXTF,

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 JMK81-1-AC J7A090287-1-SAMP	0.833sa,g	531.15sa,g	150.19g,in	0.2355g 7.4904 = 7.558 .9911 ✓	RATA25303 01/03/07	100	05	1241	1/19/07 1/19/07 1505 p 3HA 1/24/07 1100 p	
12/05/2006 12:25		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
2 JMLA1-1-AC J7A090287-2-SAMP	0.833sa,g	502.71sa,g	150.39g,in	0.2492g 7.4904 = 7.588 .9871 ✓	RATA25304 01/03/07		04	1242	1/17/07 1/19/07 1505 p 6RA 1/24/07 1053 p	
12/05/2006 12:10		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
3 JMLA4-1-AC J7A090287-3-SAMP	0.833sa,g	516.54sa,g	150.15g,in	0.2421g 7.4809 = 7.903 .9466 ✓	RATA25305 01/03/07		07	1242	1/17/07 1/19/07 1505 p GSA 1/24/07 1100 p	
12/05/2006 12:45		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
4 JMLA7-1-AC J7A090287-4-SAMP	0.833sa,g	519.32sa,g	150.24g,in	0.241g 7.5000 = 7.945 .9440 ✓	RATA25306 01/03/07		04	1242	1/17/07 1/19/07 1505 p ASC 1/24/07 1101 p	
12/05/2006 12:30		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:

1/16/2007 7:10:50 AM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011225 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 7011229, BXTF

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
5 JMLA8-1-AC J7A090287-5-SAMP	0.833sa,g	500.78sa,g	150.69g,in	0.2507g 7.4332 = 6.767 1.0984 ✓	RATA25307 01/03/07	100	G8	AU2 1/19/07 1505 JMB 1/24/07 1124p	1/17/07	
12/05/2006 12:50		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:	Beta:	
6 JMLT2-1-AC J7A100115-1-SAMP	0.833sa,g	524.49sa,g	150.01g,in	0.2382g 7.4809 = 7.240 1.0333 ✓	RATA25308 01/03/07		G4	1320 1/19/07 1505 KME 1/24/07 1116p	1/17/07 OD	
12/11/2006 11:40		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:	Beta:	
7 JMLT6-1-AC J7A100115-2-SAMP	0.833sa,g	532.31sa,g	150.08g,in	0.2349g 7.5095 = 7.114 1.0556 ✓	RATA25309 01/03/07		G7	1320 1/19/07 1530 PMA 1/24/07 1121p	1/17/07 OD	
12/11/2006 12:00		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:	Beta:	
8 JMLT7-1-AC J7A100115-3-SAMP	0.833sa,g	527.80sa,g	150.17g,in	0.237g 7.5286 = 7.686 .9795 ✓	RATA25310 01/03/07		G6	1320 1/19/07 ~~151~~p 1530p 7HB 1/24/07 1121p	1/17/07 OD	
12/11/2006 12:15		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:	Beta:	

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 2 ISV - Insufficient Volume for Analysis WO Cnt: 8
Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added Prep_SamplePrep v4.8.26

1/16/2007 7:10:51 AM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown & Caldwell

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

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011225 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 7011229, BXTF

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
9 JMLT8-1-AC J7A100115-4-SAMP	0.833sa,g	503.04sa,g	150.10g,in	0.2486g 7.5572 = 6.368 1.1867 ✓	RATA25311 01/03/07	100	G8	1321	1/17/07 ORD	
									1/19/07	1530 p ~~1505 p~~
								1RH	1/24/07	1156 p
12/11/2006 11:45		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
10 JMLVA-1-AC J7A100115-5-SAMP	0.833g	511.47g	150.26g,in	0.2447g 7.5190 = 8.383 .8969 ✓	RATA25312 01/03/07		G5	1321	1/17/07 ORD	
									1/19/07	1530 p ~~1505 p~~
								2RC	1/24/07	1146 p
12/11/2006 12:20		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
11 JMLVW-1-AC J7A100118-1-SAMP	0.833g	502.79g	150.23g,in	0.2489g 7.4904 = ~~8.383~~ AL 1/17/07 7.97 .9398 ✓	RATA25313 01/03/07		9"	1321	1/17/07 ORD	
									1/19/07	1530 p
								4UA	1/24/07	1149 p
12/13/2006 12:10		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
12 JMLV3-1-AC J7A100118-2-SAMP	0.833sa,g	507.51sa,g	150.25g,in	0.2466g 7.5095 = 7.57 .9920 ✓	RATA25314 01/03/07		G7	1356	1/17/07	
									1/19/07	1530 p
								8RD	1/24/07	1154 p
12/13/2006 12:43		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:

STL RICHLAND

1/16/2007 7:10:51 AM

Sample Preparation/Analysis

Balance Id:1120373922,1120373922,1120

536403, Brown and Caldwell , Brown & Caldwell

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

Pipet #:

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011225 FILTER pCi/sampl PM, Quote: SA , 63174

SEQ Batch, Test: 7011229, BXTF

Sep2 DT/Tm Tech:

Prep Tech: WoodT,HarrisonJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
13 JMLV5-1-AC J7A100118-3-SAMP	0.833sa,g	510.86sa,g	150.11g,in	0.2448g 7.5000 = 7.046 1.0644 ✓	RATA25315 01/03/07	100	65	1356	1/17/07 1550 P 1/19/07 ~~1530~~ P LMC 1/24/07 1311 P	
12/13/2006 13:15		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
14 JMLV8-1-AC J7A100118-4-SAMP	0.833sa,g	504.92sa,g	150.22g,in	0.2478g 7.5190 = 6.775 1.1098 ✓	RATA25316 01/03/07		64	1357	1/17/07 1550 P 1/19/07 ~~1530~~ P GRA 1/24/07 1304 P	
12/13/2006 13:18		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
15 JMLV9-1-AC J7A100118-5-SAMP	0.833sa,g	511.81sa,g	150.27g,in	0.2446g 7.5286 = 7.465 1.0085 ✓	RATA25317 01/03/07		67	1357	1/17/07 1550 P 1/19/07 ~~1530~~ P NMA 1/24/07 1309 P	
12/13/2006 13:21		AmtRec: FILTER		#Containers: 1			Scr:	Alpha:		Beta:
16 JMN85-1-AA-B J7A110000-225-BLK			152.17g,in	152.17g 7.4522 = 6.913 1.0780 ✓	RATA25318 01/03/07		66	1357	1/17/07 1550 P 1/19/07 ~~1530~~ P MRA 1/24/07 1319 P	
12/05/2006 12:25		AmtRec:		#Containers: 1			Scr:	Alpha:		Beta:

1/16/2007 7:10:53 AM

Sample Preparation/Analysis

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

Balance Id:1120373922,1120373922,1120

Pipet #:

AnalyDueDate: 02/05/2007

Sep1 DT/Tm Tech:

Batch: 7011225 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:
17 JMN85-1-AC-C			150.10g,in	150.10g	RASC4320 11/22/06	100				
J7A110000-225-LCS				7.5087			68	1357	1/17/07	
				7.835				1/19/07	1550p	
				.9584 ✓			QMB ~~QMB~~ p	1/24/07	1320 p	

12/05/2006 12:25 AmtRec: #Containers: 1 Scr: Alpha: Beta:

Comments:

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

JMK811AC-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:

JMN851AA-BLK:

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

JMN851AC-LCS:

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

JMK811AC-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JMN851AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
JMN851AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

1/29/2007 11:13:44 AM

ICOC Fraction Transfer/Status Report

ByDate: 1/29/2006, 2/3/2007, Batch: '7011225', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
7011225						
AC		**CalcC**	**WoodT**	1/15/2007 12:31:12		
SC			wagarr	IsBatched	1/11/2007 11:25:28 AM	ICOC_RADCALC v4.8.26
SC			WoodT	Prep1C	1/15/2007 12:31:12 PM	RICH-RC-5016 REVISION 5
SC			HarrisonJ	InPrep	1/16/2007 6:49:39 AM	RICH-RC-5005 Revision 5
SC			LongA	Sep1C	1/17/2007 9:56:55 AM	RICH-RC-5005 REVISION 5
SC			BlackCL	InCnt1	1/17/2007 10:47:29 AM	RICH-RD-0007 REVISION 5
SC			DAWKINSO	Cnt1C	1/17/2007 2:39:44 PM	RICH-RD-0007 REVISION 5
SC			PetersonJ	InSep2	1/19/2007 4:09:31 PM	RICH-RC-5005 REVISION 5
SC			PetersonJ	CalcC	1/25/2007 7:52:36 AM	RICH-RC-5005 REVISION 5
AC			**HarrisonJ**	1/16/2007 6:49:39		
AC			**LongA**	1/17/2007 9:56:55		
AC			**BlackCL**	1/17/2007 10:47:29		
AC			**DAWKINSO**	1/17/2007 2:39:44 PM		
AC			**PetersonJ**	1/19/2007 4:09:31 PM		
AC			**PetersonJ**	1/25/2007 7:52:36		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 7

ICOCFractions v4.8.26

1/29/2007 11:13:43 AM

Rpt DB Transfer log (Batch Results)

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Matrix / Cnt Uncert	Received Date / Tot Uncert	Mda	Sample Date / Units	Expected	Yield	Volumes
33442	**9JMK8110**			**J7A0902871**	P-0812	FILTER	1/8/2007 10:00:00		12/5/2006 12:25:00 PM			
ALPHA	BAS7		0	1/23/2007 7:52:27 PM	**7.3565E+00**	1.942E+00	2.126E+00	5.371E+00	PCI/SA	1.0	1.0E+0	1.971E-2
RA-226	BXTE		0	1/24/2007 2:00:00 PM	**-1.8572E-02**	2.11E-01	2.11E-01	8.045E-01	PCI/SA	1.009	1.0E+0	2.355E-1
TH-228	9NS1		0	1/17/2007 10:03:53 PM	**3.9481E-06**	8.376E-02	8.376E-02	4.25E-01	PCI/SA	0.953	1.0E+0	7.881E-2
TH-230	9NS1		0	1/17/2007 10:03:53 PM	**3.0258E-01**	1.086E-01	1.116E-01	2.269E-01	PCI/SA	0.953	1.0E+0	7.881E-2
TH-232	9NS1		0	1/17/2007 10:03:53 PM	**-3.7821E-02**	4.632E-02	4.643E-02	2.784E-01	PCI/SA	0.953	1.0E+0	7.881E-2
33442	**9JMLA110**			**J7A0902872**	P-0813	FILTER	1/8/2007 10:00:00		12/5/2006 12:10:00 PM			
ALPHA	BAS7		0	1/23/2007 7:52:27 PM	**5.0205E+00**	1.488E+00	1.593E+00	3.811E+00	PCI/SA	1.0	1.0E+0	2.076E-2
RA-226	BXTE		0	1/24/2007 1:53:00 PM	**2.6875E-01**	2.135E-01	2.152E-01	7.447E-01	PCI/SA	1.013	1.0E+0	2.492E-1
TH-228	9NS1		0	1/17/2007 10:04:06 PM	**7.7868E-02**	1.828E-01	1.829E-01	8.388E-01	PCI/SA	0.438	1.0E+0	8.298E-2
TH-230	9NS1		0	1/17/2007 10:04:06 PM	**2.2391E-01**	1.346E-01	1.362E-01	4.477E-01	PCI/SA	0.438	1.0E+0	8.298E-2
TH-232	9NS1		0	1/17/2007 10:04:06 PM	**0.0E+00**	0.0E+00	8.345E-02	4.477E-01	PCI/SA	0.438	1.0E+0	8.298E-2
33442	**9JMLA410**			**J7A0902873**	P-0814	FILTER	1/8/2007 10:00:00		12/5/2006 12:45:00 PM			
ALPHA	BAS7		0	1/23/2007 7:52:27 PM	**1.021E+01**	2.124E+00	2.428E+00	5.17E+00	PCI/SA	1.0	1.0E+0	2.024E-2
RA-226	BXTE		0	1/24/2007 2:00:00 PM	**-2.0119E-01**	1.475E-01	1.489E-01	6.547E-01	PCI/SA	1.056	1.0E+0	2.421E-1
TH-228	9NS1		0	1/17/2007 10:04:25 PM	**1.8576E-01**	1.273E-01	1.283E-01	4.461E-01	PCI/SA	0.833	1.0E+0	8.115E-2
TH-230	9NS1		0	1/17/2007 10:04:25 PM	**1.271E-01**	9.165E-02	9.234E-02	3.05E-01	PCI/SA	0.833	1.0E+0	8.115E-2
TH-232	9NS1		0	1/17/2007 10:04:25 PM	**-2.5423E-02**	5.684E-02	5.689E-02	3.05E-01	PCI/SA	0.833	1.0E+0	8.115E-2
33442	**9JMLA710**			**J7A0902874**	P-0815	FILTER	1/8/2007 10:00:00		12/5/2006 12:30:00 PM			
ALPHA	BAS7		0	1/23/2007 7:52:27 PM	**8.5202E+00**	1.921E+00	2.163E+00	4.521E+00	PCI/SA	1.0	1.0E+0	2.008E-2
RA-226	BXTE		0	1/24/2007 2:01:01 PM	**4.2187E-01**	1.722E-01	1.783E-01	5.027E-01	PCI/SA	1.059	1.0E+0	2.41E-1
TH-228	9NS1		0	1/17/2007 10:04:10 PM	**1.636E-01**	8.016E-02	8.133E-02	2.01E-01	PCI/SA	0.996	1.0E+0	8.039E-2
TH-230	9NS1		0	1/17/2007 10:04:10 PM	**9.5387E-02**	5.94E-02	5.994E-02	1.632E-01	PCI/SA	0.996	1.0E+0	8.039E-2
TH-232	9NS1		0	1/17/2007 10:04:10 PM	**2.044E-02**	3.54E-02	3.544E-02	1.925E-01	PCI/SA	0.996	1.0E+0	8.039E-2
33442	**9JMLA810**			**J7A0902875**	000580	FILTER	1/8/2007 10:00:00		12/5/2006 12:50:00 PM			
ALPHA	BAS7		0	1/23/2007 7:52:27 PM	**1.2459E+01**	2.199E+00	2.634E+00	4.493E+00	PCI/SA	1.0	1.0E+0	2.094E-2
RA-226	BXTE		0	1/24/2007 2:24:00 PM	**5.1999E-01**	1.387E-01	1.49E-01	3.12E-01	PCI/SA	0.91	1.0E+0	2.507E-1
TH-228	9NS1		0	1/17/2007 10:04:38 PM	**1.1513E-01**	7.339E-02	7.403E-02	2.472E-01	PCI/SA	0.893	1.0E+0	8.345E-2
TH-230	9NS1		0	1/17/2007 10:04:38 PM	**3.6534E-01**	1.147E-01	1.188E-01	1.948E-01	PCI/SA	0.893	1.0E+0	8.345E-2
TH-232	9NS1		0	1/17/2007 10:04:38 PM	**2.757E-02**	3.515E-02	3.523E-02	1.651E-01	PCI/SA	0.893	1.0E+0	8.345E-2
33443	**9JMLT210**			**J7A1001151**	P-0816	FILTER	1/8/2007 10:00:00		12/11/2006 11:40:00 AM			
ALPHA	BAS7		0	1/24/2007 11:27:16	**2.4671E+01**	3.073E+00	4.223E+00	4.533E+00	PCI/SA	1.0	1.0E+0	1.987E-2
RA-226	BXTE		0	1/24/2007 2:16:00 PM	**1.7788E-02**	1.722E-01	1.722E-01	6.813E-01	PCI/SA	0.968	1.0E+0	2.382E-1
TH-228	9NS1		0	1/17/2007 10:04:53 PM	**6.9525E-02**	8.978E-02	8.998E-02	3.897E-01	PCI/SA	1.034	1.0E+0	7.981E-2
TH-230	9NS1		0	1/17/2007 10:04:53 PM	**1.7867E-01**	9.209E-02	9.337E-02	2.679E-01	PCI/SA	1.034	1.0E+0	7.981E-2
TH-232	9NS1		0	1/17/2007 10:04:53 PM	**4.4668E-02**	4.994E-02	5.009E-02	2.679E-01	PCI/SA	1.034	1.0E+0	7.981E-2
33443	**9JMLT610**			**J7A1001152**	P-0817	FILTER	1/8/2007 10:00:00		12/11/2006 12:00:00 PM			
ALPHA	BAS7		0	1/24/2007 11:27:16	**1.7047E+01**	2.595E+00	3.236E+00	4.148E+00	PCI/SA	1.0	1.0E+0	1.972E-2
RA-226	BXTE		0	1/24/2007 2:21:00 PM	**1.9821E-01**	1.103E-01	1.122E-01	3.539E-01	PCI/SA	0.947	1.0E+0	2.349E-1
TH-228	9NS1		0	1/17/2007 10:05:00 PM	**3.2653E-01**	1.361E-01	1.391E-01	3.264E-01	PCI/SA	0.925	1.0E+0	7.84E-2
TH-230	9NS1		0	1/17/2007 10:05:00 PM	**3.1463E-01**	1.311E-01	1.34E-01	3.145E-01	PCI/SA	0.925	1.0E+0	7.84E-2
TH-232	9NS1		0	1/17/2007 10:05:00 PM	**0.0E+00**	0.0E+00	5.863E-02	3.145E-01	PCI/SA	0.925	1.0E+0	7.84E-2
33443	**9JMLT710**			**J7A1001153**	P-0818	FILTER	1/8/2007 10:00:00		12/11/2006 12:15:00 PM			
ALPHA	BAS7		0	1/24/2007 11:27:16	**2.0458E+01**	2.807E+00	3.665E+00	4.808E+00	PCI/SA	1.0	1.0E+0	1.987E-2
RA-226	BXTE		0	1/24/2007 2:21:00 PM	**1.2927E+00**	3.086E-01	3.34E-01	9.176E-01	PCI/SA	1.021	1.0E+0	2.37E-1
TH-228	9NS1		0	1/17/2007 10:06:45 PM	**1.0138E-01**	8.838E-02	8.88E-02	3.408E-01	PCI/SA	1.003	1.0E+0	7.935E-2
TH-230	9NS1		0	1/17/2007 10:06:45 PM	**1.9537E-02**	4.368E-02	4.372E-02	2.344E-01	PCI/SA	1.003	1.0E+0	7.935E-2
TH-232	9NS1		0	1/17/2007 10:06:45 PM	**-1.9536E-02**	4.368E-02	4.372E-02	2.344E-01	PCI/SA	1.003	1.0E+0	7.935E-2
33443	**9JMLT810**			**J7A1001154**	P-0819	FILTER	1/8/2007 10:00:00		12/11/2006 11:45:00 AM			
ALPHA	BAS7		0	1/24/2007 11:27:16	**1.0219E+00**	9.422E-01	9.498E-01	3.921E+00	PCI/SA	1.0	1.0E+0	2.078E-2
RA-226	BXTE		0	1/24/2007 2:56:00 PM	**5.1854E-01**	2.588E-01	2.642E-01	8.595E-01	PCI/SA	0.843	1.0E+0	2.486E-1
TH-228	9NS1		0	1/17/2007 10:06:45 PM	**5.0395E-02**	7.968E-02	7.98E-02	3.709E-01	PCI/SA	0.746	1.0E+0	8.314E-2

7011225, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 15,
**Results Inserted | ReTestInserted | Updated | NotInserted => 17 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Matrix / Cnt Uncert	Received Date / Tot Uncert	Sample Date / Mda	Units	Expected	Yield	Volumes	
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**9.7115E-02**	9.084E-02	9.125E-02	3.574E-01	PCI/SA		0.746	1.0E+0	8.314E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**-2.4278E-02**	5.429E-02	5.433E-02	2.912E-01	PCI/SA		0.746	1.0E+0	8.314E-2
33444	**9JMLV310**			**J7A1001182**	P-0821	FILTER	1/8/2007 10:00:00	12/13/2006 12:43:00 PM					
ALPHA	BAS7	0		1/24/2007 2:12:29 PM	**6.7087E+00**	1.697E+00	1.86E+00	3.988E+00	PCI/SA		1.0	1.0E+0	2.057E-2
RA-226	BXTE	0		1/24/2007 2:54:00 PM	**3.1557E-01**	1.534E-01	1.566E-01	4.799E-01	PCI/SA		1.008	1.0E+0	2.466E-1
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**2.1713E-01**	9.95E-02	1.013E-01	2.605E-01	PCI/SA		0.883	1.0E+0	8.297E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**1.4675E-01**	8.644E-02	8.737E-02	2.515E-01	PCI/SA		0.883	1.0E+0	8.297E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**1.2578E-01**	7.559E-02	7.637E-02	2.515E-01	PCI/SA		0.883	1.0E+0	8.297E-2
33444	**9JMLV510**			**J7A1001183**	P-0822	FILTER	1/8/2007 10:00:00	12/13/2006 1:15:00 PM					
ALPHA	BAS7	0		1/24/2007 2:12:29 PM	**5.6103E+00**	1.643E+00	1.766E+00	4.653E+00	PCI/SA		1.0	1.0E+0	2.053E-2
RA-226	BXTE	0		1/24/2007 4:11:00 PM	**9.3611E-02**	1.635E-01	1.638E-01	6.092E-01	PCI/SA		0.939	1.0E+0	2.448E-1
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**-4.4948E-02**	6.357E-02	6.369E-02	4.174E-01	PCI/SA		0.869	1.0E+0	8.203E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**3.472E-01**	1.247E-01	1.283E-01	2.603E-01	PCI/SA		0.869	1.0E+0	8.203E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**0.0E+00**	0.0E+00	4.852E-02	2.603E-01	PCI/SA		0.869	1.0E+0	8.203E-2
33444	**9JMLV810**			**J7A1001184**	P-0824	FILTER	1/8/2007 10:00:00	12/13/2006 1:18:00 PM					
ALPHA	BAS7	0		1/24/2007 2:12:29 PM	**3.332E-02**	7.576E-01	7.576E-01	3.963E+00	PCI/SA		1.0	1.0E+0	2.066E-2
RA-226	BXTE	0		1/24/2007 4:04:00 PM	**2.912E-01**	1.92E-01	1.944E-01	6.561E-01	PCI/SA		0.901	1.0E+0	2.478E-1
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**0.0E+00**	0.0E+00	8.769E-02	4.705E-01	PCI/SA		0.55	1.0E+0	8.28E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**1.136E-01**	1.136E-01	1.141E-01	4.542E-01	PCI/SA		0.55	1.0E+0	8.28E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**1.136E-01**	1.136E-01	1.141E-01	4.542E-01	PCI/SA		0.55	1.0E+0	8.28E-2
33444	**9JMLV910**			**J7A1001185**	P-0582	FILTER	1/8/2007 10:00:00	12/13/2006 1:21:00 PM					
ALPHA	BAS7	0		1/24/2007 2:12:29 PM	**4.1991E+00**	1.476E+00	1.555E+00	4.504E+00	PCI/SA		1.0	1.0E+0	2.041E-2
RA-226	BXTE	0		1/24/2007 4:09:00 PM	**1.5627E-01**	1.511E-01	1.52E-01	5.415E-01	PCI/SA		0.992	1.0E+0	2.446E-1
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**8.0735E-02**	6.055E-02	6.094E-02	2.421E-01	PCI/SA		0.905	1.0E+0	8.161E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**3.5078E-01**	1.185E-01	1.223E-01	2.338E-01	PCI/SA		0.905	1.0E+0	8.161E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**0.0E+00**	0.0E+00	4.358E-02	2.338E-01	PCI/SA		0.905	1.0E+0	8.161E-2
33443	**9JMLVA10**			**J7A1001155**	000581	FILTER	1/8/2007 10:00:00	12/11/2006 12:20:00 PM					
ALPHA	BAS7	0		1/24/2007 11:27:16	**2.6821E+01**	3.115E+00	4.452E+00	4.498E+00	PCI/SA		1.0	1.0E+0	2.05E-2
RA-226	BXTE	0		1/24/2007 2:46:00 PM	**3.0858E-02**	1.647E-01	1.648E-01	6.393E-01	PCI/SA		1.115	1.0E+0	2.447E-1
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**2.3414E-01**	1.352E-01	1.369E-01	4.373E-01	PCI/SA		0.864	1.0E+0	8.202E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**2.5068E-01**	1.149E-01	1.171E-01	3.007E-01	PCI/SA		0.864	1.0E+0	8.202E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**1.5041E-01**	9.038E-02	9.143E-02	3.007E-01	PCI/SA		0.864	1.0E+0	8.202E-2
33444	**9JMLVW10**			**J7A1001181**	P-0820	FILTER	1/8/2007 10:00:00	12/13/2006 12:10:00 PM					
ALPHA	BAS7	0		1/24/2007 2:12:29 PM	**4.4092E+00**	1.473E+00	1.564E+00	4.308E+00	PCI/SA		1.0	1.0E+0	2.084E-2
RA-226	BXTE	0		1/24/2007 2:49:00 PM	**2.1515E-01**	1.582E-01	1.597E-01	5.494E-01	PCI/SA		1.064	1.0E+0	2.489E-1
TH-228	9NS1	0		1/17/2007 10:06:45 PM	**8.4482E-02**	8.448E-02	8.484E-02	3.378E-01	PCI/SA		0.801	1.0E+0	8.348E-2
TH-230	9NS1	0		1/17/2007 10:06:45 PM	**2.447E-01**	1.246E-01	1.266E-01	3.262E-01	PCI/SA		0.801	1.0E+0	8.348E-2
TH-232	9NS1	0		1/17/2007 10:06:45 PM	**5.4377E-02**	6.079E-02	6.1E-02	3.262E-01	PCI/SA		0.801	1.0E+0	8.348E-2
33442	**JMN851AB**			**J7A110000225**	INTRA-LAB BLANK	FILTER	1/8/2007 10:00:00	12/5/2006 12:25:00 PM					
RA-226	BXTE	0	B	1/24/2007 4:19:00 PM	**1.8647E-04**	2.203E-04	2.212E-04	8.118E-04	PCI/SA		0.928	1.0E+0	1.522E+2
33442	**JMN851CS**			**J7A110000225**	INTRA-LAB CHECK	FILTER	1/8/2007 10:00:00	12/5/2006 12:25:00 PM					
RA-226	BXTE	0	S	1/24/2007 4:20:00 PM	**7.278E-03**	5.529E-04	9.375E-04	5.242E-04	PCI/SA	9.188E-03	1.043	1.0E+0	1.501E+2

7011225, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 15,
**Results Inserted | ReTestInserted | Updated | NotInserted => 17 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 7011225

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

1/25/2007 7:49:04 AM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Ra-226 by ASC-7				Richland Standard Ra-226/Ra-228 Deem Wo Blk Subt.										
Calc	TE	FILTER	JMK811AC	RA-226	-1.86E-02	(2.11E-01)	U4	PCI/SA	R	3.65E-01	8.04E-01		101%	
Calc	TE	FILTER	JMLA11AC	RA-226	2.69E-01	(2.15E-01)	U4	PCI/SA	R	3.38E-01	7.45E-01		101%	
Calc	TE	FILTER	JMLA41AC	RA-226	-2.01E-01	(1.49E-01)	U4	PCI/SA	R	2.87E-01	6.55E-01		106%	
Calc	TE	FILTER	JMLA71AC	RA-226	4.22E-01	(1.78E-01)		PCI/SA	R	2.00E-01	5.03E-01		106%	
Calc	TE	FILTER	JMLA81AC	RA-226	5.20E-01	(1.49E-01)		PCI/SA	R	1.18E-01	3.12E-01		91%	
Calc	TE	FILTER	JMLT21AC	RA-226	1.78E-02	(1.72E-01)	U4	PCI/SA	R	2.93E-01	6.81E-01		97%	
Calc	TE	FILTER	JMLT61AC	RA-226	1.98E-01	(1.12E-01)		PCI/SA	R	1.38E-01	3.54E-01		95%	
Calc	TE	FILTER	JMLT71AC	RA-226	1.29E+00	(3.34E-01)		PCI/SA	R	4.23E-01	9.18E-01		102%	
Calc	TE	FILTER	JMLT81AC	RA-226	5.19E-01	(2.64E-01)		PCI/SA	R	3.89E-01	8.60E-01		84%	
Calc	TE	FILTER	JMLVA1AC	RA-226	3.09E-02	(1.65E-01)	U4	PCI/SA	R	2.78E-01	6.39E-01		111%	
Calc	TE	FILTER	JMLVW1AC	RA-226	2.15E-01	(1.60E-01)	U4	PCI/SA	R	2.36E-01	5.49E-01		106%	
Calc	TE	FILTER	JMLV31AC	RA-226	3.16E-01	(1.57E-01)		PCI/SA	R	1.93E-01	4.80E-01		101%	
Calc	TE	FILTER	JMLV51AC	RA-226	9.36E-02	(1.64E-01)	U4	PCI/SA	R	2.67E-01	6.09E-01		94%	
Calc	TE	FILTER	JMLV81AC	RA-226	2.91E-01	(1.94E-01)	U4	PCI/SA	R	2.82E-01	6.56E-01		90%	
Calc	TE	FILTER	JMLV91AC	RA-226	1.56E-01	(1.52E-01)	U4	PCI/SA	R	2.35E-01	5.41E-01		99%	
Calc	TE	FILTER	JMN851AA	RA-226	1.86E-04	(2.21E-04)	U4	PCI/SA	R	3.43E-04	8.12E-04	B	93%	
Calc	TE	FILTER	JMN851AC	RA-226	7.28E-03	(9.38E-04)		PCI/SA	R	2.08E-04	5.24E-04	S	104%	79%

Angela Long
1/26/07

P Anderson
1-29-07

() - (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:17
RADCALC v4.8.26
STL Richland

Batch Nbr: 7011225

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

Detailed Report

1/25/2007 7:49:04 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	**JMK811AC**	**PCI/SA**		12/05/06 12:25	01/24/07 14:00	01/19/07 15:05	RATA25303	1	1.00 SA	
CID:P-0812LOT:J7A0902871 v4.8.26							FILTER				01/24/07 11:00	RATA25303 Alq	101%	0.235542 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	01/24/07 14:00	RA-226	31	38	ASC3HA	ASC		N	2.4113E+00	1.0000E+00	N	101%	N		1.7562E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(4.316E-02)	(0.000E+00)		8%			(0.000E+00)	4.245523		

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
	01/25/07	RA-226	R	**-0.018572**	**U4**	-1.33333E-02	-0.009711	-0.009711	1.00 SA	101%		0.804465		
				(0.21105)		(1.5151E-01)	(0.110352)	(0.110352)	(0.014142)			0.364701		

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	**JMLA11AC**	**PCI/SA**		12/05/06 12:10	01/24/07 13:53	01/19/07 15:05	RATA25304	1	1.00 SA	
CID:P-0813LOT:J7A0902872 v4.8.26							FILTER				01/24/07 10:53	RATA25304 Alq	101%	0.249199 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	01/24/07 13:53	RA-226	44	40	ASC6RA	ASC		N	2.5216E+00	1.0000E+00	N	101%	N		1.7573E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(8.674E-02)	(0.000E+00)		8%			(0.000E+00)	4.012856		

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
	01/25/07	RA-226	R	**0.268754**	**U4**	2.13333E-01	0.148673	0.148673	1.00 SA	101%		0.744704		
				(0.215195)		(1.6944E-01)	(0.118794)	(0.118794)	(0.014142)			0.338413		

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	**JMLA41AC**	**PCI/SA**		12/05/06 12:45	01/24/07 14:00	01/19/07 15:05	RATA25305	1	1.00 SA	
CID:P-0814LOT:J7A0902873 v4.8.26							FILTER				01/24/07 11:00	RATA25305 Alq	106%	0.24214 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	01/24/07 14:00	RA-226	10	20	ASCGSA	ASC		N	2.1653E+00	1.0000E+00	N	106%	N		1.7562E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(7.622E-02)	(0.000E+00)		8%			(0.000E+00)	4.129844		

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
	01/25/07	RA-226	R	**-0.201188**	**U4**	-1.33333E-01	-0.108143	-0.108143	1.00 SA	106%		0.654673		
				(0.148912)		(9.7753E-02)	(0.079846)	(0.079846)	(0.014142)			0.286615		

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	**JMLA71AC**	**PCI/SA**		12/05/06 12:30	01/24/07 14:01	01/19/07 15:05	RATA25306	1	1.00 SA	
CID:P-0815LOT:J7A0902874 v4.8.26							FILTER				01/24/07 11:01	RATA25306 Alq	106%	0.240988 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	01/24/07 14:01	RA-226	16	6	ASCASC	ASC		N	1.7118E+00	1.0000E+00	N	106%	N		1.7560E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(9.244E-02)	(0.000E+00)		8%			(0.000E+00)	4.149583		

