Analytical Data Package Prepared For

Brown and Caldwell

Transite Pipe Scale 138553-002

Radiochemical Analysis By

TestAmerica

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

Assigned Laboratory Code: TALR

Data Package Contains 222 ***Pages***

Report No.: 44272

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
41625	YERW	S-1 MWMP	J0F180565-1	L25FA2AC	9L25FA20	0172162
		S-1 MWMP	J0F180565-1	L25FA2AA	9L25FA20	0201283
		S-12A MWMP	J0F180565-2	L25FK2AC	9L25FK20	0172162
		S-12A MWMP	J0F180565-2	L25FK2AA	9L25FK20	0201283
		S-24 MWMP	J0F180565-3	L25FQ2AC	9L25FQ20	0172162
		S-24 MWMP	J0F180565-3	L25FQ2AA	9L25FQ20	0201283
		S-25 MWMP	J0F180565-4	L25FR2AC	9L25FR20	0172162
		S-25 MWMP	J0F180565-4	L25FR2AA	9L25FR20	0201283

Certificate of Analysis

July 19, 2010
July 28, 2010

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

Attention: Penny Bassett

Date Received at Lab	:	June 18, 2010
Project Name	:	Transite Pipe Scale
Project Number	:	138553-002
ENFOS Number	:	0009H-0026
Sample Type	:	Four (4) Water Samples
SDG Number	:	41625

CASE NARRATIVE

FINAL REPORT

I. Introduction

On June 18, 2010, four water samples were received at TestAmerica's Richland laboratory for radiochemical analysis. Upon receipt, the samples were assigned the TestAmerica identification number as described on the cover page of the Analytical Data Package report form. The samples were assigned to Lot Numbers J0F180565.

II. Sample Receipt

The samples were received in good condition, the custody seals were in tact, signed and dated. The COC and sample label of had a discrepancy. The client was notified and indicated that the COC was incorrect. The COC was corrected. The COC indicates only to run Ra-226 (903.0), however, the client added Gamma Spec analysis as well (see attached email).

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:

Gamma Spectrometry
Gamma by method RL-GAM-001
Gas Proportional Counting
Total Alpha Radium (Ra-226) by method RL-RA-002

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

Gamma:
Due to insufficient sample volume; a sample was counted on a separate detector to act as the sample duplicate. The achieved MDA for the samples exceed the CRDL. The samples were recounted the maximum time available for the method. The Cs-137 limits are achieved. Data is accepted. Except as noted, the LCS, batch blank, sample and sample duplicate results are within analytical requirements.

Total Alpha Radium (Ra-226) Analysis:
The batch was recounted due to the low recovery yield of the LCS. The recount is within acceptance criteria. There was insufficient sample volume available to provide a sample duplicate, matrix spike or matrix spike duplicate in the batch. The LCS recovery yield was initially low. The LCS was recounted and is now within limits. Data is accepted. Except as noted, the LCS, batch blank, and sample results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, 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:

Erika Jordan

Digitally signed by Erika Jordan
Date: 2010.07.28 21:36:11 -07'00'

Erika Jordan
Customer Service Manager

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica 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/?n), 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 TestAmerica.
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 TestAmerica "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 TestAmerica 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

Date: 28-Jul-10

TestAmerica TALR

Ordered by Method, Batch No., Client Sample ID.

Report No. : 44272 **SDG No:** 41625

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
0172162 EPA 901.1									
S-1 MWMP									
	L25FA2AC	CS-137	1.33E+00 +- 7.5E+00	ND	pCi/L		1.29E+01	2.00E+01	
		RA-228	3.31E+01 +- 2.8E+01	ND	pCi/L		5.13E+01	1.00E+00	
		TH-232	2.81E+01 +- 4.5E+01	ND	pCi/L		7.91E+01		
		TH-234	-6.48E+01 +- 8.1E+02	ND	pCi/L		1.38E+03		
S-1 MWMP DUP									
	L25FA2AD	CS-137	4.14E+00 +- 1.0E+01	ND	pCi/L		1.75E+01	2.00E+01	
		RA-228	-3.78E+01 +- 6.8E+01	ND	pCi/L		7.34E+01	1.00E+00	
		TH-232	-2.69E+01 +- 6.4E+01	ND	pCi/L		1.07E+02		
		TH-234	5.96E+02 +- 1.1E+03	ND	pCi/L		1.98E+03		
S-12A MWMP									
	L25FK2AC	CS-137	1.54E+01 +- 7.2E+00	ND	pCi/L		1.29E+01	2.00E+01	
		K-40	1.34E+01 +- 2.2E+02	ND	pCi/L		1.06E+02		
		RA-228	2.97E+01 +- 2.5E+01	ND	pCi/L		4.51E+01	1.00E+00	
		TH-232	-1.93E+01 +- 3.6E+01	ND	pCi/L		5.86E+01		
		TH-234	1.03E+03 +- 7.6E+02	ND	pCi/L		1.40E+03		
S-24 MWMP									
	L25FQ2AC	CS-137	-3.81E+00 +- 7.9E+00	ND	pCi/L		1.34E+01	2.00E+01	
		RA-228	2.58E+01 +- 7.2E+01	ND	pCi/L		6.44E+01	1.00E+00	
		SR-85	5.08E+01 +- 2.2E+01	=	pCi/L		1.40E+01		
		TH-232	4.39E+01 +- 5.0E+01	ND	pCi/L		8.79E+01		
		TH-234	9.02E+02 +- 9.4E+02	ND	pCi/L		1.69E+03		
		U-235	7.09E+01 +- 6.7E+01	=	pCi/L		6.00E+01		
		U-238-TH	8.72E+02 +- 2.6E+02	=	pCi/L		2.66E+02		
S-25 MWMP									
	L25FR2AC	CS-137	3.25E-01 +- 6.5E+00	ND	pCi/L		1.10E+01	2.00E+01	
		RA-228	2.07E+01 +- 2.3E+01	ND	pCi/L		4.15E+01	1.00E+00	
		SR-85	5.45E+01 +- 1.6E+01	=	pCi/L		1.18E+01		
		TH-232	-2.61E+01 +- 4.3E+01	ND	pCi/L		7.07E+01		
		TH-234	-1.49E+02 +- 7.1E+02	ND	pCi/L		1.21E+03		
0201283 EPA 903.0									
S-1 MWMP									
	L25FA2AA	TOTAL ALPHA RA	8.35E-01 +- 2.7E-01	=	pCi/L	94%	1.68E-01	1.00E+00	
S-12A MWMP									
	L25FK2AA	TOTAL ALPHA RA	5.42E-01 +- 2.1E-01	=	pCi/L	100%	1.33E-01	1.00E+00	
S-24 MWMP									
	L25FQ2AA	TOTAL ALPHA RA	1.14E-01 +- 8.0E-02	=	pCi/L	100%	9.09E-02	1.00E+00	
S-25 MWMP									

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rptSTLRchSaSummary2 V5.2.5 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
= ERPIMS - Equal To, Analyte Detected
D Qual - Result is greater than 3 times 1s Total Uncertainty

Sample Results Summary

Date: 28-Jul-10

TestAmerica TALR

Ordered by Method, Batch No., Client Sample ID.

Report No. : 44272 **SDG No:** 41625

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
0201283 EPA 903.0									
S-25 MWMP									
	L25FR2AA	TOTAL ALPHA RA	1.96E-01 +- 1.2E-01	=	pCi/L	100%	9.42E-02	1.00E+00	

No. of Results: 29

TestAmerica

rptSTLRchSaSummary2 V5.2.5 A2002

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

QC Results Summary

Date: 28-Jul-10

TestAmerica TALR

Ordered by Method, Batch No, QC Type,.

Report No. : 44272 **SDG No.:** 41625

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDC|MDA
EPA 901.1								
0172162 BLANK QC,								
L26752AA	CS-137	1.03E+01 +- 1.0E+01	ND	pCi/L				1.78E+01
	RA-228	-5.31E+01 +- 6.7E+01	ND	pCi/L				7.16E+01
	SR-85	1.18E+01 +- 1.4E+01	ND	pCi/L				1.37E+01
	TH-232	4.11E+01 +- 6.5E+01	ND	pCi/L				1.12E+02
	TH-234	2.47E+02 +- 1.1E+03	ND	pCi/L				1.94E+03
0172162 LCS,								
L26752AC	CS-137	4.20E+02 +- 5.4E+01	=	pCi/L		102%	0.0	1.12E+01
EPA 903.0								
0201283 BLANK QC,								
L26772AA	TOTAL ALPHA RA	-1.45E-02 +- 3.4E-02	ND	pCi/L	97%			9.53E-02
0201283 LCS,								
L26774AC	TOTAL ALPHA RA	6.01E+00 +- 1.3E+00	=	pCi/L	93%	95%	-0.1	1.08E-01

No. of Results: 8

TestAmerica

rptSTLRchQcSummary V5.2.5 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
= ERPIMS - Equal To, Analyte Detected
D Qual - Result is greater than 3 times 1s Total Uncertainty

FORM I

SAMPLE RESULTS

Date: 28-Jul-10

Lab Name:	**TestAmerica**	**SDG:**	41625	**Collection Date:**	6/15/2010
Lot-Sample No.:	**J0F180565-1**	**Report No. :**	44272	**Received Date:**	6/18/2010 10:00:00 AM
Client Sample ID:	**S-1 MWMP**	**COC No. :**	Dissolved	**Matrix:**	WATER AQ

Transite Pipe Scale 138553-002

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	Primary Detector
Batch: 0172162	EPA 901.1			**Work Order:** L25FA2AC		**Report DB ID:** 9L25FA20						
CS-137	**1.33E+00**	ND	7.5E+00	7.5E+00	1.29E+01	pCi/L		*0.1*	7/9/10 10:31 a		0.4995	GER15$1
						6.46E+00	2.00E+01	*0.35*			L	
RA-228	**3.31E+01**	ND	2.8E+01	2.8E+01	5.13E+01	pCi/L		*0.65*	7/9/10 10:31 a		0.4995	GER15$1
						2.55E+01	1.00E+00	*(2.3)*			L	
TH-232	**2.81E+01**	ND	4.5E+01	4.5E+01	7.91E+01	pCi/L		*0.36*	7/9/10 10:31 a		0.4995	GER15$1
						3.96E+01		*(1.2)*			L	
TH-234	**-6.48E+01**	ND	8.1E+02	8.1E+02	1.38E+03	pCi/L		*-0.05*	7/9/10 10:31 a		0.4995	GER15$1
						6.90E+02		*-0.16*			L	
Batch: 0201283	EPA 903.0			**Work Order:** L25FA2AA		**Report DB ID:** 9L25FA20						
TOTAL ALPHA RA	**8.35E-01**	=	2.1E-01	2.7E-01	1.68E-01	pCi/L	94%	*(5.)*	7/20/10 03:17 p		0.32	GPC10C
						6.83E-02	1.00E+00	*(6.2)*			L	

No. of Results: 5 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 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
D Qual - Result is greater than 3 times 1s Total Uncertainty

FORM I

SAMPLE RESULTS

Date: 28-Jul-10

Lab Name:	**TestAmerica**	**SDG:**	41625	**Collection Date:**	6/15/2010
Lot-Sample No.:	**J0F180565-2**	**Report No. :**	44272	**Received Date:**	6/18/2010 10:00:00 AM
Client Sample ID:	**S-12A MWMP**	**COC No. :**	Dissolved	**Matrix:**	WATER AQ

Transite Pipe Scale 138553-002

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	Primary Detector
Batch: 0172162	EPA 901.1			**Work Order:** L25FK2AC		**Report DB ID:** 9L25FK20						
CS-137	**1.54E+01**	ND	7.2E+00	7.2E+00	1.29E+01	pCi/L		*(1.2)*	7/9/10 10:32 a		0.1984	GER11$1
						6.44E+00	2.00E+01	*(4.3)*			L	
K-40	**1.34E+01**	ND	2.2E+02	2.2E+02	1.06E+02	pCi/L		*0.13*	7/9/10 10:32 a		0.1984	GER11$1
						5.30E+01		*0.12*			L	
RA-228	**2.97E+01**	ND	2.5E+01	2.5E+01	4.51E+01	pCi/L		*0.66*	7/9/10 10:32 a		0.1984	GER11$1
						2.24E+01	1.00E+00	*(2.4)*			L	
TH-232	**-1.93E+01**	ND	3.6E+01	3.6E+01	5.86E+01	pCi/L		*-0.33*	7/9/10 10:32 a		0.1984	GER11$1
						2.93E+01		*-(1.1)*			L	
TH-234	**1.03E+03**	ND	7.6E+02	7.6E+02	1.40E+03	pCi/L		*0.73*	7/9/10 10:32 a		0.1984	GER11$1
						7.02E+02		*(2.7)*			L	
Batch: 0201283	EPA 903.0			**Work Order:** L25FK2AA		**Report DB ID:** 9L25FK20						
TOTAL ALPHA RA	**5.42E-01**	=	1.7E-01	2.1E-01	1.33E-01	pCi/L	100%	*(4.1)*	7/20/10 01:23 p		0.2861	GPC10B
						4.96E-02	1.00E+00	*(5.3)*			L	

No. of Results: 6 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 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
D Qual - Result is greater than 3 times 1s Total Uncertainty

FORM I

SAMPLE RESULTS

Date: 28-Jul-10

Lab Name:	**TestAmerica**	**SDG:**	41625	**Collection Date:**	6/15/2010
Lot-Sample No.:	**J0F180565-3**	**Report No. :**	44272	**Received Date:**	6/18/2010 10:00:00 AM
Client Sample ID:	**S-24 MWMP**	**COC No. :**	Dissolved	**Matrix:**	WATER AQ

Transite Pipe Scale 138553-002

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	Primary Detector
Batch: 0172162	EPA 901.1			**Work Order:** L25FQ2AC		**Report DB ID:** 9L25FQ20						
CS-137	**-3.81E+00**	ND	7.9E+00	7.9E+00	1.34E+01	pCi/L		*-0.28*	7/9/10 10:33 a		0.4996	GER7$1
						6.68E+00	2.00E+01	*-0.96*			L	
RA-228	**2.58E+01**	ND	7.2E+01	7.2E+01	6.44E+01	pCi/L		*0.4*	7/9/10 10:33 a		0.4996	GER7$1
						3.20E+01	1.00E+00	*0.72*			L	
SR-85	**5.08E+01**	=	2.2E+01	2.2E+01	1.40E+01	pCi/L		*(3.6)*	7/9/10 10:33 a		0.4996	GER7$1
						5.38E+00		*(4.6)*			L	
TH-232	**4.39E+01**	ND	5.0E+01	5.0E+01	8.79E+01	pCi/L		*0.5*	7/9/10 10:33 a		0.4996	GER7$1
						4.40E+01		*(1.7)*			L	
TH-234	**9.02E+02**	ND	9.4E+02	9.4E+02	1.69E+03	pCi/L		*0.53*	7/9/10 10:33 a		0.4996	GER7$1
						8.46E+02		*(1.9)*			L	
U-235	**7.09E+01**	=	6.7E+01	6.7E+01	6.00E+01	pCi/L		*(1.2)*	7/9/10 10:33 a		0.4996	GER7$1
						3.00E+01		*(2.1)*			L	
U-238-TH	**8.72E+02**	=	2.6E+02	2.6E+02	2.66E+02	pCi/L		*(3.3)*	7/9/10 10:33 a		0.4996	GER7$1
						1.33E+02		*(6.7)*			L	
Batch: 0201283	EPA 903.0			**Work Order:** L25FQ2AA		**Report DB ID:** 9L25FQ20						
TOTAL ALPHA RA	**1.14E-01**	=	7.7E-02	8.0E-02	9.09E-02	pCi/L	100%	*(1.2)*	7/20/10 01:23 p		0.3318	GPC10A
						3.08E-02	1.00E+00	*(2.8)*			L	

No. of Results: 8 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 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
D Qual - Result is greater than 3 times 1s Total Uncertainty

FORM I

SAMPLE RESULTS

Date: 28-Jul-10

Lab Name:	**TestAmerica**	**SDG:**	41625	**Collection Date:**	6/15/2010
Lot-Sample No.:	**J0F180565-4**	**Report No. :**	44272	**Received Date:**	6/18/2010 10:00:00 AM
Client Sample ID:	**S-25 MWMP**	**COC No. :**	Dissolved	**Matrix:**	WATER AQ