() - (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: 7011225

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

1/25/2007 7:49:05 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
	01/25/07	RA-226	R	**0.421865**		2.20000E-01	0.225683	0.225683	1.00 SA	106%		0.502699		
				(0.178326)		(8.9815E-02)	(0.094675)	(0.094675)	(0.014142)			0.199502		

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	**JMLA81AC**	**PCI/SA**		12/05/06 12:50	01/24/07 14:24	01/19/07 15:05	RATA25307	1	1.00 SA	
CID:000580LOT:J7A0902875 v4.8.26							FILTER				01/24/07 11:24	RATA25307 Alq	91%	0.250659 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	01/24/07 14:24	RA-226	22	4	ASCJMB	ASC		N	2.4836E+00	1.0000E+00	N	91%	N		1.7524E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(1.095E-01)	(0.000E+00)		7%			(0.000E+00)	3.989491		

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
	01/25/07	RA-226	R	**0.519991**		3.73333E-01	0.28934	0.28934	1.00 SA	91%		0.311986		
				(0.149043)		(9.9555E-02)	(0.081558)	(0.081558)	(0.014142)			0.118318		

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	**JMLT21AC**	**PCI/SA**		12/11/06 11:40	01/24/07 14:16	01/19/07 15:05	RATA25308	1	1.00 SA	
CID:P-0816LOT:J7A1001151 v4.8.26							FILTER				01/24/07 11:16	RATA25308 Alq	97%	0.238247 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	01/24/07 14:16	RA-226	13	15	ASCKME	ASC		N	1.9262E+00	1.0000E+00	N	97%	N		1.7537E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(2.562E-02)	(0.000E+00)		8%			(0.000E+00)	4.197319		

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
	01/25/07	RA-226	R	**0.017788**	**U4**	1.00000E-02	0.009408	0.009408	1.00 SA	97%		0.681277		
				(0.172161)		(9.6782E-02)	(0.091052)	(0.091052)	(0.014142)			0.292608		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
7	Calc	TE	FILTER	*STLE	Ra226WoBS	**JMLT61AC**	**PCI/SA**		12/11/06 12:00	01/24/07 14:21	01/19/07 15:30	RATA25309	1	1.00 SA	
CID:P-0817LOT:J7A1001152 v4.8.26							FILTER				01/24/07 11:21	RATA25309 Alq	95%	0.234857 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	01/24/07 14:21	RA-226	11	5	ASCPMA	ASC		N	2.4525E+00	1.0000E+00	N	95%	N		1.7568E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(8.241E-02)	(0.000E+00)		8%			(0.000E+00)	4.257913		

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
	01/25/07	RA-226	R	**0.198214**		1.36667E-01	0.10334	0.10334	1.00 SA	95%		0.353936		
				(0.112155)		(7.6085E-02)	(0.058226)	(0.058226)	(0.014142)			0.137745		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	TE	FILTER	*STLE	Ra226WoBS	**JMLT71AC**	**PCI/SA**		12/11/06 12:15	01/24/07 14:21	01/19/07 15:30	RATA25310	1	1.00 SA	
CID:P-0818LOT:J7A1001153 v4.8.26							FILTER				01/24/07 11:21	RATA25310 Alq	102%	0.237006 SA	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn

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

RecCnt:8

RADCALC v4.8.26
STL Richland

Batch Nbr: 7011225

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

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1	01/24/07 14:21	RA-226	94	55	ASC7HB	ASC		N	2.4884E+00	1.0000E+00	N	102%	N		1.7568E+00	4.5045E-01	1.0000E+00
			50	60			Y		(6.544E-02)	(0.000E+00)		8%			(0.000E+00)	4.219308	

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
	01/25/07	RA-226	R	**1.292693**		9.63333E-01	0.680123	0.680123	1.00 SA	102%		0.917606		
				(0.334034)		(2.2995E-01)	(0.172155)	(0.172155)	(0.014142)			0.422688		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
9	Calc	TE	FILTER	*STLE	Ra226WoBS	**JMLT81AC**	**PCI/SA**		12/11/06 11:45	01/24/07 14:56	01/19/07 15:30	RATA25311	1	1.00 SA	
CID:P-0819LOT:J7A1001154 v4.8.26							FILTER				01/24/07 11:56	RATA25311 Alq	84%	0.248555 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	01/24/07 14:56	RA-226	47	36	ASC1RH	ASC		N	2.4697E+00	1.0000E+00	N	84%	N		1.7513E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(9.113E-02)	(0.000E+00)		7%			(0.000E+00)	4.023248		

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
	01/25/07	RA-226	R	**0.518542**		3.40000E-01	0.286115	0.286115	1.00 SA	84%		0.859533		
				(0.264201)		(1.6971E-01)	(0.145017)	(0.145017)	(0.014142)			0.388666		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	TE	FILTER	*STLE	Ra226WoBS	**JMLVA1AC**	**PCI/SA**		12/11/06 12:20	01/24/07 14:46	01/19/07 15:30	RATA25312	1	1.00 SA	
CID:000581LOT:J7A1001155 v4.8.26							FILTER				01/24/07 11:46	RATA25312 Alq	111%	0.244719 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	01/24/07 14:46	RA-226	16	18	ASC2RC	ASC		N	2.0913E+00	1.0000E+00	N	111%	N		1.7529E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(6.818E-02)	(0.000E+00)		9%			(0.000E+00)	4.086314		

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
	01/25/07	RA-226	R	**0.030858**	U4	2.00000E-02	0.016763	0.016763	1.00 SA	111%		0.639349		
				(0.164765)		(1.0677E-01)	(0.089504)	(0.089504)	(0.027062)			0.278028		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
11	Calc	TE	FILTER	*STLE	Ra226WoBS	**JMLVW1AC**	**PCI/SA**		12/13/06 12:10	01/24/07 14:49	01/19/07 15:30	RATA25313	1	1.00 SA	
CID:P-0820LOT:J7A1001181 v4.8.26							FILTER				01/24/07 11:49	RATA25313 Alq	106%	0.248894 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	01/24/07 14:49	RA-226	20	15	ASC4UA	ASC		N	2.2112E+00	1.0000E+00	N	106%	N		1.7524E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(6.457E-02)	(0.000E+00)		9%			(0.000E+00)	4.017769		

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
	01/25/07	RA-226	R	**0.215152**	U4	1.50000E-01	0.118876	0.118876	1.00 SA	106%		0.549361		
				(0.159739)		(1.1030E-01)	(0.088)	(0.088)	(0.027062)			0.23595		

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

RecCnt:12

RADCALC v4.8.26
STL Richland

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

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Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
12	Calc	TE	FILTER	*STLE	Ra226WoBS	**JMLV31AC**	**PCI/SA**		12/13/06 12:43	01/24/07 14:54	01/19/07 15:30	RATA25314	1	1.00 SA	
CID:P-0821LOT:J7A1001182 v4.8.26							FILTER				01/24/07 11:54	RATA25314 Alq	101%	0.246612 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	01/24/07 14:54	RA-226	15	7	ASC8RD	ASC		N	1.8588E+00	1.0000E+00	N	101%	N		1.7516E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(4.851E-02)	(0.000E+00)		8%			(0.000E+00)	4.054946		

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
	01/25/07	RA-226	R	**0.315572**		1.83333E-01	0.172762	0.172762	1.00 SA	101%		0.479927		
				(0.156565)		(8.9132E-02)	(0.085241)	(0.085241)	(0.014142)			0.193431		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
13	Calc	TE	FILTER	*STLE	Ra226WoBS	**JMLV51AC**	**PCI/SA**		12/13/06 13:15	01/24/07 16:11	01/19/07 15:50	RATA25315	1	1.00 SA	
CID:P-0822LOT:J7A1001183 v4.8.26							FILTER				01/24/07 13:11	RATA25315 Alq	94%	0.244767 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	01/24/07 16:11	RA-226	20	20	ASCLMC	ASC		N	2.4313E+00	1.0000E+00	N	94%	N		1.7428E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.218E-01)	(0.000E+00)		8%			(0.000E+00)	4.085519		

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
	01/25/07	RA-226	R	**0.093611**	**U4**	6.66667E-02	0.050864	0.050864	1.00 SA	94%		0.609227		
				(0.163796)		(1.1643E-01)	(0.088961)	(0.088961)	(0.014142)			0.266719		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
14	Calc	TE	FILTER	*STLE	Ra226WoBS	**JMLV81AC**	**PCI/SA**		12/13/06 13:18	01/24/07 16:04	01/19/07 15:50	RATA25316	1	1.00 SA	
CID:P-0824LOT:J7A1001184 v4.8.26							FILTER				01/24/07 13:04	RATA25316 Alq	90%	0.247828 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	01/24/07 16:04	RA-226	21	15	ASC9RA	ASC		N	2.0536E+00	1.0000E+00	N	90%	N		1.7439E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(8.974E-02)	(0.000E+00)		7%			(0.000E+00)	4.035058		

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
	01/25/07	RA-226	R	**0.291202**	**U4**	1.70000E-01	0.160206	0.160206	1.00 SA	90%		0.65607		
				(0.19444)		(1.1210E-01)	(0.106648)	(0.106648)	(0.014142)			0.281781		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
15	Calc	TE	FILTER	*STLE	Ra226WoBS	**JMLV91AC**	**PCI/SA**		12/13/06 13:21	01/24/07 16:09	01/19/07 15:50	RATA25317	1	1.00 SA	
CID:P-0582LOT:J7A1001185 v4.8.26							FILTER				01/24/07 13:09	RATA25317 Alq	99%	0.244573 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	01/24/07 16:09	RA-226	20	17	ASCNMA	ASC		N	2.4172E+00	1.0000E+00	N	99%	N		1.7431E+00	4.5045E-01	1.0000E+00	
			50	60			Y		(1.136E-01)	(0.000E+00)		8%			(0.000E+00)	4.088759		

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

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

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

RecCnt:15

RADCALC v4.8.26

STL Richland

Batch Nbr: 7011225

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

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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
	01/25/07	RA-226	R	**0.156273**	**U4**	1.16667E-01	0.084845	0.084845	1.00 SA	99%		0.541472		
				(0.151995)		(1.1279E-01)	(0.082405)	(0.082405)	(0.014142)			0.234575		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
16	Calc	TE	FILTER	*STLE	Ra226WoBS	**JMN851AA**	**PCI/SA**	**B**	12/05/06 12:25	01/24/07 16:19	01/19/07 15:50	RATA25318	1	1.00 SA	
CID:INTRA-LAB BLANKLOT:J7A110000225 v4.8.26							FILTER				01/24/07 13:19	RATA25318 Alq	93%	152.17 SA	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
1	01/24/07 16:19	RA-226	14	12	ASCMRA	ASC		N	2.3844E+00	1.0000E+00	N	93%	N		1.7415E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(1.044E-01)	(0.000E+00)		7%			(0.000E+00)	0.006572		

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
	01/25/07	RA-226	R	**0.000186**	**U4**	8.00000E-02	0.062989	0.062989	1.00 SA	93%		0.000812		
				(0.000221)		(9.4516E-02)	(0.07464)	(0.07464)	(0.014142)			0.000343		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
17	Calc	TE	FILTER	*STLE	Ra226WoBS	**JMN851AC**	**PCI/SA**	**S**	12/05/06 12:25	01/24/07 16:20	01/19/07 15:50	RASC4320	1	1.00 SA	
CID:INTRA-LAB CHECKLOT:J7A110000225 v4.8.26							FILTER				01/24/07 13:20	RASC4320 Alq	104%	150.10 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	01/24/07 16:20	RA-226	187	6	ASCQMB	ASC		N	2.6138E+00	1.0000E+00	N	104%	N		1.7414E+00	4.5045E-01	1.0001E+00	
			50	60			Y		(1.085E-01)	(0.000E+00)		8%			(0.000E+00)	0.006662		

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
	01/25/07	RA-226	R	**0.007278**		3.64000E+00	2.42505	2.42505	1.00 SA	104%	79%	0.000524		
				(0.000938)		(2.7653E-01)	(0.285842)	(0.285842)	(0.014142)			0.000208		

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

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

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

RecCnt:17

RADCALC v4.8.26

STL Richland

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

Sample ID: JMK811AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 0.9911
Technician: JP

Analysis Size: 0.2355 Analysis Unit: SA

Report Date: 24-JAN-2007 14:50:00.76
First Separation Date: 19-JAN-2007 15:05:00.00
Second Separation Date: 24-JAN-2007 11:00:00.00

Detector ID: 3 Cell ID: 3HA

Bkg Date: 19-JAN-2007 09:15:14.64
Bkg Counts: 000038 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 14:00:00.36
Counts: 000031 Count Duration: 000050.0

End of Report

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

Sample ID: JMLA11AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 0.9871
Technician: JP

Analysis Size: 0.2492 Analysis Unit: SA

Report Date: 24-JAN-2007 14:43:00.67
First Separation Date: 19-JAN-2007 15:05:00.00
Second Separation Date: 24-JAN-2007 10:53:00.00

Detector ID: 6 Cell ID: 6RA

Bkg Date: 22-JAN-2007 09:36:34.86
Bkg Counts: 000040 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 13:53:00.36
Counts: 000044 Count Duration: 000050.0

End of Report

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

Sample ID: JMLA41AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 0.9466
Technician: JP

Analysis Size: 0.2421 Analysis Unit: SA

Report Date: 24-JAN-2007 14:50:00.86
First Separation Date: 19-JAN-2007 15:05:00.00
Second Separation Date: 24-JAN-2007 11:00:00.00

Detector ID: 16 Cell ID: GSA

Bkg Date: 22-JAN-2007 09:18:04.14
Bkg Counts: 000020 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 14:00:00.42
Counts: 000010 Count Duration: 000050.0

End of Report

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

Sample ID: JMLA71AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 0.9440
Technician: JP

Analysis Size: 0.241 Analysis Unit: SA

Report Date: 24-JAN-2007 14:51:00.90
First Separation Date: 19-JAN-2007 15:05:00.00
Second Separation Date: 24-JAN-2007 11:01:00.00

Detector ID: 10 Cell ID: ASC

Bkg Date: 22-JAN-2007 09:17:53.37
Bkg Counts: 000006 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 14:01:00.51
Counts: 000016 Count Duration: 000050.0

End of Report

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

Sample ID: JMLA81AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 1.0984
Technician: JP

Analysis Size: 0.2507 Analysis Unit: SA

Report Date: 24-JAN-2007 15:14:00.62
First Separation Date: 19-JAN-2007 15:05:00.00
Second Separation Date: 24-JAN-2007 11:24:00.00

Detector ID: 18 Cell ID: JMB

Bkg Date: 23-JAN-2007 09:17:57.33
Bkg Counts: 000004 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 14:24:00.30
Counts: 000022 Count Duration: 000050.0

End of Report

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

Sample ID: JMLT21AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 1.0333
Technician: JP

Analysis Size: 0.2382 Analysis Unit: SA

Report Date: 24-JAN-2007 15:06:00.91
First Separation Date: 19-JAN-2007 15:05:00.00
Second Separation Date: 24-JAN-2007 11:16:00.00

Detector ID: 19 Cell ID: KME

Bkg Date: 22-JAN-2007 09:18:14.92
Bkg Counts: 000015 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 14:16:00.35
Counts: 000013 Count Duration: 000050.0

End of Report

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

Sample ID: JMLT61AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 1.0556
Technician: JP

Analysis Size: 0.2349 Analysis Unit: SA

Report Date: 24-JAN-2007 15:11:00.91
First Separation Date: 19-JAN-2007 15:30:00.00
Second Separation Date: 24-JAN-2007 11:21:00.00

Detector ID: 23 Cell ID: PMA

Bkg Date: 22-JAN-2007 09:18:27.90
Bkg Counts: 000005 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 14:21:00.38
Counts: 000011 Count Duration: 000050.0

End of Report

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

Sample ID: JMLT71AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 0.9795
Technician: JP

Analysis Size: 0.237 Analysis Unit: SA

Report Date: 24-JAN-2007 15:11:00.91
First Separation Date: 19-JAN-2007 15:30:00.00
Second Separation Date: 24-JAN-2007 11:21:00.00

Detector ID: 7 Cell ID: 7HB

Bkg Date: 19-JAN-2007 08:41:35.49
Bkg Counts: 000055 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 14:21:00.45
Counts: 000094 Count Duration: 000050.0

End of Report

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

Sample ID: JMLT81AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 1.1867
Technician: JP

Analysis Size: 0.2486 Analysis Unit: SA

Report Date: 24-JAN-2007 15:46:00.59
First Separation Date: 19-JAN-2007 15:30:00.00
Second Separation Date: 24-JAN-2007 11:56:00.00

Detector ID: 1 Cell ID: 1RH

Bkg Date: 24-JAN-2007 10:06:57.67
Bkg Counts: 000036 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 14:56:00.27
Counts: 000047 Count Duration: 000050.0

End of Report

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

Sample ID: JMLVA1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 0.8969
Technician: JP

Analysis Size: 0.2447 Analysis Unit: SA

Report Date: 24-JAN-2007 15:36:00.65
First Separation Date: 19-JAN-2007 15:30:00.00
Second Separation Date: 24-JAN-2007 11:46:00.00

Detector ID: 2 Cell ID: 2RC

Bkg Date: 24-JAN-2007 10:07:06.55
Bkg Counts: 000018 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 14:46:00.30
Counts: 000016 Count Duration: 000050.0

End of Report

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

Sample ID: JMLVW1AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 0.9398
Technician: JP

Analysis Size: 0.2489 Analysis Unit: SA

Report Date: 24-JAN-2007 15:39:00.62
First Separation Date: 19-JAN-2007 15:30:00.00
Second Separation Date: 24-JAN-2007 11:49:00.00

Detector ID: 4 Cell ID: 4UA

Bkg Date: 24-JAN-2007 10:07:26.27
Bkg Counts: 000015 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 14:49:00.30
Counts: 000020 Count Duration: 000050.0

End of Report

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

Sample ID: JMLV31AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 0.9920
Technician: JP

Analysis Size: 0.2466 Analysis Unit: SA

Report Date: 24-JAN-2007 15:44:00.59
First Separation Date: 19-JAN-2007 15:30:00.00
Second Separation Date: 24-JAN-2007 11:54:00.00

Detector ID: 8 Cell ID: 8RD

Bkg Date: 24-JAN-2007 10:07:46.67
Bkg Counts: 000007 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 14:54:00.26
Counts: 000015 Count Duration: 000050.0

End of Report

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

Sample ID: JMLV51AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 1.0644
Technician: JP

Analysis Size: 0.2448 Analysis Unit: SA

Report Date: 24-JAN-2007 17:01:00.63
First Separation Date: 19-JAN-2007 15:50:00.00
Second Separation Date: 24-JAN-2007 13:11:00.00

Detector ID: 20 Cell ID: LMC

Bkg Date: 24-JAN-2007 10:36:15.92
Bkg Counts: 000020 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 16:11:00.33
Counts: 000020 Count Duration: 000050.0

End of Report

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

Sample ID: JMLV81AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 1.1098
Technician: JP

Analysis Size: 0.2478 Analysis Unit: SA

Report Date: 24-JAN-2007 16:54:00.69
First Separation Date: 19-JAN-2007 15:50:00.00
Second Separation Date: 24-JAN-2007 13:04:00.00

Detector ID: 9 Cell ID: 9RA

Bkg Date: 22-JAN-2007 09:36:58.03
Bkg Counts: 000015 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 16:04:00.34
Counts: 000021 Count Duration: 000050.0

End of Report

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

Sample ID: JMLV91AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 1.0085
Technician: JP

Analysis Size: 0.2446 Analysis Unit: SA

Report Date: 24-JAN-2007 16:59:00.68
First Separation Date: 19-JAN-2007 15:50
Second Separation Date: 24-JAN-2007 13:09:00.00

Detector ID: 22 Cell ID: NMA

Bkg Date: 24-JAN-2007 10:09:04.53
Bkg Counts: 000017 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 16:09:00.35
Counts: 000020 Count Duration: 000050.0

End of Report

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

Sample ID: JMN851AA Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 1.0780
Technician: JP

Analysis Size: 1.0 Analysis Unit: SA

Report Date: 24-JAN-2007 17:09:00.65
First Separation Date: 19-JAN-2007 15:50:00.00
Second Separation Date: 24-JAN-2007 13:19:00.00

Detector ID: 21 Cell ID: MRA

Bkg Date: 24-JAN-2007 10:08:55.49
Bkg Counts: 000012 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 16:19:00.31
Counts: 000014 Count Duration: 000050.0

End of Report

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

Sample ID: JMN851AC Isotope: RA-226

Client: STL Matrix Code: 103

Batch Nbr: 7011225 Activity Unit: PCI/SA Multiplier: 0.9584
Technician: JP

Analysis Size: 1.0 Analysis Unit: SA

Report Date: 24-JAN-2007 17:10:00.64
First Separation Date: 19-JAN-2007 15:50:00.00
Second Separation Date: 24-JAN-2007 13:20:00.00

Detector ID: 24 Cell ID: QMB

Bkg Date: 24-JAN-2007 10:35:48.23
Bkg Counts: 000006 Bkg Duration: 000060.0

Count Date: 24-JAN-2007 16:20:00.30
Counts: 000187 Count Duration: 000050.0

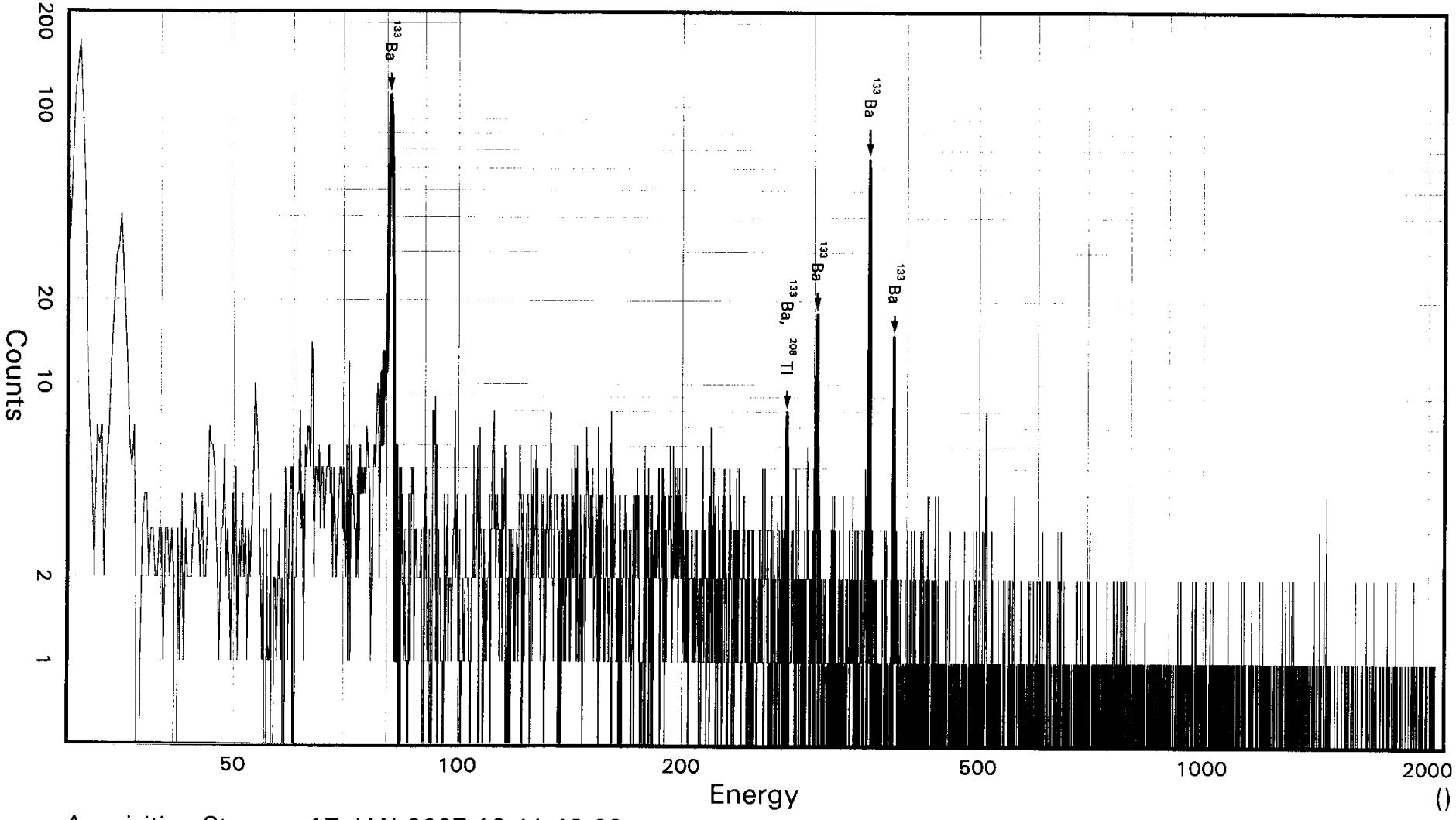
End of Report

STL Richland WA.

BA133

Sample ID: JMK811AC
Detector ID: GER5 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 12:11:48.23
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -3.21439E-01
Slope: 2.49458E-01
Quadrature: -2.31442E-09

SAMPLE IDENTIFICATION: JMK811AC

CONFIGURATION ID: GER5:JMK811AC_170171211
TITLE : BA133
SAMPLE ID : JMK811AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 12:11:48
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 04:58:20.28
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: -.3214E+00 keV
ENERGY SLOPE: 2.4946E-01 keV/C
ENERGY Q COEFF: -.2314E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 7.4627E-01 keV
FWHM SLOPE: 2.8344E-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 17-JAN-2007 12:42:03

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMK811AC_170171211.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:11:48
Sample ID : JMK811AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Start energy : 19.64 End energy : 2043.08
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	31.00	599	135	0.86	125.56	118	15	3.33E-01	5.9	
2	0	35.38	186	35	1.04	143.11	136	16	1.04E-01	10.5	
3	0	53.67	20	27	0.64	216.42	209	12	1.11E-02	56.4	
4	0	80.91	437	68	0.89	325.64	316	20	2.43E-01	6.7	
5	0	276.05	43	6	1.35	1107.88	1100	14	2.38E-02	20.0	
6	0	302.91	108	18	1.31	1215.59	1206	20	6.02E-02	13.9	
7	0	355.96	292	16	0.98	1428.24	1420	19	1.62E-01	6.6	
8	0	384.00	38	17	0.38	1540.65	1534	14	2.10E-02	28.5	

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

VMS Nuclide Identification Report V3.1 Generated 17-JAN-2007 12:42:03

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMK811AC_170171211.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:11:48
Sample ID : JMK811AC 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	437	33.00	1.924E+00	2.292E+03	2.298E+03	8.63
	276.40	43	6.90	2.077E+00	9.964E+02	9.990E+02	20.73
	302.84	108	17.80	2.080E+00	9.751E+02	9.775E+02	14.89
	356.00	292	62.05*	2.082E+00	7.539E+02	7.558E+02	8.55
	383.85	38	8.70	2.081E+00	6.962E+02	6.980E+02	29.01

Flag: "*" = Keyline

Unidentified Energy Lines
Page : 2
Sample ID : JMK811AC
Acquisition date : 17-JAN-2007 12:11:48

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	31.00	599	135	0.86	125.56	118	15	3.33E-01	5.9	1.68E+00	
0	35.38	186	35	1.04	143.11	136	16	1.04E-01	10.5	1.72E+00	
0	53.67	20	27	0.64	216.42	209	12	1.11E-02	56.4	1.83E+00	

Flags: "T" = Tentatively associated

Sample ID : JMK811AC Acquisition date : 17-JAN-2007 12:11:48

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	1.011E+03	20.73	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 17-JAN-2007 12:42:04

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMK811AC_170171211.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,WTMEAN/KEY V1.8
Analyses by : MINACT V2.8
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:11:48
Sample ID : JMK811AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.558E+02	6.459E+01	6.483E+01	1.297E+00	11.659

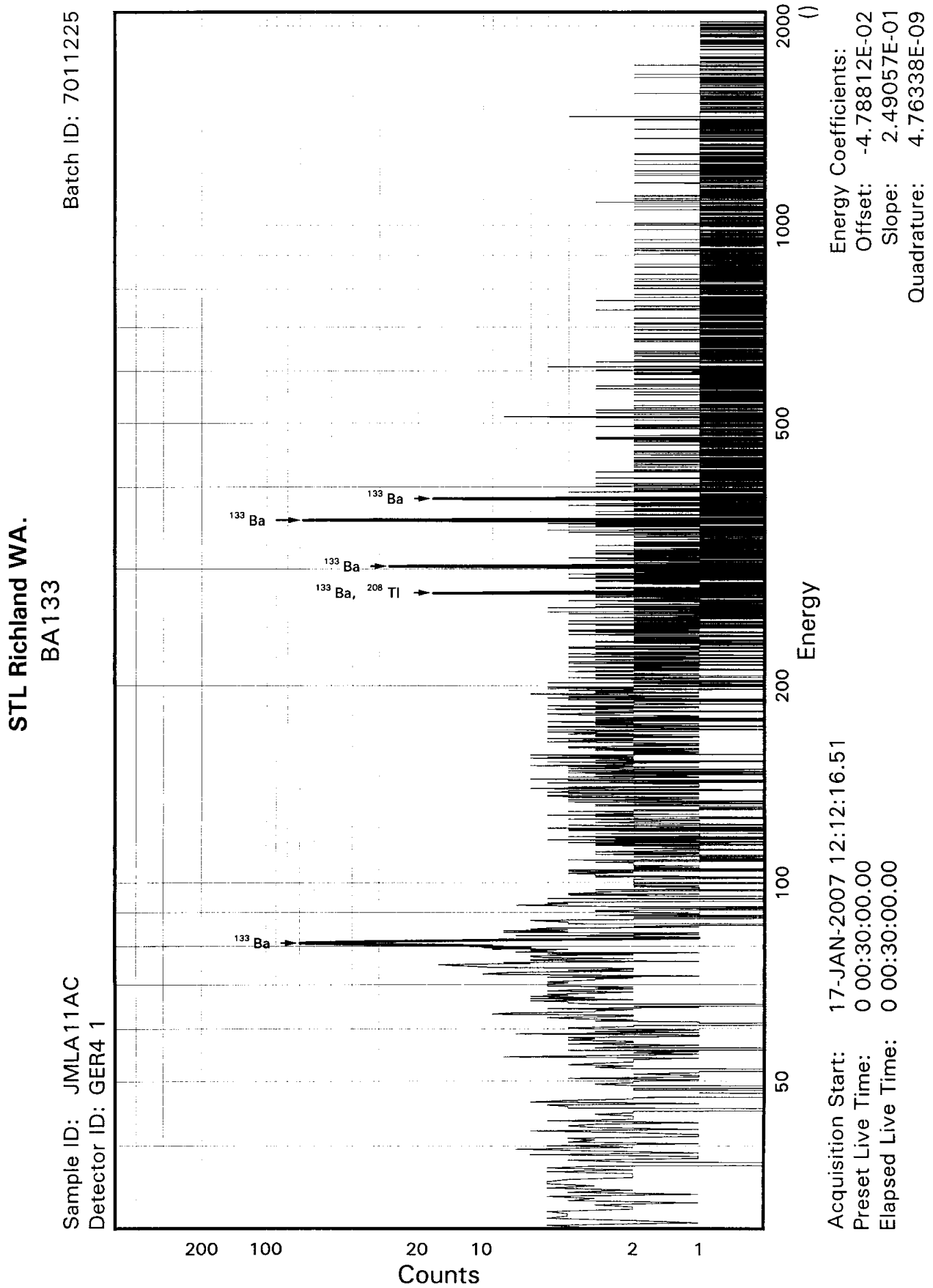
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.358E+02		6.854E+01	3.276E+02	6.571E+00	0.415
NA-22	2.002E-01		4.123E+00	1.846E+01	3.914E-01	0.011
NA-24	1.175E+01		7.177E+00	Half-Life too short		
K-40	2.234E+00		6.166E+01	3.241E+02	6.962E+00	0.007
SC-46	1.782E+00		4.529E+00	2.355E+01	4.937E-01	0.076
CR-51	1.984E+02		1.393E+02	5.753E+02	1.151E+01	0.345
MN-54	2.976E+00		5.448E+00	2.380E+01	4.886E-01	0.125
CO-57	5.758E+00		1.354E+02	4.814E+02	9.952E+00	0.012
CO-58	-8.194E-01		4.604E+00	1.953E+01	4.003E-01	-0.042
FE-59	-1.820E+00		8.753E+00	3.734E+01	7.817E-01	-0.049
CO-60	1.759E+00		2.943E+00	1.590E+01	3.385E-01	0.111
ZN-65	-1.091E+01		1.043E+01	3.672E+01	7.695E-01	-0.297
SE-75	4.133E+01		1.746E+01	7.501E+01	1.505E+00	0.551
SR-85	-5.534E+01		1.386E+01	3.316E+01	6.664E-01	-1.669
Y-88	6.787E-02		3.854E+00	1.804E+01	3.974E-01	0.004
NB-94	-2.899E+00		4.525E+00	1.773E+01	3.649E-01	-0.164
NB-95	6.192E+00		8.456E+00	3.600E+01	7.353E-01	0.172
TC-95M	7.441E+00		2.103E+01	7.871E+01	1.592E+00	0.095
ZR-95	9.568E+00		1.031E+01	4.795E+01	9.788E-01	0.200
ZRNB-95	7.017E+00		1.540E+01	6.346E+01	1.296E+00	0.111
MO-99	-2.728E+02		4.835E+02	1.731E+03	3.570E+01	-0.158
RH-101	7.119E+00		1.994E+01	7.315E+01	1.481E+00	0.097
RH-102M	-2.764E+00		6.134E+00	2.331E+01	4.677E-01	-0.119
RU-103	1.482E+00		1.078E+01	4.191E+01	8.416E-01	0.035
RU-106DA	3.591E+01		5.306E+01	2.391E+02	4.835E+00	0.150
AG-108M	-2.221E+00		7.756E+00	2.943E+01	5.895E-01	-0.075
AG-110M	-4.411E+00		4.575E+00	1.737E+01	3.579E-01	-0.254