Transite Pipe Scale 138553-002

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	Primary Detector
Batch: 0172162	EPA 901.1			**Work Order:** L25FR2AC		**Report DB ID:** 9L25FR20						
CS-137	**3.25E-01**	ND	6.5E+00	6.5E+00	1.10E+01	pCi/L		*0.03*	7/9/10 10:33 a		0.4996	GER10$1
						5.52E+00	2.00E+01	*0.1*			L	
RA-228	**2.07E+01**	ND	2.3E+01	2.3E+01	4.15E+01	pCi/L		*0.5*	7/9/10 10:33 a		0.4996	GER10$1
						2.06E+01	1.00E+00	*(1.8)*			L	
SR-85	**5.45E+01**	=	1.6E+01	1.6E+01	1.18E+01	pCi/L		*(4.6)*	7/9/10 10:33 a		0.4996	GER10$1
						4.53E+00		*(6.9)*			L	
TH-232	**-2.61E+01**	ND	4.3E+01	4.3E+01	7.07E+01	pCi/L		*-0.37*	7/9/10 10:33 a		0.4996	GER10$1
						3.54E+01		*-(1.2)*			L	
TH-234	**-1.49E+02**	ND	7.1E+02	7.1E+02	1.21E+03	pCi/L		*-0.12*	7/9/10 10:33 a		0.4996	GER10$1
						6.05E+02		*-0.42*			L	
Batch: 0201283	EPA 903.0			**Work Order:** L25FR2AA		**Report DB ID:** 9L25FR20						
TOTAL ALPHA RA	**1.96E-01**	=	1.1E-01	1.2E-01	9.42E-02	pCi/L	100%	*(2.1)*	7/20/10 01:23 p		0.2391	GPC10E
						2.58E-02	1.00E+00	*(3.2)*			L	

No. of Results: 6 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 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
D Qual - Result is greater than 3 times 1s Total Uncertainty

FORM II

Date: 28-Jul-10

DUPLICATE RESULTS

Lab Name:	**TestAmerica**	**SDG:**	41625	**Collection Date:**	6/15/2010
Lot-Sample No.:	**J0F180565-1**	**Report No. :**	44272	**Received Date:**	6/18/2010 10:00:00 AM
Client Sample ID:	**S-1 MWMP DUP**	**COC No. :**		**Matrix:**	WATER AQ

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0172162	EPA 901.1			**Work Order:** L25FA2AD		**Report DB ID:** L25FA2DR			**Orig Sa DB ID:** 9L25FA20			
CS-137	4.14E+00	ND	1.0E+01	1.0E+01	1.75E+01	pCi/L		0.24	7/10/10 08:45 a		0.4995	GER14$1
	1.33E+00	ND	**RER2 0.4**			2.00E+01		0.82			L	
RA-228	-3.78E+01	ND	6.8E+01	6.8E+01	7.34E+01	pCi/L		-0.51	7/10/10 08:45 a		0.4995	GER14$1
	3.31E+01	ND	**RER2 1.9**			1.00E+00		-(1.1)			L	
TH-232	-2.69E+01	ND	6.4E+01	6.4E+01	1.07E+02	pCi/L		-0.25	7/10/10 08:45 a		0.4995	GER14$1
	2.81E+01	ND	**RER2 1.4**					-0.84			L	
TH-234	5.96E+02	ND	1.1E+03	1.1E+03	1.98E+03	pCi/L		0.3	7/10/10 08:45 a		0.4995	GER14$1
	-6.48E+01	ND	**RER2 1.0**					(1.1)			L	

No. of Results: 4 **Comments:**

TestAmerica
rptSTLRchDupV5.2.5 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
D Qual - Result is greater than 3 times 1s Total Uncertainty

FORM II

BLANK RESULTS

Date: 28-Jul-10

Lab Name: TestAmerica

Matrix: WATER

SDG: 41625

Report No. : 44272

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	Primary Detector
Batch: 0172162	EPA 901.1			**Work Order:**	L26752AA		**Report DB ID:**	L26752AB				
CS-137	1.03E+01	ND	1.0E+01	1.0E+01	1.78E+01	pCi/L		0.58	7/9/10 10:33 a		0.5004	GER14$1
					8.90E+00	2.00E+01		(2.)			L	
RA-228	-5.31E+01	ND	6.7E+01	6.7E+01	7.16E+01	pCi/L		-0.74	7/9/10 10:33 a		0.5004	GER14$1
					3.59E+01	1.00E+00		-(1.6)			L	
SR-85	1.18E+01	ND	1.4E+01	1.4E+01	1.37E+01	pCi/L		0.86	7/9/10 10:33 a		0.5004	GER14$1
					6.74E+00			(1.7)			L	
TH-232	4.11E+01	ND	6.5E+01	6.5E+01	1.12E+02	pCi/L		0.37	7/9/10 10:33 a		0.5004	GER14$1
					5.62E+01			(1.3)			L	
TH-234	2.47E+02	ND	1.1E+03	1.1E+03	1.94E+03	pCi/L		0.13	7/9/10 10:33 a		0.5004	GER14$1
					9.71E+02			0.44			L	
Batch: 0201283	EPA 903.0			**Work Order:**	L26772AA		**Report DB ID:**	L26772AB				
TOTAL ALPHA RA	-1.45E-02	ND	3.4E-02	3.4E-02	9.53E-02	pCi/L	97%	-0.15	7/20/10 01:23 p		0.5007	GPC10D
					3.78E-02	1.00E+00		-0.85			L	

No. of Results: 6 **Comments:**

TestAmerica
rptSTLRchBlank
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
D Qual - Result is greater than 3 times 1s Total Uncertainty

FORM II

Date: 28-Jul-10

LCS RESULTS

Lab Name: **TestAmerica** **SDG:** 41625

Matrix: WATER **Report No. :** 44272

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	Primary Detector
Batch: 0172162	EPA 901.1			**Work Order:**	L26752AC		**Report DB ID:**	L26752CS					
CS-137	4.20E+02	=	5.4E+01	5.4E+01	1.12E+01	pCi/L		4.12E+02	9.79E+02	102%	7/10/10 08:46 a	0.5004	GER10$1
							Rec Limits:	75	125	0.0		L	
Batch: 0201283	EPA 903.0			**Work Order:**	L26774AC		**Report DB ID:**	L26774CS					
TOTAL ALPHA RA	6.01E+00	=	4.2E-01	1.3E+00	1.08E-01	pCi/L	93%	6.34E+00	6.61E-02	95%	7/20/10 01:23 p	0.5012	GPC10C
							Rec Limits:	75	125	-0.1		L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchLcs
V5.2.5 A2002

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

CHAIN OF CUSTODY

TestAmerica Laboratories, Inc.

Atlantic Richfield Company
A BP affiliated company

Laboratory Management Program LaMP Chain of Custody Record

COC# YERW B

Page ____ of ____

BP/ARC Project Name: ~~2Q2010 GW Monitoring~~ PS TRANSITE PIPE SCALE

Req Due Date (mm/dd/yy): RUSH

BP/ARC Facility No: YERINGTON

Lab Work Order Number:

Lab Name:	Test America-Richland	BP/ARC Facility Address:	1 Austin Circle	Consultant/Contractor:	Brown and Caldwell
Lab Address:	2800 George Washington Way Richland WA, 99354	City, State, ZIP Code:	Yerington, NV 89447	Consultant/Contractor Project No:	138553-002
Lab PM:	Erika Jordan	Lead Regulatory Agency:	EPA Region 9	Address:	3264 Goni Rd, Suite 153 Carson City, NV 89706
Lab Phone:	509-375-3131 (x160)	California Global ID No.:		Consultant/Contractor PM:	~~Rob Lowry~~ PS Penny Bassett
Lab Shipping Accnt:		Enfos Proposal No:	~~00095-0015~~ 0009H-0026	Phone:	~~775-434-3426~~ 775-315-4343
Lab Bottle Order No:		Accounting Mode:	Provision X OOC-BU ____ OOC-RM ____	Email EDD To:	skocsis@brwncald.com
Other Info:		Stage: 1-Appraise	Activity: 11-Field Characterization	Invoice To:	BP/ARC X Contractor ____

BP/ARC EBM: Jack Oman
EBM Phone: 714-228-6774
EBM Email: jack.oman@bp.com

Report Type & QC Level: Standard X; Full Data Package ____

Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor		Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	HCl	Methanol		~~Gross Alpha/Beta (900.0)~~	~~Ra-226/228 (903.0/904.0)~~	~~Th-228/230 (Hast 300)~~	Ra-226 (903.0)							Filtered
	S-1 MWMP	6/15/10	—		X			1			X				X	X	X	X	L25FA						Y
	S-12a MWMP		—		X			1			X							X	L25FK						Y
	S-24 MWMP		—		X			1			X							X	L25FQ						Y
	S-12 MWMP		—		X			1			X							X							Y
	S-25 MWMP																		L25FR						
	AG 6.18.10 per Client.																								

JOF180565

JOF180565
JDG41625
Due 7.02.10

Sampler's Name: Penny Bassett	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Brown and Caldwell	Penny Bassett	6/16/10	13:30	Angel DeLaco TA-R	6/18/10	10AM
Shipment Method: FedEx ~~Ground~~ next day Ship Date: 6/17/10						
Shipment Tracking No: 827074587841						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____°F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 10am 6.18.10 @ GM Screen Results (out) .3 (in) .4 Initials [✓]

Client: BRC SDG #: 41625 NA [ ] SAF #: Yes NA [ ]

Work Order Number: JOF180565 Chain of Custody # _____

Shipping Container ID: _____ NA [✓] Air Bill # _____ NA [✓]

Item 1 through 5 for shipping container only. Initial appropriate response.

1. Custody Seals on shipping container intact? Yes [✓] No [ ] No Custody Seal [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ] No Custody Seal [ ]
3. Chain of Custody record present? Yes [✓] No [ ]
4. Cooler temperature: _____ NA [✓] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [✓]

Item 6 through 10 for samples. Initial appropriate response.

6. Number of samples in shipping container (Each sample may contain multiple bottles): 4 @ 1 bottle
7. Sample holding times exceeded? NA [✓] Yes [ ] No [ ] PQ
8. Samples have:
   - ____ tape
   - ____ custody seals
   - ____ hazard labels
   - ✓ appropriate sample labels
9. Samples are:
   - ✓ in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles (Only for samples requiring head space)
10. Sample pH taken? NA [ ] pH<2 [✓] pH>2 [ ] pH>9 [ ] Amount of HNO3 Added _____
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): NA [ ] Sample ID on COC S-12 MWMP Does not match label; label has S-25 MWMP. Erika contacted client & change to what is on the label. Thank's

see other side for additional comments

Sample Custodian: _____ Date: _____

Client Informed on _____ by _____ Person contacted _____

[✓] No action necessary; process as is.

Project Manager Erika Jordan Date 6/18/10

LS-023, Rev. 10, 10/09

Jordan, Erika

From: Bassett, Penny [PBassett@brwncald.com]
Sent: Friday, June 18, 2010 12:54 PM
To: Jordan, Erika
Subject: RE: MWMP Leachate samples

The error is on the COC. The COC should be changed to match the bottle "S-25-MWMP". Thanks for letting me know.

Penny

From: Jordan, Erika [mailto:Erika.Jordan@testamericainc.com]
Sent: Friday, June 18, 2010 12:49 PM
To: Bassett, Penny
Cc: Matthew Arno
Subject: RE: MWMP Leachate samples

Penny,

Yes, we can run these sequentially by running a Gamma first and the 903.0 second.

We are logging the samples in now.

We only have one issue. The very last sample on the COC is named differently than what we actually received.

The COC says "S-12-MWMP" and we received "S-25-MWMP". Please advise?

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback

Thank you!

ERIKA JORDAN
Customer Service Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

2800 George Washington Way
Richland, WA 99354
Tel 509.375.3131, Ext 160 / Fax 509.375.5590
www.testamericainc.com

From: Bassett, Penny [mailto:PBassett@brwncald.com]
Sent: Friday, June 18, 2010 8:09 AM

To: Jordan, Erika
Cc: Matthew Arno
Subject: FW: MWMP Leachate samples

Erika –

See Matt's comments below. I wrote just the 903.0 method on the COC. Can you confirm if you are able to run the 901.1 an 903.0 methods sequentially with the volumes provided? And let me know if you want me to send you a modified COC or if y can take care of it on your end.

Thanks,
Penny

From: Matthew Arno [mailto:arno@foxfirescientific.com]
Sent: Thursday, June 17, 2010 7:37 PM
To: Bassett, Penny
Cc: Zimmerman, Chuck
Subject: RE: MWMP Leachate samples

Penny,

Gamma spec analysis is non-destructive, so they can do that and then use the same sample volume for the Ra-226 analysis. That will give us at least some information about Ra-228 and preserve the detection limit for Ra-226. Let's request they run 9C and 903.0 sequentially in that order on the same sample. There's no sample prep for the gamma spec, so that should only ad day to the total required time.

Matt

From: Bassett, Penny [mailto:PBassett@brwncald.com]
Sent: Thursday, June 17, 2010 8:13 PM
To: Matthew Arno
Cc: Zimmerman, Chuck
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Matt –

Based on the info that Erika provided below, I requested only Ra-226 and provided ~500 ml samples for only 4 of the 7 MWM samples (the other 3 only had enough volume for metals analysis). Based on her info, we could potentially add more analyte (alpha, beta, Ra-228 or Th) but would have lower detection limits. Do you want to proceed with only Ra-226 as I submitted o change to add more analytes?

Thanks,
Penny

From: Bassett, Penny
Sent: Thursday, June 17, 2010 6:09 PM
To: 'Jordan, Erika'
Cc: Konstadina Vlahogiani
Subject: RE: Leachate samples

Erika –

I shipped the samples on the attached COC to you today for overnight delivery tomorrow. For each of the samples I am only able to provide ~500-1000 ml, therefore I only requested Ra-226. I'm going to check with our rad guy and see if he wants mc analytes at lower detection limits and I will send you a modified COC if I need to change.

I wrote RUSH for the TAT but not sure if that will help speed up the results. Actually, 2-wk TAT is fine but if I need to pay rush

charge to make that happen I will. Keep me updated on the achievable TAT you can achieve.

Thanks,
Penny

From: Jordan, Erika [mailto:Erika.Jordan@testamericainc.com]
Sent: Wednesday, June 16, 2010 12:43 PM
To: Bassett, Penny; Mata, Patty
Cc: Konstadina Vlahogiani
Subject: RE: Leachate samples

Hi Penny!

500 mL is going to be pretty tough. I we can definitely run the tests with that much but you're not going to come close to meeting the detection limits. You will not have any volume for the duplicate or MS/MSDs either.

Typical pour up for us is:

200 mL	Alpha (sometimes reduced due to heavy weight screens)
200 mL	Beta (also reduced at times due to heavy weight screens)
200 mL	Thorium
500 mL	Total Radium (Ra226)
1 L	Radium 228

Unless you can get more volume, we will pour up the following:

50 mL	Alpha
50 mL	Beta
100 mL	Thorium
150 mL	Total Radium (Ra-226)
150 mL	Ra-228

No duplicates or MS/MSDs will be available.

We will do our best to meet the 2 week TAT. It will be really tight. If the samples are too nasty, will definitely take longer in prep. We've had leachates that we've had to run as soils before because they were so heavy in dissolved solids. Hopefully this won't be the case for these samples.

Let me know if you need further info or have additional intel to offer on this.

Thank you and have a great day!

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback

ERIKA JORDAN
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From: Bassett, Penny [mailto:PBassett@brwncald.com]
Sent: Tuesday, June 15, 2010 9:17 PM
To: Jordan, Erika; Mata, Patty
Cc: Konstadina Vlahogiani
Subject: Leachate samples

Patty & Erika –

I will be sending you 7 liquid samples for delivery either Friday or early next week. These are leachate solutions from a Mete Water Mobility Procedure (MWMP) done by a lab here in Reno. The COC will request the standard analyte list that we run o water samples but these samples are a different project than the quarterly water samples you are also receiving right now ar completion of these takes priority over the quarterly water samples. I will need a 2 week turn around if at all possible.