Sample ID : JMK811AC Acquisition date : 17-JAN-2007 12:11:48

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	1.581E+01		1.190E+01	5.187E+01	1.038E+00	0.305
SB-124	-3.175E+00		8.075E+00	3.079E+01	6.220E-01	-0.103
SB-125	3.855E+01		2.769E+01	1.176E+02	2.354E+00	0.328
SN-126DA	-1.564E+00		3.607E+00	1.508E+01	3.058E-01	-0.104
I-131	3.390E+01		3.122E+01	1.321E+02	2.642E+00	0.257
CS-134	-6.151E+00		5.275E+00	1.804E+01	3.693E-01	-0.341
CS-137DA	7.693E+00		5.398E+00	2.691E+01	5.457E-01	0.286
LA-138	-5.110E+00		5.137E+00	1.893E+01	4.060E-01	-0.270
CE-139	-1.550E+01		1.669E+01	5.801E+01	1.185E+00	-0.267
BA-140	-1.064E+01		3.872E+01	1.562E+02	3.142E+00	-0.068
BALA-140	1.534E+01		1.567E+01	8.362E+01	1.813E+00	0.183
LA-140	5.328E-04		5.446E-04	Half-Life too short		
CE-141	-4.871E+01		3.872E+01	1.322E+02	2.720E+00	-0.369
CE-144	1.372E+02		1.404E+02	5.215E+02	1.080E+01	0.263
CEPR-144	2.757E+02		2.808E+02	1.043E+03	2.160E+01	0.264
PM-144	1.935E+00		5.489E+00	2.365E+01	4.781E-01	0.082
PM-146	-5.801E+00		9.931E+00	3.671E+01	7.357E-01	-0.158
EU-152	-1.302E+01		3.400E+01	1.256E+02	2.513E+00	-0.104
EU-154	5.602E-01		1.152E+01	5.160E+01	1.094E+00	0.011
EU-155	1.116E+02		6.615E+01	2.590E+02	5.463E+00	0.431
HF-181	-1.778E+01		9.044E+00	2.625E+01	5.267E-01	-0.677
BI-207	6.984E+00		5.653E+00	2.625E+01	5.291E-01	0.266
TL-208	-7.246E+00		6.063E+00	2.554E+01	5.153E-01	-0.284
BI-210M	-1.365E+01		2.038E+01	7.127E+01	1.430E+00	-0.192
BI-212	-7.575E+01		7.495E+01	2.666E+02	8.151E+00	-0.284
PB-212	-4.425E+01		2.961E+01	1.043E+02	2.099E+00	-0.424
BI-214	5.157E+00		1.452E+01	6.574E+01	1.328E+00	0.078
PB-214	2.526E+01		3.215E+01	1.176E+02	2.351E+00	0.215
RA-223	-1.096E+01		7.423E+01	2.706E+02	5.427E+00	-0.041
RA-224DA	-4.487E+01		3.002E+01	1.058E+02	2.128E+00	-0.424
RA-226DA	5.156E+00		1.452E+01	6.574E+01	1.328E+00	0.078
AC-227DA	3.427E+00		1.098E+02	3.987E+02	8.023E+00	0.009
AC-228	-1.055E+01		1.214E+01	6.213E+01	1.283E+00	-0.170
RA-228DA	-1.060E+01		1.219E+01	6.242E+01	1.289E+00	-0.170
TH-228DA	-2.045E+01		1.711E+01	7.209E+01	1.454E+00	-0.284
TH-232DA	6.969E+01		7.868E+01	3.140E+02	6.280E+00	0.222
TH-234DA	-2.468E+02		5.685E+02	2.375E+03	4.937E+01	-0.104
U-234DA	3.935E+01		6.145E+01	2.329E+02	4.663E+00	0.169
U-235HP	1.864E+02		1.280E+02	5.036E+02	1.037E+01	0.370
NP-237DA	-7.952E+00		2.117E+01	7.746E+01	1.550E+00	-0.103
U-238DA	2.526E+01		3.215E+01	1.176E+02	2.351E+00	0.215
U-238DHP	2.521E+02		5.152E+02	1.974E+03	4.395E+01	0.128
AM-241HP	-2.002E+01		4.136E+01	1.467E+02	3.290E+00	-0.136


STL Richland WA.
BA133
Batch ID: 7011225
Sample ID: JMLA11AC
Detector ID: GER4 1
133 Ba
133 Ba
133 Ba
133 Ba, 208 Tl
133 Ba
Counts
200
100
20
10
2
1
Energy
50
100
200
500
1000
2000
()
Acquisition Start: 17-JAN-2007 12:12:16.51
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00
Energy Coefficients:
Offset: -4.78812E-02
Slope: 2.49057E-01
Quadrature: 4.76338E-09

SAMPLE IDENTIFICATION: JMLA11AC

CONFIGURATION ID: GER4:JMLA11AC_170171212
TITLE : BA133
SAMPLE ID : JMLA11AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 12:12:16
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 05:15:56.94
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: -.4788E-01 keV
ENERGY SLOPE: 2.4906E-01 keV/C
ENERGY Q COEFF: 4.7634E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.3478E-01 keV
FWHM SLOPE: 4.2590E-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 17-JAN-2007 12:42:33

Configuration : $DISK1:[GER4.SAMPLE]JMLA11AC_170171212.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:12:16
Sample ID : JMLA11AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.40 0.0%
Start energy : 19.88 End energy : 2040.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.11*	7	29	0.80	301.75	297	9	3.82E-03	170.6	
2	0	81.00	231	51	0.72	325.43	319	13	1.28E-01	9.2	
3	0	276.49	45	15	0.78	1110.31	1103	13	2.49E-02	23.7	
4	0	302.99	104	13	0.89	1216.70	1210	14	5.75E-02	12.4	
5	0	356.01	311	15	1.06	1429.60	1422	15	1.73E-01	6.3	
6	0	384.01	49	13	0.85	1541.99	1532	15	2.71E-02	22.3	

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

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 12:42:34

Configuration : $DISK1:[GER4.SAMPLE]JMLA11AC_170171212.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:12:16
Sample ID : JMLA11AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.40 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	231	33.00	2.043E+00	1.144E+03	1.147E+03	10.75
	276.40	45	6.90	2.202E+00	9.843E+02	9.868E+02	24.30
	302.84	104	17.80	2.205E+00	8.796E+02	8.818E+02	13.60
	356.00	311	62.05*	2.207E+00	7.568E+02	7.588E+02	9.32
	383.85	49	8.70	2.207E+00	8.473E+02	8.494E+02	23.12

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JMLA11AC

Acquisition date : 17-JAN-2007 12:12:16

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.11	7	29	0.80	301.75	297	9	3.82E-03	****	2.03E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLA11AC
Acquisition date : 17-JAN-2007 12:12:16

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	9.988E+02	24.30	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 17-JAN-2007 12:42:36

Configuration : $DISK1:[GER4.SAMPLE]JMLA11AC_170171212.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 : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:12:16
Sample ID : JMLA11AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.40 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.588E+02	7.069E+01	4.210E+01	1.973E+00	18.023

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-4.608E+01		7.366E+01	2.741E+02	1.001E+01	-0.168
NA-22	-8.238E+00		4.367E+00	1.189E+01	4.584E-01	-0.693
K-40	-9.374E+00		6.954E+01	3.568E+02	1.394E+01	-0.026
SC-46	3.874E+00		6.067E+00	2.666E+01	1.016E+00	0.145
CR-51	-1.679E+01		1.006E+02	3.887E+02	9.022E+00	-0.043
MN-54	4.492E+00		5.402E+00	2.399E+01	8.958E-01	0.187
CO-57	7.208E+01		1.131E+02	4.284E+02	1.027E+01	0.168
CO-58	8.734E+00		6.003E+00	2.830E+01	1.055E+00	0.309
FE-59	1.073E+01		9.108E+00	4.553E+01	1.733E+00	0.236
CO-60	-3.340E+00		2.371E+00	4.363E+00	1.689E-01	-0.766
ZN-65	-9.298E+00		1.045E+01	3.841E+01	1.464E+00	-0.242
SE-75	1.204E+01		1.440E+01	5.809E+01	1.352E+00	0.207
SR-85	-3.628E+01		1.027E+01	2.502E+01	9.151E-01	-1.450
Y-88	-3.663E+00		2.601E+00	4.948E+00	1.981E-01	-0.740
NB-94	-4.275E+00		4.541E+00	1.671E+01	6.257E-01	-0.256
NB-95	-2.245E+00		7.948E+00	3.058E+01	1.136E+00	-0.073
TC-95M	7.066E+00		1.618E+01	6.306E+01	1.479E+00	0.112
ZR-95	9.624E+00		1.080E+01	4.866E+01	1.807E+00	0.198
ZRNB-95	-3.959E+00		1.401E+01	5.391E+01	2.003E+00	-0.073
MO-99	-4.647E+01		3.982E+02	1.453E+03	3.476E+01	-0.032
RH-101	1.743E+01		1.441E+01	5.759E+01	1.353E+00	0.303
RH-102M	1.361E+01		7.171E+00	3.251E+01	1.187E+00	0.419
RU-103	3.794E+00		7.911E+00	3.374E+01	1.233E+00	0.112
RU-106DA	2.803E+01		6.135E+01	2.544E+02	9.363E+00	0.110
AG-108M	-1.730E+01		7.582E+00	2.102E+01	7.661E-01	-0.823
AG-110M	6.270E-01		5.439E+00	2.447E+01	9.171E-01	0.026
SN-113DA	-2.353E-01		9.539E+00	3.800E+01	1.384E+00	-0.006

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

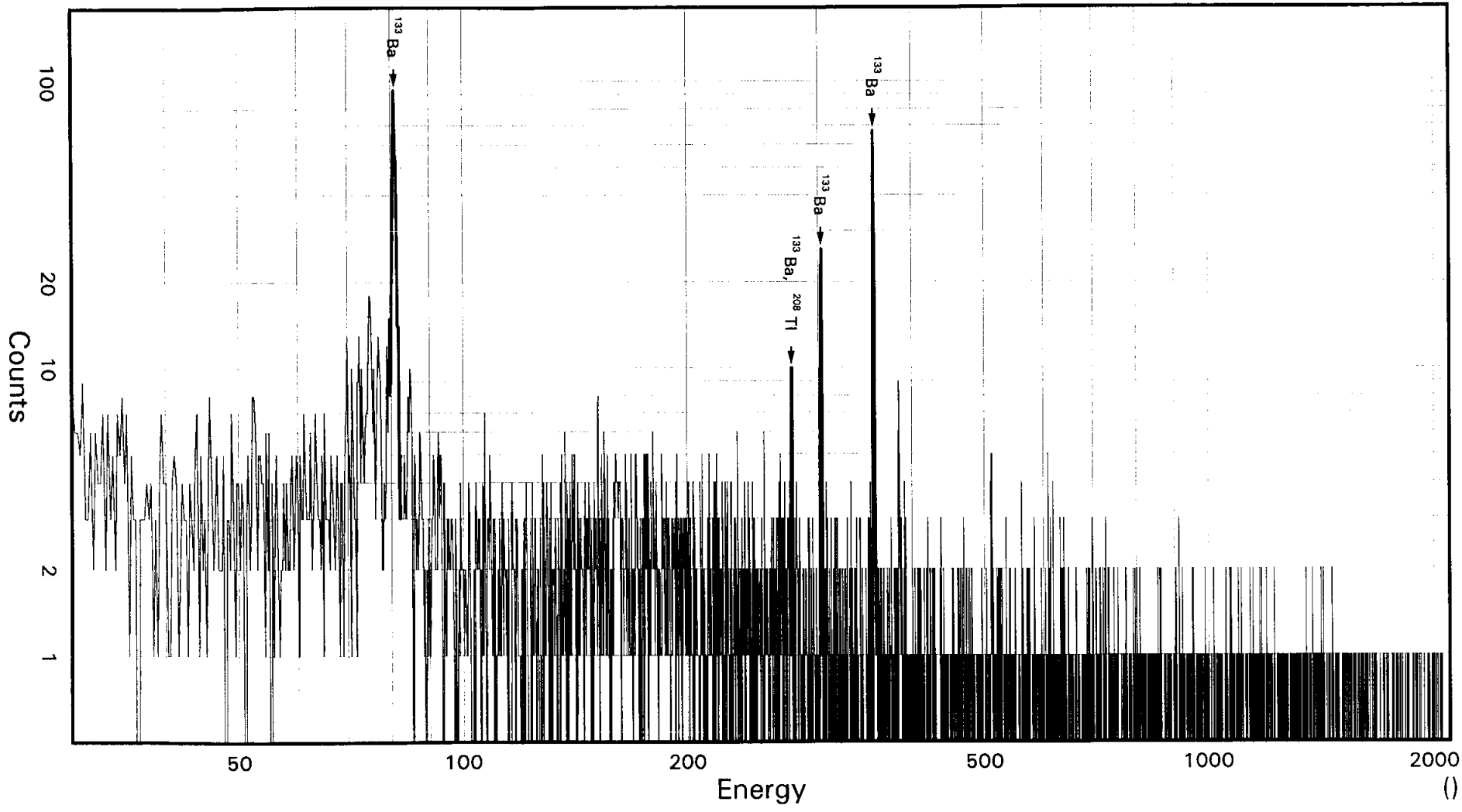
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	6.032E+00		7.336E+00	3.123E+01	1.148E+00	0.193
SB-125	-6.642E+00		1.770E+01	6.818E+01	2.485E+00	-0.097
SN-126DA	-1.039E+00		5.807E+00	2.299E+01	8.484E-01	-0.045
I-131	-1.486E+01		2.867E+01	1.059E+02	3.856E+00	-0.140
CS-134	2.028E+00		4.212E+00	2.011E+01	7.489E-01	0.101
CS-137DA	-1.260E+00		6.343E+00	2.537E+01	9.361E-01	-0.050
LA-138	6.702E+00		5.274E+00	2.837E+01	1.106E+00	0.236
CE-139	-1.621E+00		1.515E+01	5.422E+01	1.284E+00	-0.030
BA-140	-1.041E+02		4.517E+01	1.193E+02	4.367E+00	-0.873
BALA-140	2.641E+00		1.141E+01	5.982E+01	2.358E+00	0.044
CE-141	-6.235E+00		2.872E+01	1.040E+02	2.483E+00	-0.060
CE-144	-1.189E+02		9.696E+01	3.271E+02	7.852E+00	-0.363
CEPR-144	-2.377E+02		1.939E+02	6.542E+02	1.571E+01	-0.363
PM-144	6.916E+00		5.714E+00	2.581E+01	9.496E-01	0.268
PM-146	7.315E+00		9.468E+00	3.986E+01	1.454E+00	0.183
EU-152	-1.973E+01		3.073E+01	1.112E+02	2.579E+00	-0.177
EU-154	-2.302E+01		1.220E+01	3.323E+01	1.281E+00	-0.693
EU-155	-5.332E+01		4.771E+01	1.662E+02	4.064E+00	-0.321
HF-181	5.108E+00		7.833E+00	3.453E+01	1.261E+00	0.148
BI-207	8.030E+00		6.139E+00	2.740E+01	1.005E+00	0.293
TL-208	-1.330E+00		7.560E+00	3.149E+01	1.156E+00	-0.042
BI-210M	-2.322E+01		1.610E+01	5.252E+01	1.222E+00	-0.442
BI-212	-6.907E+01		6.991E+01	2.514E+02	1.094E+01	-0.275
PB-212	-2.210E+01		2.152E+01	7.986E+01	1.864E+00	-0.277
BI-214	3.363E+01		1.559E+01	7.742E+01	2.847E+00	0.434
PB-214	-1.724E+01		3.214E+01	1.025E+02	2.377E+00	-0.168
RA-223	1.445E+01		6.197E+01	2.363E+02	5.499E+00	0.061
RA-224DA	-2.241E+01		2.182E+01	8.098E+01	1.890E+00	-0.277
RA-226DA	3.363E+01		1.559E+01	7.742E+01	2.847E+00	0.434
AC-227DA	-1.666E+01		8.086E+01	2.980E+02	6.957E+00	-0.056
AC-228	-1.472E+00		1.815E+01	8.440E+01	3.169E+00	-0.017
RA-228DA	-1.479E+00		1.823E+01	8.479E+01	3.184E+00	-0.017
TH-228DA	-3.755E+00		2.134E+01	8.888E+01	3.263E+00	-0.042
TH-232DA	-8.865E+01		6.530E+01	2.207E+02	5.122E+00	-0.402
TH-234DA	-2.572E+02		7.293E+02	2.896E+03	1.095E+02	-0.089
U-234DA	4.725E+01		4.504E+01	1.802E+02	4.187E+00	0.262
U-235HP	4.422E+01		1.006E+02	3.799E+02	9.075E+00	0.116
NP-237DA	1.779E+01		2.285E+01	9.260E+01	2.150E+00	0.192
U-238DA	-1.724E+01		3.214E+01	1.025E+02	2.377E+00	-0.168
U-238DHP	6.009E+02		3.205E+02	1.331E+03	3.432E+01	0.452
AM-241HP	2.241E+01		2.933E+01	1.149E+02	2.984E+00	0.195

STL Richland WA.

BA133

Sample ID: JMLA41AC
Detector ID: GER7 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 12:12:22.02
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 6.28599E-01
Slope: 2.49276E-01
Quadrature: 1.25500E-07

SAMPLE IDENTIFICATION: JMLA41AC

CONFIGURATION ID: GER7:JMLA41AC_170171212
TITLE : BA133
SAMPLE ID : JMLA41AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 12:12:22
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 04:58:47.78
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 6.2860E-01 keV
ENERGY SLOPE: 2.4928E-01 keV/C
ENERGY Q COEFF: 1.2550E-07 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.1102E-01 keV
FWHM SLOPE: 3.3558E-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 17-JAN-2007 12:42:50

```
Configuration     : $DISK1:[GER7.SAMPLE]JMLA41AC_170171212.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 3-JAN-2007 12:00:00  Acquisition date : 17-JAN-2007 12:12:22
Sample ID         : JMLA41AC             Sample quantity  : 1.0000 SAMPL
Sample type       :                      Sample geometry  : BA133T15
Elapsed live time: 0 00:30:00.00         Elapsed real time: 0 00:30:00.20   0.0%
Start energy      :    20.57             End energy       :  2051.12
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.80*	56	53	2.65	301.53	294	16	3.10E-02	34.5	
2	0	81.02	277	82	0.85	322.46	317	11	1.54E-01	8.8	
3	0	276.32	42	6	0.99	1105.37	1099	12	2.34E-02	19.3	
4	0	302.80	114	10	1.18	1211.45	1204	14	6.32E-02	11.2	
5	0	355.93	305	16	1.01	1424.32	1415	20	1.70E-01	6.5	

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

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 12:42:50

Configuration : $DISK1:[GER7.SAMPLE]JMLA41AC_170171212.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:12:22
Sample ID : JMLA41AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	277	33.00	1.923E+00	1.456E+03	1.459E+03	10.34
	276.40	42	6.90	2.076E+00	9.790E+02	9.815E+02	20.05
	302.84	114	17.80	2.078E+00	1.024E+03	1.027E+03	12.39
	356.00	305	62.05*	2.080E+00	7.883E+02	7.903E+02	8.46
	383.85	------	8.70	2.080E+00	------ Line Not Found		------

Flag: "*" = Keyline

Sample ID : JMLA41AC
Acquisition date : 17-JAN-2007 12:12:22

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.80	56	53	2.65	301.53	294	16	3.10E-02	34.5	1.91E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLA41AC
Acquisition date : 17-JAN-2007 12:12:22

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	9.934E+02	20.05	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 17-JAN-2007 12:42:52

Configuration : $DISK1:[GER7.SAMPLE]JMLA41AC_170171212.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 : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:12:22
Sample ID : JMLA41AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.903E+02	6.682E+01	4.434E+01	8.869E-01	17.821

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-3.866E+01		6.970E+01	2.607E+02	5.231E+00	-0.148
NA-22	1.753E+00		3.825E+00	1.847E+01	3.917E-01	0.095
K-40	-2.351E+01		6.810E+01	3.034E+02	6.519E+00	-0.077
SC-46	1.804E+00		3.317E+00	1.750E+01	3.670E-01	0.103
CR-51	1.358E+01		1.082E+02	4.197E+02	8.398E+00	0.032
MN-54	-1.199E+00		5.480E+00	2.223E+01	4.563E-01	-0.054
CO-57	8.671E+01		1.120E+02	4.313E+02	8.915E+00	0.201
CO-58	9.231E-01		4.141E+00	1.928E+01	3.950E-01	0.048
FE-59	-1.092E+01		1.152E+01	4.097E+01	8.577E-01	-0.267
CO-60	3.421E+00		3.437E+00	1.844E+01	3.926E-01	0.186
ZN-65	-7.176E+00		5.089E+00	9.305E+00	1.950E-01	-0.771
SE-75	-1.118E+01		1.794E+01	6.385E+01	1.281E+00	-0.175
SR-85	-1.943E+01		1.132E+01	3.593E+01	7.220E-01	-0.541
Y-88	1.945E+00		1.948E+00	1.430E+01	3.151E-01	0.136
NB-94	-1.529E+00		2.789E+00	1.212E+01	2.496E-01	-0.126
NB-95	2.036E+00		4.896E+00	2.327E+01	4.753E-01	0.087
TC-95M	1.254E+01		1.791E+01	7.061E+01	1.428E+00	0.178
ZR-95	6.795E+00		6.938E+00	3.702E+01	7.558E-01	0.184
ZRNB-95	3.589E+00		8.630E+00	4.102E+01	8.378E-01	0.087
MO-99	1.987E+02		4.636E+02	1.747E+03	3.605E+01	0.114
RH-101	-5.819E-01		1.557E+01	5.802E+01	1.175E+00	-0.010
RH-102M	-3.548E+00		6.426E+00	2.406E+01	4.826E-01	-0.147
RU-103	1.141E+01		7.746E+00	3.669E+01	7.366E-01	0.311
RU-106DA	-6.093E+01		5.804E+01	2.068E+02	4.182E+00	-0.295
AG-108M	-8.665E+00		6.863E+00	2.339E+01	4.684E-01	-0.371
AG-110M	-4.428E+00		5.673E+00	2.193E+01	4.519E-01	-0.202
SN-113DA	3.345E+01		1.269E+01	5.915E+01	1.183E+00	0.566

Sample ID : JMLA41AC Acquisition date : 17-JAN-2007 12:12:22

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

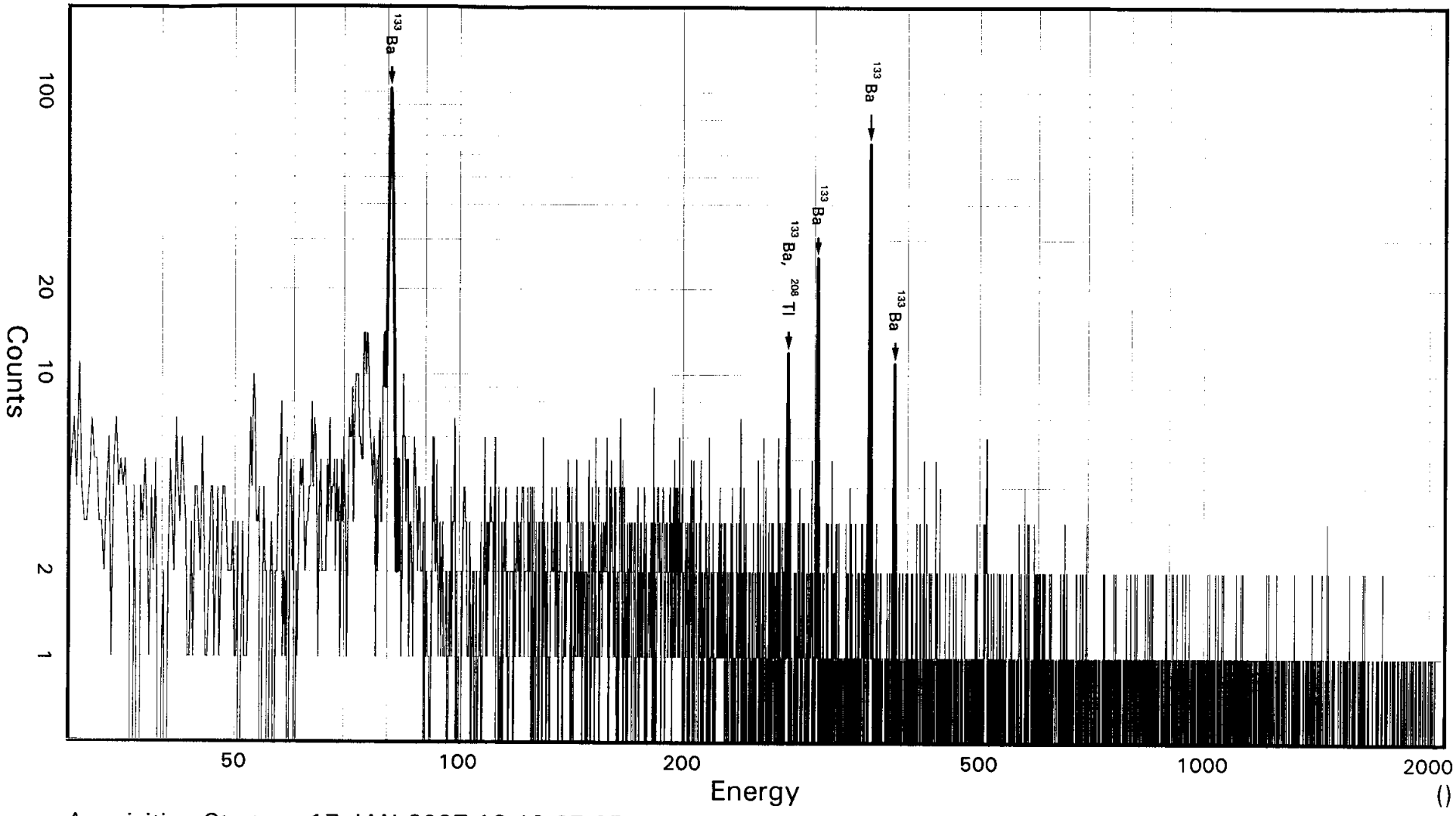
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-3.985E+00		5.907E+00	2.264E+01	4.574E-01	-0.176
SB-125	3.843E+01		2.130E+01	9.965E+01	1.995E+00	0.386
SN-126DA	-2.588E+00		4.665E+00	1.822E+01	3.697E-01	-0.142
I-131	2.181E+01		3.199E+01	1.314E+02	2.628E+00	0.166
CS-134	1.703E+00		5.240E+00	2.335E+01	4.780E-01	0.073
CS-137DA	4.795E-01		4.728E+00	2.108E+01	4.274E-01	0.023
LA-138	2.576E+00		2.580E+00	1.894E+01	4.062E-01	0.136
CE-139	5.244E+00		1.635E+01	6.022E+01	1.230E+00	0.087
BA-140	-1.236E+02		5.297E+01	1.392E+02	2.801E+00	-0.888
BALA-140	3.311E-01		1.539E+01	7.217E+01	1.565E+00	0.005
CE-141	-8.417E+00		3.367E+01	1.207E+02	2.484E+00	-0.070
CE-144	-3.355E+01		1.054E+02	3.810E+02	7.888E+00	-0.088
CEPR-144	-6.456E+01		2.111E+02	7.633E+02	1.580E+01	-0.085
PM-144	2.097E+00		6.405E+00	2.664E+01	5.386E-01	0.079
PM-146	7.461E+00		8.222E+00	3.719E+01	7.454E-01	0.201
EU-152	-4.449E+01		2.487E+01	7.494E+01	1.499E+00	-0.594
EU-154	4.899E+00		1.069E+01	5.163E+01	1.095E+00	0.095
EU-155	7.394E+01		5.265E+01	2.142E+02	4.517E+00	0.345
HF-181	7.062E+00		7.342E+00	3.426E+01	6.874E-01	0.206
BI-207	2.426E+00		6.323E+00	2.600E+01	5.242E-01	0.093
TL-208	3.151E+00		7.491E+00	3.215E+01	6.486E-01	0.098
BI-210M	2.874E+01		2.107E+01	8.471E+01	1.699E+00	0.339
BI-212	9.887E+01		6.116E+01	3.249E+02	9.933E+00	0.304
PB-212	-1.886E+01		2.481E+01	9.303E+01	1.871E+00	-0.203
BI-214	8.661E+00		1.920E+01	8.019E+01	1.620E+00	0.108
PB-214	-3.375E+01		3.174E+01	9.628E+01	1.926E+00	-0.350
RA-223	-9.012E+01		8.401E+01	2.861E+02	5.738E+00	-0.315
RA-224DA	-1.912E+01		2.516E+01	9.434E+01	1.898E+00	-0.203
RA-226DA	8.932E+00		1.922E+01	8.033E+01	1.623E+00	0.111
AC-227DA	-1.017E+02		9.075E+01	3.118E+02	6.275E+00	-0.326
AC-228	-1.257E+00		1.727E+01	7.822E+01	1.615E+00	-0.016
RA-228DA	-1.263E+00		1.735E+01	7.858E+01	1.622E+00	-0.016
TH-228DA	8.895E+00		2.114E+01	9.074E+01	1.831E+00	0.098
TH-232DA	-1.551E+02		6.775E+01	1.939E+02	3.879E+00	-0.800
TH-234DA	-3.364E+00		5.140E+02	2.377E+03	4.940E+01	-0.001
U-234DA	-3.678E+01		4.304E+01	1.588E+02	3.180E+00	-0.232
U-235HP	-7.005E+01		1.144E+02	4.005E+02	8.251E+00	-0.175
NP-237DA	-1.797E+01		2.340E+01	8.222E+01	1.646E+00	-0.219
U-238DA	-3.375E+01		3.174E+01	9.628E+01	1.926E+00	-0.350
U-238DHP	-3.108E+02		4.280E+02	1.488E+03	3.312E+01	-0.209
AM-241HP	-3.110E+00		4.256E+01	1.512E+02	3.393E+00	-0.021

STL Richland WA.

BA133

Sample ID: JMLA71AC
Detector ID: GER6 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 12:12:27.95
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 6.67382E-02
Slope: 2.49506E-01
Quadrature: 3.15485E-09

SAMPLE IDENTIFICATION: JMLA71AC

CONFIGURATION ID: GER6:JMLA71AC_170171212
TITLE : BA133
SAMPLE ID : JMLA71AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 12:12:27
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 04:59:06.34
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 6.6738E-02 keV
ENERGY SLOPE: 2.4951E-01 keV/C
ENERGY Q COEFF: 3.1548E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.3531E-01 keV
FWHM SLOPE: 6.7559E-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 17-JAN-2007 12:43:05

Configuration : $DISK1:[GER6.SAMPLE]JMLA71AC_170171212.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:12:27
Sample ID : JMLA71AC 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 : 20.03 End energy : 2044.23
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.93	366	103	0.84	324.10	317	16	2.03E-01	8.3	
2	0	276.63	54	17	1.56	1108.41	1095	21	3.02E-02	22.8	
3	0	302.81	118	4	0.97	1213.34	1203	19	6.54E-02	10.2	
4	0	356.10	345	20	1.27	1426.93	1418	20	1.92E-01	6.3	
5	0	384.20	50	10	0.84	1539.55	1528	20	2.76E-02	21.1	

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

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 12:43:06

Configuration : $DISK1:[GER6.SAMPLE]JMLA71AC_170171212.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:12:27
Sample ID : JMLA71AC 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	366	33.00	2.167E+00	1.707E+03	1.712E+03	9.90
	276.40	54	6.90	2.334E+00	1.127E+03	1.130E+03	23.41
	302.84	118	17.80	2.337E+00	9.432E+02	9.456E+02	11.55
	356.00	345	62.05*	2.339E+00	7.925E+02	7.945E+02	8.25
	383.85	50	8.70	2.338E+00	8.144E+02	8.164E+02	21.78

Flag: "*" = Keyline

Sample ID : JMLA71AC
Acquisition date : 17-JAN-2007 12:12:27

None

Flags: "T" = Tentatively associated

Sample ID : JMLA71AC
Acquisition date : 17-JAN-2007 12:12:27

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	1.143E+03	23.41	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 17-JAN-2007 12:43:08

Configuration : $DISK1:[GER6.SAMPLE]JMLA71AC_170171212.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 : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:12:27
Sample ID : JMLA71AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.945E+02	6.555E+01	5.031E+01	1.006E+00	15.790

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-5.575E+01		5.678E+01	2.043E+02	4.099E+00	-0.273
NA-22	-1.684E+00		4.629E+00	1.830E+01	3.874E-01	-0.092
K-40	-5.231E+01		6.708E+01	3.132E+02	6.715E+00	-0.167
SC-46	3.155E+00		5.364E+00	2.361E+01	4.944E-01	0.134
CR-51	4.089E+01		1.312E+02	4.965E+02	9.933E+00	0.082
MN-54	5.639E+00		5.873E+00	2.573E+01	5.277E-01	0.219
CO-57	2.298E+01		9.398E+01	3.591E+02	7.417E+00	0.064
CO-58	-3.846E+00		6.860E+00	2.527E+01	5.175E-01	-0.152
FE-59	-3.671E+00		1.099E+01	4.295E+01	8.978E-01	-0.085
CO-60	-1.385E+00		3.976E+00	1.637E+01	3.479E-01	-0.085
ZN-65	-1.595E+01		1.038E+01	3.290E+01	6.885E-01	-0.485
SE-75	-1.364E+01		1.654E+01	5.672E+01	1.138E+00	-0.241
SR-85	-2.377E+01		1.261E+01	4.014E+01	8.066E-01	-0.592
Y-88	5.176E+00		3.002E+00	1.856E+01	4.077E-01	0.279
NB-94	2.976E+00		3.575E+00	1.759E+01	3.618E-01	0.169
NB-95	-3.072E+00		7.326E+00	2.789E+01	5.692E-01	-0.110
TC-95M	4.709E+00		1.731E+01	6.567E+01	1.328E+00	0.072
ZR-95	6.140E+00		1.060E+01	4.592E+01	9.367E-01	0.134
ZRNB-95	-6.229E+00		1.281E+01	4.840E+01	9.880E-01	-0.129
MO-99	7.322E+02		3.625E+02	1.518E+03	3.129E+01	0.482
RH-101	2.943E+01		1.502E+01	6.114E+01	1.237E+00	0.481
RH-102M	-1.215E+00		4.946E+00	1.989E+01	3.990E-01	-0.061
RU-103	4.386E+00		9.598E+00	3.871E+01	7.773E-01	0.113
RU-106DA	-1.121E+00		6.000E+01	2.379E+02	4.809E+00	-0.005
AG-108M	-1.975E+01		8.676E+00	2.540E+01	5.086E-01	-0.778
AG-110M	-1.105E+01		8.547E+00	2.890E+01	5.948E-01	-0.383
SN-113DA	8.301E+00		8.039E+00	3.671E+01	7.344E-01	0.226

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	1.066E+01		8.760E+00	3.679E+01	7.429E-01	0.290
SB-125	-2.573E+01		2.292E+01	7.818E+01	1.565E+00	-0.329
SN-126DA	1.438E+01		5.485E+00	2.719E+01	5.514E-01	0.529
I-131	-1.899E+01		3.028E+01	1.106E+02	2.212E+00	-0.172
CS-134	-3.693E+00		5.546E+00	2.075E+01	4.246E-01	-0.178
CS-137DA	-1.193E+01		6.777E+00	2.086E+01	4.228E-01	-0.572
LA-138	6.802E+00		6.083E+00	2.996E+01	6.411E-01	0.227
CE-139	4.056E+01		1.408E+01	5.945E+01	1.213E+00	0.682
BA-140	-4.624E+01		5.049E+01	1.780E+02	3.581E+00	-0.260
BALA-140	6.886E+00		1.197E+01	6.404E+01	1.385E+00	0.108
CE-141	3.116E+01		2.502E+01	1.018E+02	2.094E+00	0.306
CE-144	1.143E+01		9.074E+01	3.456E+02	7.147E+00	0.033
CEPR-144	2.059E+01		1.813E+02	6.900E+02	1.427E+01	0.030
PM-144	-1.969E+00		5.282E+00	2.050E+01	4.144E-01	-0.096
PM-146	-9.802E+00		9.697E+00	3.332E+01	6.677E-01	-0.294
EU-152	-6.241E+01		3.124E+01	9.513E+01	1.903E+00	-0.656
EU-154	-4.706E+00		1.294E+01	5.115E+01	1.083E+00	-0.092
EU-155	-7.479E+00		3.633E+01	1.368E+02	2.880E+00	-0.055
HF-181	-4.951E-01		7.298E+00	2.979E+01	5.977E-01	-0.017
BI-207	7.618E+00		5.248E+00	2.450E+01	4.937E-01	0.311
TL-208	-3.880E+00		6.439E+00	2.685E+01	5.416E-01	-0.144
BI-210M	-1.383E+01		1.885E+01	6.498E+01	1.303E+00	-0.213
BI-212	-1.948E+01		7.237E+01	2.889E+02	8.829E+00	-0.067
PB-212	1.425E+01		2.221E+01	8.760E+01	1.762E+00	0.163
BI-214	7.455E+00		1.662E+01	6.802E+01	1.374E+00	0.110
PB-214	-2.243E+01		2.802E+01	7.880E+01	1.576E+00	-0.285
RA-223	4.626E+01		6.821E+01	2.608E+02	5.231E+00	0.177
RA-224DA	1.445E+01		2.252E+01	8.883E+01	1.787E+00	0.163
RA-226DA	7.455E+00		1.662E+01	6.802E+01	1.374E+00	0.110
AC-227DA	-2.181E+02		8.615E+01	2.544E+02	5.119E+00	-0.857
AC-228	1.052E+01		1.505E+01	6.951E+01	1.434E+00	0.151
RA-228DA	1.057E+01		1.512E+01	6.983E+01	1.440E+00	0.151
TH-228DA	-1.095E+01		1.817E+01	7.579E+01	1.529E+00	-0.144
TH-232DA	-6.172E+01		6.353E+01	2.180E+02	4.361E+00	-0.283
TH-234DA	3.842E+02		6.982E+02	3.118E+03	6.472E+01	0.123
U-234DA	-3.454E+01		4.447E+01	1.575E+02	3.154E+00	-0.219
U-235HP	-3.181E+01		9.053E+01	3.315E+02	6.823E+00	-0.096
NP-237DA	1.196E+01		2.058E+01	8.205E+01	1.642E+00	0.146
U-238DA	-2.243E+01		2.802E+01	7.880E+01	1.576E+00	-0.285
U-238DHP	3.509E+02		3.473E+02	1.317E+03	2.923E+01	0.266
AM-241HP	-2.625E+01		3.171E+01	1.103E+02	2.467E+00	-0.238

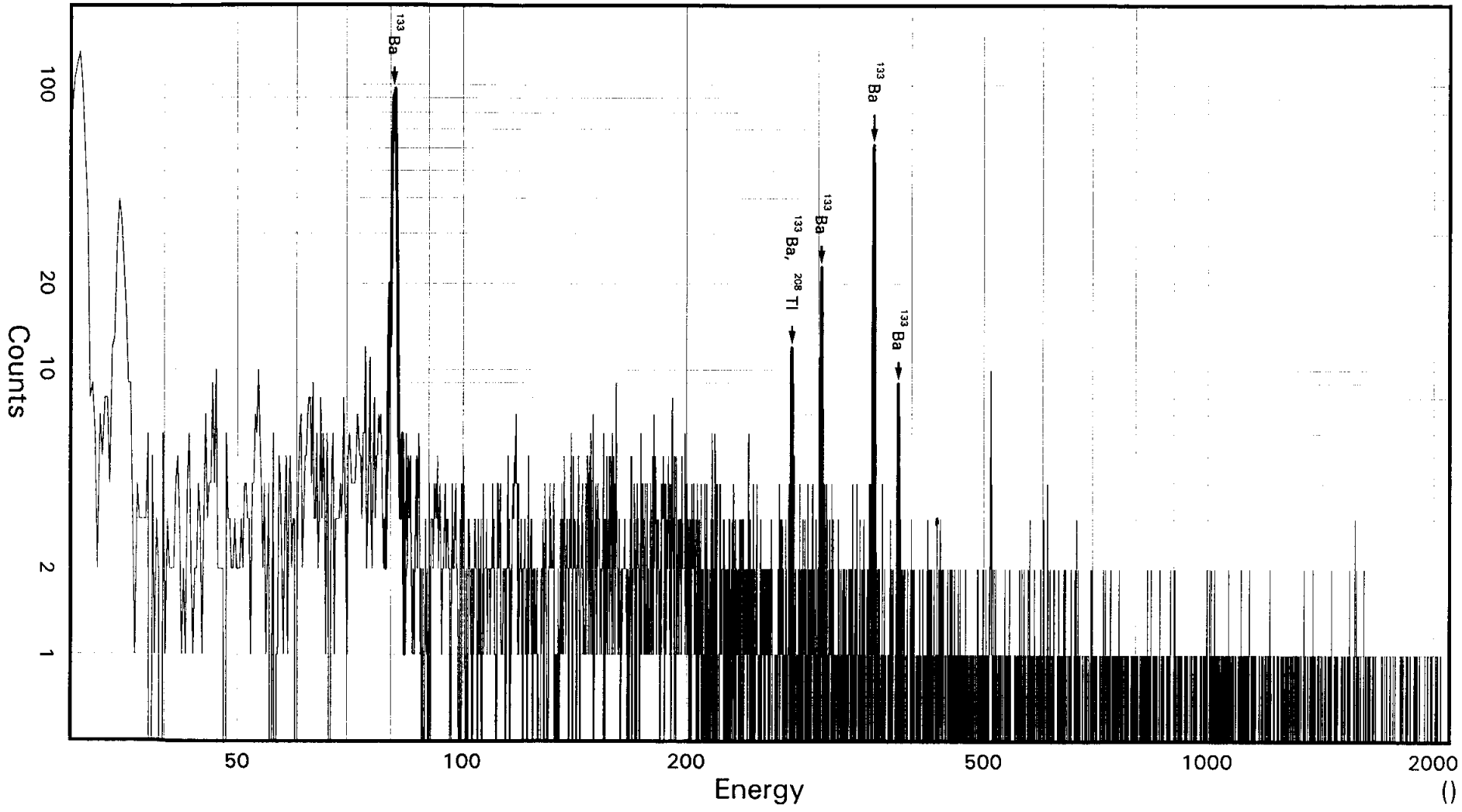
STL Richland WA.

BA133

Sample ID: JMLA81AC

Detector ID: GER8 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 12:12:40.72

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: 3.71259E-01

Slope: 2.49848E-01

Quadrature: 1.33547E-08

SAMPLE IDENTIFICATION: JMLA81AC

CONFIGURATION ID: GER8:JMLA81AC_170171212
TITLE : BA133
SAMPLE ID : JMLA81AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 12:12:40
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 05:16:14.20
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 3.7126E-01 keV
ENERGY SLOPE: 2.4985E-01 keV/C
ENERGY Q COEFF: 1.3355E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.3638E-01 keV
FWHM SLOPE: 2.2109E-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 17-JAN-2007 12:43:21

Configuration : $DISK1:[GER8.SAMPLE]JMLA81AC_170171212.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:12:40
Sample ID : JMLA81AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.21 0.0%
Start energy : 20.36 End energy : 2048.02
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.62	673	127	1.23	121.07	110	20	3.74E-01	5.6	
2	0	34.94	156	67	0.89	138.37	130	17	8.64E-02	14.5	
3	0	80.99	496	41	1.08	322.67	313	21	2.76E-01	5.5	
4	0	276.45	58	6	1.21	1104.91	1099	12	3.22E-02	15.6	
5	0	302.84	121	0	1.18	1210.53	1201	19	6.72E-02	9.1	
6	0	356.01	299	10	1.15	1423.32	1414	19	1.66E-01	6.3	
7	0	383.88	40	7	0.91	1534.84	1528	13	2.19E-02	20.7	

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

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 12:43:22

Configuration : $DISK1:[GER8.SAMPLE]JMLA81AC_170171212.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:12:40
Sample ID : JMLA81AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.21 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	496	33.00	2.202E+00	2.275E+03	2.281E+03	7.78
	276.40	58	6.90	2.371E+00	1.182E+03	1.185E+03	16.52
	302.84	121	17.80	2.374E+00	9.546E+02	9.570E+02	10.57
	356.00	299	62.05*	2.376E+00	6.749E+02	6.767E+02	8.28
	383.85	40	8.70	2.375E+00	6.371E+02	6.388E+02	21.43

Flag: "*" = Keyline

Sample ID : JMLA81AC Acquisition date : 17-JAN-2007 12:12:40

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.62	673	127	1.23	121.07	110	20	3.74E-01	5.6	1.93E+00	
0	34.94	156	67	0.89	138.37	130	17	8.64E-02	14.5	1.97E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLA81AC Acquisition date : 17-JAN-2007 12:12:40

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.199E+03	16.52	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 17-JAN-2007 12:43:24

Configuration : $DISK1:[GER8.SAMPLE]JMLA81AC_170171212.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 : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:12:40
Sample ID : JMLA81AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.21 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.767E+02	5.606E+01	6.030E+01	1.206E+00	11.222

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-8.147E+00		5.264E+01	2.152E+02	4.317E+00	-0.038
NA-22	1.392E+00		3.405E+00	1.614E+01	3.416E-01	0.086
K-40	4.092E+01		3.795E+01	2.114E+02	4.531E+00	0.194
SC-46	-6.761E+00		5.096E+00	1.979E+01	4.143E-01	-0.342
CR-51	4.002E+01		9.063E+01	3.671E+02	7.345E+00	0.109
MN-54	5.787E+00		4.265E+00	2.092E+01	4.291E-01	0.277
CO-57	5.065E+01		1.055E+02	3.941E+02	8.138E+00	0.129
CO-58	-3.537E+00		3.432E+00	1.219E+01	2.496E-01	-0.290
FE-59	3.212E+00		7.223E+00	3.471E+01	7.254E-01	0.093
CO-60	2.996E+00		2.125E+00	1.390E+01	2.953E-01	0.216
ZN-65	-4.982E-02		7.393E+00	3.238E+01	6.775E-01	-0.002
SE-75	-4.986E+00		1.414E+01	5.222E+01	1.048E+00	-0.095
SR-85	-3.693E+01		1.256E+01	3.690E+01	7.415E-01	-1.001
Y-88	3.348E+00		3.425E+00	1.826E+01	4.010E-01	0.183
NB-94	1.642E+00		3.743E+00	1.731E+01	3.560E-01	0.095
NB-95	1.707E+00		5.080E+00	2.272E+01	4.637E-01	0.075
TC-95M	1.520E+01		1.869E+01	7.227E+01	1.461E+00	0.210
ZR-95	-6.501E+00		9.716E+00	3.623E+01	7.391E-01	-0.179
ZRNB-95	3.009E+00		8.954E+00	4.005E+01	8.174E-01	0.075
MO-99	1.299E+02		4.464E+02	1.631E+03	3.362E+01	0.080
RH-101	1.342E+01		1.655E+01	6.141E+01	1.243E+00	0.218
RH-102M	1.978E+00		5.259E+00	2.243E+01	4.499E-01	0.088
RU-103	1.017E+01		7.174E+00	3.347E+01	6.720E-01	0.304
RU-106DA	7.452E+01		4.468E+01	2.230E+02	4.508E+00	0.334
AG-108M	-2.697E+00		8.632E+00	3.142E+01	6.293E-01	-0.086
AG-110M	-3.513E+00		6.988E+00	2.709E+01	5.576E-01	-0.130
SN-113DA	-3.591E+00		1.143E+01	4.240E+01	8.482E-01	-0.085

Sample ID : JMLA81AC Acquisition date : 17-JAN-2007 12:12:40

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

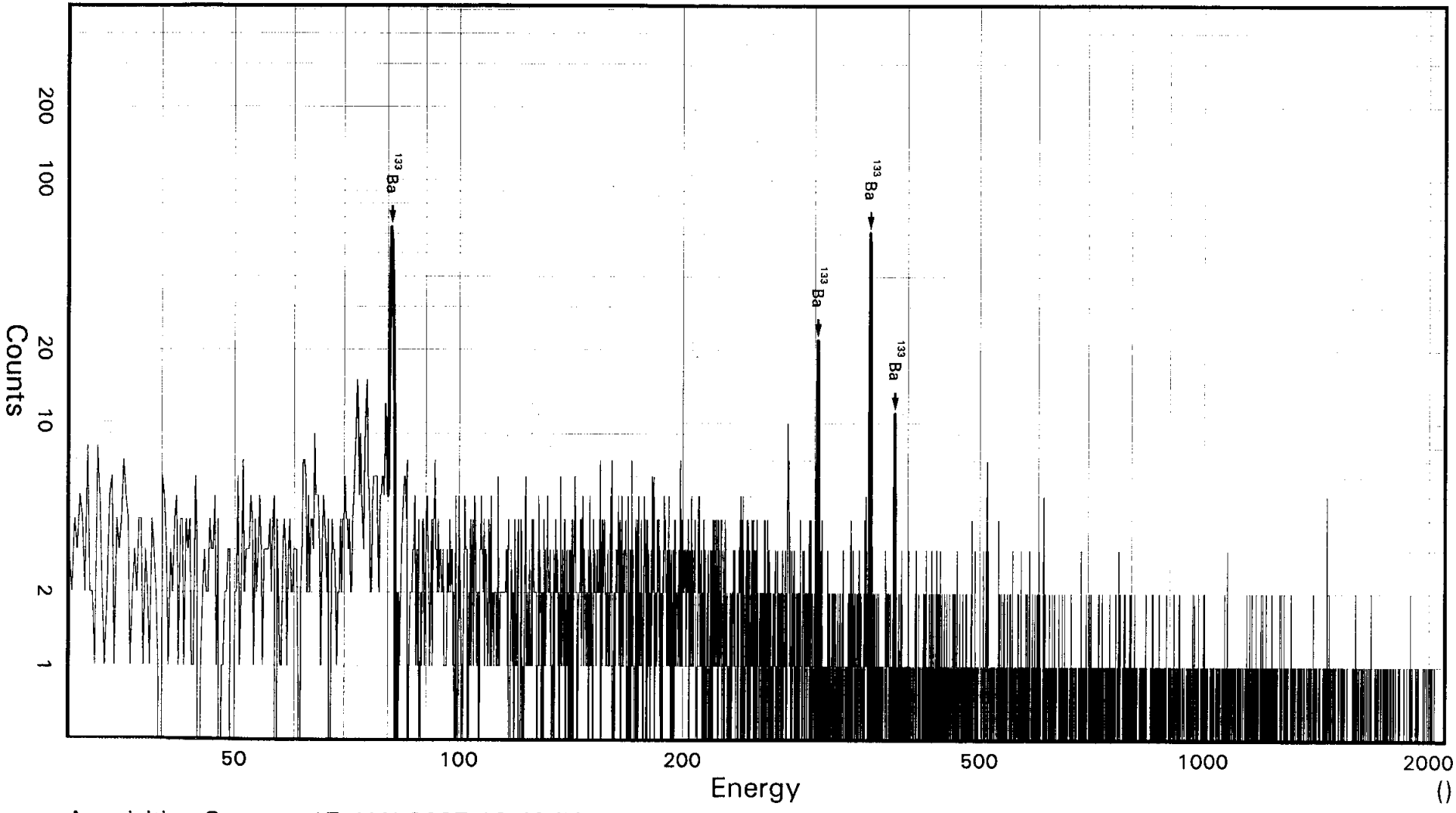
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	8.324E+00		6.536E+00	2.939E+01	5.935E-01	0.283
SB-125	-2.683E+00		1.968E+01	7.592E+01	1.520E+00	-0.035
SN-126DA	-1.491E+00		5.884E+00	2.256E+01	4.574E-01	-0.066
I-131	-1.691E+01		2.702E+01	9.775E+01	1.955E+00	-0.173
CS-134	1.425E+00		5.200E+00	2.230E+01	4.561E-01	0.064
CS-137DA	-4.028E-02		5.805E+00	2.357E+01	4.777E-01	-0.002
LA-138	2.140E-01		5.425E+00	2.421E+01	5.179E-01	0.009
CE-139	-1.508E+01		1.439E+01	4.832E+01	9.861E-01	-0.312
BA-140	-5.684E+01		3.551E+01	1.131E+02	2.275E+00	-0.503
BALA-140	-6.699E+00		1.172E+01	4.994E+01	1.080E+00	-0.134
CE-141	-4.575E+01		3.431E+01	1.130E+02	2.325E+00	-0.405
CE-144	-1.250E+02		9.944E+01	3.313E+02	6.850E+00	-0.377
CEPR-144	-2.477E+02		1.990E+02	6.637E+02	1.372E+01	-0.373
PM-144	-1.015E+01		5.682E+00	1.764E+01	3.565E-01	-0.575
PM-146	3.242E+00		9.955E+00	3.933E+01	7.883E-01	0.082
EU-152	2.497E+01		2.864E+01	1.156E+02	2.311E+00	0.216
EU-154	3.892E+00		9.518E+00	4.512E+01	9.547E-01	0.086
EU-155	3.412E+00		5.088E+01	1.876E+02	3.950E+00	0.018
HF-181	4.717E+00		6.628E+00	3.013E+01	6.045E-01	0.157
BI-207	-9.831E+00		4.741E+00	1.344E+01	2.708E-01	-0.732
TL-208	5.203E+00		6.021E+00	2.664E+01	5.374E-01	0.195
BI-210M	2.351E+01		1.676E+01	6.896E+01	1.383E+00	0.341
BI-212	3.161E+01		6.772E+01	2.963E+02	9.057E+00	0.107
PB-212	-2.961E+01		2.208E+01	7.684E+01	1.545E+00	-0.385
BI-214	5.320E+00		1.427E+01	6.777E+01	1.369E+00	0.079
PB-214	6.664E-01		2.665E+01	1.035E+02	2.071E+00	0.006
RA-223	2.015E-01		6.267E+01	2.354E+02	4.721E+00	0.001
RA-224DA	-3.003E+01		2.239E+01	7.792E+01	1.567E+00	-0.385
RA-226DA	5.198E+00		1.425E+01	6.770E+01	1.368E+00	0.077
AC-227DA	-4.236E+00		7.968E+01	2.974E+02	5.984E+00	-0.014
AC-228	-4.446E+00		1.353E+01	5.618E+01	1.159E+00	-0.079
RA-228DA	-4.466E+00		1.359E+01	5.644E+01	1.164E+00	-0.079
TH-228DA	1.468E+01		1.699E+01	7.520E+01	1.517E+00	0.195
TH-232DA	9.041E+01		6.447E+01	2.664E+02	5.328E+00	0.339
TH-234DA	-1.312E+03		7.019E+02	2.079E+03	4.314E+01	-0.631
U-234DA	-1.971E+01		4.620E+01	1.845E+02	3.694E+00	-0.107
U-235HP	-8.501E+01		1.109E+02	3.806E+02	7.832E+00	-0.223
NP-237DA	3.891E+01		2.210E+01	9.350E+01	1.871E+00	0.416
U-238DA	6.664E-01		2.665E+01	1.035E+02	2.071E+00	0.006
U-238DHP	5.521E+02		4.421E+02	1.713E+03	3.801E+01	0.322
AM-241HP	-2.775E+01		4.227E+01	1.479E+02	3.305E+00	-0.188

STL Richland WA.

BA133

Sample ID: JMLT21AC
Detector ID: GER4 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 12:49:52.74
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -4.78812E-02
Slope: 2.49057E-01
Quadrature: 4.76338E-09

SAMPLE IDENTIFICATION: JMLT21AC

CONFIGURATION ID: GER4:JMLT21AC_170171249
TITLE : BA133
SAMPLE ID : JMLT21AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 12:49:52
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 05:15:56.94
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: -.4788E-01 keV
ENERGY SLOPE: 2.4906E-01 keV/C
ENERGY Q COEFF: 4.7634E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.3478E-01 keV
FWHM SLOPE: 4.2590E-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 17-JAN-2007 13:20:07

Configuration : $DISK1:[GER4.SAMPLE]JMLT21AC_170171249.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:49:52
Sample ID : JMLT21AC 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 : 2040.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	5	72.99*	24	20	1.12	293.25	288	18	1.34E-02	46.3	7.82E-01
2	5	75.11*	4	16	0.86	301.78	288	18	2.39E-03	220.2	
3	0	81.12	195	62	0.81	325.89	320	11	1.08E-01	10.8	
4	0	302.80	114	4	1.17	1215.95	1208	14	6.34E-02	10.0	
5	0	356.01	297	4	1.13	1429.57	1421	15	1.65E-01	6.0	
6	0	384.15	29	6	0.62	1542.58	1538	10	1.60E-02	25.4	

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

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 13:20:07

Configuration : $DISK1:[GER4.SAMPLE]JMLT21AC_170171249.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:49:52
Sample ID : JMLT21AC 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	195	33.00	2.043E+00	9.629E+02	9.653E+02	12.12
	276.40	------	6.90	2.202E+00	------	Line Not Found	------
	302.84	114	17.80	2.205E+00	9.688E+02	9.713E+02	11.42
	356.00	297	62.05*	2.207E+00	7.222E+02	7.240E+02	9.10
	383.85	29	8.70	2.207E+00	5.012E+02	5.025E+02	26.14

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JMLT21AC Acquisition date : 17-JAN-2007 12:49:52

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
5	72.99	24	20	1.12	293.25	288	18	1.34E-02	46.3	2.02E+00	
5	75.11	4	16	0.86	301.78	288	18	2.39E-03	****	2.03E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLT21AC
Acquisition date : 17-JAN-2007 12:49:52

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 13:20:09

Configuration : $DISK1:[GER4.SAMPLE]JMLT21AC_170171249.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 : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:49:52
Sample ID : JMLT21AC 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%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.240E+02	6.591E+01	3.232E+01	1.515E+00	22.401

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-3.030E+01		6.759E+01	2.592E+02	9.463E+00	-0.117
NA-22	-5.731E+00		3.504E+00	9.787E+00	3.773E-01	-0.586
K-40	3.664E+01		8.025E+01	3.941E+02	1.539E+01	0.093
SC-46	1.969E+00		4.631E+00	2.133E+01	8.132E-01	0.092
CR-51	2.318E+01		9.155E+01	3.729E+02	8.657E+00	0.062
MN-54	9.288E+00		6.092E+00	2.783E+01	1.039E+00	0.334
CO-57	-4.114E+01		1.029E+02	3.691E+02	8.848E+00	-0.111
CO-58	5.953E-01		5.887E+00	2.431E+01	9.065E-01	0.024
FE-59	-4.008E+00		8.752E+00	3.583E+01	1.364E+00	-0.112
CO-60	-5.574E-02		2.322E+00	1.187E+01	4.595E-01	-0.005
ZN-65	7.366E-01		1.102E+01	4.570E+01	1.742E+00	0.016
SE-75	1.819E+01		1.446E+01	6.000E+01	1.397E+00	0.303
SR-85	-1.961E+01		1.035E+01	3.278E+01	1.199E+00	-0.598
Y-88	-1.832E+00		1.836E+00	4.949E+00	1.981E-01	-0.370
NB-94	4.917E+00		5.085E+00	2.331E+01	8.728E-01	0.211
NB-95	-6.273E+00		6.181E+00	2.193E+01	8.151E-01	-0.286
TC-95M	1.670E+01		1.888E+01	7.381E+01	1.732E+00	0.226
ZR-95	3.113E+00		1.080E+01	4.571E+01	1.698E+00	0.068
ZRNB-95	-1.105E+01		1.089E+01	3.865E+01	1.436E+00	-0.286
MO-99	-6.842E+02		4.000E+02	1.284E+03	3.073E+01	-0.533
RH-101	4.322E+00		1.562E+01	5.878E+01	1.381E+00	0.074
RH-102M	4.739E-01		5.438E+00	2.267E+01	8.278E-01	0.021
RU-103	5.098E+00		5.415E+00	2.686E+01	9.815E-01	0.190
RU-106DA	7.750E+01		5.403E+01	2.536E+02	9.334E+00	0.306
AG-108M	-1.748E+01		8.333E+00	2.439E+01	8.890E-01	-0.717
AG-110M	2.464E+00		5.805E+00	2.673E+01	1.002E+00	0.092
SN-113DA	1.178E+01		1.162E+01	4.891E+01	1.781E+00	0.241

Sample ID : JMLT21AC Acquisition date : 17-JAN-2007 12:49:52

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-6.141E+00		7.272E+00	2.581E+01	9.488E-01	-0.238
SB-125	8.732E+00		2.125E+01	8.667E+01	3.158E+00	0.101
SN-126DA	2.262E+00		5.055E+00	2.199E+01	8.114E-01	0.103
I-131	6.890E+00		2.559E+01	1.040E+02	3.784E+00	0.066
CS-134	-3.398E+00		6.545E+00	2.465E+01	9.180E-01	-0.138
CS-137DA	1.812E+00		5.799E+00	2.501E+01	9.229E-01	0.072
LA-138	-7.115E+00		4.133E+00	6.555E+00	2.556E-01	-1.086
CE-139	2.218E-01		1.497E+01	5.406E+01	1.281E+00	0.004
BA-140	5.231E+01		5.813E+01	2.445E+02	8.955E+00	0.214
BALA-140	-7.978E+00		1.965E+01	7.887E+01	3.109E+00	-0.101
CE-141	-2.565E+01		3.185E+01	1.098E+02	2.620E+00	-0.234
CE-144	-1.643E+02		9.595E+01	3.093E+02	7.426E+00	-0.531
CEPR-144	-3.286E+02		1.919E+02	6.187E+02	1.485E+01	-0.531
PM-144	-4.945E+00		5.472E+00	1.939E+01	7.133E-01	-0.255
PM-146	7.341E+00		8.099E+00	3.589E+01	1.309E+00	0.205
EU-152	5.425E+01		2.745E+01	1.225E+02	2.844E+00	0.443
EU-154	-1.438E+01		1.015E+01	3.193E+01	1.231E+00	-0.451
EU-155	-3.877E+01		5.202E+01	1.857E+02	4.540E+00	-0.209
HF-181	9.117E-01		9.554E+00	3.833E+01	1.400E+00	0.024
BI-207	1.769E+00		5.717E+00	2.371E+01	8.699E-01	0.075
TL-208	2.240E+00		8.392E+00	3.522E+01	1.293E+00	0.064
BI-210M	1.193E+01		1.577E+01	6.329E+01	1.473E+00	0.188
BI-212	4.793E+01		9.322E+01	3.891E+02	1.693E+01	0.123
PB-212	5.924E+00		2.311E+01	9.170E+01	2.140E+00	0.065
BI-214	2.433E+01		1.806E+01	8.141E+01	2.994E+00	0.299
PB-214	3.393E+01		2.665E+01	1.037E+02	2.407E+00	0.327
RA-223	8.785E+00		5.928E+01	2.260E+02	5.258E+00	0.039
RA-224DA	6.007E+00		2.343E+01	9.299E+01	2.170E+00	0.065
RA-226DA	2.446E+01		1.807E+01	8.147E+01	2.996E+00	0.300
AC-227DA	-2.581E+02		8.816E+01	2.480E+02	5.790E+00	-1.040
AC-228	-1.337E+00		1.978E+01	8.917E+01	3.349E+00	-0.015
RA-228DA	-1.343E+00		1.987E+01	8.959E+01	3.364E+00	-0.015
TH-228DA	6.322E+00		2.369E+01	9.940E+01	3.649E+00	0.064
TH-232DA	2.411E+00		6.715E+01	2.565E+02	5.953E+00	0.009
TH-234DA	-2.231E+01		9.087E+02	3.620E+03	1.369E+02	-0.006
U-234DA	5.897E+01		4.756E+01	1.907E+02	4.430E+00	0.309
U-235HP	-2.202E+01		1.067E+02	3.842E+02	9.177E+00	-0.057
NP-237DA	2.328E+01		1.796E+01	7.922E+01	1.839E+00	0.294
U-238DA	3.393E+01		2.665E+01	1.037E+02	2.407E+00	0.327
U-238DHP	-2.029E+02		3.714E+02	1.332E+03	3.434E+01	-0.152
AM-241HP	2.821E+01		2.828E+01	1.130E+02	2.937E+00	0.250

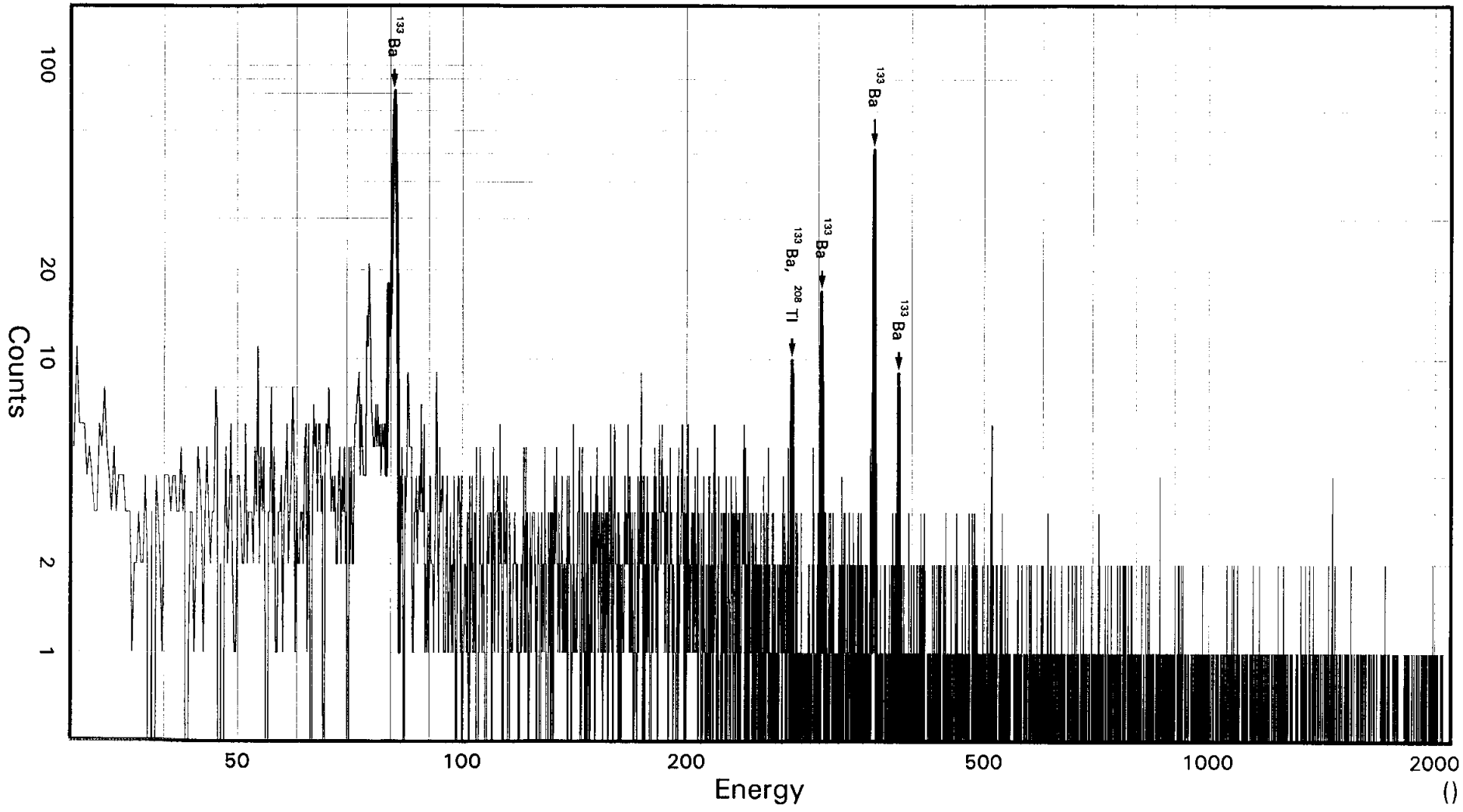
STL Richland WA.

BA133

Sample ID: JMLT61AC

Detector ID: GER7 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 12:50:13.75

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: 6.28599E-01

Slope: 2.49276E-01

Quadrature: 1.25500E-07

SAMPLE IDENTIFICATION: JMLT61AC

CONFIGURATION ID: GER7:JMLT61AC_170171250
TITLE : BA133
SAMPLE ID : JMLT61AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 12:50:13
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 04:58:47.78
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 6.2860E-01 keV
ENERGY SLOPE: 2.4928E-01 keV/C
ENERGY Q COEFF: 1.2550E-07 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.1102E-01 keV
FWHM SLOPE: 3.3558E-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 17-JAN-2007 13:20:30

Configuration : $DISK1:[GER7.SAMPLE]JMLT61AC_170171250.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:50:13
Sample ID : JMLT61AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Start energy : 20.57 End energy : 2051.12
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.00*	1	64	0.80	298.30	293	12	6.76E-04	*****	
2	0	80.92	309	79	0.82	322.03	313	15	1.72E-01	8.1	
3	0	276.43	59	0	1.37	1105.80	1099	13	3.28E-02	13.0	
4	0	302.99	83	18	1.28	1212.20	1203	23	4.60E-02	17.1	
5	0	355.97	275	23	1.22	1424.47	1413	24	1.53E-01	7.7	
6	0	383.78	46	0	1.31	1535.87	1529	13	2.56E-02	14.7	

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

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 13:20:30

Configuration : $DISK1:[GER7.SAMPLE]JMLT61AC_170171250.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:50:13
Sample ID : JMLT61AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	309	33.00	1.923E+00	1.623E+03	1.628E+03	9.76
	276.40	59	6.90	2.076E+00	1.373E+03	1.377E+03	14.09
	302.84	83	17.80	2.078E+00	7.459E+02	7.478E+02	17.92
	356.00	275	62.05*	2.080E+00	7.096E+02	7.114E+02	9.36
	383.85	46	8.70	2.080E+00	8.473E+02	8.495E+02	15.70

Flag: "*" = Keyline

Sample ID : JMLT61AC Acquisition date : 17-JAN-2007 12:50:13

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.00	1	64	0.80	298.30	293	12	6.76E-04	****	1.91E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLT61AC Acquisition date : 17-JAN-2007 12:50:13

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	1.393E+03	14.09	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 17-JAN-2007 13:20:32

Configuration : $DISK1:[GER7.SAMPLE]JMLT61AC_170171250.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 : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:50:13
Sample ID : JMLT61AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.114E+02	6.656E+01	6.405E+01	1.281E+00	11.107

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	7.278E+01		7.444E+01	3.222E+02	6.463E+00	0.226
NA-22	3.434E+00		2.436E+00	1.593E+01	3.378E-01	0.216
K-40	1.395E+02		7.535E+01	3.706E+02	7.961E+00	0.377
SC-46	2.145E+00		6.482E+00	2.722E+01	5.706E-01	0.079
CR-51	-1.339E+01		1.205E+02	4.506E+02	9.015E+00	-0.030
MN-54	2.150E+00		5.512E+00	2.395E+01	4.917E-01	0.090
CO-57	-1.410E+02		1.168E+02	3.927E+02	8.119E+00	-0.359
CO-58	-2.165E+00		4.361E+00	1.758E+01	3.603E-01	-0.123
FE-59	-3.966E+00		6.557E+00	2.715E+01	5.683E-01	-0.146
CO-60	1.582E+00		2.939E+00	1.570E+01	3.343E-01	0.101
ZN-65	-2.902E-01		7.033E+00	3.195E+01	6.696E-01	-0.009
SE-75	-5.669E+00		1.538E+01	5.671E+01	1.138E+00	-0.100
SR-85	-8.080E+00		1.279E+01	4.475E+01	8.994E-01	-0.181
Y-88	1.892E+00		3.403E+00	1.805E+01	3.977E-01	0.105
NB-94	6.053E-01		4.054E+00	1.830E+01	3.766E-01	0.033
NB-95	4.052E+00		6.179E+00	2.826E+01	5.773E-01	0.143
TC-95M	3.638E-01		2.191E+01	8.103E+01	1.639E+00	0.004
ZR-95	-1.104E+01		1.263E+01	4.510E+01	9.207E-01	-0.245
ZRNB-95	6.683E+00		1.081E+01	4.933E+01	1.008E+00	0.135
MO-99	-2.340E+02		4.456E+02	1.592E+03	3.284E+01	-0.147
RH-101	8.788E+00		1.832E+01	6.900E+01	1.397E+00	0.127
RH-102M	1.577E+00		7.073E+00	2.843E+01	5.704E-01	0.055
RU-103	2.809E+00		5.356E+00	2.569E+01	5.158E-01	0.109
RU-106DA	-4.767E+01		4.992E+01	1.826E+02	3.693E+00	-0.261
AG-108M	-4.434E+00		8.555E+00	3.150E+01	6.309E-01	-0.141
AG-110M	-4.215E+00		6.584E+00	2.561E+01	5.278E-01	-0.165
SN-113DA	5.348E+00		1.169E+01	4.800E+01	9.602E-01	0.111

Sample ID : JMLT61AC Acquisition date : 17-JAN-2007 12:50:13

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	1.332E+00		4.889E+00	2.231E+01	4.508E-01	0.060
SB-125	2.196E+01		2.048E+01	9.147E+01	1.832E+00	0.240
SN-126DA	9.775E+00		4.622E+00	2.440E+01	4.949E-01	0.401
I-131	1.596E+01		2.584E+01	1.103E+02	2.206E+00	0.145
CS-134	3.435E+00		4.776E+00	2.300E+01	4.709E-01	0.149
CS-137DA	-3.366E+00		6.604E+00	2.530E+01	5.131E-01	-0.133
LA-138	2.499E+00		4.509E+00	2.390E+01	5.126E-01	0.105
CE-139	2.981E+01		1.587E+01	6.383E+01	1.304E+00	0.467
BA-140	-1.874E+01		5.476E+01	2.071E+02	4.168E+00	-0.090
BALA-140	7.955E+00		1.340E+01	7.228E+01	1.567E+00	0.110
CE-141	-2.521E+01		3.048E+01	1.055E+02	2.172E+00	-0.239
CE-144	1.434E+02		1.139E+02	4.481E+02	9.277E+00	0.320
CEPR-144	2.869E+02		2.278E+02	8.963E+02	1.856E+01	0.320
PM-144	-7.886E+00		5.929E+00	2.015E+01	4.075E-01	-0.391
PM-146	-2.223E+01		9.653E+00	2.666E+01	5.343E-01	-0.834
EU-152	-8.507E+00		3.018E+01	1.112E+02	2.223E+00	-0.077
EU-154	9.599E+00		6.807E+00	4.453E+01	9.443E-01	0.216
EU-155	3.558E+01		5.314E+01	2.072E+02	4.371E+00	0.172
HF-181	-5.222E+00		1.045E+01	3.873E+01	7.772E-01	-0.135
BI-207	4.909E+00		5.115E+00	2.355E+01	4.748E-01	0.208
TL-208	2.696E+00		6.448E+00	2.878E+01	5.806E-01	0.094
BI-210M	-2.922E+00		1.951E+01	7.212E+01	1.447E+00	-0.041
BI-212	7.373E+01		6.602E+01	3.249E+02	9.933E+00	0.227
PB-212	4.780E+01		2.669E+01	1.122E+02	2.257E+00	0.426
BI-214	4.768E+00		1.547E+01	6.808E+01	1.376E+00	0.070
PB-214	-2.312E+00		3.068E+01	1.043E+02	2.087E+00	-0.022
RA-223	1.497E+01		7.774E+01	2.914E+02	5.844E+00	0.051
RA-224DA	4.847E+01		2.706E+01	1.138E+02	2.289E+00	0.426
RA-226DA	1.403E+00		1.583E+01	6.808E+01	1.376E+00	0.021
AC-227DA	-1.970E+02		1.002E+02	3.201E+02	6.442E+00	-0.615
AC-228	1.679E+01		2.181E+01	9.943E+01	2.053E+00	0.169
RA-228DA	1.687E+01		2.191E+01	9.989E+01	2.062E+00	0.169
TH-228DA	7.609E+00		1.820E+01	8.123E+01	1.639E+00	0.094
TH-232DA	-1.083E+01		7.279E+01	2.677E+02	5.354E+00	-0.040
TH-234DA	7.651E+02		6.802E+02	3.356E+03	6.974E+01	0.228
U-234DA	3.859E+01		4.836E+01	1.976E+02	3.957E+00	0.195
U-235HP	1.494E+02		1.097E+02	4.348E+02	8.957E+00	0.344
NP-237DA	2.297E+01		2.284E+01	9.358E+01	1.873E+00	0.245
U-238DA	-2.312E+00		3.068E+01	1.043E+02	2.087E+00	-0.022
U-238DHP	-8.504E+01		4.453E+02	1.587E+03	3.532E+01	-0.054
AM-241HP	3.232E-01		4.338E+01	1.546E+02	3.468E+00	0.002

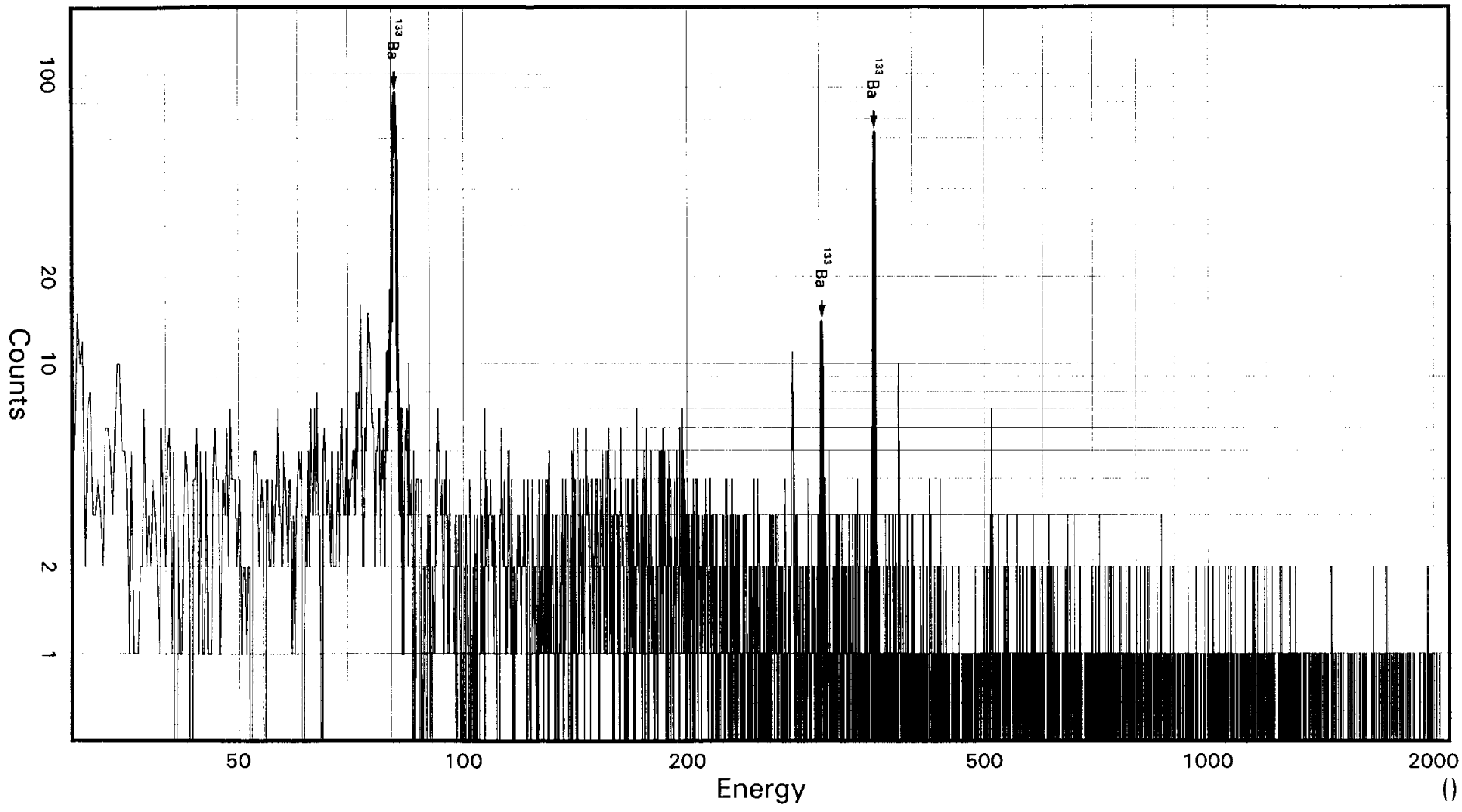
STL Richland WA.

BA133

Sample ID: JMLT71AC

Detector ID: GER6 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 12:50:41.41

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: 6.67382E-02

Slope: 2.49506E-01

Quadrature: 3.15485E-09

SAMPLE IDENTIFICATION: JMLT71AC

CONFIGURATION ID: GER6:JMLT71AC_170171250
TITLE : BA133
SAMPLE ID : JMLT71AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 12:50:41
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 04:59:06.34
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 6.6738E-02 keV
ENERGY SLOPE: 2.4951E-01 keV/C
ENERGY Q COEFF: 3.1548E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.3531E-01 keV
FWHM SLOPE: 6.7559E-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 17-JAN-2007 13:20:57