The volume of sample I can provide to Richland will probably be an issue so we may need to discuss what analyses you can actually complete with the limited volume. I think all I will be able to supply is 500 ml, but I will know more tomorrow.

Sorry to send these in the middle of the other samples.

Thanks,
Penny

Penny Bassett
Brown and Caldwell
pbassett@brwncald.com
T 775.283.0801 | **C** 775.315.4343

Brown AND Caldwell

Garcia, Angel

From: Jordan, Erika
Sent: Friday, June 18, 2010 1:03 PM
To: Garcia, Angel
Subject: FW: MWMP Leachate samples

Here are BRC's instructions for the sample mis-identification.

Thank you
E :)

From: Bassett, Penny [mailto:PBassett@brwncald.com]
Sent: Friday, June 18, 2010 12:54 PM
To: Jordan, Erika
Subject: RE: MWMP Leachate samples

The error is on the COC. The COC should be changed to match the bottle "S-25-MWMP". Thanks for letting me know.

Penny

From: Jordan, Erika [mailto:Erika.Jordan@testamericainc.com]
Sent: Friday, June 18, 2010 12:49 PM
To: Bassett, Penny
Cc: Matthew Arno
Subject: RE: MWMP Leachate samples

Penny,

Yes, we can run these sequentially by running a Gamma first and the 903.0 second.

We are logging the samples in now.

We only have one issue. The very last sample on the COC is named differently than what we actually received.

The COC says "S-12-MWMP" and we received "S-25-MWMP". Please advise?

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Penny,

Gamma spec analysis is non-destructive, so they can do that and then use the same sample volume for the Ra-226 analysis. That will give us at least some information about Ra-228 and preserve the detection limit for Ra-226. Let's request they run 901.1 and 903.0 sequentially in that order on the same sample. There's no sample prep for the gamma spec, so that should only add a day to the total required time.

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the 7 MWMP samples (the other 3 only had enough volume for metals analysis). Based on her info, we could potentially add more analytes (alpha, beta, Ra-228 or Th) but would have lower detection limits. Do you want to proceed with only Ra-226 as I submitted or change to add more analytes?

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Cc: Konstadina Vlahogiani
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Typical pour up for us is:

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200 mL	Beta (also reduced at times due to heavy weight screens)
200 mL	Thorium
500 mL	Total Radium (Ra226)
1 L	Radium 228

Unless you can get more volume, we will pour up the following:

50 mL	Alpha
50 mL	Beta
100 mL	Thorium
150 mL	Total Radium (Ra-226)

150 mL Ra-228

No duplicates or MS/MSDs will be available.

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Subject: Leachate samples

Patty & Erika –

I will be sending you 7 liquid samples for delivery either Friday or early next week. These are leachate solutions from a Meteoric Water Mobility Procedure (MWMP) done by a lab here in Reno. The COC will request the standard analyte list that we run on water samples but these samples are a different project than the quarterly water samples you are also receiving right now and completion of these takes priority over the quarterly water samples. I will need a 2 week turn around if at all possible.

The volume of sample I can provide to Richland will probably be an issue so we may need to discuss what analyses you can actually complete with the limited volume. I think all I will be able to supply is 500 ml, but I will know more tomorrow.

Sorry to send these in the middle of the other samples.

Thanks,
Penny

Penny Bassett
Brown and Caldwell
pbassett@brwncald.com
T 775.283.0801 | **C** 775.315.4343

Brown AND Caldwell

GAMMA

SAMPLE AND QC DATA

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

7/15/2010 12:17:10 PM

Lot No., Due Date: J0F180565; 07/02/2010
Client, Site: 536403; YERINGTON - BRC Yerington Mine, NV
QC Batch No., Method Test: 0172162; RGAMMA Gamma by GER
SDG, Matrix: 41625; WATER

1.0 COC

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

2.0 QC Batch

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

3.0 QC & Samples

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

4.0 Raw Data

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

5.0 Other

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

6.0 Comments on any No response:
NCM 10-16261

First Level Lee Antonson Date 7/15/10

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist

RADIOCHEMISTRY

Second Level Review

Batch Number: 0172162

Review Item	Yes (√)	No (√)	NA (√)
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 within contract acceptance criteria?	√		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	√		
7. Do the MS/MSD results and yields meet acceptance criteria?			√
8. Do the duplicate sample results and yields meet acceptance criteria?	√	√	
C. Other 1. Are all Non-conformances 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 ncr

Second Level Review: Erika Jordan Date: 7/18/10

LS-038B, Rev. 10, 9/07

Clouseau
Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: **10-16261**
NCM Initiated By: Lisa Antonson
Date Opened: 07/08/2010
Date Closed:

Classification: **Anomaly**
Status: **PMREVIEW**
Production Area: Environmental - Prep
Tests: Gamma by GER
Lot #'s (Sample #'s): J0F180565 (1,2,3,4), J0F210000 (162),
QC Batches: 0172162,

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

Problem Description / Root Cause

Name	Date	Description
Lisa Antonson	07/08/2010	None of the CRDL's are met for this batch. The entire batch is being recounted at the max count time of 1000 minutes. The original data will be uploaded for client review at PM request
Lisa Antonson	07/15/2010	The samples were recounted. The only DL met is for CS-137. Recounts have been uploaded for client review.

Corrective Action

Name	Date	Corrective Action
Lisa Antonson	07/08/2010	The batch is being recounted for extended count time.
Lisa Antonson	07/15/2010	

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: 7/15/2010

7/8/2010 11:40:52 AM

Sample Preparation/Analysis

Balance Id:1120482733

536403, Brown and Caldwell and Caldwell , Brown

AW Gamma Prp GAM001
TA Gamma by HPGE
01 STANDARD TEST SET

Pipet #:

AnalyDueDate: 07/02/2010

Sep1 DT/Tm Tech:

Batch: 0172162 WATER pCi/L PM, Quote: EJ , 73181

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: LucasD,Barcotl

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 L25FA-1-AC J0F180565-1-SAMP 06/15/2010 00:00		499.50g,in AmtRec: 1XLP #Containers: 1						Scr: Alpha: 5.20E-05 uCi/Sa		Beta: 4.98E-05 uCi/Sa
2 L25FA-1-AD-X J0F180565-1-DUP 06/15/2010 00:00		AmtRec: 1XLP #Containers: 1						Scr: Alpha: 5.20E-05 uCi/Sa		Beta: 4.98E-05 uCi/Sa
3 L25FA-2-AC J0F180565-1-SAMP 06/15/2010 00:00		499.50g AmtRec: 1XLP #Containers: 1		500ml		1000		Scr: Alpha: 5.20E-05 uCi/Sa	0371 7/9/10	Beta: 4.98E-05 uCi/Sa
4 L25FA-2-AD-X J0F180565-1-DUP 06/15/2010 00:00		499.50g AmtRec: 1XLP #Containers: 1						Scr: Alpha: 5.20E-05 uCi/Sa	0125 7/9/10	Beta: 4.98E-05 uCi/Sa
5 L25FK-1-AC J0F180565-2-SAMP 06/15/2010 00:00		198.40g,in AmtRec: 1XLP #Containers: 1						Scr: Alpha: 2.37E-04 uCi/Sa		Beta: -5.74E-05 uCi/Sa
6 L25FK-2-AC J0F180565-2-SAMP 06/15/2010 00:00		198.40g AmtRec: 1XLP #Containers: 1		200ml				Scr: Alpha: 2.37E-04 uCi/Sa	0312 7/9/10	Beta: -5.74E-05 uCi/Sa
7 L25FQ-1-AC J0F180565-3-SAMP 06/15/2010 00:00		499.60g,in AmtRec: 1XLP #Containers: 1						Scr: Alpha: 2.25E-03 uCi/Sa 8.0E-02L		Beta: 7.12E-05 uCi/Sa

TestAmerica Richland Wa.

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

Page 1

ISV - Insufficient Volume for Analysis

WO Cnt: 7

ICOC v4.8.40

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32

7/8/2010 11:40:53 AM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown
and Caldwell

AW Gamma Prp GAM001
TA Gamma by HPGE
01 STANDARD TEST SET

Balance Id:
Pipet #:

AnalyDueDate: 07/02/2010

Sep1 DT/Tm Tech:

Batch: 0172162 WATER pCi/L PM, Quote: EJ , 73181

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech:

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 L25FQ-2-AC J0F180565-3-SAMP 06/15/2010 00:00		499.60g AmtRec: 1XLP #Containers: 1			500ml	1000	67	0313	7/9/10 S	Scr: Alpha: 2.25E-03 uCi/Sa 8.0E-02L Beta: 7.12E-05 uCi/Sa
9 L25FR-1-AC J0F180565-4-SAMP 06/15/2010 00:00		499.60g,in AmtRec: 1XLP #Containers: 1								Scr: Alpha: -4.80E-05 uCi/Sa Beta: 2.84E-05 uCi/Sa
10 L25FR-2-AC J0F180565-4-SAMP 06/15/2010 00:00		499.60g AmtRec: 1XLP #Containers: 1					610	0313		Scr: Alpha: -4.80E-05 uCi/Sa Beta: 2.84E-05 uCi/Sa
11 L2675-1-AA-B J0F210000-162-BLK 06/21/2010 13:25 pd		500.40g,in AmtRec: #Containers: 1								Scr: Alpha: Beta:
12 L2675-1-AC-C J0F210000-162-LCS 06/21/2010 13:25 pd		500.40g,in AmtRec: #Containers: 1	GSE1509 06/02/10,pd 06/08/05,r							Scr: Alpha: Beta:
13 L2675-2-AA-B J0F210000-162-BLK 07/08/2010 11:40 pd		500.40g AmtRec: #Containers: 1					614	0313		Scr: Alpha: Beta:
14 L2675-2-AC-C J0F210000-162-LCS 07/08/2010 10:05 pd		500.40g AmtRec: #Containers: 1					610	0124	7/10/10 S	Scr: Alpha: Beta:

TestAmerica Laboratories, Inc.

Sample Preparation/Analysis

AW Gamma Prp GAM001
TA Gamma by HPGE
01 STANDARD TEST SET

AnalyDueDate: 07/02/2010

Batch: 0172162 pCi/L
SEQ Batch, Test: None

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

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

Comments: L25FA-SAMP "Comments. No Dup. poured, due to insuff. volume amount. Please recount on diff. detector. JB 6-22-10; All samples' alliquots are poured up with what was ","left of samples.- DL 6
L25FK-SAMP "Comments. Sample L2FK only poured 200 ml. geo. due to insuff. sample amount. JB 6-22-10; All samples' alliquots are poured up with what was left of ","samples.- DL 6/28/10",
L25FQ-SAMP "Comments: All samples' alliquots are poured up with what was left of samples.- DL 6/28/10"
L25FR-SAMP "Comments: All samples' alliquots are poured up with what was left of samples.- DL 6/28/10"

All Clients for Batch:
536403, Brown and Caldwell Brown and Caldwell , EJ , 73181

L25FA1AC-SAMP Constituent List:

Cs-137	RDL:20	pCi/L	LCL:	UCL:	RPD:	Cs-137DA	RDL:20	pCi/L	LCL:	UCL:	RPD:
RA-228	RDL:1.0	pCi/L	LCL:	UCL:	RPD:	RA-228DA	RDL:1.0	pCi/L	LCL:	UCL:	RPD:
Th-232	RDL:1.0	pCi/L	LCL:	UCL:	RPD:	Th-234	RDL:1.0	pCi/L	LCL:	UCL:	RPD:

L26751AA-BLK:

Cs-137	RDL:20	pCi/L	LCL:	UCL:	RPD:	Cs-137DA	RDL:20	pCi/L	LCL:	UCL:	RPD:
RA-228	RDL:1.0	pCi/L	LCL:	UCL:	RPD:	RA-228DA	RDL:1.0	pCi/L	LCL:	UCL:	RPD:
Th-232	RDL:1.0	pCi/L	LCL:	UCL:	RPD:	Th-234	RDL:1.0	pCi/L	LCL:	UCL:	RPD:

L26751AC-LCS:

Cs-137	RDL:20	pCi/L	LCL:70	UCL:130	RPD:20	Cs-137DA	RDL:20	pCi/L	LCL:70	UCL:130	RPD:20

L26752AA-BLK:

L26752AC-LCS:

L25FA1AC-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
L26751AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
L26751AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
L26752AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
L26752AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

TestAmerica Laboratories, Inc.

7/15/2010 12:16:32 PM

ICOC Fraction Transfer/Status Report

ByDate: 7/15/2009, 7/20/2010, Batch: '0172162', User: *ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting			Comments
0172162							
AC			CalcC	**Barcotl**	6/22/2010 10:17:20		
SC				mcginnist	IsBatched	6/21/2010 2:45:27 PM	ICOC_RADCALC v4.8.40
SC				Barcotl	InPrep	6/22/2010 10:17:20 AM	RL-PRP-004 Revision 1
SC				LoeberL	Prep1C	6/22/2010 11:47:51 AM	RL-PRP-004 REVISION 1
SC				BlackCL	InCnt1	6/22/2010 11:52:23 AM	RL-CI-007 REVISION 1
SC				ClarkR	CalcC	6/23/2010 12:17:47 PM	RL-CI-007 REVISION 1
SC				antonsonl	Rev1C	7/8/2010 8:48:51 AM	RL-DR-001 Rev 0
SC				ClarkR	InCnt1	7/8/2010 11:57:16 AM	RL-CI-007 REVISION 1
SC				BlackCL	CalcC	7/11/2010 7:07:16 AM	RL-CI-007 REVISION 1
AC				**LoeberL**	6/22/2010 11:47:51		
AC				**BlackCL**	6/22/2010 11:52:23		
AC				**ClarkR**	6/23/2010 12:17:47		
AC				**antonsonl**	7/8/2010 8:48:51 AM		
AC				**ClarkR**	7/8/2010 11:57:16		
AC				**BlackCL**	7/11/2010 7:07:16		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Grp Rec Cnt: 7

ICOCFractions v4.8.44

7/15/2010 12:16:31 PM

Rpt DB Transfer log (Batch Results)