```
Configuration     : $DISK1:[GER6.SAMPLE]JMLT71AC_170171250.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BA133
Sample date       : 3-JAN-2007 12:00:00  Acquisition date : 17-JAN-2007 12:50:41
Sample ID         : JMLT71AC             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      :    20.03             End energy       :  2044.23
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.85	363	70	1.04	323.79	316	17	2.02E-01	7.1	
2	0	303.05	77	8	1.27	1214.30	1206	16	4.28E-02	14.0	
3	0	356.01	334	3	1.30	1426.57	1418	15	1.85E-01	5.6	

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

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 13:20:57

Configuration : $DISK1:[GER6.SAMPLE]JMLT71AC_170171250.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:50:41
Sample ID : JMLT71AC 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	363	33.00	2.166E+00	1.693E+03	1.697E+03	8.96
	276.40	------	6.90	2.334E+00	------	Line Not Found	------
	302.84	77	17.80	2.337E+00	6.171E+02	6.187E+02	15.04
	356.00	334	62.05*	2.339E+00	7.667E+02	7.686E+02	7.78
	383.85	------	8.70	2.338E+00	------	Line Not Found	------

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 13:20:59

Configuration : $DISK1:[GER6.SAMPLE]JMLT71AC_170171250.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 : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:50:41
Sample ID : JMLT71AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.686E+02	5.979E+01	5.427E+01	1.085E+00	14.163

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.953E+01		5.852E+01	2.470E+02	4.955E+00	0.079
NA-22	-1.652E+00		4.084E+00	1.640E+01	3.472E-01	-0.101
K-40	-1.600E+01		6.118E+01	3.089E+02	6.623E+00	-0.052
SC-46	1.529E+00		4.491E+00	2.012E+01	4.212E-01	0.076
CR-51	9.937E+01		1.327E+02	5.154E+02	1.031E+01	0.193
MN-54	3.226E+00		4.707E+00	2.126E+01	4.360E-01	0.152
CO-57	6.940E+01		9.168E+01	3.623E+02	7.481E+00	0.192
CO-58	1.525E+00		4.518E+00	2.022E+01	4.140E-01	0.075
FE-59	-6.886E+00		9.399E+00	3.528E+01	7.375E-01	-0.195
CO-60	-7.439E+00		3.351E+00	4.114E+00	8.743E-02	-1.808
ZN-65	-1.265E+01		7.691E+00	2.249E+01	4.707E-01	-0.562
SE-75	3.344E+00		1.513E+01	5.700E+01	1.144E+00	0.059
SR-85	-7.420E+00		1.159E+01	4.078E+01	8.194E-01	-0.182
Y-88	-5.260E+00		3.907E+00	1.269E+01	2.787E-01	-0.415
NB-94	4.531E+00		5.647E+00	2.441E+01	5.019E-01	0.186
NB-95	-7.772E+00		7.231E+00	2.520E+01	5.145E-01	-0.308
TC-95M	-2.881E+00		1.812E+01	6.665E+01	1.347E+00	-0.043
ZR-95	-9.238E+00		1.184E+01	4.305E+01	8.782E-01	-0.215
ZRNB-95	-1.370E+01		1.274E+01	4.442E+01	9.067E-01	-0.308
MO-99	3.025E+02		3.981E+02	1.544E+03	3.183E+01	0.196
RH-101	1.121E+01		1.631E+01	6.198E+01	1.255E+00	0.181
RH-102M	3.361E+00		5.607E+00	2.409E+01	4.833E-01	0.139
RU-103	-9.997E+00		8.434E+00	2.902E+01	5.826E-01	-0.345
RU-106DA	-1.196E+02		6.757E+01	2.127E+02	4.301E+00	-0.562
AG-108M	1.478E+01		7.467E+00	3.335E+01	6.680E-01	0.443
AG-110M	-2.032E+00		5.534E+00	2.260E+01	4.652E-01	-0.090
SN-113DA	-2.047E+00		1.230E+01	4.641E+01	9.285E-01	-0.044

Sample ID : JMLT71AC Acquisition date : 17-JAN-2007 12:50:41

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-2.020E+01		7.687E+00	2.075E+01	4.190E-01	-0.974
SB-125	-1.056E+00		2.109E+01	8.180E+01	1.638E+00	-0.013
SN-126DA	-9.104E+00		5.911E+00	1.894E+01	3.840E-01	-0.481
I-131	-4.983E+00		2.729E+01	1.050E+02	2.101E+00	-0.047
CS-134	-4.581E+00		5.952E+00	2.175E+01	4.449E-01	-0.211
CS-137DA	8.850E+00		5.762E+00	2.732E+01	5.538E-01	0.324
LA-138	-7.005E+00		6.117E+00	2.122E+01	4.541E-01	-0.330
CE-139	-2.738E+01		1.496E+01	4.781E+01	9.758E-01	-0.573
BA-140	1.032E+01		4.806E+01	1.947E+02	3.916E+00	0.053
BALA-140	6.879E+00		1.548E+01	7.435E+01	1.608E+00	0.093
CE-141	-3.713E+00		2.974E+01	1.092E+02	2.246E+00	-0.034
CE-144	-1.209E+02		9.036E+01	3.100E+02	6.411E+00	-0.390
CEPR-144	-2.396E+02		1.809E+02	6.213E+02	1.285E+01	-0.386
PM-144	2.522E+00		6.247E+00	2.557E+01	5.169E-01	0.099
PM-146	1.548E+01		7.469E+00	3.692E+01	7.399E-01	0.419
EU-152	-2.327E+01		2.838E+01	9.894E+01	1.979E+00	-0.235
EU-154	-4.617E+00		1.141E+01	4.584E+01	9.703E-01	-0.101
EU-155	-5.743E+01		4.613E+01	1.554E+02	3.273E+00	-0.369
HF-181	-1.462E+01		7.712E+00	2.337E+01	4.689E-01	-0.626
BI-207	7.908E+00		5.659E+00	2.577E+01	5.194E-01	0.307
TL-208	-6.800E+00		7.661E+00	2.972E+01	5.994E-01	-0.229
BI-210M	2.490E+01		1.530E+01	6.456E+01	1.295E+00	0.386
BI-212	-1.932E+01		8.443E+01	3.302E+02	1.009E+01	-0.059
PB-212	3.651E+01		2.000E+01	8.592E+01	1.728E+00	0.425
BI-214	3.024E+01		1.765E+01	7.677E+01	1.551E+00	0.394
PB-214	3.020E+01		2.592E+01	9.200E+01	1.840E+00	0.328
RA-223	-4.384E+01		6.086E+01	2.115E+02	4.241E+00	-0.207
RA-224DA	3.702E+01		2.028E+01	8.713E+01	1.752E+00	0.425
RA-226DA	3.024E+01		1.765E+01	7.677E+01	1.551E+00	0.394
AC-227DA	-1.749E+02		8.335E+01	2.575E+02	5.180E+00	-0.679
AC-228	2.644E+01		1.768E+01	8.413E+01	1.735E+00	0.314
RA-228DA	2.656E+01		1.777E+01	8.452E+01	1.743E+00	0.314
TH-228DA	-1.919E+01		2.162E+01	8.388E+01	1.692E+00	-0.229
TH-232DA	2.213E+01		5.998E+01	2.336E+02	4.672E+00	0.095
TH-234DA	1.154E+03		7.525E+02	3.608E+03	7.491E+01	0.320
U-234DA	2.581E+01		4.227E+01	1.670E+02	3.345E+00	0.154
U-235HP	-5.283E+01		1.003E+02	3.601E+02	7.412E+00	-0.147
NP-237DA	-1.592E+01		2.375E+01	8.427E+01	1.686E+00	-0.189
U-238DA	3.020E+01		2.592E+01	9.200E+01	1.840E+00	0.328
U-238DHP	6.167E+02		3.283E+02	1.307E+03	2.899E+01	0.472
AM-241HP	8.351E+00		3.042E+01	1.143E+02	2.556E+00	0.073

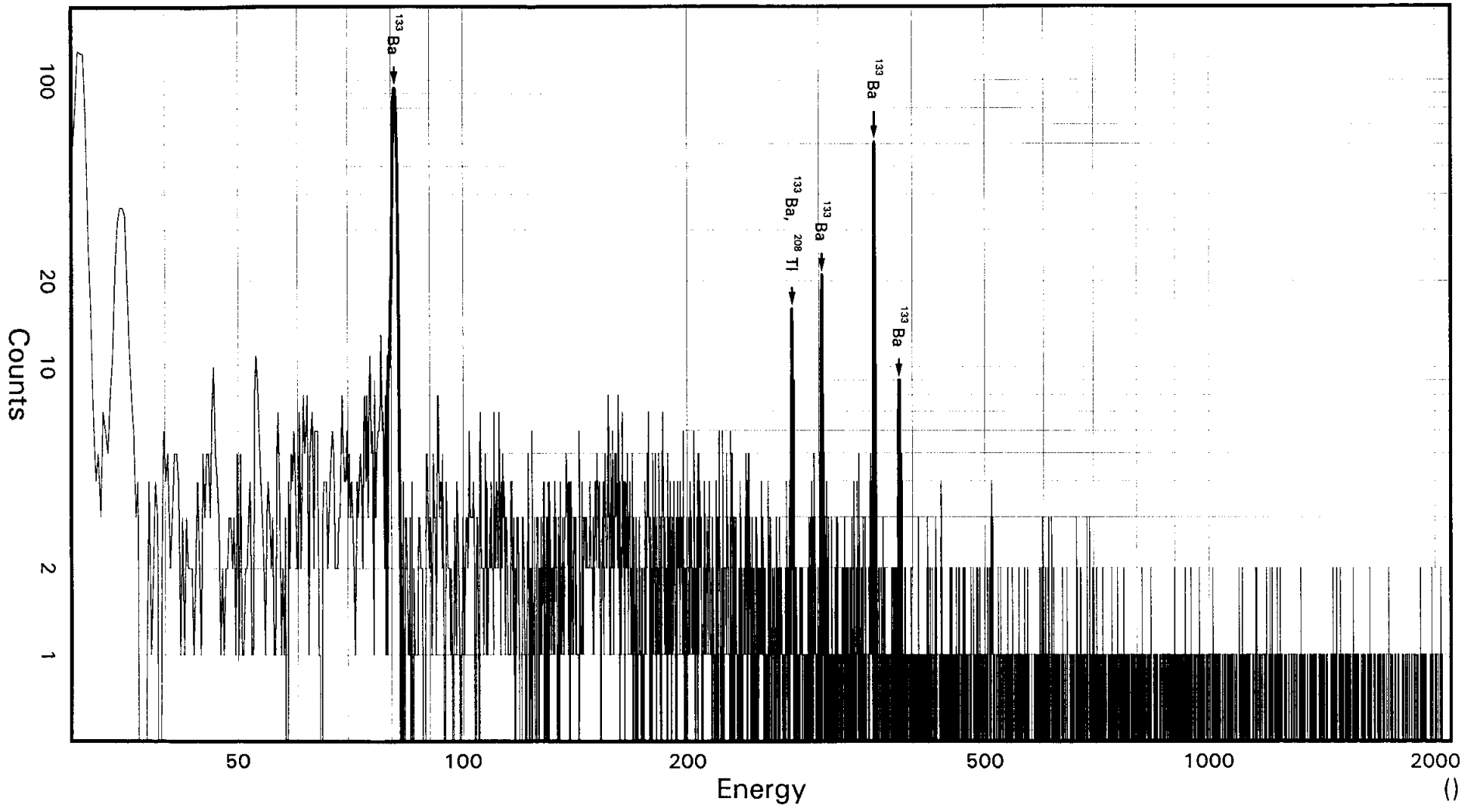
STL Richland WA.