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Matrix / Cnt Uncert	Received Date / Tot Uncert	Mda	Sample Date / Units	Expected	Yield	Volumes
41625	**9L25FA10**			**J0F1805651**	S-1 MWMP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	0		6/22/2010 11:50:36	**8.423E-01**	9.444E+00	9.444E+00	3.418E+01	PCI/LITER			4.995E-1
RA	BQTD	0		7/1/2010 8:09:51 AM	**1.7468E+00**	2.485E-01	3.024E-01	3.772E-01	pCi/L		0.935	3.2E-1
RA-228	AWTA	0		6/22/2010 11:50:36	**-3.7171E+01**	5.022E+01	5.022E+01	1.748E+02	PCI/LITER			4.995E-1
TH-232	AWTA	0		6/22/2010 11:50:36	**1.4856E+01**	6.442E+01	6.442E+01	2.273E+02	PCI/LITER			4.995E-1
TH-234	AWTA	0		6/22/2010 11:50:36	**-3.6255E+02**	1.08E+03	1.08E+03	3.901E+03	PCI/LITER			4.995E-1
41625	**9L25FA20**			**J0F1805651**	S-1 MWMP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	1		7/9/2010 10:31:24 AM	**1.3301E+00**	3.752E+00	3.752E+00	1.291E+01	PCI/LITER			4.995E-1
RA-228	AWTA	1		7/9/2010 10:31:24 AM	**3.3141E+01**	1.423E+01	1.423E+01	5.132E+01	PCI/LITER			4.995E-1
TH-232	AWTA	1		7/9/2010 10:31:24 AM	**2.8145E+01**	2.262E+01	2.262E+01	7.912E+01	PCI/LITER			4.995E-1
TH-234	AWTA	1		7/9/2010 10:31:24 AM	**-6.4752E+01**	4.032E+02	4.032E+02	1.377E+03	PCI/LITER			4.995E-1
41625	**9L25FK10**			**J0F1805652**	S-12A MWMP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	0		6/22/2010 3:17:56 PM	**4.5393E+00**	1.333E+01	1.333E+01	4.834E+01	PCI/LITER			1.984E-1
RA	BQTD	0		7/1/2010 8:09:51 AM	**1.3741E+00**	2.169E-01	2.602E-01	1.913E-01	pCi/L		1.0	2.861E-1
RA-228	AWTA	0		6/22/2010 3:17:56 PM	**-9.1633E+01**	6.155E+01	6.155E+01	2.075E+02	PCI/LITER			1.984E-1
TH-232	AWTA	0		6/22/2010 3:17:56 PM	**1.5081E+02**	8.926E+01	8.926E+01	3.123E+02	PCI/LITER			1.984E-1
TH-234	AWTA	0		6/22/2010 3:17:56 PM	**1.5156E+03**	1.351E+03	1.351E+03	5.304E+03	PCI/LITER			1.984E-1
41625	**9L25FK20**			**J0F1805652**	S-12A MWMP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	1		7/9/2010 10:32:31 AM	**1.5384E+01**	3.603E+00	3.603E+00	1.289E+01	PCI/LITER			1.984E-1
K-40	AWTA	1		7/9/2010 10:32:31 AM	**1.3372E+01**	1.122E+02	1.122E+02	1.057E+02	PCI/LITER			1.984E-1
RA-228	AWTA	1		7/9/2010 10:32:31 AM	**2.971E+01**	1.258E+01	1.258E+01	4.509E+01	PCI/LITER			1.984E-1
TH-232	AWTA	1		7/9/2010 10:32:31 AM	**-1.9327E+01**	1.793E+01	1.793E+01	5.855E+01	PCI/LITER			1.984E-1
TH-234	AWTA	1		7/9/2010 10:32:31 AM	**1.0272E+03**	3.81E+02	3.81E+02	1.402E+03	PCI/LITER			1.984E-1
41625	**9L25FQ10**			**J0F1805653**	S-24 MWMP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	0		6/22/2010 6:43:43 PM	**-7.2142E+00**	9.743E+00	9.743E+00	3.376E+01	PCI/LITER			4.996E-1
RA	BQTD	0		7/1/2010 8:09:51 AM	**3.7998E+00**	3.425E-01	5.148E-01	4.566E-01	pCi/L		1.0	3.318E-1
RA-228	AWTA	0		6/22/2010 6:43:43 PM	**-7.7035E+01**	4.984E+01	4.984E+01	1.67E+02	PCI/LITER			4.996E-1
TH-232	AWTA	0		6/22/2010 6:43:43 PM	**-2.9937E+00**	6.982E+01	6.982E+01	2.434E+02	PCI/LITER			4.996E-1
TH-234	AWTA	0		6/22/2010 6:43:43 PM	**1.4525E+03**	1.026E+03	1.026E+03	4.093E+03	PCI/LITER			4.996E-1
41625	**9L25FQ20**			**J0F1805653**	S-24 MWMP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	1		7/9/2010 10:33:21 AM	**-3.8073E+00**	3.958E+00	3.958E+00	1.336E+01	PCI/LITER			4.996E-1
RA-228	AWTA	1		7/9/2010 10:33:21 AM	**2.5796E+01**	3.594E+01	3.594E+01	6.439E+01	PCI/LITER			4.996E-1
SR-85	AWTA	1		7/9/2010 10:33:21 AM	**5.0844E+01**	1.095E+01	1.095E+01	1.401E+01	PCI/LITER			4.996E-1
TH-232	AWTA	1		7/9/2010 10:33:21 AM	**4.3912E+01**	2.518E+01	2.518E+01	8.792E+01	PCI/LITER			4.996E-1
TH-234	AWTA	1		7/9/2010 10:33:21 AM	**9.0218E+02**	4.68E+02	4.68E+02	1.69E+03	PCI/LITER			4.996E-1
U-235	AWTA	1		7/9/2010 10:33:21 AM	**7.0922E+01**	3.36E+01	3.36E+01	6.001E+01	PCI/LITER			4.996E-1
U-238-TH	AWTA	1		7/9/2010 10:33:21 AM	**8.7224E+02**	1.293E+02	1.293E+02	2.665E+02	PCI/LITER			4.996E-1
41625	**9L25FR10**			**J0F1805654**	S-25 MWMP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	0		6/22/2010 10:13:36 PM	**-1.829E+01**	9.829E+00	9.829E+00	3.187E+01	PCI/LITER			4.996E-1
RA	BQTD	0		7/1/2010 8:09:51 AM	**1.2091E-01**	8.892E-02	8.973E-02	3.37E-01	pCi/L		1.0	2.391E-1
RA-228	AWTA	0		6/22/2010 10:13:36 PM	**1.4509E+01**	5.866E+01	5.866E+01	1.814E+02	PCI/LITER			4.996E-1
TH-232	AWTA	0		6/22/2010 10:13:36 PM	**7.2677E+01**	6.986E+01	6.986E+01	2.493E+02	PCI/LITER			4.996E-1
TH-234	AWTA	0		6/22/2010 10:13:36 PM	**-4.0949E+02**	9.452E+02	9.452E+02	3.429E+03	PCI/LITER			4.996E-1
41625	**9L25FR20**			**J0F1805654**	S-25 MWMP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	1		7/9/2010 10:33:38 AM	**3.2492E-01**	3.262E+00	3.262E+00	1.104E+01	PCI/LITER			4.996E-1
RA-228	AWTA	1		7/9/2010 10:33:38 AM	**2.0718E+01**	1.173E+01	1.173E+01	4.147E+01	PCI/LITER			4.996E-1
SR-85	AWTA	1		7/9/2010 10:33:38 AM	**5.4514E+01**	7.875E+00	7.875E+00	1.179E+01	PCI/LITER			4.996E-1
TH-232	AWTA	1		7/9/2010 10:33:38 AM	**-2.6136E+01**	2.156E+01	2.156E+01	7.065E+01	PCI/LITER			4.996E-1
TH-234	AWTA	1		7/9/2010 10:33:38 AM	**-1.494E+02**	3.571E+02	3.571E+02	1.208E+03	PCI/LITER			4.996E-1
41625	**L25FA1DR**			**J0F1805651**	S-1 MWMP DUP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	0	R	6/23/2010 4:51:38 AM	**-7.3563E+00**	8.912E+00	8.912E+00	3.053E+01	PCI/LITER			4.995E-1
RA-228	AWTA	0	R	6/23/2010 4:51:38 AM	**9.8386E+01**	4.812E+01	4.812E+01	1.69E+02	PCI/LITER			4.995E-1

0172162,0172162, **Samples Inserted | Updated | NotUpdated => 7 | 0 | 7,
**Results Inserted | ReTestInserted | Updated | NotInserted => 31 | 0 | 0 | 25.
**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-232	AWTA	0	R	6/23/2010 4:51:38 AM	**1.0923E+01**	6.024E+01	6.024E+01	2.094E+02	PCI/LITER			4.995E-1
TH-234	AWTA	0	R	6/23/2010 4:51:38 AM	**8.3479E+02**	1.124E+03	1.124E+03	4.201E+03	PCI/LITER			4.995E-1
41625	L25FA2DR			J0F1805651	S-1 MWMP DUP	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	1	R	7/10/2010 8:45:13 AM	**4.1417E+00**	5.046E+00	5.046E+00	1.746E+01	PCI/LITER			4.995E-1
RA-228	AWTA	1	R	7/10/2010 8:45:13 AM	**-3.7817E+01**	3.387E+01	3.387E+01	7.344E+01	PCI/LITER			4.995E-1
TH-232	AWTA	1	R	7/10/2010 8:45:13 AM	**-2.6886E+01**	3.196E+01	3.196E+01	1.07E+02	PCI/LITER			4.995E-1
TH-234	AWTA	1	R	7/10/2010 8:45:13 AM	**5.9578E+02**	5.607E+02	5.607E+02	1.976E+03	PCI/LITER			4.995E-1
41625	L26751AB			J0F210000162	INTRA-LAB BLANK	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	0	B	6/23/2010 4:52:07 AM	**9.686E+00**	9.016E+00	9.016E+00	3.42E+01	PCI/LITER			5.004E-1
RA-228	AWTA	0	B	6/23/2010 4:52:07 AM	**1.4872E+00**	6.121E+01	6.121E+01	1.74E+02	PCI/LITER			5.004E-1
TH-232	AWTA	0	B	6/23/2010 4:52:07 AM	**4.9688E+01**	6.885E+01	6.885E+01	2.436E+02	PCI/LITER			5.004E-1
TH-234	AWTA	0	B	6/23/2010 4:52:07 AM	**-6.2036E+01**	1.212E+03	1.212E+03	4.405E+03	PCI/LITER			5.004E-1
41625	L26751CS			J0F210000162	INTRA-LAB CHECK	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	0	S	6/23/2010 8:17:31 AM	**4.2203E+02**	3.897E+01	3.897E+01	3.752E+01	PCI/LITER	4.1231E+02		5.004E-1
41625	L26752AB			J0F210000162	INTRA-LAB BLANK	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	1	B	7/9/2010 10:33:53 AM	**1.0268E+01**	5.069E+00	5.069E+00	1.777E+01	PCI/LITER			5.004E-1
RA-228	AWTA	1	B	7/9/2010 10:33:53 AM	**-5.3142E+01**	3.364E+01	3.364E+01	7.165E+01	PCI/LITER			5.004E-1
SR-85	AWTA	1	B	7/9/2010 10:33:53 AM	**1.1787E+01**	6.769E+00	6.769E+00	1.366E+01	PCI/LITER			5.004E-1
TH-232	AWTA	1	B	7/9/2010 10:33:53 AM	**4.1078E+01**	3.266E+01	3.266E+01	1.123E+02	PCI/LITER			5.004E-1
TH-234	AWTA	1	B	7/9/2010 10:33:53 AM	**2.472E+02**	5.603E+02	5.603E+02	1.94E+03	PCI/LITER			5.004E-1
41625	L26752CS			J0F210000162	INTRA-LAB CHECK	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	1	S	7/10/2010 8:46:11 AM	**4.196E+02**	2.719E+01	2.719E+01	1.119E+01	PCI/LITER	4.1187E+02		5.004E-1

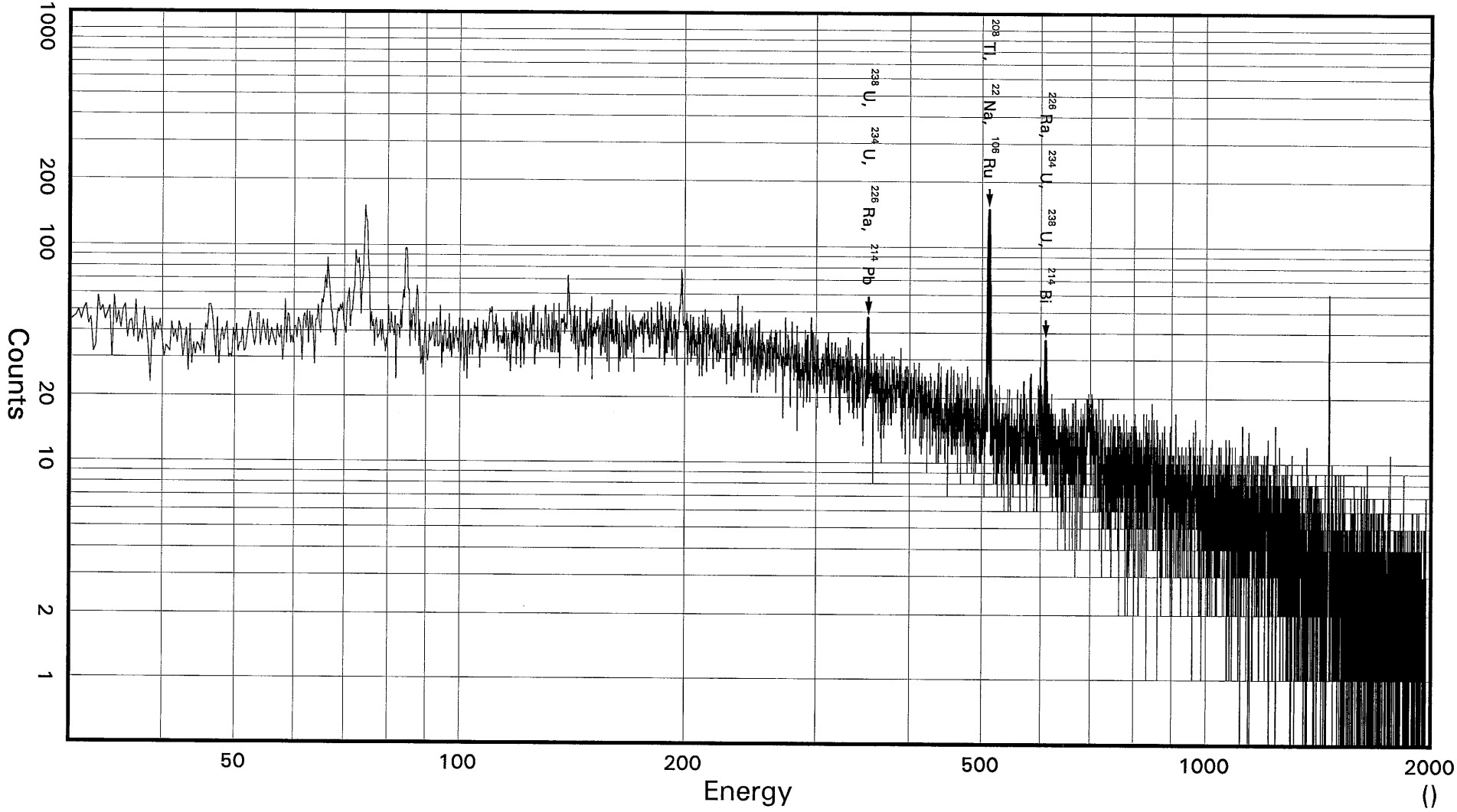
0172162,0172162, **Samples Inserted | Updated | NotUpdated => 7 | 0 | 7,
**Results Inserted | ReTestInserted | Updated | NotInserted => 31 | 0 | 0 | 25.
**Diff RptDb | Qtims => .

TAL Richland WA.

BRC WATER

Sample ID: L25FA2AC
Detector ID: GER15 1

Batch ID: 0172162



Acquisition Start: 9-JUL-2010 10:31:24.27
Preset Live Time: 0 16:40:00.00
Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:
Offset: 1.12266E+01
Slope: 2.39347E-01
Quadrature: 1.10977E-08

SAMPLE IDENTIFICATION: L25FA2AC

CONFIGURATION ID: GER15:L25FA2AC_090701031
TITLE : BRC WATER
SAMPLE ID : L25FA2AC

REPORT DATE: 10-JUL-10
ACQUIRE DATE: 09-JUL-10 10:31:24
ELAPSED LIVE TIME: 60000.0 Sec
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 15-JUN-2010 00:00:00.00
CALIB DATE: 9-JUL-2010 03:36:13.58
ELAPSED LIVE TIME: 0 16:40:00
ELAPSED REAL TIME: 0 16:40:20

SAMPLE QUANTITY: 4.9950E-01
SAMPLE GEOMETRY: 500ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: 1.1227E+01 keV
ENERGY SLOPE: 2.3935E-01 keV/C
ENERGY Q COEFF: 1.1098E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 5.9708E-01 keV
FWHM SLOPE: 3.3020E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 2.000 keV
VARIABLE PEAK WIDTH: 3.00

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 10-JUL-2010 03:12:01

```
Configuration     : RDND06$DKA100:[GER15.SAMPLE]L25FA2AC_090701031.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 9-JUL-2010 10:31:24
Sample ID         : L25FA2AC             Sample quantity  : 0.49950 LITER
Sample type       :                      Sample geometry  : 500ML
Elapsed live time: 0 16:40:00.00         Elapsed real time: 0 16:40:20.85   0.0%
Start energy      :    11.47             End energy       :  1972.70
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	352.10	31	318	0.62	1424.08	1417	12	5.18E-04	116.6	0.00E+00
2	0	511.07*	163	426	2.43	2088.16	2075	32	2.72E-03	61.8	
3	0	609.11*	32	231	2.70	2497.70	2487	21	5.41E-04	162.4	

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

VMS Nuclide Identification Report V3.1 Generated 10-JUL-2010 03:12:02