BA133

Sample ID: JMLT81AC

Detector ID: GER8 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 12:51:05.83

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: 3.71259E-01

Slope: 2.49848E-01

Quadrature: 1.33547E-08

SAMPLE IDENTIFICATION: JMLT81AC

CONFIGURATION ID: GER8:JMLT81AC_170171251
TITLE : BA133
SAMPLE ID : JMLT81AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 12:51:05
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 05:16:14.20
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 3.7126E-01 keV
ENERGY SLOPE: 2.4985E-01 keV/C
ENERGY Q COEFF: 1.3355E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.3638E-01 keV
FWHM SLOPE: 2.2109E-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 17-JAN-2007 13:21:22

Configuration : $DISK1:[GER8.SAMPLE]JMLT81AC_170171251.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:51:05
Sample ID : JMLT81AC 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 : 20.36 End energy : 2048.02
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.72	638	125	1.12	121.47	111	20	3.54E-01	5.8	
2	0	35.07	220	33	1.35	138.86	130	18	1.22E-01	9.3	
3	0	53.30	21	29	0.74	211.83	206	11	1.17E-02	54.9	
4	0	80.93	494	41	1.23	322.43	314	16	2.75E-01	5.3	
5	0	276.49	59	24	1.22	1105.09	1096	16	3.29E-02	22.6	
6	0	302.95	103	5	0.99	1210.96	1203	18	5.72E-02	11.0	
7	0	356.00	281	12	1.05	1423.28	1415	16	1.56E-01	6.6	
8	0	383.77	50	0	1.17	1534.42	1526	15	2.78E-02	14.1	

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

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 13:21:22

Configuration : $DISK1:[GER8.SAMPLE]JMLT81AC_170171251.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:51:05
Sample ID : JMLT81AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	494	33.00	2.202E+00	2.269E+03	2.274E+03	7.62
	276.40	59	6.90	2.371E+00	1.207E+03	1.210E+03	23.22
	302.84	103	17.80	2.374E+00	8.129E+02	8.150E+02	12.24
	356.00	281	62.05*	2.376E+00	6.352E+02	6.368E+02	8.50
	383.85	50	8.70	2.375E+00	8.065E+02	8.086E+02	15.13

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JMLT81AC Acquisition date : 17-JAN-2007 12:51:05

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.72	638	125	1.12	121.47	111	20	3.54E-01	5.8	1.93E+00	
0	35.07	220	33	1.35	138.86	130	18	1.22E-01	9.3	1.97E+00	
0	53.30	21	29	0.74	211.83	206	11	1.17E-02	54.9	2.10E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLT81AC Acquisition date : 17-JAN-2007 12:51:05

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	1.225E+03	23.22	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 17-JAN-2007 13:21:24

Configuration : $DISK1:[GER8.SAMPLE]JMLT81AC_170171251.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 : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:51:05
Sample ID : JMLT81AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.368E+02	5.411E+01	4.993E+01	9.986E-01	12.754

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	8.188E+01		4.278E+01	2.284E+02	4.581E+00	0.359
NA-22	3.001E+00		2.129E+00	1.392E+01	2.947E-01	0.216
K-40	-1.505E+01		3.206E+01	1.691E+02	3.625E+00	-0.089
SC-46	-1.589E+00		5.376E+00	2.345E+01	4.908E-01	-0.068
CR-51	-2.839E+02		1.227E+02	3.678E+02	7.359E+00	-0.772
MN-54	2.818E+00		3.702E+00	1.782E+01	3.655E-01	0.158
CO-57	5.002E+01		1.149E+02	4.239E+02	8.752E+00	0.118
CO-58	9.318E-01		5.003E+00	2.127E+01	4.355E-01	0.044
FE-59	-3.257E+00		8.553E+00	3.472E+01	7.257E-01	-0.094
CO-60	-1.638E+00		2.678E+00	1.101E+01	2.340E-01	-0.149
ZN-65	2.392E+00		6.615E+00	3.158E+01	6.609E-01	0.076
SE-75	2.532E+01		1.513E+01	6.328E+01	1.269E+00	0.400
SR-85	-1.418E+01		8.624E+00	2.827E+01	5.680E-01	-0.501
Y-88	-4.771E-02		2.435E+00	1.249E+01	2.742E-01	-0.004
NB-94	-2.553E+00		3.966E+00	1.552E+01	3.191E-01	-0.165
NB-95	-1.630E+01		7.262E+00	1.974E+01	4.028E-01	-0.826
TC-95M	-2.052E+01		1.968E+01	6.812E+01	1.377E+00	-0.301
ZR-95	-6.574E+00		9.708E+00	3.616E+01	7.376E-01	-0.182
ZRNB-95	-2.912E+01		1.275E+01	3.421E+01	6.983E-01	-0.851
MO-99	-2.191E+02		4.491E+02	1.569E+03	3.233E+01	-0.140
RH-101	-1.865E+00		1.504E+01	5.349E+01	1.083E+00	-0.035
RH-102M	-4.001E+00		4.330E+00	1.608E+01	3.225E-01	-0.249
RU-103	-5.420E+00		6.531E+00	2.433E+01	4.884E-01	-0.223
RU-106DA	-1.599E+01		5.706E+01	2.212E+02	4.472E+00	-0.072
AG-108M	-2.162E+01		7.874E+00	2.054E+01	4.113E-01	-1.053
AG-110M	4.492E+00		6.433E+00	2.914E+01	5.999E-01	0.154
SN-113DA	1.104E+01		9.183E+00	4.070E+01	8.143E-01	0.271

Sample ID : JMLT81AC Acquisition date : 17-JAN-2007 12:51:05

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	1.815E+00		5.610E+00	2.398E+01	4.842E-01	0.076
SB-125	2.707E+01		1.958E+01	8.706E+01	1.743E+00	0.311
SN-126DA	-2.892E+00		4.517E+00	1.708E+01	3.463E-01	-0.169
I-131	7.146E+00		2.834E+01	1.108E+02	2.217E+00	0.064
CS-134	-5.383E+00		3.941E+00	1.252E+01	2.560E-01	-0.430
CS-137DA	4.997E+00		5.031E+00	2.357E+01	4.777E-01	0.212
LA-138	-2.108E+00		3.817E+00	1.655E+01	3.540E-01	-0.127
CE-139	1.279E+01		1.661E+01	6.157E+01	1.257E+00	0.208
BA-140	-3.261E+01		4.591E+01	1.703E+02	3.427E+00	-0.191
BALA-140	-6.709E+00		1.173E+01	5.001E+01	1.082E+00	-0.134
CE-141	-4.277E+00		3.162E+01	1.131E+02	2.326E+00	-0.038
CE-144	4.512E+00		1.022E+02	3.728E+02	7.709E+00	0.012
CEPR-144	6.794E+00		2.043E+02	7.446E+02	1.540E+01	0.009
PM-144	-3.565E+00		6.118E+00	2.267E+01	4.583E-01	-0.157
PM-146	-7.486E+00		8.108E+00	2.843E+01	5.697E-01	-0.263
EU-152	4.953E+01		2.697E+01	1.173E+02	2.346E+00	0.422
EU-154	7.940E+00		5.787E+00	3.817E+01	8.077E-01	0.208
EU-155	-3.934E+01		6.102E+01	2.123E+02	4.470E+00	-0.185
HF-181	-3.506E+00		7.191E+00	2.802E+01	5.622E-01	-0.125
BI-207	1.353E-01		4.048E+00	1.738E+01	3.503E-01	0.008
TL-208	1.056E+00		5.405E+00	2.292E+01	4.623E-01	0.046
BI-210M	9.641E+00		1.646E+01	6.465E+01	1.297E+00	0.149
BI-212	-2.316E+01		4.920E+01	2.014E+02	6.155E+00	-0.115
PB-212	-4.766E+01		2.457E+01	8.133E+01	1.636E+00	-0.586
BI-214	-2.258E+00		1.343E+01	6.340E+01	1.281E+00	-0.036
PB-214	4.438E+00		2.691E+01	1.052E+02	2.104E+00	0.042
RA-223	-7.381E+01		5.816E+01	1.974E+02	3.959E+00	-0.374
RA-224DA	-4.833E+01		2.492E+01	8.247E+01	1.659E+00	-0.586
RA-226DA	-2.258E+00		1.343E+01	6.340E+01	1.281E+00	-0.036
AC-227DA	-6.695E+01		8.213E+01	2.897E+02	5.828E+00	-0.231
AC-228	1.329E+01		1.499E+01	7.073E+01	1.459E+00	0.188
RA-228DA	1.336E+01		1.506E+01	7.106E+01	1.465E+00	0.188
TH-228DA	2.981E+00		1.525E+01	6.470E+01	1.305E+00	0.046
TH-232DA	5.714E+01		6.740E+01	2.669E+02	5.338E+00	0.214
TH-234DA	4.480E+02		3.177E+02	2.079E+03	4.314E+01	0.216
U-234DA	4.186E+01		4.768E+01	2.026E+02	4.058E+00	0.207
U-235HP	-8.686E+01		1.053E+02	3.608E+02	7.425E+00	-0.241
NP-237DA	-1.010E+01		1.881E+01	6.889E+01	1.379E+00	-0.147
U-238DA	4.438E+00		2.691E+01	1.052E+02	2.104E+00	0.042
U-238DHP	-5.185E+02		4.276E+02	1.513E+03	3.356E+01	-0.343
AM-241HP	-1.913E+01		4.433E+01	1.564E+02	3.494E+00	-0.122

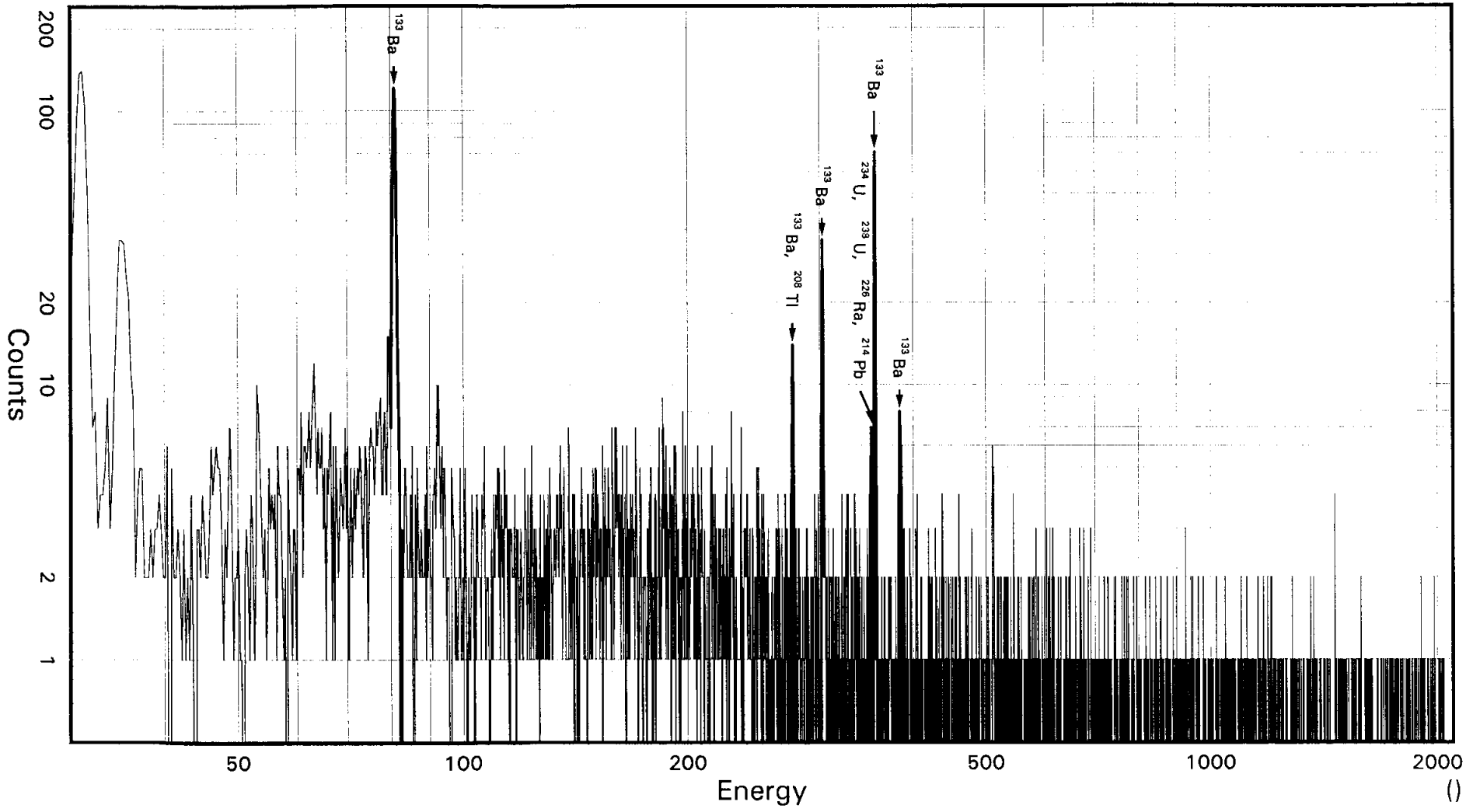
STL Richland WA.

BA133

Sample ID: JMLVA1AC

Detector ID: GER5 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 12:51:16.78

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: -3.21439E-01

Slope: 2.49458E-01

Quadrature: -2.31442E-09

SAMPLE IDENTIFICATION: JMLVA1AC

CONFIGURATION ID: GER5:JMLVA1AC_170171251
TITLE : BA133
SAMPLE ID : JMLVA1AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 12:51:16
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 04:58:20.28
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: -.3214E+00 keV
ENERGY SLOPE: 2.4946E-01 keV/C
ENERGY Q COEFF: -.2314E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 7.4627E-01 keV
FWHM SLOPE: 2.8344E-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 17-JAN-2007 13:21:32

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLVA1AC_170171251.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:51:16
Sample ID : JMLVA1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.25 0.0%
Start energy : 19.64 End energy : 2043.08
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.98	592	112	0.99	125.50	117	16	3.29E-01	5.7	
2	0	35.41	161	70	1.32	143.24	137	19	8.95E-02	15.4	
3	0	53.58	19	26	0.53	216.09	208	13	1.07E-02	59.0	
4	0	81.10	401	66	0.81	326.39	321	12	2.23E-01	6.6	
5	0	276.12	61	3	0.92	1108.18	1101	13	3.39E-02	14.1	
6	0	302.77	113	24	0.82	1215.00	1208	14	6.26E-02	13.2	
7	0	351.87*	11	2	1.00	1411.83	1407	10	6.12E-03	47.8	
8	0	355.94	324	0	0.95	1428.18	1418	20	1.80E-01	5.6	
9	0	383.81	35	7	0.70	1539.88	1534	13	1.92E-02	22.8	

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

VMS Nuclide Identification Report V3.1 Generated 17-JAN-2007 13:21:33

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLVA1AC_170171251.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:51:16
Sample ID : JMLVA1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.25 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	401	33.00	1.924E+00	2.105E+03	2.111E+03	8.53
	276.40	61	6.90	2.077E+00	1.421E+03	1.425E+03	15.13
	302.84	113	17.80	2.080E+00	1.014E+03	1.017E+03	14.30
	356.00	324	62.05*	2.082E+00	8.361E+02	8.383E+02	7.74
	383.85	35	8.70	2.081E+00	6.351E+02	6.367E+02	23.47

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JMLVA1AC Acquisition date : 17-JAN-2007 12:51:16

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.98	592	112	0.99	125.50	117	16	3.29E-01	5.7	1.68E+00	
0	35.41	161	70	1.32	143.24	137	19	8.95E-02	15.4	1.72E+00	
0	53.58	19	26	0.53	216.09	208	13	1.07E-02	59.0	1.83E+00	
0	351.87	11	2	1.00	1411.83	1407	10	6.12E-03	47.8	2.08E+00	T

Flags: "T" = Tentatively associated

Sample ID : JMLVA1AC Acquisition date : 17-JAN-2007 12:51:16

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	1.442E+03	15.13	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			
PB-214	4.47E+09Y	0.00	241.98	7.49	--- Not Found ---		Abun.
			295.21	19.20	--- Not Found ---		
			351.92*	37.20	4.741E+01	48.07	
			785.91	1.10	--- Not Found ---		
		% Abundances Found =		57.24			
RA-226DA	1600.00Y	0.00	186.21	3.50	--- Not Found ---		Abun.
			241.98	7.49	--- Not Found ---		
			295.22	19.20	--- Not Found ---		
			351.92	37.20	4.741E+01	48.07	
			609.32*	46.30	--- Not Found ---		
			1120.28	15.10	--- Not Found ---		
			1238.11	5.94	--- Not Found ---		
			1764.49	15.80	--- Not Found ---		
		% Abundances Found =		24.71			
U-234DA	4.47E+09Y	0.00	241.98	7.49	--- Not Found ---		Abun.
			295.22*	19.20	--- Not Found ---		
			351.92	37.20	4.741E+01	48.07	
			609.31	46.30	--- Not Found ---		
		% Abundances Found =		33.76			
U-238DA	4.47E+09Y	0.00	241.98	7.49	--- Not Found ---		Abun.
			295.22	19.20	--- Not Found ---		
			351.92*	37.20	4.741E+01	48.07	
			609.31	46.30	--- Not Found ---		
		% Abundances Found =		33.76			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 17-JAN-2007 13:21:34

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLVA1AC_170171251.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,WTMEAN/KEY V1.8
Analyses by : MINACT V2.8
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 12:51:16
Sample ID : JMLVA1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.25 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	8.383E+02	6.486E+01	2.925E+01	5.851E-01	28.656

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.002E+02		7.376E+01	3.293E+02	6.607E+00	0.304
NA-22	-1.583E+00		2.897E+00	1.262E+01	2.676E-01	-0.125
NA-24	-4.230E+00		9.915E+00	Half-Life too short		
K-40	2.234E+00		6.166E+01	3.241E+02	6.962E+00	0.007
SC-46	-8.674E+00		6.702E+00	2.470E+01	5.179E-01	-0.351
CR-51	5.516E+01		1.185E+02	4.745E+02	9.494E+00	0.116
MN-54	1.541E+00		3.863E+00	1.824E+01	3.745E-01	0.084
CO-57	1.594E+01		1.381E+02	4.924E+02	1.018E+01	0.032
CO-58	-5.968E+00		4.376E+00	1.393E+01	2.854E-01	-0.429
FE-59	1.102E+01		8.295E+00	4.429E+01	9.271E-01	0.249
CO-60	-5.004E+00		2.902E+00	4.631E+00	9.859E-02	-1.081
ZN-65	3.132E+00		1.151E+01	4.849E+01	1.016E+00	0.065
SE-75	6.063E+00		1.694E+01	6.478E+01	1.300E+00	0.094
SR-85	-5.526E+01		1.467E+01	3.723E+01	7.482E-01	-1.484
Y-88	1.978E+00		3.350E+00	1.804E+01	3.975E-01	0.110
NB-94	5.262E+00		5.379E+00	2.473E+01	5.090E-01	0.213
NB-95	-3.523E+00		7.105E+00	2.720E+01	5.556E-01	-0.130
TC-95M	-5.516E+00		2.347E+01	8.404E+01	1.699E+00	-0.066
ZR-95	8.440E+00		1.012E+01	4.686E+01	9.566E-01	0.180
ZRNB-95	-6.668E+00		1.245E+01	4.743E+01	9.687E-01	-0.141
MO-99	8.679E+02		4.367E+02	1.807E+03	3.727E+01	0.480
RH-101	3.109E+01		1.753E+01	6.980E+01	1.413E+00	0.445
RH-102M	3.541E+00		6.957E+00	2.875E+01	5.766E-01	0.123
RU-103	-9.919E+00		8.225E+00	2.777E+01	5.576E-01	-0.357
RU-106DA	-6.391E+01		5.774E+01	2.036E+02	4.119E+00	-0.314
AG-108M	-2.683E+01		1.040E+01	2.981E+01	5.971E-01	-0.900
AG-110M	2.095E-01		4.622E+00	2.192E+01	4.517E-01	0.010

Sample ID : JMLVA1AC Acquisition date : 17-JAN-2007 12:51:16

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

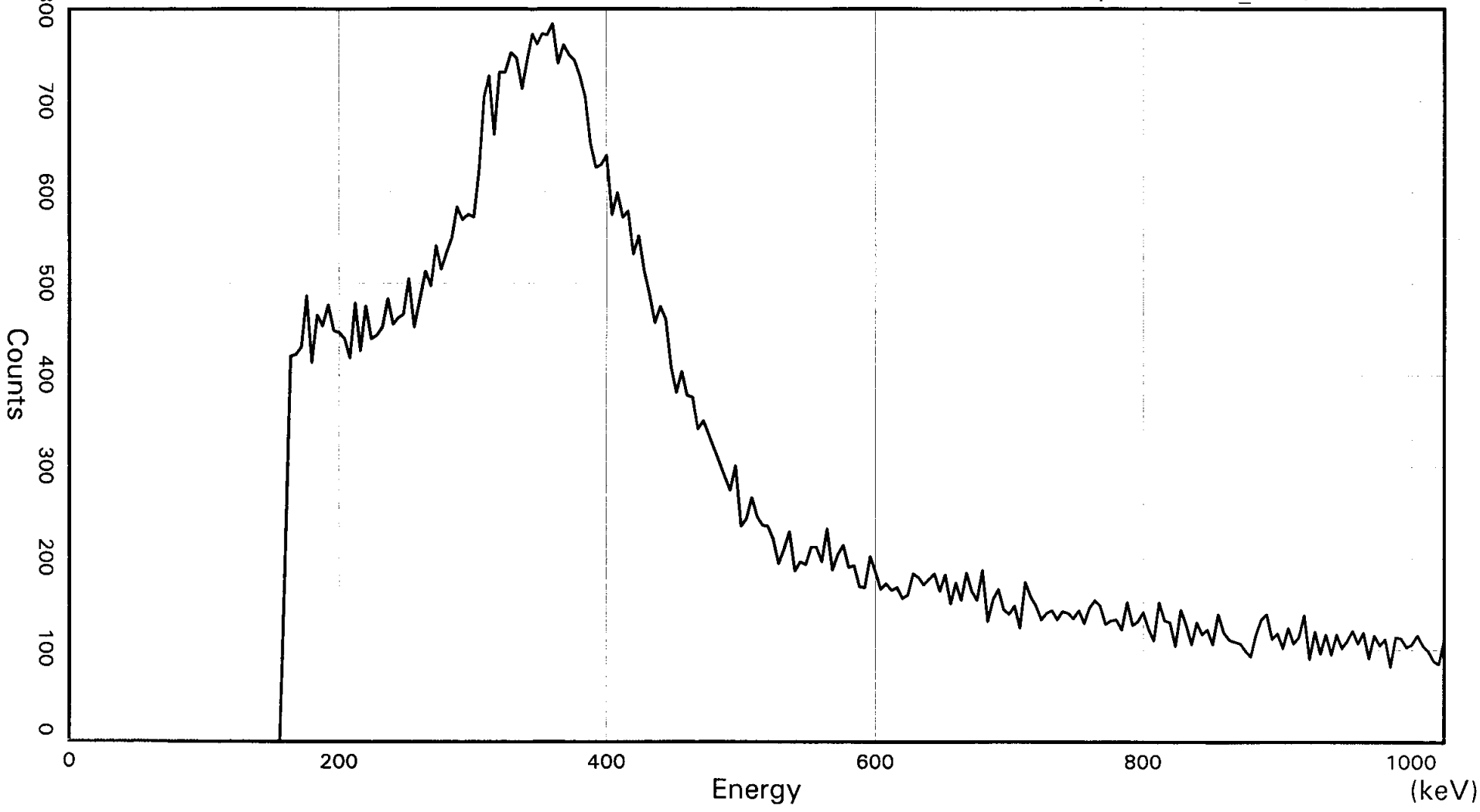
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	1.005E+01		1.182E+01	4.980E+01	9.964E-01	0.202
SB-124	-1.331E+01		8.638E+00	2.852E+01	5.761E-01	-0.467
SB-125	-4.386E+00		2.422E+01	9.285E+01	1.859E+00	-0.047
SN-126DA	4.882E+00		6.654E+00	2.818E+01	5.717E-01	0.173
I-131	-8.848E-01		2.404E+01	9.721E+01	1.944E+00	-0.009
CS-134	1.753E+00		5.218E+00	2.334E+01	4.777E-01	0.075
CS-137DA	-5.510E+00		6.831E+00	2.502E+01	5.073E-01	-0.220
LA-138	-2.549E+00		4.446E+00	1.893E+01	4.060E-01	-0.135
CE-139	-1.401E+01		1.855E+01	6.487E+01	1.325E+00	-0.216
BA-140	-1.411E+01		4.776E+01	1.851E+02	3.724E+00	-0.076
BALA-140	-7.995E+00		8.007E+00	2.104E+01	4.563E-01	-0.380
LA-140	-2.805E-04		2.809E-04	Half-Life too short		
CE-141	1.249E+01		3.357E+01	1.272E+02	2.619E+00	0.098
CE-144	-9.718E+01		1.370E+02	4.648E+02	9.622E+00	-0.209
CEPR-144	-1.982E+02		2.738E+02	9.280E+02	1.921E+01	-0.214
PM-144	-2.997E+00		5.712E+00	2.198E+01	4.445E-01	-0.136
PM-146	2.184E+00		1.028E+01	4.125E+01	8.267E-01	0.053
EU-152	-3.375E+01		2.877E+01	9.974E+01	1.995E+00	-0.338
EU-154	-4.423E+00		8.097E+00	3.527E+01	7.478E-01	-0.125
EU-155	1.198E+02		6.452E+01	2.557E+02	5.393E+00	0.469
HF-181	-1.208E+01		1.038E+01	3.524E+01	7.071E-01	-0.343
BI-207	-5.796E+00		6.418E+00	2.330E+01	4.696E-01	-0.249
TL-208	-4.793E+00		9.820E+00	3.872E+01	7.812E-01	-0.124
BI-210M	-6.671E+00		1.811E+01	6.563E+01	1.317E+00	-0.102
BI-212	8.734E+01		9.176E+01	4.044E+02	1.236E+01	0.216
PB-212	-2.839E+01		2.869E+01	1.048E+02	2.109E+00	-0.271
BI-214	-1.735E+01		1.578E+01	6.182E+01	1.249E+00	-0.281
PB-214	4.741E+01	+	2.279E+01	1.063E+02	2.126E+00	0.446
RA-223	5.285E+01		6.702E+01	2.652E+02	5.318E+00	0.199
RA-224DA	-2.879E+01		2.910E+01	1.063E+02	2.138E+00	-0.271
RA-226DA	-1.735E+01		1.578E+01	6.182E+01	1.249E+00	-0.281
AC-227DA	-4.630E+01		9.845E+01	3.495E+02	7.033E+00	-0.132
AC-228	-2.033E+01		1.708E+01	7.162E+01	1.479E+00	-0.284
RA-228DA	-2.042E+01		1.716E+01	7.195E+01	1.485E+00	-0.284
TH-228DA	-1.353E+01		2.772E+01	1.093E+02	2.205E+00	-0.124
TH-232DA	0.000E+00		7.047E+01	2.694E+02	5.388E+00	0.000
TH-234DA	-7.526E+02		6.727E+02	2.375E+03	4.937E+01	-0.317
U-234DA	1.668E+01		5.726E+01	2.148E+02	4.301E+00	0.078
U-235HP	8.185E+00		1.161E+02	4.325E+02	8.908E+00	0.019
NP-237DA	-2.323E+01		2.625E+01	8.964E+01	1.794E+00	-0.259
U-238DA	4.741E+01	+	2.279E+01	1.063E+02	2.126E+00	0.446
U-238DHP	3.200E+02		5.423E+02	2.066E+03	4.599E+01	0.155
AM-241HP	-5.830E+01		4.835E+01	1.635E+02	3.668E+00	-0.357

STL Richland WA.

BA133

Sample ID: JMLVW1AC
Detector ID: NAI1 1

BatchID: 7011225
Library: [NUC_LIBR]BA133.NLB



Acquisition Start:	17-JAN-2007 12:51:37.92	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: JMLVW1AC

CONFIGURATION ID: NAI1:JMLVW1AC_170171251
TITLE : BA133
SAMPLE ID : JMLVW1AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 12:51:37
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/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 17-JAN-2007 13:21:42

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JMLVW1AC_170171251.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 3-JAN-2007 12:00:00	Acquisition date	: 17-JAN-2007 12:51:37
Sample ID	: JMLVW1AC	Sample quantity	: 1.0000 sampl
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:00.68 0.0%
Sample Multiplier	: 1.00	Rejection Coeff.	: 0.00
Gain shift type	: ITER	Threshold Shift	: No
Weighting type	: DERIVED	Calculated counts	: No
Iterations	: 5		

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	5.5	4.6	5.5	4.9	3.2	2.4	3.9	2.7
88:	2.5	1.6	0.5	-0.7	1.2	-1.2	0.9	0.8
96:	-0.3	-2.9	-3.1	-2.6	-3.3	-3.3	-1.9	-2.7
104:	-3.6	-4.7	-2.6	-2.9	-4.2	-3.8	-3.0	-3.0
112:	-3.9	-4.5						

List of Suspicious Channels

81 82 83 84 85 86 87

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	7.39E+00	0.00E+00	1.03E+00
2	2.76E+00	0.00E+00	1.06E+00
3	1.09E+00	0.00E+00	1.06E+00

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	797.	9.35

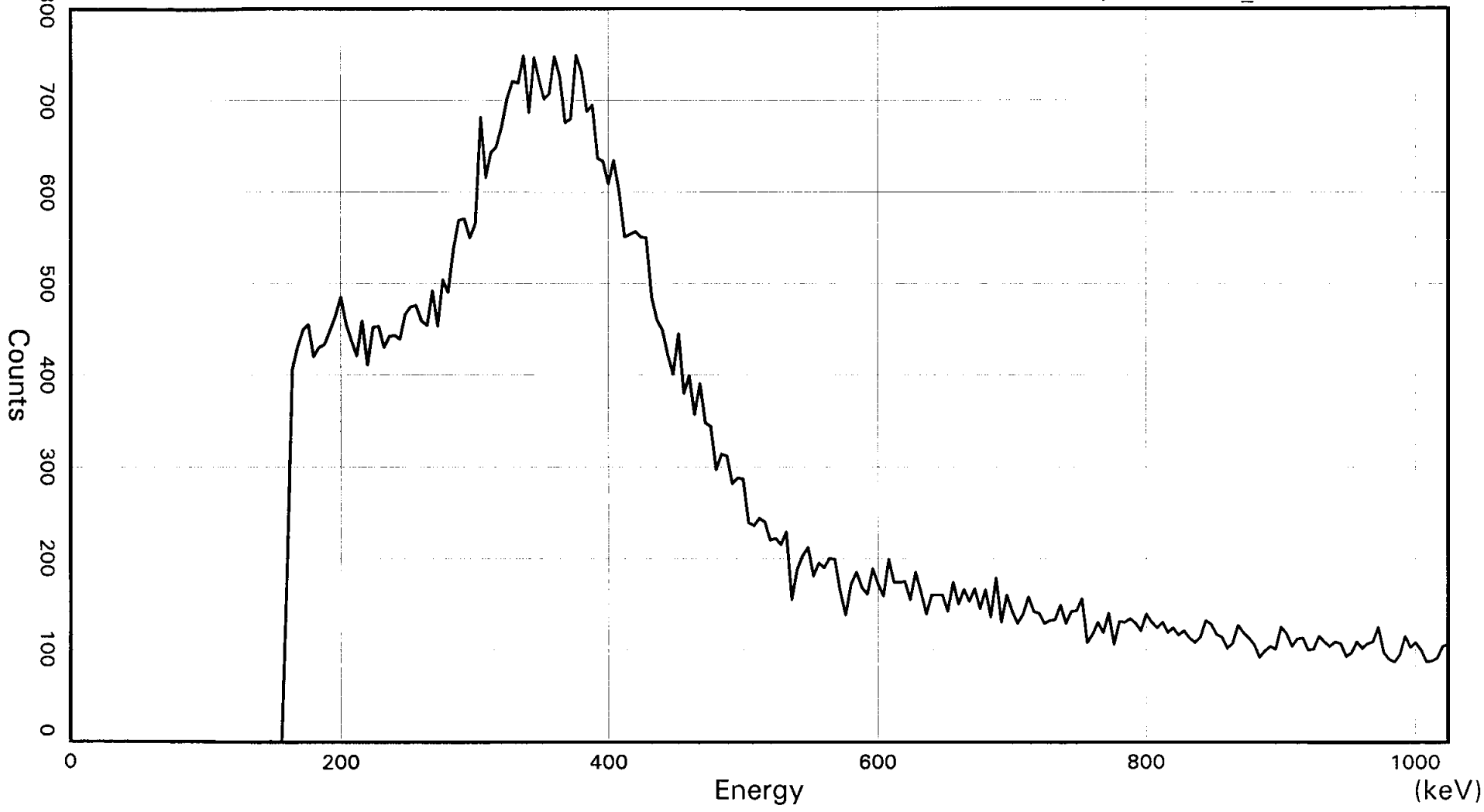
Total Activity :	797.	

STL Richland WA.

BA133

Sample ID: JMLV31AC
Detector ID: NAI1 1

BatchID: 7011225
Library: [NUC_LIBR]BA133.NLB



Acquisition Start:	17-JAN-2007 13:26:44.35	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: JMLV31AC

CONFIGURATION ID: NAI1:JMLV31AC_170171326
TITLE : BA133
SAMPLE ID : JMLV31AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 13:26:44
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/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 17-JAN-2007 13:56:49

Configuration	: RDND06$DKA100:[NAI1.SAMPLE]JMLV31AC_170171326.CNF;1		
Analyses by	: NAI V3.0		
Sample title	: BA133		
Sample date	: 3-JAN-2007 12:00:00	Acquisition date	: 17-JAN-2007 13:26:44
Sample ID	: JMLV31AC	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:	4.5	5.5	5.2	4.2	5.5	1.2	3.9	2.0
88:	0.5	0.2	0.4	0.0	-1.0	-2.9	1.9	1.8
96:	0.0	-0.6	-2.3	-1.9	-3.7	-0.4	-1.6	-3.1
104:	-3.8	-3.1	-2.3	-0.8	-3.5	-3.2	-3.9	-4.4
112:	-3.7	-1.3						

List of Suspicious Channels

81 82 83

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	8.08E+00	0.00E+00	1.01E+00
2	3.52E+00	0.00E+00	1.04E+00
3	1.51E+00	0.00E+00	1.04E+00
4	1.40E+00	0.00E+00	1.05E+00
5	1.16E+00	0.00E+00	1.05E+00

Sample ID : JMLV31AC Acquisition date : 17-JAN-2007 13:26:44

Brief Report

Nuclide	Activity DPM/sampl	1-Sigma Error
BA-133	757.	9.63

Total Activity :	757.	