```
Configuration     : RDND06$DKA100:[GER15.SAMPLE]L25FA2AC_090701031.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 9-JUL-2010 10:31:24
Sample ID         : L25FA2AC             Sample quantity  : 0.49950 LITER
Sample type       :                      Sample geometry  : 500ML
Elapsed live time: 0 16:40:00.00         Elapsed real time: 0 16:40:20.85   0.0%
Energy tolerance :     2.00              Half life ratio  :     8.00
Errors propagated: Yes                   Systematic Error :     5.00 %
Efficiency type  : Empirical             Efficiencies at  : Peak Energy
Abundance limit  :    80.00
```

Nuclide Line Activity Report

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : L25FA2AC Acquisition date : 9-JUL-2010 10:31:24

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	352.10	31	318	0.62	1424.08	1417	12	5.18E-04	****	9.21E-01	T
0	511.07	163	426	2.43	2088.16	2075	32	2.72E-03	61.8	7.00E-01	T
0	609.11	32	231	2.70	2497.70	2487	21	5.41E-04	****	6.16E-01	T

Flags: "T" = Tentatively associated

Sample ID : L25FA2AC Acquisition date : 9-JUL-2010 10:31:24

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/LITER)	1-Sigma %Error	Rejected by
NA-22	2.60Y	0.03	511.00	180.76	1.186E+01	62.16	Abun.
			1274.54*	99.94	--- Not Found ---		
		% Abundances Found =		64.40			
RU-106	381.80D	0.06	511.86	20.40	1.080E+02	62.16	Abun.
			621.93*	9.93	--- Not Found ---		
		% Abundances Found =		67.26			
TL-208	1.41E+10Y	0.00	277.37	6.60	--- Not Found ---		Abun.
			510.77	22.60	9.317E+01	62.16	
			583.19*	85.00	--- Not Found ---		
			860.56	12.50	--- Not Found ---		
		% Abundances Found =		17.84			
BI-214	4.47E+09Y	0.00	609.31	46.10	1.030E+01	162.50	Abun.
			1120.29	15.10	--- Not Found ---		
			1764.49*	15.40	--- Not Found ---		
		% Abundances Found =		60.18			
PB-214	4.47E+09Y	0.00	242.00	7.43	--- Not Found ---		Abun.
			295.22	19.30	--- Not Found ---		
			351.93*	37.60	8.094E+00	116.74	
		% Abundances Found =		58.45			
RA-226	1600.00Y	0.00	186.21	3.59	--- Not Found ---		Abun.
			295.22	19.30	--- Not Found ---		
			351.93	37.60	8.094E+00	116.74	
			609.31*	46.10	1.030E+01	162.50	
			1120.29	15.10	--- Not Found ---		
			1764.49	15.40	--- Not Found ---		
		% Abundances Found =		61.05			
U-234	4.47E+09Y	0.00	242.00	7.43	--- Not Found ---		Abun.
			295.22*	19.30	--- Not Found ---		
			351.93	37.60	8.094E+00	116.74	
			609.31	46.10	1.030E+01	162.50	
		% Abundances Found =		75.79			
U-238	4.47E+09Y	0.00	242.00	7.43	--- Not Found ---		Abun.
			295.22	19.30	--- Not Found ---		
			351.93*	37.60	8.094E+00	116.74	
			609.31	46.10	1.030E+01	162.50	
		% Abundances Found =		75.79			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 10-JUL-2010 03:12:03

Configuration : RDND06$DKA100:[GER15.SAMPLE]L25FA2AC_090701031.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 : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 9-JUL-2010 10:31:24
Sample ID : L25FA2AC Sample quantity : 0.49950 LITER
Sample type : Sample geometry : 500ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:20.85 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 2.00 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	-2.132E+01		3.776E+01	1.259E+02	4.886E+00	-0.169
NA-22	-5.654E-01		3.699E+00	1.276E+01	3.925E-01	-0.044
K-40	-2.484E+02		1.033E+02	2.994E+02	9.299E+00	-0.830
CR-51	-5.906E+01		4.978E+01	1.617E+02	6.598E+00	-0.365
MN-54	-9.894E+00		3.703E+00	1.175E+01	3.795E-01	-0.842
CO-57	-1.378E+01		1.716E+01	5.671E+01	1.886E+00	-0.243
CO-60	-3.016E+00		3.614E+00	1.212E+01	3.723E-01	-0.249
ZN-65	-1.969E+01		8.039E+00	2.567E+01	7.922E-01	-0.767
SR-85	4.148E+01		6.116E+00	1.871E+01	7.217E-01	2.217
Y-88	5.311E+00		4.116E+00	1.545E+01	4.719E-01	0.344
RU-106	1.920E+01		3.322E+01	1.151E+02	4.204E+00	0.167
SB-125	-1.055E-01		9.293E+00	3.157E+01	1.220E+00	-0.003
I-131	-1.738E+01		2.685E+01	9.082E+01	3.585E+00	-0.191
BA-133	-2.143E+00		4.607E+00	1.448E+01	5.766E-01	-0.148
CS-134	-4.506E+00		3.868E+00	1.300E+01	4.319E-01	-0.347
CS-137	1.330E+00		3.752E+00	1.291E+01	4.543E-01	0.103
CE-144	1.332E+01		1.566E+01	5.320E+01	1.770E+00	0.250
EU-152	7.924E+00		9.824E+00	3.413E+01	1.372E+00	0.232
EU-154	-3.119E+00		1.053E+01	3.612E+01	1.111E+00	-0.086
EU-155	-3.318E+00		6.943E+00	2.340E+01	7.565E-01	-0.142
BI-207	5.967E+00		3.277E+00	1.160E+01	4.384E-01	0.514
TL-208	3.142E+00		3.819E+00	1.330E+01	4.991E-01	0.236
BI-212	5.682E+01		4.835E+01	1.689E+02	6.981E+00	0.336
PB-212	-1.285E+00		5.444E+00	1.833E+01	6.959E-01	-0.070
BI-214	9.614E+01		2.670E+01	1.028E+02	3.168E+00	0.935
PB-214	8.094E+00	+	9.449E+00	2.593E+01	1.036E+00	0.312
RA-223	-1.910E+01		1.741E+01	5.730E+01	2.254E+00	-0.333
RA-224	-1.317E+00		5.580E+00	1.879E+01	7.133E-01	-0.070
RA-226	1.030E+01	+	1.674E+01	2.820E+01	1.040E+00	0.365
AC-227	6.395E+00		1.290E+01	4.393E+01	1.662E+00	0.146
AC-228	3.287E+01		1.412E+01	5.091E+01	1.554E+00	0.646
RA-228	3.314E+01		1.423E+01	5.132E+01	1.567E+00	0.646
TH-228	8.960E+00		1.089E+01	3.794E+01	1.423E+00	0.236

Sample ID : L25FA2AC Acquisition date : 9-JUL-2010 10:31:24

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
TH-232	2.814E+01		2.262E+01	7.912E+01	3.195E+00	0.356
TH-234	-6.475E+01		4.032E+02	1.377E+03	4.249E+01	-0.047
U-234	2.059E+01		1.347E+01	4.596E+01	1.848E+00	0.448
U-235	9.745E+00		1.576E+01	5.315E+01	1.765E+00	0.183
U-238	8.094E+00	+	9.449E+00	2.593E+01	1.036E+00	0.312
U-238-TH	-3.938E+01		3.632E+01	1.179E+02	3.648E+00	-0.334
AM-241	5.154E+00		4.851E+00	1.639E+01	5.193E-01	0.314

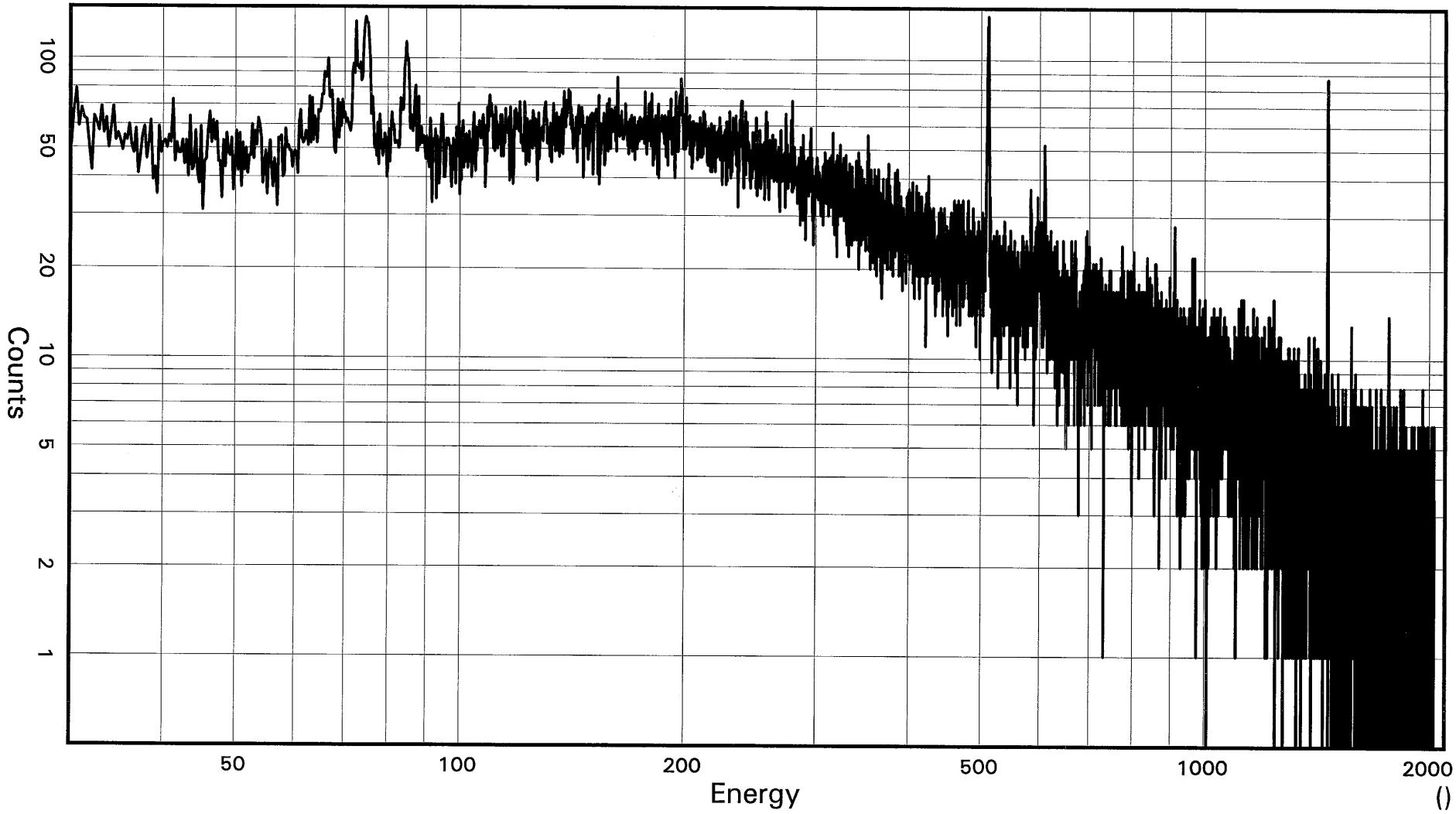
TAL Richland WA.

BRC WATER

Sample ID: L25FA2AD

Detector ID: GER14 1

Batch ID: 0172162



Acquisition Start: 10-JUL-2010 08:45:13.13

Preset Live Time: 0 16:40:00.00

Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:

Offset: -7.20646E-01

Slope: 2.48251E-01

Quadrature: 4.06913E-09

SAMPLE IDENTIFICATION: L25FA2AD

CONFIGURATION ID: GER14:L25FA2AD_100700845
TITLE : BRC WATER
SAMPLE ID : L25FA2AD

REPORT DATE: 11-JUL-10
ACQUIRE DATE: 10-JUL-10 08:45:13
ELAPSED LIVE TIME: 60000.0 Sec
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 15-JUN-2010 00:00:00.00
CALIB DATE: 10-JUL-2010 05:02:25.24
ELAPSED LIVE TIME: 0 16:40:00
ELAPSED REAL TIME: 0 16:40:09

SAMPLE QUANTITY: 4.9950E-01
SAMPLE GEOMETRY: 500ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: -.7206E+00 keV
ENERGY SLOPE: 2.4825E-01 keV/C
ENERGY Q COEFF: 4.0691E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.1249E+00 keV
FWHM SLOPE: 2.5812E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

```
VMS Peak Search Report V1.9 Generated 11-JUL-2010 01:25:28

Configuration     : RDND07$DKA100:[GER14.SAMPLE]L25FA2AD_100700845.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 10-JUL-2010 08:45:13
Sample ID         : L25FA2AD             Sample quantity  : 0.49950 LITER
Sample type       :                      Sample geometry  : 500ML
Elapsed live time: 0 16:40:00.00         Elapsed real time: 0 16:40:09.99   0.0%
Start energy      :    19.14             End energy       :  2033.23
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
No peaks were found
```

VMS Nuclide Identification Report V3.1 Generated 11-JUL-2010 01:25:29

```
Configuration     : RDND07$DKA100:[GER14.SAMPLE]L25FA2AD_100700845.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 10-JUL-2010 08:45:13
Sample ID         : L25FA2AD             Sample quantity  : 0.49950 LITER
Sample type       :                      Sample geometry  : 500ML
Elapsed live time: 0 16:40:00.00         Elapsed real time: 0 16:40:09.99   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

Flag: "*" = Keyline

Sample ID : L25FA2AD
Acquisition date : 10-JUL-2010 08:45:13

None

Flags: "T" = Tentatively associated

Sample ID : L25FA2AD
Acquisition date : 10-JUL-2010 08:45:13

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 11-JUL-2010 01:25:30

Configuration : RDND07$DKA100:[GER14.SAMPLE]L25FA2AD_100700845.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,WTMEAN V1.8
Analyses by : MINACT V2.8
Sample title : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 10-JUL-2010 08:45:13
Sample ID : L25FA2AD Sample quantity : 0.49950 LITER
Sample type : Sample geometry : 500ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.99 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

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	-1.366E+01		5.284E+01	1.768E+02	7.830E+00	-0.077
NA-22	5.302E-01		4.839E+00	1.664E+01	5.204E-01	0.032
K-40	-9.055E+02		1.585E+02	4.325E+02	1.366E+01	-2.094
CR-51	-9.470E+01		6.869E+01	2.279E+02	1.270E+01	-0.416
MN-54	-6.574E+00		5.075E+00	1.663E+01	5.615E-01	-0.395
CO-57	-3.299E+01		2.470E+01	8.211E+01	2.846E+00	-0.402
CO-60	7.180E+00		4.781E+00	1.708E+01	5.342E-01	0.420
ZN-65	-3.672E+01		1.171E+01	3.631E+01	1.133E+00	-1.011
SR-85	-6.310E+01		9.893E+00	2.685E+01	1.357E+00	-2.350
Y-88	-5.491E+00		5.589E+00	1.864E+01	5.712E-01	-0.295
RU-106	-7.382E+00		4.618E+01	1.572E+02	6.756E+00	-0.047
SB-125	-5.658E+00		1.315E+01	4.403E+01	1.599E+00	-0.128
I-131	8.121E+00		4.049E+01	1.375E+02	5.727E+00	0.059
BA-133	-2.399E+01		6.176E+00	1.907E+01	8.515E-01	-1.258
CS-134	8.550E-01		5.351E+00	1.823E+01	6.446E-01	0.047
CS-137	4.142E+00		5.046E+00	1.746E+01	6.805E-01	0.237
CE-144	-2.890E+01		2.286E+01	7.615E+01	2.618E+00	-0.380
EU-152	-2.400E+00		1.376E+01	4.650E+01	2.259E+00	-0.052
EU-154	2.839E+00		1.368E+01	4.717E+01	1.475E+00	0.060
EU-155	8.935E-01		1.033E+01	3.424E+01	1.116E+00	0.026
BI-207	5.982E+00		4.253E+00	1.484E+01	7.015E-01	0.403
TL-208	-2.369E+00		7.320E+00	1.814E+01	8.392E-01	-0.131
BI-212	1.720E+02		6.925E+01	2.437E+02	1.071E+01	0.706
PB-212	1.218E+01		7.737E+00	2.608E+01	1.212E+00	0.467
BI-214	-7.318E+01		6.248E+01	1.513E+02	4.692E+00	-0.484
PB-214	-4.031E+01		1.698E+01	3.461E+01	1.594E+00	-1.165
RA-223	-6.663E+00		2.433E+01	8.054E+01	4.034E+00	-0.083
RA-224	1.250E+01		7.937E+00	2.675E+01	1.243E+00	0.467
RA-226	-3.074E+01		1.930E+01	4.109E+01	1.813E+00	-0.748
AC-227	-4.054E+00		1.832E+01	6.090E+01	2.811E+00	-0.067
AC-228	-3.750E+01		3.358E+01	7.282E+01	2.240E+00	-0.515
RA-228	-3.782E+01		3.387E+01	7.344E+01	2.259E+00	-0.515
TH-228	-6.763E+00		2.089E+01	5.177E+01	2.395E+00	-0.131