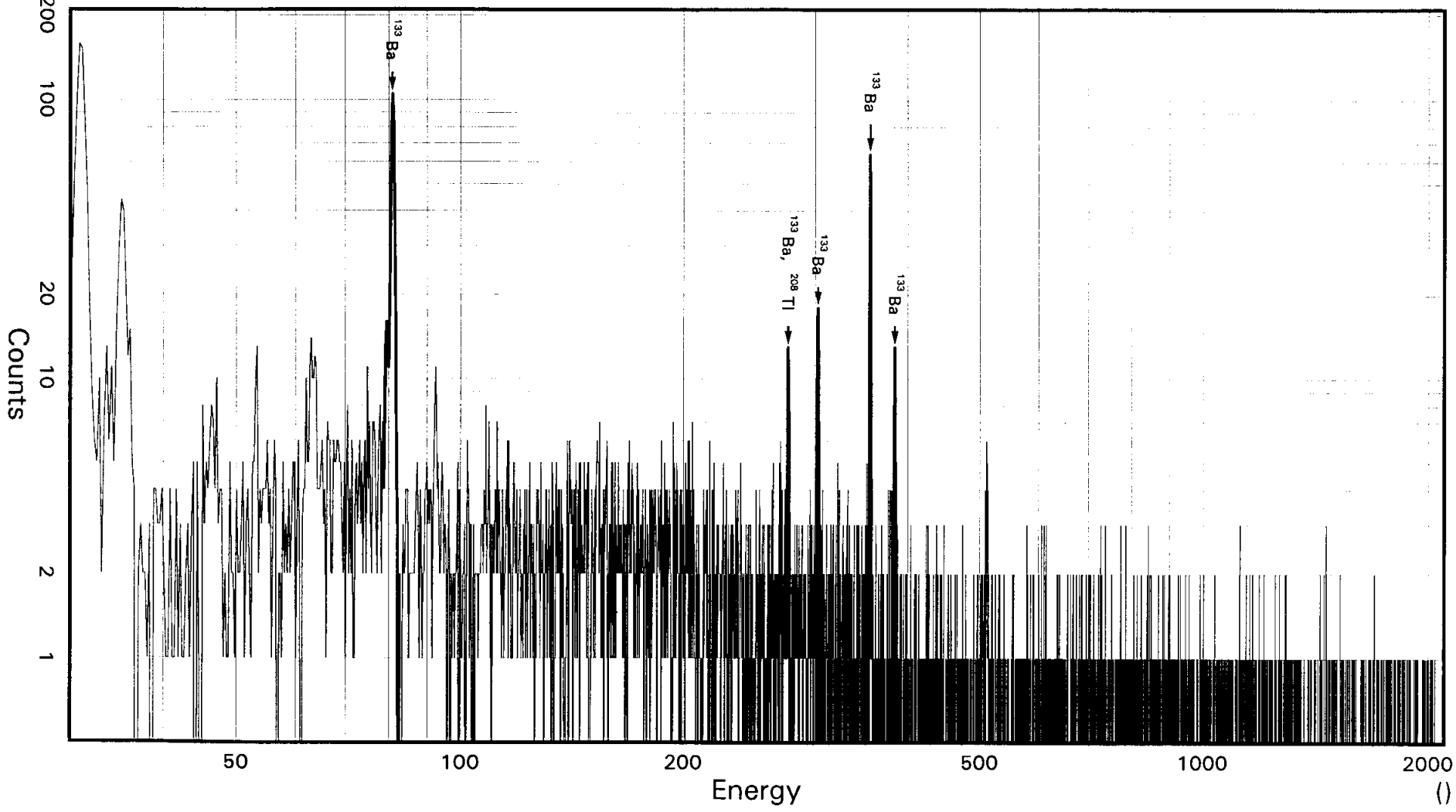
STL Richland WA.

BA133

Sample ID: JMLV51AC

Detector ID: GER5 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 13:26:55.35

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: -3.21439E-01

Slope: 2.49458E-01

Quadrature: -2.31442E-09

SAMPLE IDENTIFICATION: JMLV51AC

CONFIGURATION ID: GER5:JMLV51AC_170171326
TITLE : BA133
SAMPLE ID : JMLV51AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 13:26:55
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 04:58:20.28
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: -.3214E+00 keV
ENERGY SLOPE: 2.4946E-01 keV/C
ENERGY Q COEFF: -.2314E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 7.4627E-01 keV
FWHM SLOPE: 2.8344E-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 17-JAN-2007 13:57:10

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLV51AC_170171326.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 13:26:55
Sample ID : JMLV51AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Start energy : 19.64 End energy : 2043.08
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	31.00	601	107	0.85	125.57	119	16	3.34E-01	5.7	
2	0	35.27	175	55	0.80	142.67	134	16	9.74E-02	12.2	
3	0	80.93	413	53	0.85	325.71	317	16	2.29E-01	6.3	
4	0	276.13	63	13	1.12	1108.22	1099	18	3.48E-02	18.7	
5	0	302.80	105	0	1.20	1215.12	1209	15	5.83E-02	9.8	
6	0	356.00	272	20	1.08	1428.40	1421	16	1.51E-01	7.1	
7	0	384.02	60	4	1.21	1540.74	1533	15	3.36E-02	14.6	

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

VMS Nuclide Identification Report V3.1 Generated 17-JAN-2007 13:57:11

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLV51AC_170171326.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 13:26:55
Sample ID : JMLV51AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	413	33.00	1.924E+00	2.167E+03	2.173E+03	8.32
	276.40	63	6.90	2.077E+00	1.457E+03	1.460E+03	19.43
	302.84	105	17.80	2.080E+00	9.455E+02	9.479E+02	11.15
	356.00	272	62.05*	2.082E+00	7.028E+02	7.046E+02	8.90
	383.85	60	8.70	2.081E+00	1.112E+03	1.115E+03	15.59

Flag: "*" = Keyline

Unidentified Energy Lines
Page : 2
Sample ID : JMLV51AC
Acquisition date : 17-JAN-2007 13:26:55

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	31.00	601	107	0.85	125.57	119	16	3.34E-01	5.7	1.68E+00	
0	35.27	175	55	0.80	142.67	134	16	9.74E-02	12.2	1.72E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLV51AC
Acquisition date : 17-JAN-2007 13:26:55

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	1.478E+03	19.43	Abun.
			510.84	21.60	--- Not Found ---		
			583.14*	84.20	--- Not Found ---		
			860.37	12.46	--- Not Found ---		
		% Abundances Found =		5.44			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 17-JAN-2007 13:57:12

Configuration : RDND06$DKA100:[GER5.SAMPLE]JMLV51AC_170171326.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,WTMEAN/KEY V1.8
Analyses by : MINACT V2.8
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 13:26:55
Sample ID : JMLV51AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.046E+02	6.269E+01	5.567E+01	1.113E+00	12.657

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-8.171E+01		7.963E+01	2.756E+02	5.529E+00	-0.296
NA-22	6.931E+00		4.194E+00	2.248E+01	4.767E-01	0.308
NA-24	8.694E-02		6.456E+00	Half-Life too short		
K-40	-3.002E+01		6.960E+01	3.339E+02	7.174E+00	-0.090
SC-46	2.821E+00		5.461E+00	2.658E+01	5.573E-01	0.106
CR-51	-2.878E+02		1.383E+02	4.371E+02	8.745E+00	-0.659
MN-54	4.933E+00		4.555E+00	2.222E+01	4.561E-01	0.222
CO-57	1.159E+02		1.266E+02	4.766E+02	9.852E+00	0.243
CO-58	-1.201E+01		6.781E+00	2.038E+01	4.176E-01	-0.589
FE-59	7.382E+00		5.235E+00	3.425E+01	7.170E-01	0.216
CO-60	-6.627E+00		4.120E+00	1.260E+01	2.682E-01	-0.526
ZN-65	-7.068E+00		6.986E+00	2.530E+01	5.303E-01	-0.279
SE-75	4.346E+00		1.880E+01	7.026E+01	1.410E+00	0.062
SR-85	-1.660E+01		1.375E+01	4.568E+01	9.180E-01	-0.363
Y-88	3.395E-02		2.726E+00	1.430E+01	3.150E-01	0.002
NB-94	4.346E+00		5.696E+00	2.529E+01	5.207E-01	0.172
NB-95	-2.360E+00		5.801E+00	2.328E+01	4.755E-01	-0.101
TC-95M	2.520E+01		2.434E+01	9.261E+01	1.873E+00	0.272
ZR-95	-7.287E+00		1.102E+01	4.131E+01	8.433E-01	-0.176
ZRNB-95	-8.058E+00		1.095E+01	4.101E+01	8.378E-01	-0.196
MO-99	5.520E+02		5.142E+02	1.992E+03	4.109E+01	0.277
RH-101	-1.233E+01		1.803E+01	6.298E+01	1.275E+00	-0.196
RH-102M	4.514E+00		7.492E+00	3.074E+01	6.167E-01	0.147
RU-103	1.531E+01		9.016E+00	4.155E+01	8.344E-01	0.368
RU-106DA	3.799E+01		5.340E+01	2.411E+02	4.876E+00	0.158
AG-108M	-9.047E+00		8.959E+00	3.106E+01	6.220E-01	-0.291
AG-110M	-7.750E+00		9.284E+00	3.391E+01	6.987E-01	-0.229

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	8.164E+00		1.219E+01	5.032E+01	1.007E+00	0.162
SB-124	-3.248E+00		7.616E+00	2.916E+01	5.890E-01	-0.111
SB-125	1.098E+01		2.067E+01	8.751E+01	1.752E+00	0.126
SN-126DA	1.809E+00		7.041E+00	2.828E+01	5.737E-01	0.064
I-131	8.164E+00		3.255E+01	1.285E+02	2.570E+00	0.064
CS-134	6.537E+00		6.053E+00	2.823E+01	5.779E-01	0.232
CS-137DA	-7.420E+00		6.564E+00	2.292E+01	4.648E-01	-0.324
LA-138	5.162E+00		5.150E+00	2.769E+01	5.939E-01	0.186
CE-139	-2.007E+01		1.746E+01	5.971E+01	1.220E+00	-0.336
BA-140	-2.751E+01		5.414E+01	2.004E+02	4.033E+00	-0.137
BALA-140	-2.104E-01		1.117E+01	5.732E+01	1.243E+00	-0.004
LA-140	-7.460E-06		3.955E-04	Half-Life too short		
CE-141	-3.525E+01		3.853E+01	1.343E+02	2.765E+00	-0.262
CE-144	-6.414E+00		1.296E+02	4.600E+02	9.522E+00	-0.014
CEPR-144	-1.538E+01		2.591E+02	9.189E+02	1.902E+01	-0.017
PM-144	-4.182E+00		6.003E+00	2.244E+01	4.537E-01	-0.186
PM-146	-5.394E+00		1.172E+01	4.312E+01	8.642E-01	-0.125
EU-152	-5.260E+00		3.565E+01	1.335E+02	2.669E+00	-0.039
EU-154	1.937E+01		1.172E+01	6.284E+01	1.332E+00	0.308
EU-155	-1.117E+02		6.632E+01	2.123E+02	4.478E+00	-0.526
HF-181	-2.792E+00		7.446E+00	2.931E+01	5.882E-01	-0.095
BI-207	5.463E-01		5.122E+00	2.180E+01	4.394E-01	0.025
TL-208	-1.844E+01		7.107E+00	2.336E+01	4.712E-01	-0.790
BI-210M	-3.069E+01		2.271E+01	7.467E+01	1.498E+00	-0.411
BI-212	1.626E+02		9.542E+01	4.422E+02	1.352E+01	0.368
PB-212	-3.758E+01		2.668E+01	9.613E+01	1.934E+00	-0.391
BI-214	-1.844E+01		1.566E+01	6.103E+01	1.233E+00	-0.302
PB-214	5.744E+00		3.078E+01	1.086E+02	2.172E+00	0.053
RA-223	1.300E+02		8.144E+01	3.264E+02	6.546E+00	0.398
RA-224DA	-3.811E+01		2.705E+01	9.748E+01	1.961E+00	-0.391
RA-226DA	-1.830E+01		1.568E+01	6.114E+01	1.235E+00	-0.299
AC-227DA	-8.556E+01		1.098E+02	3.787E+02	7.620E+00	-0.226
AC-228	-9.892E+00		1.879E+01	8.266E+01	1.706E+00	-0.120
RA-228DA	-9.938E+00		1.888E+01	8.304E+01	1.714E+00	-0.120
TH-228DA	-5.206E+01		2.006E+01	6.593E+01	1.330E+00	-0.790
TH-232DA	-3.289E+01		6.967E+01	2.568E+02	5.136E+00	-0.128
TH-234DA	1.230E+01		7.197E+02	3.073E+03	6.386E+01	0.004
U-234DA	2.700E+01		5.252E+01	2.026E+02	4.057E+00	0.133
U-235HP	-9.298E+01		1.363E+02	4.811E+02	9.910E+00	-0.193
NP-237DA	-1.842E+01		2.494E+01	8.665E+01	1.734E+00	-0.213
U-238DA	5.744E+00		3.078E+01	1.086E+02	2.172E+00	0.053
U-238DHP	1.747E+03		5.687E+02	2.294E+03	5.107E+01	0.761
AM-241HP	-3.426E+01		4.444E+01	1.544E+02	3.464E+00	-0.222

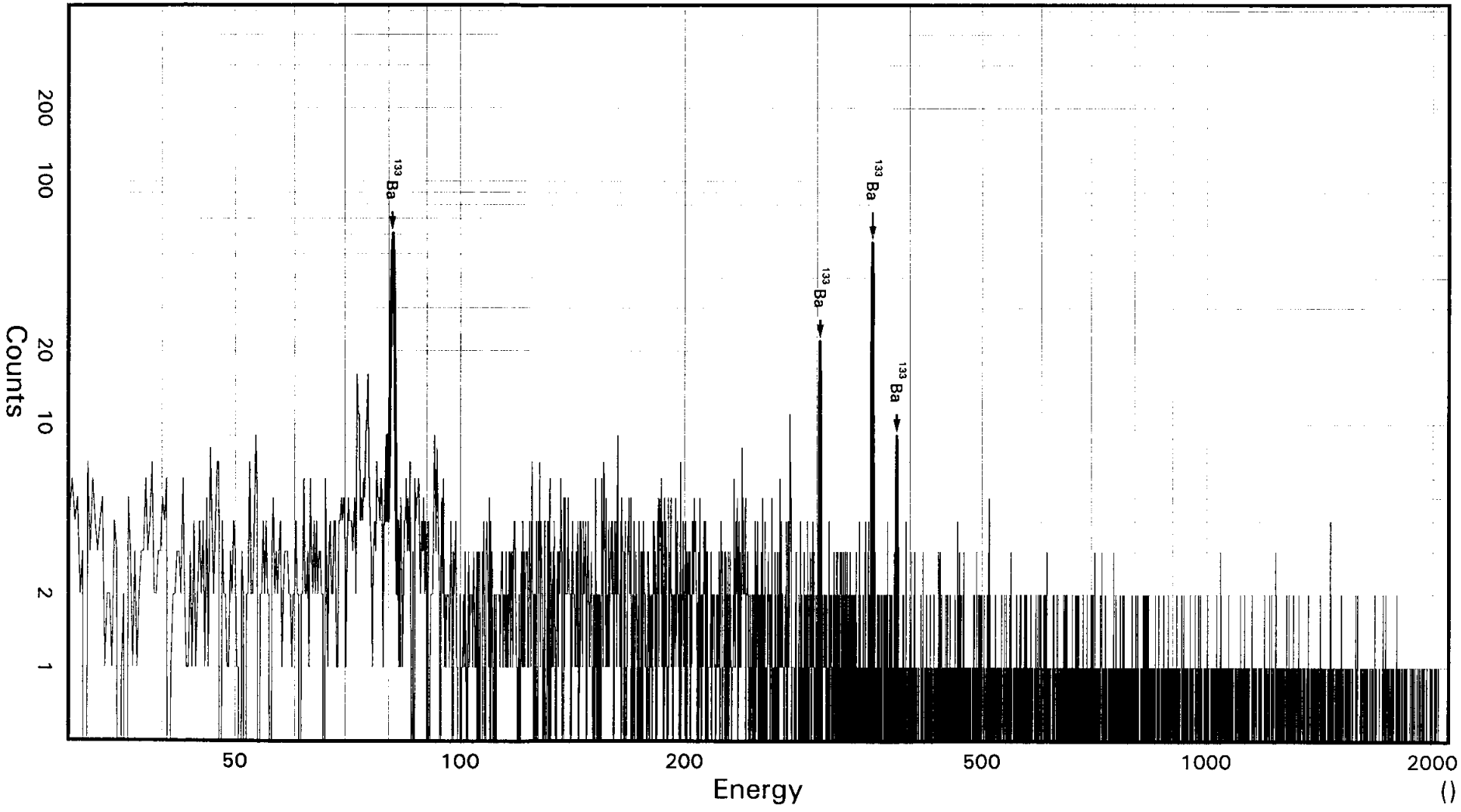
STL Richland WA.

BA133

Sample ID: JMLV81AC

Detector ID: GER4 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 13:27:19.58

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: -4.78812E-02

Slope: 2.49057E-01

Quadrature: 4.76338E-09

SAMPLE IDENTIFICATION: JMLV81AC

CONFIGURATION ID: GER4:JMLV81AC_170171327
TITLE : BA133
SAMPLE ID : JMLV81AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 13:27:19
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 05:15:56.94
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: -.4788E-01 keV
ENERGY SLOPE: 2.4906E-01 keV/C
ENERGY Q COEFF: 4.7634E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 3.3478E-01 keV
FWHM SLOPE: 4.2590E-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 17-JAN-2007 13:57:36

Configuration : $DISK1:[GER4.SAMPLE]JMLV81AC_170171327.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 13:27:19
Sample ID : JMLV81AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.40 0.0%
Start energy : 19.88 End energy : 2040.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	1	72.95*	7	22	0.77	293.10	289	18	3.74E-03	139.9	1.51E+00
2	0	80.95	233	36	0.88	325.23	317	16	1.29E-01	8.7	
3	0	302.95	87	17	1.15	1216.57	1209	13	4.86E-02	14.3	
4	0	356.16	278	22	1.24	1430.17	1421	18	1.54E-01	7.2	
5	0	383.90	42	0	1.32	1541.57	1536	11	2.33E-02	15.4	

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

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 13:57:37

Configuration : $DISK1:[GER4.SAMPLE]JMLV81AC_170171327.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 13:27:19
Sample ID : JMLV81AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.40 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	233	33.00	2.043E+00	1.152E+03	1.155E+03	10.36
	276.40	------	6.90	2.202E+00	------	Line Not Found	------
	302.84	87	17.80	2.205E+00	7.426E+02	7.445E+02	15.34
	356.00	278	62.05*	2.207E+00	6.758E+02	6.775E+02	9.90
	383.85	42	8.70	2.207E+00	7.291E+02	7.310E+02	16.62

Flag: "*" = Keyline

Sample ID : JMLV81AC Acquisition date : 17-JAN-2007 13:27:19

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	72.95	7	22	0.77	293.10	289	18	3.74E-03	****	2.02E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLV81AC
Acquisition date : 17-JAN-2007 13:27:19

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 13:57:39

Configuration : $DISK1:[GER4.SAMPLE]JMLV81AC_170171327.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 : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 13:27:19
Sample ID : JMLV81AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.40 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.775E+02	6.708E+01	4.708E+01	2.206E+00	14.393

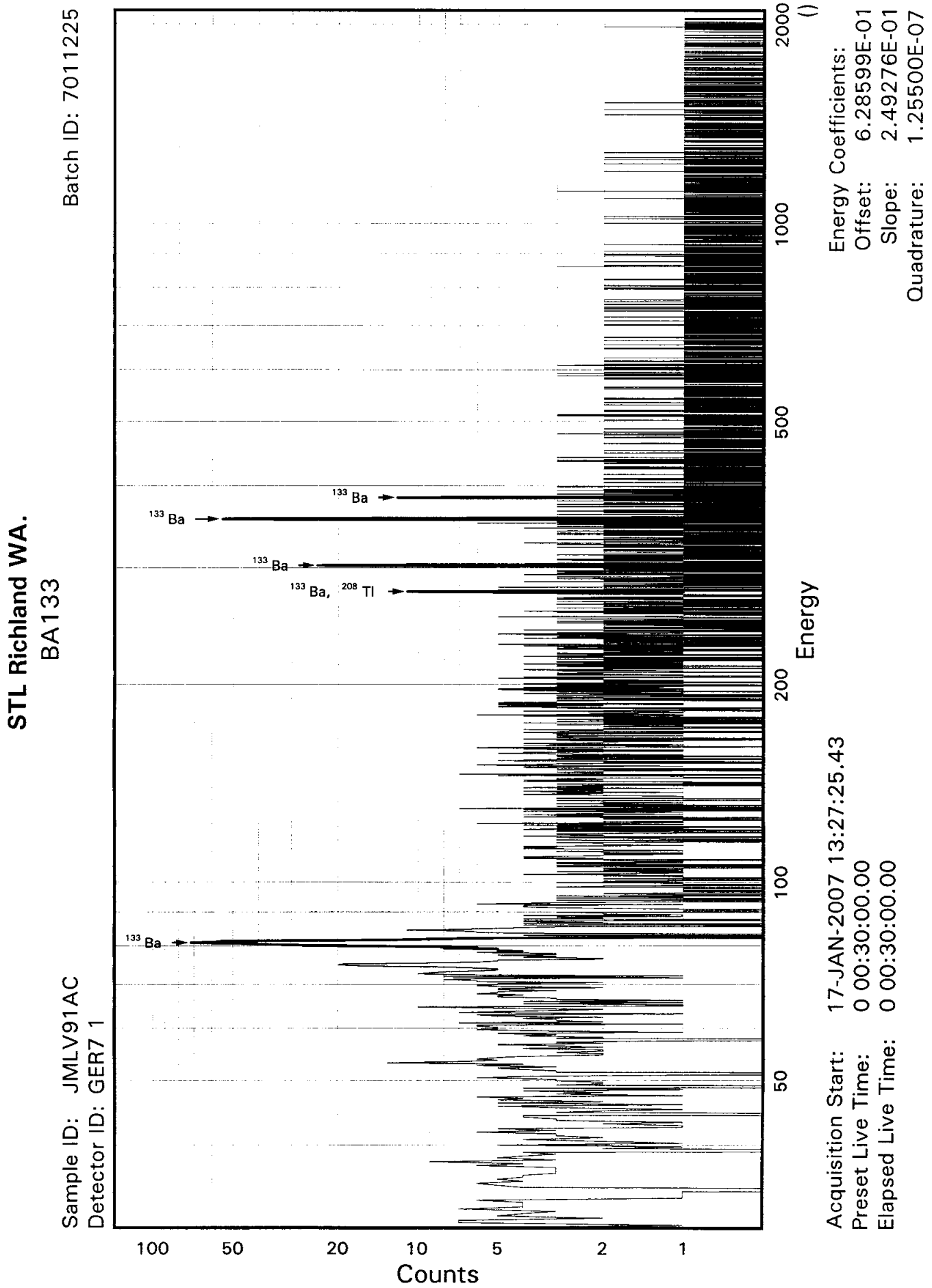
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-6.319E+01		5.868E+01	2.094E+02	7.645E+00	-0.302
NA-22	-6.309E-01		3.878E+00	1.663E+01	6.410E-01	-0.038
K-40	6.701E+01		8.315E+01	4.080E+02	1.593E+01	0.164
SC-46	1.065E+01		5.597E+00	2.806E+01	1.070E+00	0.379
CR-51	5.560E+01		1.083E+02	4.375E+02	1.016E+01	0.127
MN-54	1.143E+00		5.893E+00	2.399E+01	8.959E-01	0.048
CO-57	2.988E+01		1.059E+02	3.961E+02	9.494E+00	0.075
CO-58	-7.524E+00		5.207E+00	1.657E+01	6.178E-01	-0.454
FE-59	-3.023E+00		7.578E+00	3.227E+01	1.229E+00	-0.094
CO-60	1.558E+00		2.830E+00	1.498E+01	5.798E-01	0.104
ZN-65	-1.450E+01		8.538E+00	2.596E+01	9.894E-01	-0.559
SE-75	8.504E+00		1.288E+01	5.238E+01	1.219E+00	0.162
SR-85	-3.767E+01		1.076E+01	2.695E+01	9.856E-01	-1.398
Y-88	-1.833E+00		3.175E+00	1.346E+01	5.391E-01	-0.136
NB-94	-5.700E+00		5.246E+00	1.865E+01	6.982E-01	-0.306
NB-95	5.990E+00		7.401E+00	3.234E+01	1.202E+00	0.185
TC-95M	-2.218E+01		1.897E+01	6.519E+01	1.529E+00	-0.340
ZR-95	-1.568E-01		1.128E+01	4.573E+01	1.698E+00	-0.003
ZRNB-95	1.055E+01		1.304E+01	5.699E+01	2.118E+00	0.185
MO-99	4.210E+01		4.100E+02	1.515E+03	3.625E+01	0.028
RH-101	5.962E+00		1.467E+01	5.601E+01	1.316E+00	0.106
RH-102M	4.739E-01		5.438E+00	2.267E+01	8.278E-01	0.021
RU-103	8.163E+00		8.510E+00	3.725E+01	1.361E+00	0.219
RU-106DA	9.516E+01		4.593E+01	2.400E+02	8.834E+00	0.396
AG-108M	-2.261E+01		8.227E+00	2.102E+01	7.661E-01	-1.076
AG-110M	-6.129E+00		7.231E+00	2.673E+01	1.002E+00	-0.229
SN-113DA	2.231E+00		1.111E+01	4.410E+01	1.606E+00	0.051

Sample ID : JMLV81AC Acquisition date : 17-JAN-2007 13:27:19

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-3.125E+00		6.082E+00	2.308E+01	8.485E-01	-0.135
SB-125	-3.362E+01		2.023E+01	6.247E+01	2.277E+00	-0.538
SN-126DA	-4.041E+00		5.796E+00	2.159E+01	7.968E-01	-0.187
I-131	1.319E+01		2.642E+01	1.089E+02	3.965E+00	0.121
CS-134	1.079E+01		6.946E+00	3.190E+01	1.188E+00	0.338
CS-137DA	5.567E+00		7.255E+00	3.106E+01	1.146E+00	0.179
LA-138	3.622E+00		4.496E+00	2.428E+01	9.468E-01	0.149
CE-139	-3.029E+00		1.442E+01	5.150E+01	1.220E+00	-0.059
BA-140	1.346E+01		5.035E+01	2.065E+02	7.563E+00	0.065
BALA-140	-7.504E+00		7.519E+00	1.984E+01	7.822E-01	-0.378
CE-141	-8.951E+00		2.922E+01	1.050E+02	2.506E+00	-0.085
CE-144	-9.346E+01		9.421E+01	3.247E+02	7.794E+00	-0.288
CEPR-144	-1.797E+02		1.890E+02	6.534E+02	1.569E+01	-0.275
PM-144	-1.004E+01		4.710E+00	1.163E+01	4.280E-01	-0.863
PM-146	6.044E+00		9.307E+00	3.889E+01	1.419E+00	0.155
EU-152	4.588E+00		2.663E+01	1.053E+02	2.443E+00	0.044
EU-154	-5.033E+00		1.014E+01	4.144E+01	1.598E+00	-0.121
EU-155	-4.904E+01		4.210E+01	1.467E+02	3.587E+00	-0.334
HF-181	-1.695E+00		7.457E+00	3.017E+01	1.102E+00	-0.056
BI-207	1.389E+01		6.879E+00	3.133E+01	1.149E+00	0.443
TL-208	-5.825E+00		5.961E+00	2.455E+01	9.013E-01	-0.237
BI-210M	-3.100E+01		1.826E+01	5.799E+01	1.350E+00	-0.535
BI-212	-1.153E+02		8.417E+01	2.805E+02	1.220E+01	-0.411
PB-212	1.144E+01		2.673E+01	1.039E+02	2.424E+00	0.110
BI-214	-1.651E+01		1.379E+01	5.735E+01	2.109E+00	-0.288
PB-214	-1.122E+01		2.743E+01	9.138E+01	2.120E+00	-0.123
RA-223	8.989E+01		6.860E+01	2.765E+02	6.434E+00	0.325
RA-224DA	1.160E+01		2.711E+01	1.053E+02	2.458E+00	0.110
RA-226DA	-1.651E+01		1.379E+01	5.736E+01	2.109E+00	-0.288
AC-227DA	-7.680E+01		1.036E+02	3.605E+02	8.415E+00	-0.213
AC-228	-1.794E+01		2.052E+01	8.440E+01	3.169E+00	-0.213
RA-228DA	-1.802E+01		2.062E+01	8.479E+01	3.184E+00	-0.213
TH-228DA	-1.644E+01		1.683E+01	6.929E+01	2.544E+00	-0.237
TH-232DA	5.553E+01		6.136E+01	2.533E+02	5.878E+00	0.219
TH-234DA	1.194E+03		8.766E+02	4.018E+03	1.519E+02	0.297
U-234DA	9.411E+01		4.775E+01	1.996E+02	4.638E+00	0.471
U-235HP	-3.030E+01		9.730E+01	3.506E+02	8.376E+00	-0.086
NP-237DA	1.956E+01		2.083E+01	8.680E+01	2.015E+00	0.225
U-238DA	-1.122E+01		2.743E+01	9.138E+01	2.120E+00	-0.123
U-238DHP	-1.508E+02		3.104E+02	1.144E+03	2.949E+01	-0.132
AM-241HP	1.056E+01		2.755E+01	1.062E+02	2.760E+00	0.099


STL Richland WA.
BA133
Batch ID: 7011225
Sample ID: JMLV91AC
Detector ID: GER7 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: 17-JAN-2007 13:27:25.43
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00
Energy Coefficients:
Offset: 6.28599E-01
Slope: 2.49276E-01
Quadrature: 1.25500E-07

SAMPLE IDENTIFICATION: JMLV91AC

CONFIGURATION ID: GER7:JMLV91AC_170171327
TITLE : BA133
SAMPLE ID : JMLV91AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 13:27:25
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 04:58:47.78
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 6.2860E-01 keV
ENERGY SLOPE: 2.4928E-01 keV/C
ENERGY Q COEFF: 1.2550E-07 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 6.1102E-01 keV
FWHM SLOPE: 3.3558E-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 17-JAN-2007 13:57:52

Configuration : $DISK1:[GER7.SAMPLE]JMLV91AC_170171327.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 13:27:25
Sample ID : JMLV91AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.21 0.0%
Start energy : 20.57 End energy : 2051.12
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.08*	29	35	0.80	298.64	294	11	1.60E-02	50.3	
2	0	80.96	321	52	1.05	322.21	312	18	1.78E-01	7.6	
3	0	276.76	33	14	0.61	1107.10	1102	12	1.81E-02	29.4	
4	0	302.84	104	11	1.17	1211.61	1200	19	5.78E-02	12.2	
5	0	355.93	288	8	1.17	1424.32	1416	16	1.60E-01	6.3	
6	0	383.89	41	4	0.99	1536.33	1530	15	2.26E-02	18.9	

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

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 13:57:53

Configuration : $DISK1:[GER7.SAMPLE]JMLV91AC_170171327.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 13:27:25
Sample ID : JMLV91AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.21 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	321	33.00	1.923E+00	1.687E+03	1.692E+03	9.35
	276.40	33	6.90	2.076E+00	7.586E+02	7.606E+02	29.92
	302.84	104	17.80	2.078E+00	9.373E+02	9.397E+02	13.30
	356.00	288	62.05*	2.080E+00	7.446E+02	7.465E+02	8.27
	383.85	41	8.70	2.080E+00	7.507E+02	7.526E+02	19.61

Flag: "*" = Keyline

Sample ID : JMLV91AC Acquisition date : 17-JAN-2007 13:27:25

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.08	29	35	0.80	298.64	294	11	1.60E-02	50.3	1.91E+00	

Flags: "T" = Tentatively associated

Sample ID : JMLV91AC Acquisition date : 17-JAN-2007 13:27:25

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	7.698E+02	29.92	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 17-JAN-2007 13:57:55

Configuration : $DISK1:[GER7.SAMPLE]JMLV91AC_170171327.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 : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 13:27:25
Sample ID : JMLV91AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.21 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.465E+02	6.176E+01	5.057E+01	1.011E+00	14.761