Sample ID : L25FA2AD Acquisition date : 10-JUL-2010 08:45:13

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
TH-232	-2.689E+01		3.196E+01	1.070E+02	5.398E+00	-0.251
TH-234	5.958E+02		5.607E+02	1.976E+03	6.159E+01	0.301
U-234	2.804E+01		1.826E+01	6.136E+01	3.253E+00	0.457
U-235	-1.515E+01		2.285E+01	7.659E+01	2.713E+00	-0.198
U-238	-4.031E+01		1.698E+01	3.461E+01	1.594E+00	-1.165
U-238-TH	-1.256E+02		5.243E+01	1.689E+02	5.412E+00	-0.744
AM-241	-4.444E+00		6.483E+00	2.155E+01	7.059E-01	-0.206

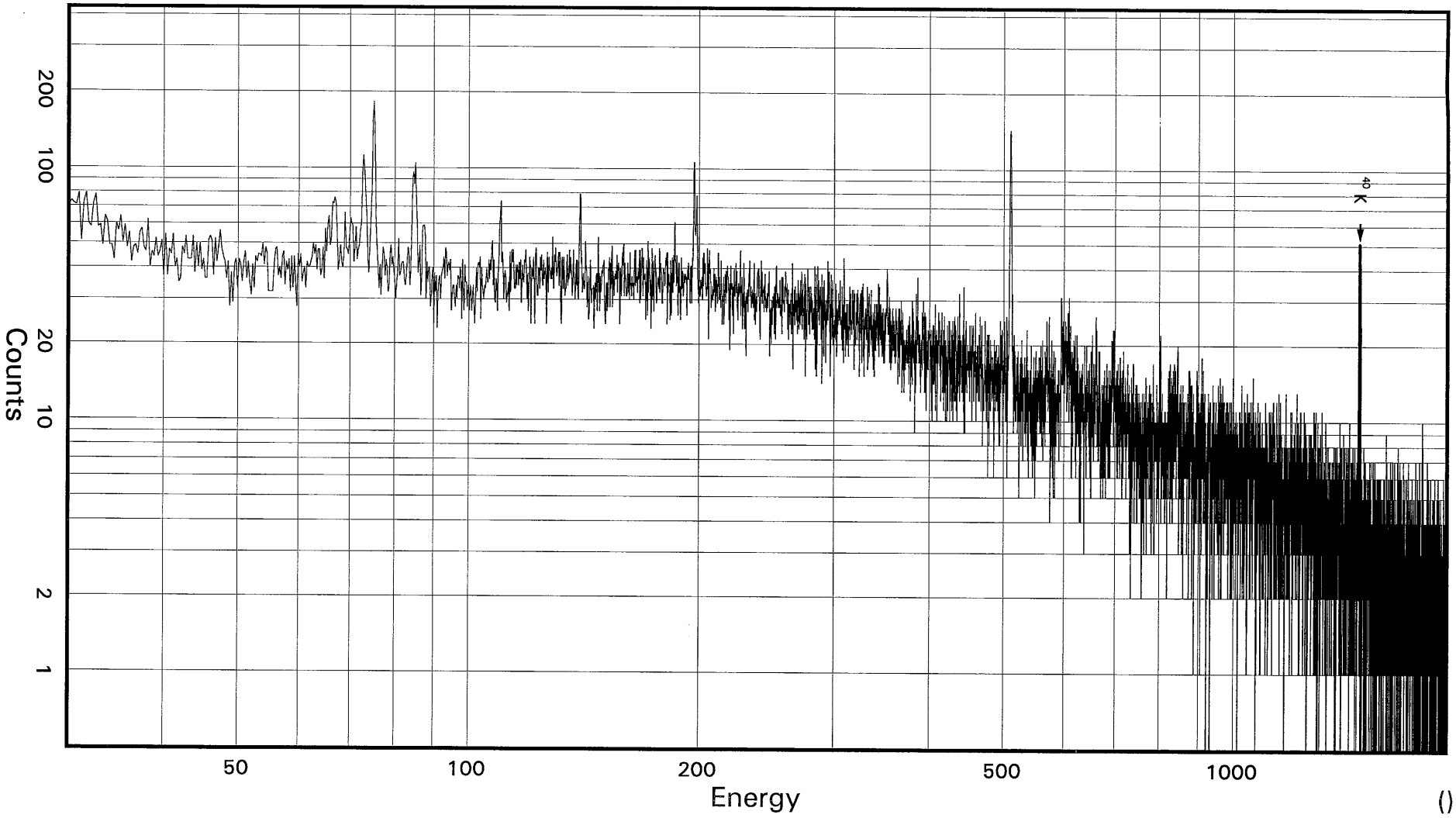
TAL Richland WA.

BRC WATER

Sample ID: L25FK2AC

Detector ID: GER11 1

Batch ID: 0172162



()

Acquisition Start: 9-JUL-2010 10:32:31.40

Preset Live Time: 0 16:40:00.00

Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:

Offset: -1.23136E+00

Slope: 2.31568E-01

Quadrature: 3.99895E-08

SAMPLE IDENTIFICATION: L25FK2AC

CONFIGURATION ID: GER11:L25FK2AC_090701032
TITLE : BRC WATER
SAMPLE ID : L25FK2AC

REPORT DATE: 10-JUL-10
ACQUIRE DATE: 09-JUL-10 10:32:31
ELAPSED LIVE TIME: 60000.0 Sec
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 15-JUN-2010 00:00:00.00
CALIB DATE: 9-JUL-2010 03:46:44.70
ELAPSED LIVE TIME: 0 16:40:00
ELAPSED REAL TIME: 0 16:40:29

SAMPLE QUANTITY: 1.9840E-01
SAMPLE GEOMETRY: 200ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: -.1231E+01 keV
ENERGY SLOPE: 2.3157E-01 keV/C
ENERGY Q COEFF: 3.9989E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 2.5472E-01 keV
FWHM SLOPE: 3.9519E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 10-JUL-2010 03:13:45

```
Configuration     : RDND07$DKA100:[GER11.SAMPLE]L25FK2AC_090701032.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 9-JUL-2010 10:32:31
Sample ID         : L25FK2AC             Sample quantity  : 0.19840 LITER
Sample type       :                      Sample geometry  : 200ML
Elapsed live time: 0 16:40:00.00         Elapsed real time: 0 16:40:29.08   0.0%
Start energy      :     1.08             End energy       :  1898.46
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	198.53*	13	418	0.89	862.52	849	20	2.25E-04	451.1	1.17E+00
2	0	1460.01*	5	109	1.80	6303.34	6286	37	8.99E-05	838.9	

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

VMS Nuclide Identification Report V3.1 Generated 10-JUL-2010 03:13:45

Configuration : RDND07$DKA100:[GER11.SAMPLE]L25FK2AC_090701032.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 9-JUL-2010 10:32:31
Sample ID : L25FK2AC Sample quantity : 0.19840 LITER
Sample type : Sample geometry : 200ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:29.08 0.0%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/LITER	Decay Corr PCI/LITER	1-Sigma %Error
K-40	1460.82	5	10.66*	8.596E-01	1.337E+01	1.337E+01	838.94

Flag: "*" = Keyline

Unidentified Energy Lines
Page : 2
Sample ID : L25FK2AC
Acquisition date : 9-JUL-2010 10:32:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	198.53	13	418	0.89	862.52	849	20	2.25E-04	****	3.94E+00	

Flags: "T" = Tentatively associated

Sample ID : L25FK2AC
Acquisition date : 9-JUL-2010 10:32:31

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 10-JUL-2010 03:13:46

Configuration : RDND07$DKA100:[GER11.SAMPLE]L25FK2AC_090701032.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 : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 9-JUL-2010 10:32:31
Sample ID : L25FK2AC Sample quantity : 0.19840 LITER
Sample type : Sample geometry : 200ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:29.08 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 (PCI/LITER)	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
K-40	1.337E+01	1.122E+02	1.057E+02	3.424E+00	0.126

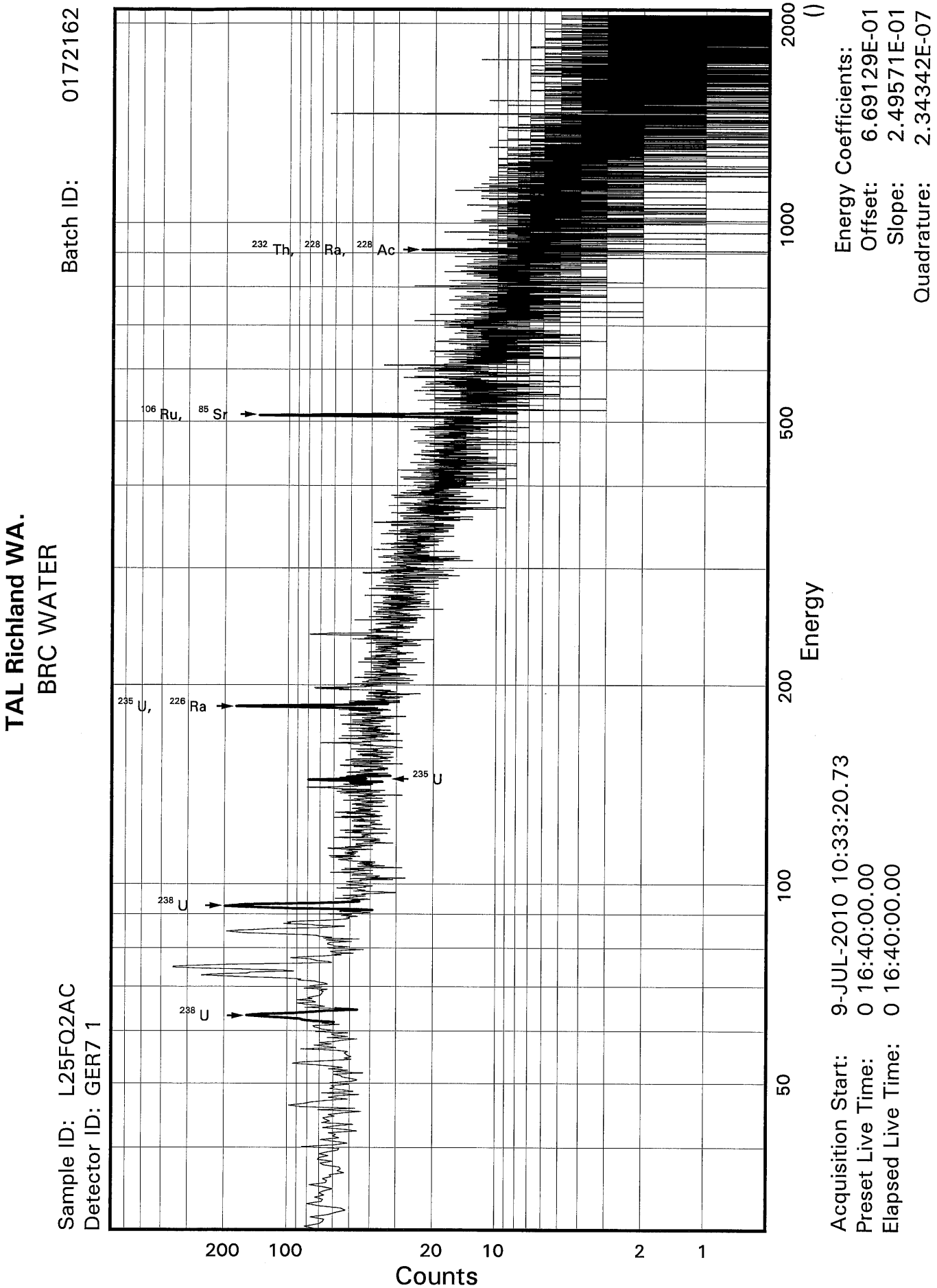
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	1.357E+01		2.998E+01	1.025E+02	3.665E+00	0.132
NA-22	-5.284E+00		3.419E+00	1.128E+01	3.572E-01	-0.469
CR-51	-3.259E+01		3.766E+01	1.243E+02	4.845E+00	-0.262
MN-54	-2.195E+00		3.344E+00	1.125E+01	4.185E-01	-0.195
CO-57	5.270E+00		1.336E+01	4.642E+01	1.626E+00	0.114
CO-60	-3.800E-01		3.176E+00	1.106E+01	3.547E-01	-0.034
ZN-65	-1.539E+00		7.162E+00	2.448E+01	7.936E-01	-0.063
SR-85	-7.516E+01		7.025E+00	1.303E+01	4.873E-01	-5.768
Y-88	-2.495E+00		3.398E+00	1.179E+01	3.597E-01	-0.212
RU-106	-4.327E+01		2.878E+01	9.432E+01	3.602E+00	-0.459
SB-125	-4.459E-02		7.201E+00	2.462E+01	8.222E-01	-0.002
I-131	-2.906E+01		2.169E+01	7.281E+01	2.538E+00	-0.399
BA-133	-1.319E+00		3.410E+00	1.127E+01	4.031E-01	-0.117
CS-134	-1.059E+00		3.261E+00	1.117E+01	4.207E-01	-0.095
CS-137	1.538E+01		3.603E+00	1.289E+01	4.916E-01	1.193
CE-144	5.446E+00		1.259E+01	4.388E+01	1.529E+00	0.124
EU-152	1.052E-01		7.895E+00	2.639E+01	9.744E-01	0.004
EU-154	-1.459E+01		9.649E+00	3.187E+01	1.009E+00	-0.458
EU-155	-7.964E+00		6.897E+00	2.242E+01	7.168E-01	-0.355
BI-207	4.817E+00		2.660E+00	9.446E+00	3.588E-01	0.510
TL-208	7.647E-01		2.808E+00	9.733E+00	3.705E-01	0.079
BI-212	6.833E+01		4.187E+01	1.503E+02	6.675E+00	0.455
PB-212	6.619E+00		3.917E+00	1.381E+01	5.392E-01	0.479
BI-214	1.326E+02		2.610E+01	1.025E+02	3.195E+00	1.294
PB-214	1.556E+01		5.942E+00	2.054E+01	7.432E-01	0.757
RA-223	-6.658E+00		1.311E+01	4.429E+01	1.745E+00	-0.150
RA-224	6.784E+00		4.015E+00	1.415E+01	5.527E-01	0.479

Sample ID : L25FK2AC Acquisition date : 9-JUL-2010 10:32:31

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
RA-226	8.648E+00		6.776E+00	2.355E+01	8.988E-01	0.367
AC-227	-1.012E+01		9.242E+00	3.120E+01	1.217E+00	-0.324
AC-228	2.947E+01		1.248E+01	4.472E+01	1.609E+00	0.659
RA-228	2.971E+01		1.258E+01	4.509E+01	1.622E+00	0.659
TH-228	2.181E+00		8.006E+00	2.776E+01	1.057E+00	0.079
TH-232	-1.933E+01		1.793E+01	5.855E+01	2.194E+00	-0.330
TH-234	1.027E+03		3.810E+02	1.402E+03	4.886E+01	0.733
U-234	2.244E+01		1.027E+01	3.580E+01	1.409E+00	0.627
U-235	-1.214E+01		1.165E+01	3.926E+01	1.400E+00	-0.309
U-238	1.556E+01		5.942E+00	2.054E+01	7.432E-01	0.757
U-238-TH	5.279E+01		8.935E+01	3.124E+02	1.134E+01	0.169
AM-241	3.656E+00		1.433E+01	5.018E+01	1.934E+00	0.073


TAL Richland WA.
BRC WATER
Batch ID: 0172162
Sample ID: L25FQ2AC
Detector ID: GER7 1
232 Th, 228 Ra, 228 Ac
106 Ru, 85 Sr
235 U, 226 Ra
235 U
238 U
238 U
Counts
200
100
20
10
2
1
Energy
50
100
200
500
1000
2000
()
Energy Coefficients:
Offset: 6.69129E-01
Slope: 2.49571E-01
Quadrature: 2.34342E-07
Acquisition Start: 9-JUL-2010 10:33:20.73
Preset Live Time: 0 16:40:00.00
Elapsed Live Time: 0 16:40:00.00

SAMPLE IDENTIFICATION: L25FQ2AC

CONFIGURATION ID: GER7:L25FQ2AC_090701033
TITLE : BRC WATER
SAMPLE ID : L25FQ2AC

REPORT DATE: 10-JUL-10
ACQUIRE DATE: 09-JUL-10 10:33:20
ELAPSED LIVE TIME: 60000.0 Sec
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 15-JUN-2010 00:00:00.00
CALIB DATE: 9-JUL-2010 03:28:56.57
ELAPSED LIVE TIME: 0 16:40:00
ELAPSED REAL TIME: 0 16:40:05

SAMPLE QUANTITY: 4.9960E-01
SAMPLE GEOMETRY: 500ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: 6.6913E-01 keV
ENERGY SLOPE: 2.4957E-01 keV/C
ENERGY Q COEFF: 2.3434E-07 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 5.3237E-01 keV
FWHM SLOPE: 4.1279E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 10-JUL-2010 03:13:32

```
Configuration     : RDND07$DKA100:[GER7.SAMPLE]L25FQ2AC_090701033.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 9-JUL-2010 10:33:20
Sample ID         : L25FQ2AC             Sample quantity  : 0.49960 LITER
Sample type       :                      Sample geometry  : 500ML
Elapsed live time: 0 16:40:00.00         Elapsed real time: 0 16:40:05.37   0.0%
Start energy      :    20.64             End energy       :  2060.88
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	53.61	121	577	0.64	212.07	207	11	2.01E-03	39.6	
2	0	63.25	419	690	0.88	250.71	245	12	6.99E-03	13.5	
3	0	92.71*	253	716	1.14	368.66	362	14	4.21E-03	31.5	0.00E+00
4	0	144.17	133	719	0.58	574.66	565	17	2.22E-03	47.0	
5	0	185.60*	327	583	0.88	740.47	735	14	5.45E-03	21.5	
6	3	512.54	261	267	1.77	2047.06	2027	31	4.35E-03	20.5	2.51E+00
7	0	911.07*	30	134	1.73	3635.46	3620	31	5.00E-04	139.2	

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

VMS Nuclide Identification Report V3.1 Generated 10-JUL-2010 03:13:32

Configuration : RDND07$DKA100:[GER7.SAMPLE]L25FQ2AC_090701033.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 9-JUL-2010 10:33:20
Sample ID : L25FQ2AC Sample quantity : 0.49960 LITER
Sample type : Sample geometry : 500ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:05.37 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 PCI/LITER	Decay Corr PCI/LITER	1-Sigma %Error
SR-85	514.00	261	96.00*	6.285E-01	3.901E+01	5.084E+01	21.53

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/LITER	Decay Corr PCI/LITER	1-Sigma %Error
U-235	143.76	133	10.96*	1.547E+00	7.092E+01	7.092E+01	47.37
	185.71	327	57.20	1.358E+00	3.795E+01	3.795E+01	22.43
	205.31	------	5.01	1.270E+00	------ Line Not Found		------
U-238-TH	63.29	419	4.80*	9.025E-01	8.722E+02	8.722E+02	14.83
	92.59	253	5.58	1.514E+00	2.696E+02	2.696E+02	32.06

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : L25FQ2AC Acquisition date : 9-JUL-2010 10:33:20

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	53.61	121	577	0.64	212.07	207	11	2.01E-03	39.6	5.72E-01	
0	911.07	30	134	1.73	3635.46	3620	31	5.00E-04	****	4.10E-01	T

Flags: "T" = Tentatively associated

Sample ID : L25FQ2AC Acquisition date : 9-JUL-2010 10:33:20

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/LITER)	1-Sigma %Error	Rejected by
RU-106	381.80D	0.06	511.86	20.40	1.920E+02	21.53	Abun.
			621.93*	9.93	--- Not Found ---		
		% Abundances Found =		67.26			
RA-226	1600.00Y	0.00	186.21	3.59	6.046E+02	22.43	Abun.
			295.22	19.30	--- Not Found ---		
			351.93	37.60	--- Not Found ---		
			609.31*	46.10	--- Not Found ---		
			1120.29	15.10	--- Not Found ---		
			1764.49	15.40	--- Not Found ---		
		% Abundances Found =		2.62			
AC-228	1.41E+10Y	0.00	209.25	3.89	--- Not Found ---		Abun.
			338.32	11.27	--- Not Found ---		
			911.20*	25.80	2.559E+01	139.31	
			968.97	15.80	--- Not Found ---		
		% Abundances Found =		45.45			
RA-228	5.75Y	0.01	209.25	3.89	--- Not Found ---		Abun.
			338.32	11.27	--- Not Found ---		
			911.20*	25.80	2.580E+01	139.31	
			964.77	4.99	--- Not Found ---		
			968.97	15.80	--- Not Found ---		
		% Abundances Found =		41.78			
TH-232	1.41E+10Y	0.00	238.63	43.60	--- Not Found ---		Abun.
			338.32*	11.27	--- Not Found ---		
			583.19	30.55	--- Not Found ---		
			911.20	25.80	2.559E+01	139.31	
			968.97	15.80	--- Not Found ---		
		% Abundances Found =		20.31			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 10-JUL-2010 03:13:34

Configuration	: RDND07$DKA100:[GER7.SAMPLE]L25FQ2AC_090701033.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	: BRC WATER		
Sample date	: 15-JUN-2010 00:00:00	Acquisition date	: 9-JUL-2010 10:33:20
Sample ID	: L25FQ2AC	Sample quantity	: 0.49960 LITER
Sample type	:	Sample geometry	: 500ML
Elapsed live time	: 0 16:40:00.00	Elapsed real time	: 0 16:40:05.37 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 (PCI/LITER)	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
SR-85	5.084E+01	1.095E+01	1.401E+01	6.113E-01	3.630
U-235	7.092E+01	3.360E+01	6.001E+01	2.099E+00	1.182
U-238-TH	8.722E+02	1.293E+02	2.665E+02	9.543E+00	3.273

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	2.102E+01		4.193E+01	1.456E+02	6.116E+00	0.144
NA-22	5.213E-01		4.022E+00	1.405E+01	5.920E-01	0.037
K-40	-7.703E+02		1.235E+02	3.102E+02	1.347E+01	-2.483
CR-51	-2.756E+01		5.135E+01	1.741E+02	7.627E+00	-0.158
MN-54	2.876E+00		4.174E+00	1.443E+01	5.154E-01	0.199
CO-57	-1.447E+01		1.890E+01	6.264E+01	2.175E+00	-0.231
CO-60	3.137E-01		4.097E+00	1.423E+01	6.545E-01	0.022
ZN-65	-1.783E+01		9.721E+00	3.113E+01	1.109E+00	-0.573
Y-88	1.189E+00		4.817E+00	1.725E+01	5.376E-01	0.069
RU-106	2.755E+01		3.515E+01	1.212E+02	4.836E+00	0.227
SB-125	-3.475E+00		1.018E+01	3.404E+01	1.346E+00	-0.102
I-131	1.916E+01		2.964E+01	1.019E+02	4.121E+00	0.188
BA-133	-1.507E+01		4.640E+00	1.446E+01	5.962E-01	-1.042
CS-134	6.001E+00		4.251E+00	1.505E+01	5.488E-01	0.399
CS-137	-3.807E+00		3.958E+00	1.336E+01	5.042E-01	-0.285
CE-144	9.248E+00		1.746E+01	5.917E+01	2.051E+00	0.156
EU-152	-7.593E+00		1.036E+01	3.485E+01	1.470E+00	-0.218
EU-154	8.260E-01		1.132E+01	3.946E+01	1.662E+00	0.021
EU-155	7.614E+00		8.481E+00	2.926E+01	1.016E+00	0.260
BI-207	-5.963E-02		3.424E+00	1.165E+01	4.903E-01	-0.005
TL-208	-7.724E+00		7.239E+00	1.598E+01	6.646E-01	-0.483
BI-212	1.116E+02		5.468E+01	1.955E+02	8.556E+00	0.571
PB-212	-2.128E+01		1.012E+01	2.302E+01	9.386E-01	-0.924
BI-214	-5.394E+01		5.857E+01	1.209E+02	4.115E+00	-0.446
PB-214	-3.083E+01		1.507E+01	2.823E+01	1.173E+00	-1.092

Sample ID : L25FQ2AC Acquisition date : 9-JUL-2010 10:33:20

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
RA-223	-9.231E+00		1.841E+01	6.107E+01	2.583E+00	-0.151
RA-224	-2.181E+01		1.037E+01	2.360E+01	9.620E-01	-0.924
RA-226	-2.455E+01		1.662E+01	3.314E+01	1.342E+00	-0.741
AC-227	-5.904E+01		1.530E+01	4.693E+01	1.906E+00	-1.258
AC-228	2.559E+01	+	3.564E+01	6.387E+01	2.193E+00	0.401
RA-228	2.580E+01	+	3.594E+01	6.439E+01	2.211E+00	0.401
TH-228	-2.203E+01		2.064E+01	4.556E+01	1.895E+00	-0.483
TH-232	4.391E+01		2.518E+01	8.792E+01	3.748E+00	0.499
TH-234	9.022E+02		4.680E+02	1.690E+03	5.928E+01	0.534
U-234	-5.162E+01		2.364E+01	4.859E+01	2.100E+00	-1.062
U-238	-3.083E+01		1.507E+01	2.823E+01	1.173E+00	-1.092
AM-241	-1.157E+01		1.238E+01	3.836E+01	1.424E+00	-0.302

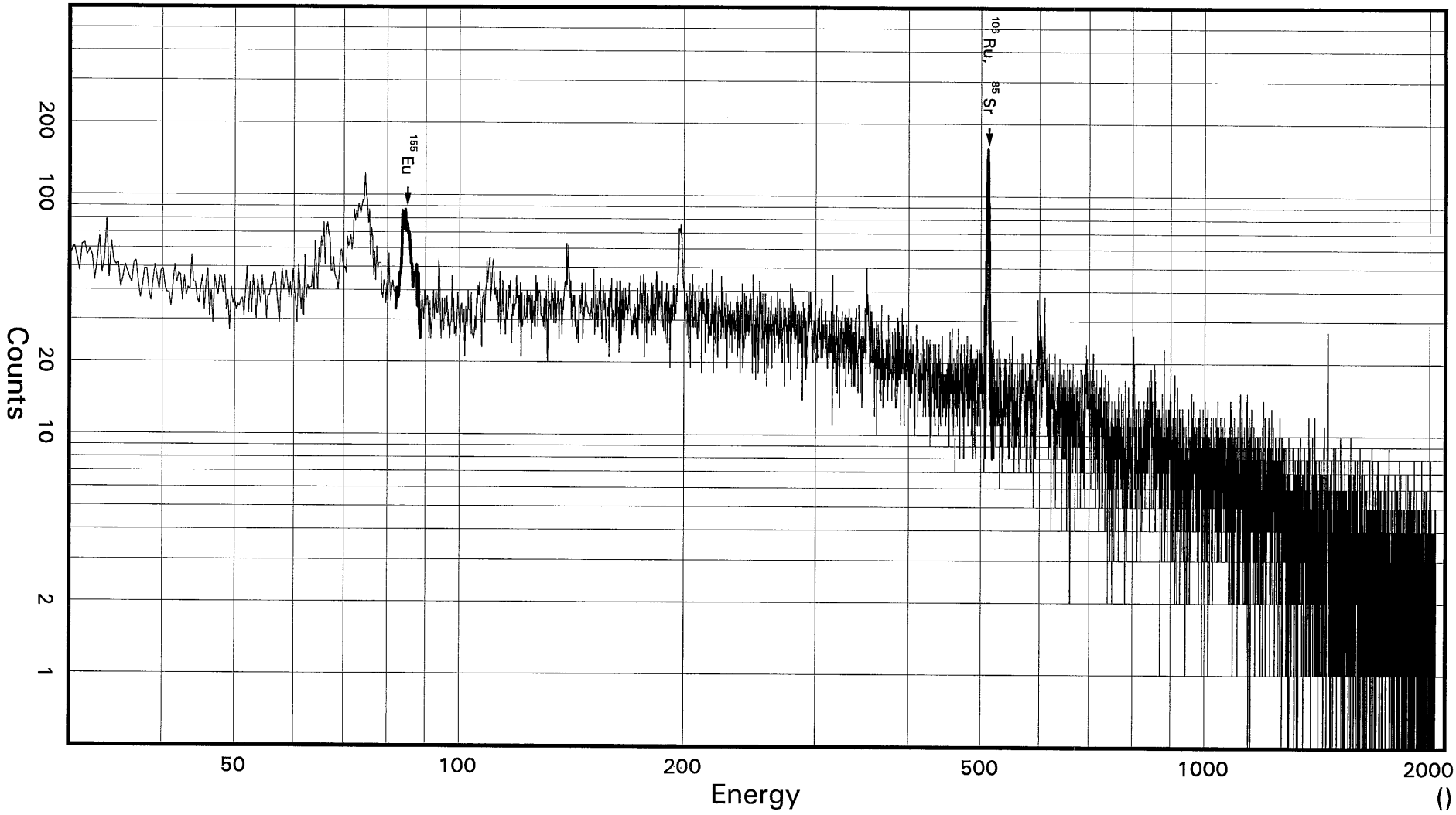
TAL Richland WA.

BRC WATER

Sample ID: L25FR2AC

Detector ID: GER10 1

Batch ID: 0172162



Acquisition Start: 9-JUL-2010 10:33:37.74

Preset Live Time: 0 16:40:00.00

Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:

Offset: 1.46235E+01

Slope: 2.47237E-01

Quadrature: 3.48068E-09

SAMPLE IDENTIFICATION: L25FR2AC

CONFIGURATION ID: GER10:L25FR2AC_090701033
TITLE : BRC WATER
SAMPLE ID : L25FR2AC

REPORT DATE: 10-JUL-10
ACQUIRE DATE: 09-JUL-10 10:33:37
ELAPSED LIVE TIME: 60000.0 Sec
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 15-JUN-2010 00:00:00.00
CALIB DATE: 9-JUL-2010 04:07:29.65
ELAPSED LIVE TIME: 0 16:40:00
ELAPSED REAL TIME: 0 16:40:05