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	2.063E+02		7.768E+01	3.742E+02	7.507E+00	0.551
NA-22	-3.363E+00		4.181E+00	1.593E+01	3.379E-01	-0.211
K-40	-2.119E+01		4.979E+01	2.558E+02	5.495E+00	-0.083
SC-46	5.332E+00		6.366E+00	2.832E+01	5.937E-01	0.188
CR-51	6.131E+01		1.183E+02	4.676E+02	9.355E+00	0.131
MN-54	5.149E+00		4.985E+00	2.373E+01	4.872E-01	0.217
CO-57	8.600E+01		1.143E+02	4.383E+02	9.060E+00	0.196
CO-58	-1.020E+01		6.528E+00	2.039E+01	4.179E-01	-0.500
FE-59	-2.745E-01		7.525E+00	3.427E+01	7.174E-01	-0.008
CO-60	-5.173E+00		3.857E+00	1.261E+01	2.684E-01	-0.410
ZN-65	-7.612E+00		1.001E+01	3.704E+01	7.763E-01	-0.206
SE-75	-3.398E+00		1.612E+01	5.995E+01	1.203E+00	-0.057
SR-85	-1.906E+01		9.581E+00	2.899E+01	5.827E-01	-0.657
Y-88	-1.999E+00		2.002E+00	5.260E+00	1.159E-01	-0.380
NB-94	-4.647E+00		4.258E+00	1.530E+01	3.149E-01	-0.304
NB-95	1.626E+01		7.455E+00	3.700E+01	7.557E-01	0.440
TC-95M	2.732E+01		2.025E+01	8.107E+01	1.639E+00	0.337
ZR-95	1.058E+01		1.265E+01	5.517E+01	1.126E+00	0.192
ZRNB-95	2.911E+01		1.320E+01	6.553E+01	1.339E+00	0.444
MO-99	-7.062E+02		4.706E+02	1.560E+03	3.218E+01	-0.453
RH-101	1.010E+01		1.687E+01	6.453E+01	1.307E+00	0.157
RH-102M	3.578E+00		6.453E+00	2.728E+01	5.473E-01	0.131
RU-103	7.023E+00		7.048E+00	3.286E+01	6.598E-01	0.214
RU-106DA	-1.123E+02		6.869E+01	2.224E+02	4.498E+00	-0.505
AG-108M	-9.136E+00		8.801E+00	3.063E+01	6.134E-01	-0.298
AG-110M	-1.130E+01		6.945E+00	2.194E+01	4.520E-01	-0.515
SN-113DA	2.880E+00		1.253E+01	4.988E+01	9.979E-01	0.058

Sample ID : JMLV91AC Acquisition date : 17-JAN-2007 13:27:25

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-6.662E+00		8.084E+00	2.939E+01	5.937E-01	-0.227
SB-125	-1.609E+01		2.376E+01	8.704E+01	1.743E+00	-0.185
SN-126DA	6.436E-01		4.670E+00	2.016E+01	4.089E-01	0.032
I-131	9.440E+00		3.080E+01	1.239E+02	2.478E+00	0.076
CS-134	4.808E+00		5.793E+00	2.666E+01	5.457E-01	0.180
CS-137DA	-1.746E+00		6.288E+00	2.503E+01	5.076E-01	-0.070
LA-138	5.075E+00		5.198E+00	2.771E+01	5.943E-01	0.183
CE-139	-3.988E+00		1.667E+01	5.919E+01	1.209E+00	-0.067
BA-140	-7.468E+01		5.155E+01	1.659E+02	3.339E+00	-0.450
BALA-140	4.980E-01		1.890E+01	8.391E+01	1.819E+00	0.006
CE-141	-1.498E+01		3.517E+01	1.242E+02	2.556E+00	-0.121
CE-144	-6.499E+01		1.006E+02	3.560E+02	7.371E+00	-0.183
CEPR-144	-1.274E+02		2.014E+02	7.135E+02	1.477E+01	-0.179
PM-144	1.036E+01		6.670E+00	3.043E+01	6.154E-01	0.340
PM-146	1.241E+01		7.461E+00	3.719E+01	7.454E-01	0.334
EU-152	-4.156E+01		3.342E+01	1.105E+02	2.211E+00	-0.376
EU-154	-9.400E+00		1.169E+01	4.453E+01	9.443E-01	-0.211
EU-155	-1.333E+01		5.046E+01	1.863E+02	3.931E+00	-0.072
HF-181	-1.266E+01		1.132E+01	3.875E+01	7.775E-01	-0.327
BI-207	-1.027E-01		2.413E+00	1.216E+01	2.452E-01	-0.008
TL-208	-6.396E+00		7.640E+00	2.881E+01	5.812E-01	-0.222
BI-210M	1.201E+01		1.690E+01	6.788E+01	1.362E+00	0.177
BI-212	3.773E+01		9.205E+01	3.850E+02	1.177E+01	0.098
PB-212	6.176E+00		2.511E+01	9.958E+01	2.003E+00	0.062
BI-214	2.926E+00		1.804E+01	7.514E+01	1.519E+00	0.039
PB-214	-1.282E+01		3.309E+01	1.071E+02	2.142E+00	-0.120
RA-223	3.244E+01		6.555E+01	2.569E+02	5.153E+00	0.126
RA-224DA	6.263E+00		2.546E+01	1.010E+02	2.031E+00	0.062
RA-226DA	2.917E+00		1.803E+01	7.514E+01	1.518E+00	0.039
AC-227DA	-5.640E+01		9.615E+01	3.433E+02	6.907E+00	-0.164
AC-228	4.850E+00		2.009E+01	8.959E+01	1.850E+00	0.054
RA-228DA	4.873E+00		2.018E+01	9.001E+01	1.858E+00	0.054
TH-228DA	-1.805E+01		2.157E+01	8.131E+01	1.640E+00	-0.222
TH-232DA	1.155E+01		6.708E+01	2.562E+02	5.125E+00	0.045
TH-234DA	1.537E+03		6.329E+02	3.610E+03	7.502E+01	0.426
U-234DA	2.278E+01		5.134E+01	2.026E+02	4.057E+00	0.112
U-235HP	-1.264E+01		1.139E+02	4.124E+02	8.495E+00	-0.031
NP-237DA	-6.197E-01		2.737E+01	1.011E+02	2.023E+00	-0.006
U-238DA	-1.282E+01		3.309E+01	1.071E+02	2.142E+00	-0.120
U-238DHP	1.970E+02		4.163E+02	1.546E+03	3.442E+01	0.127
AM-241HP	7.804E+01		4.374E+01	1.695E+02	3.804E+00	0.460

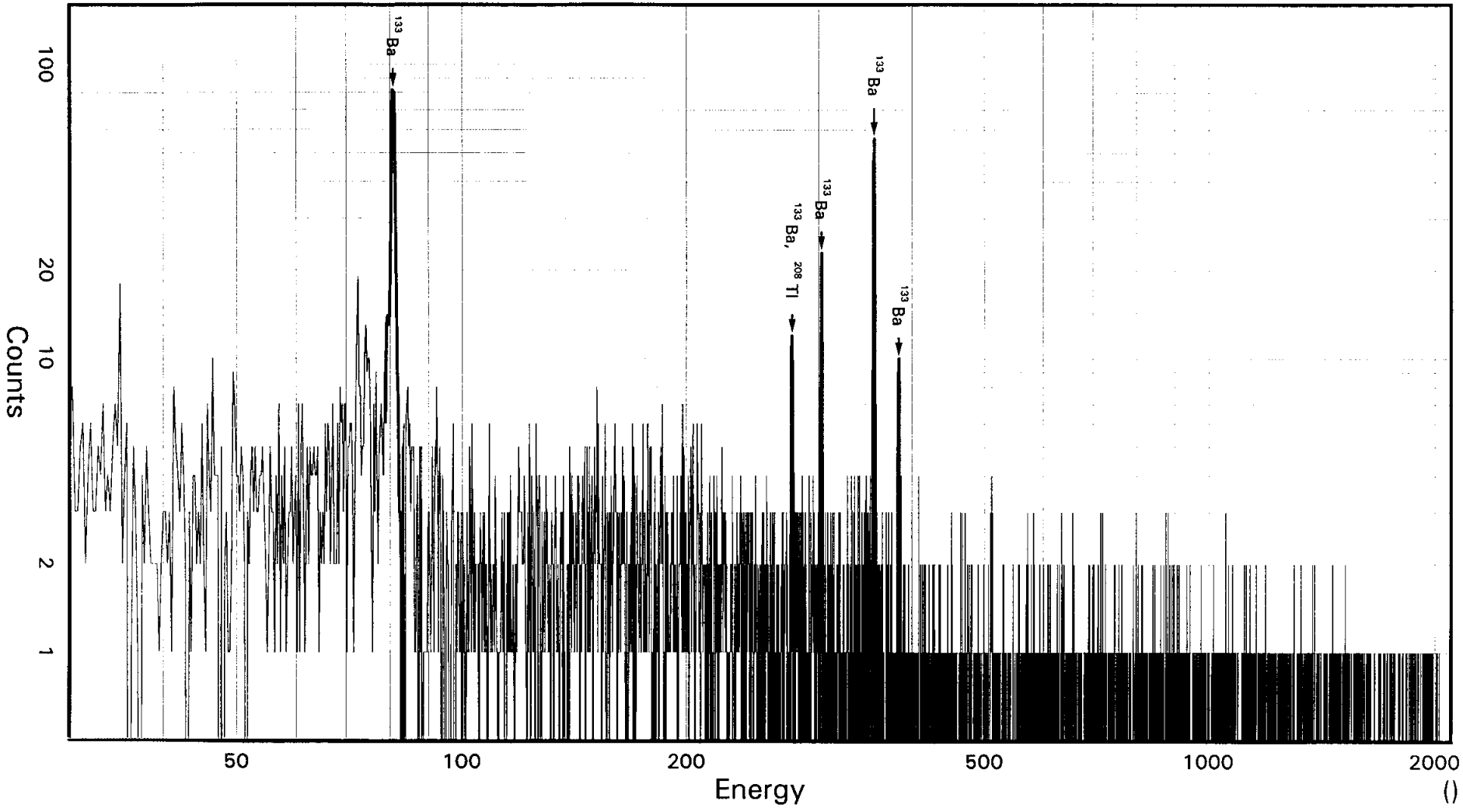
STL Richland WA.

BA133

Sample ID: JMN851AA

Detector ID: GER6 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 13:27:38.07

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: 6.67382E-02

Slope: 2.49506E-01

Quadrature: 3.15485E-09

SAMPLE IDENTIFICATION: JMN851AA

CONFIGURATION ID: GER6:JMN851AA_170171327
TITLE : BA133
SAMPLE ID : JMN851AA

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 13:27:38
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE DATE: 3-JAN-2007 12:00:00.00
CALIB DATE: 17-JAN-2007 04:59:06.34
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 6.6738E-02 keV
ENERGY SLOPE: 2.4951E-01 keV/C
ENERGY Q COEFF: 3.1548E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.3531E-01 keV
FWHM SLOPE: 6.7559E-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 17-JAN-2007 13:58:08

Configuration : $DISK1:[GER6.SAMPLE]JMN851AA_170171327.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 13:27:38
Sample ID : JMN851AA Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
Start energy : 20.03 End energy : 2044.23
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	35.03	36	18	0.28	140.13	135	10	2.01E-02	28.2	
2	0	73.57*	59	81	2.16	294.60	282	23	3.27E-02	42.6	
3	0	80.86	365	82	0.93	323.83	316	18	2.03E-01	8.0	
4	0	276.51	71	0	1.23	1107.94	1100	16	3.94E-02	11.9	
5	0	302.82	94	12	0.82	1213.39	1205	15	5.25E-02	12.9	
6	0	356.04	300	5	1.18	1426.67	1417	17	1.67E-01	6.0	
7	0	383.82	51	6	1.42	1538.01	1530	14	2.83E-02	17.7	

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

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 13:58:08

Configuration : $DISK1:[GER6.SAMPLE]JMN851AA_170171327.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 13:27:38
Sample ID : JMN851AA Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	365	33.00	2.166E+00	1.701E+03	1.705E+03	9.68
	276.40	71	6.90	2.334E+00	1.470E+03	1.474E+03	13.03
	302.84	94	17.80	2.337E+00	7.571E+02	7.591E+02	13.97
	356.00	300	62.05*	2.339E+00	6.896E+02	6.913E+02	8.05
	383.85	51	8.70	2.338E+00	8.357E+02	8.378E+02	18.50

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JMN851AA Acquisition date : 17-JAN-2007 13:27:38

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	35.03	36	18	0.28	140.13	135	10	2.01E-02	28.2	1.94E+00	
0	73.57	59	81	2.16	294.60	282	23	3.27E-02	42.6	2.14E+00	

Flags: "T" = Tentatively associated

Sample ID : JMN851AA Acquisition date : 17-JAN-2007 13:27:38

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	1.491E+03	13.03	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 17-JAN-2007 13:58:10

Configuration : $DISK1:[GER6.SAMPLE]JMN851AA_170171327.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 : 3-JAN-2007 12:00:00 Acquisition date : 17-JAN-2007 13:27:38
Sample ID : JMN851AA Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.913E+02	5.567E+01	5.714E+01	1.143E+00	12.100

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.135E+01		7.061E+01	2.742E+02	5.501E+00	-0.041
NA-22	2.986E+00		3.765E+00	1.830E+01	3.874E-01	0.163
K-40	-8.034E+01		5.713E+01	2.788E+02	5.976E+00	-0.288
SC-46	3.059E+00		6.353E+00	2.658E+01	5.565E-01	0.115
CR-51	1.826E+01		1.077E+02	4.148E+02	8.300E+00	0.044
MN-54	1.718E+00		4.457E+00	1.976E+01	4.053E-01	0.087
CO-57	1.048E+01		8.470E+01	3.254E+02	6.720E+00	0.032
CO-58	4.437E+00		6.575E+00	2.783E+01	5.698E-01	0.159
FE-59	-1.339E+01		6.732E+00	8.868E+00	1.854E-01	-1.509
CO-60	-2.941E+00		2.997E+00	1.119E+01	2.378E-01	-0.263
ZN-65	1.738E+00		1.190E+01	4.788E+01	1.002E+00	0.036
SE-75	-1.344E+01		1.468E+01	5.023E+01	1.008E+00	-0.267
SR-85	-2.084E+01		1.063E+01	3.331E+01	6.694E-01	-0.625
Y-88	6.904E+00		3.473E+00	2.072E+01	4.550E-01	0.333
NB-94	-8.591E+00		5.040E+00	1.577E+01	3.242E-01	-0.545
NB-95	6.684E-01		8.272E+00	3.263E+01	6.660E-01	0.020
TC-95M	-8.172E+00		2.027E+01	7.283E+01	1.472E+00	-0.112
ZR-95	2.994E+00		1.014E+01	4.306E+01	8.785E-01	0.070
ZRNB-95	1.586E+00		1.462E+01	5.780E+01	1.180E+00	0.027
MO-99	4.334E+02		3.656E+02	1.471E+03	3.032E+01	0.295
RH-101	2.578E+01		1.476E+01	5.971E+01	1.209E+00	0.432
RH-102M	-4.758E-01		6.892E+00	2.679E+01	5.373E-01	-0.018
RU-103	-8.023E+00		7.086E+00	2.472E+01	4.964E-01	-0.325
RU-106DA	-2.207E+01		4.880E+01	1.898E+02	3.838E+00	-0.116
AG-108M	5.965E+00		7.196E+00	2.987E+01	5.982E-01	0.200
AG-110M	3.876E+00		8.321E+00	3.464E+01	7.131E-01	0.112
SN-113DA	-4.810E+00		1.106E+01	4.125E+01	8.253E-01	-0.117

Sample ID : JMN851AA Acquisition date : 17-JAN-2007 13:27:38

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-4.849E+00		7.052E+00	2.595E+01	5.239E-01	-0.187
SB-125	3.836E+01		2.435E+01	1.046E+02	2.095E+00	0.367
SN-126DA	-3.165E+00		5.090E+00	1.894E+01	3.840E-01	-0.167
I-131	5.047E+01		2.981E+01	1.295E+02	2.591E+00	0.390
CS-134	-6.097E+00		5.165E+00	1.766E+01	3.613E-01	-0.345
CS-137DA	-8.857E+00		6.245E+00	2.039E+01	4.133E-01	-0.434
LA-138	-4.690E+00		5.654E+00	2.122E+01	4.541E-01	-0.221
CE-139	-5.207E+00		1.287E+01	4.616E+01	9.422E-01	-0.113
BA-140	-2.766E+00		4.642E+01	1.838E+02	3.697E+00	-0.015
BALA-140	-1.391E+01		1.700E+01	6.423E+01	1.389E+00	-0.217
CE-141	-1.946E+01		3.025E+01	1.074E+02	2.209E+00	-0.181
CE-144	7.777E+01		8.623E+01	3.464E+02	7.164E+00	0.225
CEPR-144	1.555E+02		1.725E+02	6.928E+02	1.433E+01	0.225
PM-144	-2.902E+00		5.150E+00	1.956E+01	3.954E-01	-0.148
PM-146	5.824E+00		9.841E+00	4.004E+01	8.025E-01	0.145
EU-152	-5.210E+01		3.394E+01	1.095E+02	2.189E+00	-0.476
EU-154	8.346E+00		1.052E+01	5.115E+01	1.083E+00	0.163
EU-155	-2.703E+01		4.616E+01	1.644E+02	3.461E+00	-0.164
HF-181	-5.572E+00		7.781E+00	2.897E+01	5.812E-01	-0.192
BI-207	1.089E+01		7.262E+00	3.134E+01	6.316E-01	0.348
TL-208	1.618E+00		7.866E+00	3.324E+01	6.704E-01	0.049
BI-210M	1.652E+00		1.542E+01	5.816E+01	1.167E+00	0.028
BI-212	1.115E+02		7.304E+01	3.496E+02	1.068E+01	0.319
PB-212	-6.630E+01		2.327E+01	7.030E+01	1.414E+00	-0.943
BI-214	-1.919E+00		1.510E+01	6.054E+01	1.223E+00	-0.032
PB-214	-1.299E+01		3.128E+01	9.194E+01	1.839E+00	-0.141
RA-223	4.095E+01		6.408E+01	2.468E+02	4.949E+00	0.166
RA-224DA	-6.724E+01		2.359E+01	7.129E+01	1.434E+00	-0.943
RA-226DA	-1.919E+00		1.510E+01	6.054E+01	1.223E+00	-0.032
AC-227DA	4.771E+01		8.611E+01	3.281E+02	6.600E+00	0.145
AC-228	2.638E+01		2.064E+01	9.237E+01	1.905E+00	0.286
RA-228DA	2.650E+01		2.073E+01	9.280E+01	1.914E+00	0.286
TH-228DA	4.568E+00		2.220E+01	9.381E+01	1.892E+00	0.049
TH-232DA	6.285E+01		7.008E+01	2.760E+02	5.521E+00	0.228
TH-234DA	9.213E+02		6.418E+02	3.207E+03	6.658E+01	0.287
U-234DA	5.799E+01		4.740E+01	1.907E+02	3.818E+00	0.304
U-235HP	-2.010E+01		9.527E+01	3.505E+02	7.214E+00	-0.057
NP-237DA	3.085E+01		2.167E+01	9.052E+01	1.811E+00	0.341
U-238DA	-1.299E+01		3.128E+01	9.194E+01	1.839E+00	-0.141
U-238DHP	4.240E+02		3.149E+02	1.232E+03	2.733E+01	0.344
AM-241HP	-3.506E+00		3.265E+01	1.189E+02	2.659E+00	-0.029

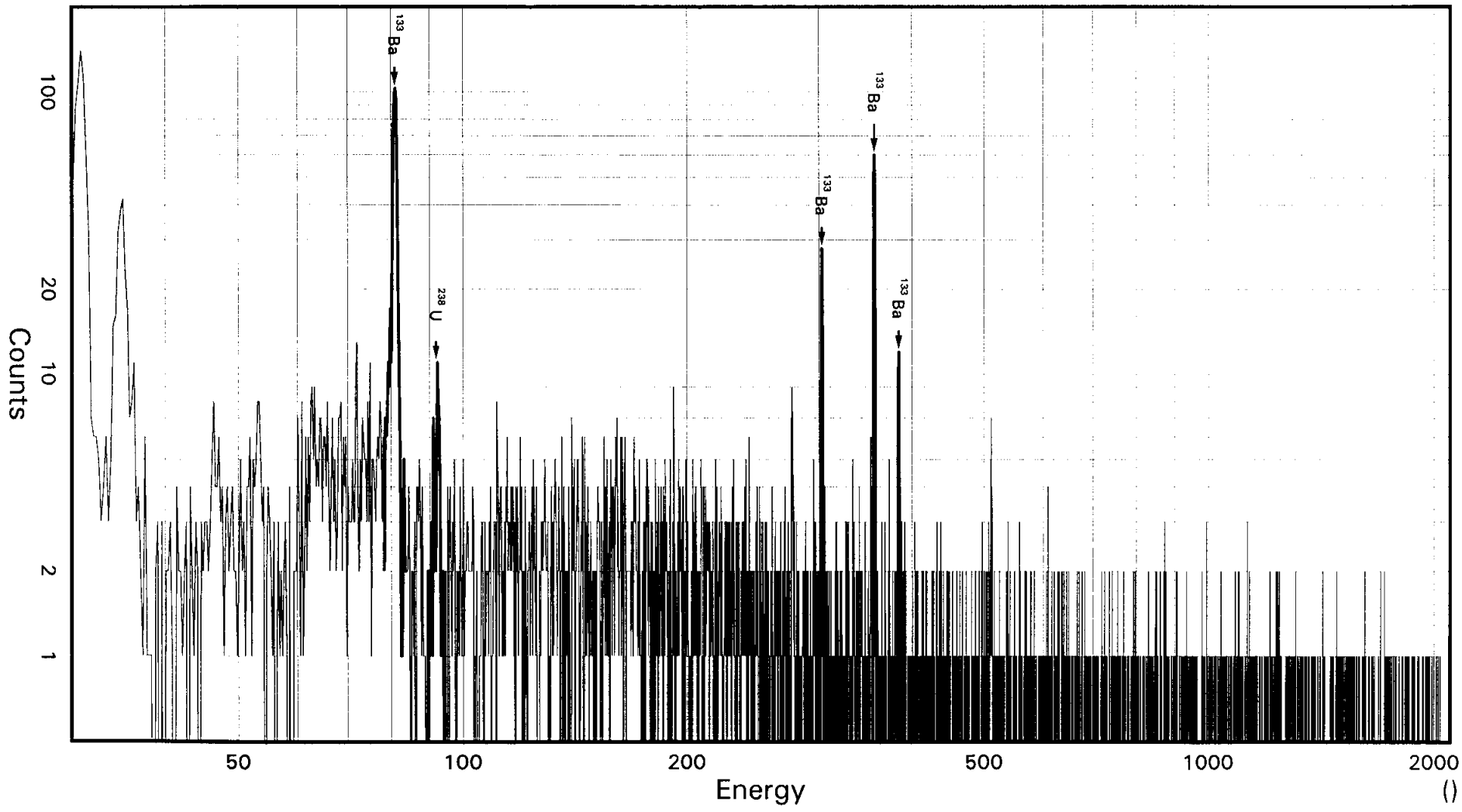
STL Richland WA.

BA133

Sample ID: JMN851AC

Detector ID: GER8 1

Batch ID: 7011225



Acquisition Start: 17-JAN-2007 13:27:48.24

Preset Live Time: 0 00:30:00.00

Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:

Offset: 3.71259E-01

Slope: 2.49848E-01

Quadrature: 1.33547E-08

SAMPLE IDENTIFICATION: JMN851AC

CONFIGURATION ID: GER8:JMN851AC_170171327
TITLE : BA133
SAMPLE ID : JMN851AC

REPORT DATE: 17-JAN-07
ACQUIRE DATE: 17-JAN-07 13:27:48
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-JAN-2007 05:16:14.20
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

UNITS: SAMPL
SAMPLE TYPE:

ENERGY OFFSET: 3.7126E-01 keV
ENERGY SLOPE: 2.4985E-01 keV/C
ENERGY Q COEFF: 1.3355E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.3638E-01 keV
FWHM SLOPE: 2.2109E-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 17-JAN-2007 13:58:23

Configuration : $DISK1:[GER8.SAMPLE]JMN851AC_170171327.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 17-JAN-2007 13:27:48
Sample ID : JMN851AC 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 : 20.36 End energy : 2048.02
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.78	570	135	1.02	121.71	114	18	3.17E-01	6.5	
2	0	35.05	195	41	0.91	138.81	131	17	1.09E-01	10.4	
3	0	80.97	488	67	1.08	322.61	312	23	2.71E-01	6.3	
4	0	91.91*	43	10	1.89	366.36	356	21	2.37E-02	26.4	
5	0	302.84	114	21	0.97	1210.52	1202	17	6.32E-02	13.2	
6	0	356.00	343	0	1.30	1423.29	1414	20	1.91E-01	5.4	
7	0	383.79	61	3	1.27	1534.50	1528	13	3.38E-02	14.2	

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

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 13:58:23

Configuration : $DISK1:[GER8.SAMPLE]JMN851AC_170171327.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 17-JAN-2007 13:27:48
Sample ID : JMN851AC 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	488	33.00	2.202E+00	2.240E+03	2.263E+03	8.34
	276.40	------	6.90	2.371E+00	------ Line Not Found		------
	302.84	114	17.80	2.374E+00	8.970E+02	9.062E+02	14.26
	356.00	343	62.05*	2.376E+00	7.756E+02	7.835E+02	7.63
	383.85	61	8.70	2.375E+00	9.813E+02	9.913E+02	15.18

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JMN851AC Acquisition date : 17-JAN-2007 13:27:48

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.78	570	135	1.02	121.71	114	18	3.17E-01	6.5	1.93E+00	
0	35.05	195	41	0.91	138.81	131	17	1.09E-01	10.4	1.97E+00	
0	91.91	43	10	1.89	366.36	356	21	2.37E-02	26.4	2.23E+00	T

Flags: "T" = Tentatively associated

Sample ID : JMN851AC Acquisition date : 17-JAN-2007 13:27:48

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (DPM/SAMPL)	1-Sigma %Error	Rejected by
U-238DHP	4.47E+09Y	0.00	63.28*	3.80	--- Not Found ---		Abun.
			92.59	5.41	1.180E+03	26.98	

% Abundances Found = 58.74

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.0 Generated 17-JAN-2007 13:58:25

Configuration : $DISK1:[GER8.SAMPLE]JMN851AC_170171327.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8
Analyses by : MINACT V2.8
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 17-JAN-2007 13:27:48
Sample ID : JMN851AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.835E+02	5.975E+01	6.180E+01	1.236E+00	12.678

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-7.346E+01		8.968E+01	3.355E+02	6.729E+00	-0.219
NA-22	1.492E+00		2.714E+00	1.436E+01	3.038E-01	0.104
K-40	-2.914E+01		2.883E+01	1.516E+02	3.248E+00	-0.192
SC-46	-4.887E+00		7.196E+00	3.058E+01	6.402E-01	-0.160
CR-51	5.976E+01		2.905E+02	1.132E+03	2.264E+01	0.053
MN-54	1.159E+00		4.978E+00	2.120E+01	4.349E-01	0.055
CO-57	-8.368E+01		1.275E+02	4.412E+02	9.110E+00	-0.190
CO-58	-1.115E-01		3.618E+00	1.840E+01	3.767E-01	-0.006
FE-59	-9.484E+00		1.809E+01	7.055E+01	1.475E+00	-0.134
CO-60	1.200E-01		3.177E+00	1.453E+01	3.088E-01	0.008
ZN-65	-1.707E+01		9.062E+00	2.493E+01	5.218E-01	-0.685
SE-75	3.829E-01		2.069E+01	7.741E+01	1.553E+00	0.005
SR-85	-2.306E+01		1.750E+01	5.926E+01	1.191E+00	-0.389
Y-88	2.106E+00		5.048E+00	2.401E+01	5.271E-01	0.088
NB-94	3.987E-01		4.883E+00	2.033E+01	4.180E-01	0.020
NB-95	-7.122E-01		1.397E+01	5.695E+01	1.162E+00	-0.013
TC-95M	4.302E+01		2.735E+01	1.115E+02	2.253E+00	0.386
ZR-95	4.028E+00		1.597E+01	6.692E+01	1.365E+00	0.060
ZRNB-95	-8.596E-01		1.686E+01	6.873E+01	1.403E+00	-0.013
RH-101	-3.718E+00		1.587E+01	5.588E+01	1.131E+00	-0.067
RH-102M	6.477E+00		5.240E+00	2.436E+01	4.886E-01	0.266
RU-103	1.393E+01		1.617E+01	7.076E+01	1.421E+00	0.197
RU-106DA	4.031E+01		4.094E+01	2.020E+02	4.083E+00	0.200
AG-108M	-1.067E+01		8.541E+00	2.835E+01	5.678E-01	-0.376
AG-110M	1.999E-01		4.548E+00	2.156E+01	4.438E-01	0.009
SN-113DA	4.932E+00		1.568E+01	6.093E+01	1.219E+00	0.081
SB-124	-8.428E+00		1.055E+01	3.845E+01	7.764E-01	-0.219

Sample ID : JMN851AC Acquisition date : 17-JAN-2007 13:27:48

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

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-125	2.920E+00		2.217E+01	8.663E+01	1.735E+00	0.034
SN-126DA	2.800E+00		5.339E+00	2.256E+01	4.574E-01	0.124
I-131	4.933E+02		9.911E+02	4.005E+03	8.009E+01	0.123
CS-134	-1.955E+00		6.037E+00	2.343E+01	4.793E-01	-0.083
CS-137DA	-3.579E+00		5.289E+00	1.991E+01	4.035E-01	-0.180
LA-138	0.000E+00		0.000E+00	6.082E+00	1.301E-01	0.000
CE-139	-7.821E+00		2.034E+01	7.090E+01	1.447E+00	-0.110
BA-140	1.073E+03		4.572E+02	2.217E+03	4.461E+01	0.484
BALA-140	0.000E+00		0.000E+00	1.793E+02	3.877E+00	0.000
CE-141	1.265E+01		8.273E+01	2.990E+02	6.149E+00	0.042
CE-144	1.241E+02		1.252E+02	4.753E+02	9.829E+00	0.261
CEPR-144	2.532E+02		2.508E+02	9.526E+02	1.970E+01	0.266
PM-144	-4.680E+00		5.259E+00	1.911E+01	3.863E-01	-0.245
PM-146	1.041E+01		8.084E+00	3.658E+01	7.332E-01	0.285
EU-152	2.068E+01		2.839E+01	1.137E+02	2.274E+00	0.182
EU-154	4.080E+00		7.423E+00	3.927E+01	8.310E-01	0.104
EU-155	-8.720E+01		5.168E+01	1.674E+02	3.524E+00	-0.521
HF-181	1.767E+01		1.328E+01	6.381E+01	1.280E+00	0.277
BI-207	4.546E+00		5.927E+00	2.523E+01	5.085E-01	0.180
TL-208	8.499E+00		5.563E+00	2.664E+01	5.374E-01	0.319
BI-210M	-1.778E+01		1.861E+01	6.463E+01	1.296E+00	-0.275
BI-212	1.075E+02		6.574E+01	3.257E+02	9.954E+00	0.330
PB-212	2.477E+01		2.377E+01	9.426E+01	1.896E+00	0.263
BI-214	-2.354E+01		1.380E+01	5.758E+01	1.163E+00	-0.409
PB-214	-1.031E+01		2.722E+01	1.017E+02	2.034E+00	-0.101
RA-223	3.942E+01		6.450E+01	2.514E+02	5.042E+00	0.157
RA-224DA	2.618E+01		2.513E+01	9.966E+01	2.004E+00	0.263
RA-226DA	-2.355E+01		1.380E+01	5.758E+01	1.163E+00	-0.409
AC-227DA	-1.091E+02		8.808E+01	3.000E+02	6.036E+00	-0.363
AC-228	-2.514E+01		1.133E+01	1.412E+01	2.911E-01	-1.781
RA-228DA	-2.561E+01		1.154E+01	1.438E+01	2.965E-01	-1.781
TH-228DA	2.501E+01		1.637E+01	7.841E+01	1.582E+00	0.319
TH-232DA	0.000E+00		0.000E+00	2.419E+02	4.838E+00	0.000
TH-234DA	4.003E+00		3.140E+02	1.647E+03	3.419E+01	0.002
U-234DA	-3.236E+01		4.747E+01	1.854E+02	3.712E+00	-0.175
U-235HP	-3.486E+01		1.223E+02	4.295E+02	8.838E+00	-0.081
NP-237DA	-9.231E+00		1.890E+01	6.952E+01	1.391E+00	-0.133
U-238DA	-1.031E+01		2.722E+01	1.017E+02	2.034E+00	-0.101
U-238DHP	2.223E+02		4.677E+02	1.751E+03	3.885E+01	0.127
AM-241HP	-5.120E+01		3.753E+01	1.266E+02	2.829E+00	-0.404