SAMPLE QUANTITY: 4.9960E-01
SAMPLE GEOMETRY: 500ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: 1.4623E+01 keV
ENERGY SLOPE: 2.4724E-01 keV/C
ENERGY Q COEFF: 3.4807E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.6081E+00 keV
FWHM SLOPE: 2.2598E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 10-JUL-2010 03:13:58

```
Configuration     : RDND07$DKA100:[GER10.SAMPLE]L25FR2AC_090701033.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 9-JUL-2010 10:33:37
Sample ID         : L25FR2AC             Sample quantity  : 0.49960 LITER
Sample type       :                      Sample geometry  : 500ML
Elapsed live time: 0 16:40:00.00         Elapsed real time: 0 16:40:05.66   0.0%
Start energy      :    17.10             End energy       :  2040.22
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	85.14*	225	926	2.23	285.22	273	27	3.74E-03	42.7	
2	1	512.82	431	369	2.12	2015.00	1990	47	7.18E-03	13.0	3.74E+00

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

VMS Nuclide Identification Report V3.1 Generated 10-JUL-2010 03:13:58

Configuration : RDND07$DKA100:[GER10.SAMPLE]L25FR2AC_090701033.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 9-JUL-2010 10:33:37
Sample ID : L25FR2AC Sample quantity : 0.49960 LITER
Sample type : Sample geometry : 500ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:05.66 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 PCI/LITER	Decay Corr PCI/LITER	1-Sigma %Error
SR-85	514.00	431	96.00*	9.672E-01	4.182E+01	5.451E+01	14.45

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : L25FR2AC Acquisition date : 9-JUL-2010 10:33:37

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	85.14	225	926	2.23	285.22	273	27	3.74E-03	42.7	1.77E+00	T

Flags: "T" = Tentatively associated

Sample ID : L25FR2AC Acquisition date : 9-JUL-2010 10:33:37

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/LITER)	1-Sigma %Error	Rejected by
RU-106	381.80D	0.06	511.86	20.40	2.059E+02	14.45	Abun.
			621.93*	9.93	--- Not Found ---		
		% Abundances Found =		67.26			
EU-155	4.75Y	0.01	43.00	12.00	--- Not Found ---		Abun.
			86.55	30.70	3.764E+01	43.12	
			105.31*	21.10	--- Not Found ---		
		% Abundances Found =		48.12			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 10-JUL-2010 03:13:59

Configuration : RDND07$DKA100:[GER10.SAMPLE]L25FR2AC_090701033.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 : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 9-JUL-2010 10:33:37
Sample ID : L25FR2AC Sample quantity : 0.49960 LITER
Sample type : Sample geometry : 500ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:05.66 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 (PCI/LITER)	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
SR-85	5.451E+01	7.875E+00	1.179E+01	4.639E-01	4.624

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	3.741E+01		3.448E+01	1.189E+02	4.411E+00	0.315
NA-22	-1.326E+00		3.114E+00	1.067E+01	3.374E-01	-0.124
K-40	-8.131E+01		6.026E+01	1.556E+02	5.041E+00	-0.523
CR-51	-9.881E+01		4.550E+01	1.460E+02	6.877E+00	-0.677
MN-54	9.621E-01		3.277E+00	1.127E+01	3.752E-01	0.085
CO-57	-1.900E+01		1.835E+01	6.014E+01	2.043E+00	-0.316
CO-60	-9.008E-01		3.016E+00	1.037E+01	3.347E-01	-0.087
ZN-65	-8.852E+00		6.871E+00	2.257E+01	7.017E-01	-0.392
Y-88	-7.378E-01		3.175E+00	1.112E+01	3.382E-01	-0.066
RU-106	-2.778E+01		3.054E+01	1.012E+02	3.653E+00	-0.274
SB-125	-1.990E-01		8.303E+00	2.827E+01	9.623E-01	-0.007
I-131	-1.009E+01		2.496E+01	8.298E+01	3.178E+00	-0.122
BA-133	-5.213E+00		4.306E+00	1.409E+01	5.657E-01	-0.370
CS-134	-1.112E+01		3.466E+00	1.084E+01	3.655E-01	-1.026
CS-137	3.249E-01		3.262E+00	1.104E+01	3.788E-01	0.029
CE-144	3.878E+00		1.683E+01	5.621E+01	1.896E+00	0.069
EU-152	-1.483E+01		9.178E+00	2.981E+01	1.269E+00	-0.497
EU-154	-3.740E+00		8.781E+00	3.007E+01	9.512E-01	-0.124
EU-155	-2.313E+01		8.647E+00	2.756E+01	9.081E-01	-0.839
BI-207	9.591E+00		2.918E+00	1.021E+01	3.876E-01	0.939
TL-208	7.105E+00		3.264E+00	1.137E+01	4.266E-01	0.625
BI-212	-2.444E+01		4.379E+01	1.458E+02	5.994E+00	-0.168
PB-212	-3.885E+00		4.836E+00	1.610E+01	6.752E-01	-0.241
BI-214	3.987E+01		2.058E+01	7.595E+01	2.359E+00	0.525
PB-214	-1.339E-01		1.094E+01	2.478E+01	1.016E+00	-0.005
RA-223	1.087E+01		1.644E+01	5.565E+01	2.452E+00	0.195
RA-224	-3.982E+00		4.957E+00	1.650E+01	6.920E-01	-0.241

Sample ID : L25FR2AC Acquisition date : 9-JUL-2010 10:33:37

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
RA-226	2.767E+01		7.620E+00	2.633E+01	9.632E-01	1.051
AC-227	2.006E+00		1.156E+01	3.905E+01	1.630E+00	0.051
AC-228	2.055E+01		1.163E+01	4.113E+01	1.329E+00	0.500
RA-228	2.072E+01		1.173E+01	4.147E+01	1.340E+00	0.500
TH-228	2.026E+01		9.308E+00	3.242E+01	1.216E+00	0.625
TH-232	-2.614E+01		2.156E+01	7.065E+01	3.092E+00	-0.370
TH-234	-1.494E+02		3.571E+02	1.208E+03	3.870E+01	-0.124
U-234	1.634E+01		1.239E+01	4.210E+01	1.923E+00	0.388
U-235	-7.347E+01		1.741E+01	5.286E+01	1.829E+00	-1.390
U-238	-1.339E-01		1.094E+01	2.478E+01	1.016E+00	-0.005
U-238-TH	-3.600E+01		7.897E+01	2.639E+02	9.307E+00	-0.136
AM-241	-1.469E+01		1.152E+01	3.808E+01	1.410E+00	-0.386

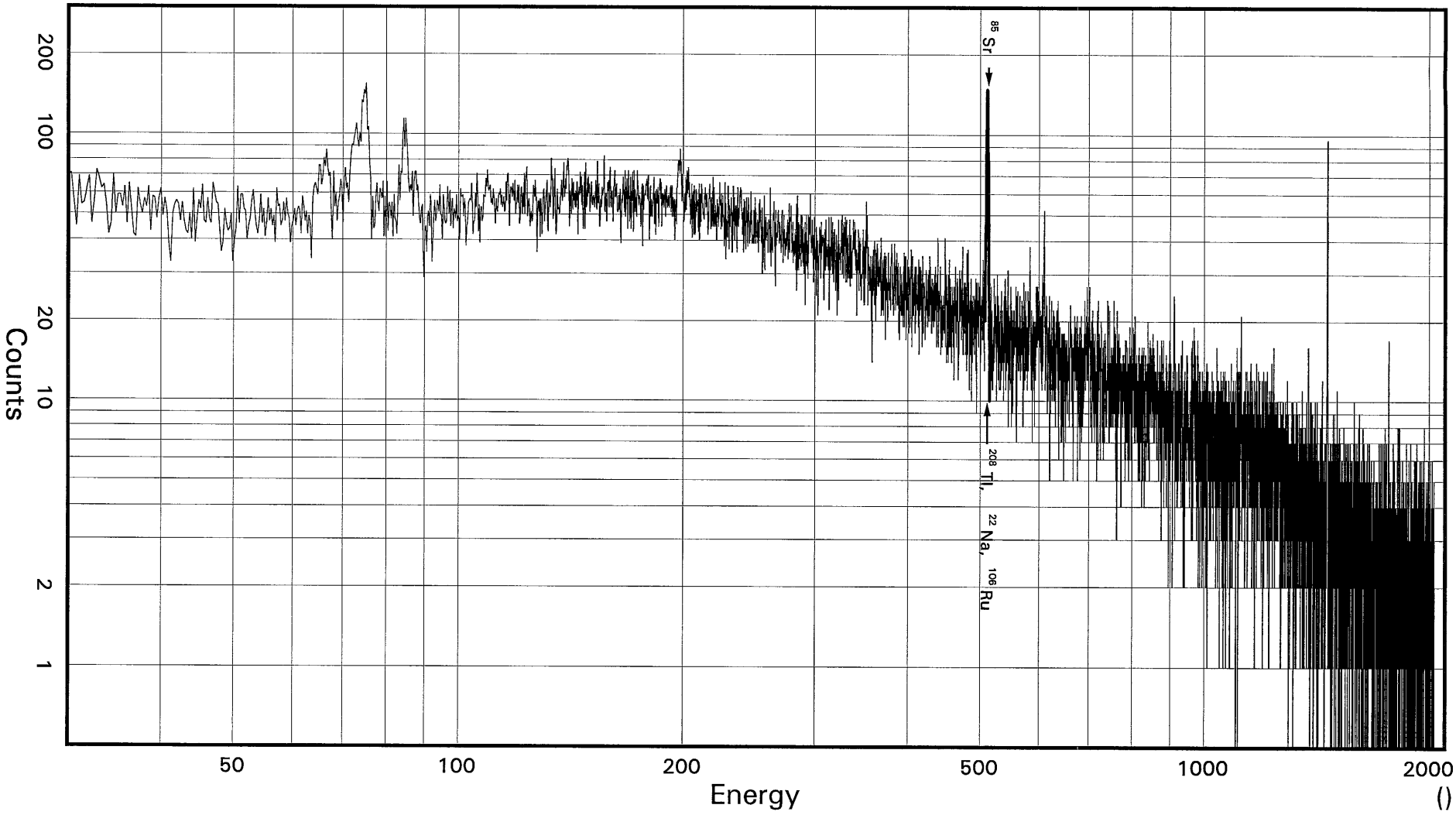
TAL Richland WA.

BRC WATER

Sample ID: L26752AA

Detector ID: GER14 1

Batch ID: 0172162



Acquisition Start: 9-JUL-2010 10:33:52.95

Preset Live Time: 0 16:40:00.00

Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:

Offset: -7.72347E-01

Slope: 2.48341E-01

Quadrature: -9.65870E-09

SAMPLE IDENTIFICATION: L26752AA

CONFIGURATION ID: GER14:L26752AA_090701033
TITLE : BRC WATER
SAMPLE ID : L26752AA

REPORT DATE: 10-JUL-10
ACQUIRE DATE: 09-JUL-10 10:33:52
ELAPSED LIVE TIME: 60000.0 Sec
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 8-JUL-2010 11:40:00.00
CALIB DATE: 9-JUL-2010 03:29:47.42
ELAPSED LIVE TIME: 0 16:40:00
ELAPSED REAL TIME: 0 16:40:09

SAMPLE QUANTITY: 5.0040E-01
SAMPLE GEOMETRY: 500ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: -.7723E+00 keV
ENERGY SLOPE: 2.4834E-01 keV/C
ENERGY Q COEFF: -.9659E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.0247E+00 keV
FWHM SLOPE: 3.0384E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 10-JUL-2010 03:14:11

```
Configuration     : RDND07$DKA100:[GER14.SAMPLE]L26752AA_090701033.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 8-JUL-2010 11:40:00  Acquisition date : 9-JUL-2010 10:33:52
Sample ID         : L26752AA             Sample quantity  : 0.50040 LITER
Sample type       :                      Sample geometry  : 500ML
Elapsed live time: 0 16:40:00.00         Elapsed real time: 0 16:40:09.90   0.0%
Start energy      :    19.09             End energy       :  2032.99
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	6	511.00*	21	564	2.76	2060.91	2046	32	3.51E-04	503.7	1.51E+00
2	6	513.00	80	272	1.71	2069.00	2046	32	1.33E-03	57.0	

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

VMS Nuclide Identification Report V3.1 Generated 10-JUL-2010 03:14:11

Configuration : RDND07$DKA100:[GER14.SAMPLE]L26752AA_090701033.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BRC WATER
Sample date : 8-JUL-2010 11:40:00 Acquisition date : 9-JUL-2010 10:33:52
Sample ID : L26752AA Sample quantity : 0.50040 LITER
Sample type : Sample geometry : 500ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.90 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 PCI/LITER	Decay Corr PCI/LITER	1-Sigma %Error
SR-85	514.00	80	96.00*	6.429E-01	1.162E+01	1.179E+01	57.43

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : L26752AA Acquisition date : 9-JUL-2010 10:33:52

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
6	511.00	21	564	2.76	2060.91	2046	32	3.51E-04	****	6.45E-01	T

Flags: "T" = Tentatively associated

Sample ID : L26752AA Acquisition date : 9-JUL-2010 10:33:52

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/LITER)	1-Sigma %Error	Rejected by
NA-22	2.60Y	0.00	511.00	180.76	1.628E+00	503.73	Abun.
			1274.54*	99.94	--- Not Found ---		
		% Abundances Found =		64.40			
RU-106	381.80D	0.00	511.86	20.40	1.445E+01	503.73	Abun.
			621.93*	9.93	--- Not Found ---		
		% Abundances Found =		67.26			
TL-208	1.41E+10Y	0.00	277.37	6.60	--- Not Found ---		Abun.
			510.77	22.60	1.301E+01	503.73	
			583.19*	85.00	--- Not Found ---		
			860.56	12.50	--- Not Found ---		
		% Abundances Found =		17.84			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 10-JUL-2010 03:14:12

Configuration : RDND07$DKA100:[GER14.SAMPLE]L26752AA_090701033.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 : BRC WATER
Sample date : 8-JUL-2010 11:40:00 Acquisition date : 9-JUL-2010 10:33:52
Sample ID : L26752AA Sample quantity : 0.50040 LITER
Sample type : Sample geometry : 500ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:09.90 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 (PCI/LITER)	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
SR-85	1.179E+01	6.769E+00	1.366E+01	6.905E-01	0.863

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	-2.179E+01		3.922E+01	1.305E+02	5.778E+00	-0.167
NA-22	-1.602E+00		4.853E+00	1.666E+01	5.210E-01	-0.096
K-40	-7.639E+02		1.574E+02	4.436E+02	1.401E+01	-1.722
CR-51	-3.669E+01		3.651E+01	1.191E+02	6.640E+00	-0.308
MN-54	6.152E-01		4.774E+00	1.613E+01	5.447E-01	0.038
CO-57	-6.452E+01		2.345E+01	7.418E+01	2.572E+00	-0.870
CO-60	1.836E+00		4.620E+00	1.622E+01	5.076E-01	0.113
ZN-65	-2.170E+01		1.100E+01	3.533E+01	1.102E+00	-0.614
Y-88	3.891E+00		4.531E+00	1.646E+01	5.045E-01	0.236
RU-106	-4.292E+01		4.159E+01	1.388E+02	5.968E+00	-0.309
SB-125	1.496E+01		1.274E+01	4.367E+01	1.586E+00	0.343
I-131	4.231E+00		4.890E+00	1.677E+01	6.985E-01	0.252
BA-133	-1.786E+01		5.948E+00	1.894E+01	8.458E-01	-0.943
CS-134	6.579E+00		5.337E+00	1.847E+01	6.531E-01	0.356
CS-137	1.027E+01		5.069E+00	1.777E+01	6.927E-01	0.578
CE-144	1.472E+01		2.102E+01	7.026E+01	2.415E+00	0.210
EU-152	2.274E+00		1.345E+01	4.579E+01	2.224E+00	0.050
EU-154	-1.137E+00		1.380E+01	4.774E+01	1.493E+00	-0.024
EU-155	-5.652E+00		9.844E+00	3.269E+01	1.065E+00	-0.173
BI-207	-3.978E+00		4.211E+00	1.414E+01	6.681E-01	-0.281
TL-208	-1.644E+00		7.315E+00	1.816E+01	8.404E-01	-0.091
BI-212	7.142E+00		6.796E+01	2.309E+02	1.015E+01	0.031
PB-212	1.381E+01		7.502E+00	2.545E+01	1.183E+00	0.543
BI-214	-7.925E+01		6.133E+01	1.459E+02	4.524E+00	-0.543
PB-214	-4.073E+01		1.698E+01	3.477E+01	1.601E+00	-1.172
RA-223	4.438E+01		2.396E+01	8.114E+01	4.064E+00	0.547
RA-224	1.383E+01		7.511E+00	2.548E+01	1.184E+00	0.543

Sample ID : L26752AA Acquisition date : 9-JUL-2010 10:33:52

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
RA-226	-5.505E+01		1.938E+01	3.915E+01	1.727E+00	-1.406
AC-227	-9.732E+00		1.779E+01	5.920E+01	2.732E+00	-0.164
AC-228	-5.312E+01		3.363E+01	7.162E+01	2.203E+00	-0.742
RA-228	-5.314E+01		3.364E+01	7.165E+01	2.203E+00	-0.742
TH-228	-4.581E+00		2.038E+01	5.060E+01	2.341E+00	-0.091
TH-232	4.108E+01		3.266E+01	1.123E+02	5.666E+00	0.366
TH-234	2.472E+02		5.603E+02	1.940E+03	6.045E+01	0.127
U-234	3.455E+01		1.814E+01	6.124E+01	3.247E+00	0.564
U-235	-2.569E+00		2.282E+01	7.539E+01	2.671E+00	-0.034
U-238	-4.073E+01		1.698E+01	3.477E+01	1.601E+00	-1.172
U-238-TH	-1.207E+02		4.786E+01	1.557E+02	4.990E+00	-0.775
AM-241	-1.514E+00		6.113E+00	2.072E+01	6.787E-01	-0.073

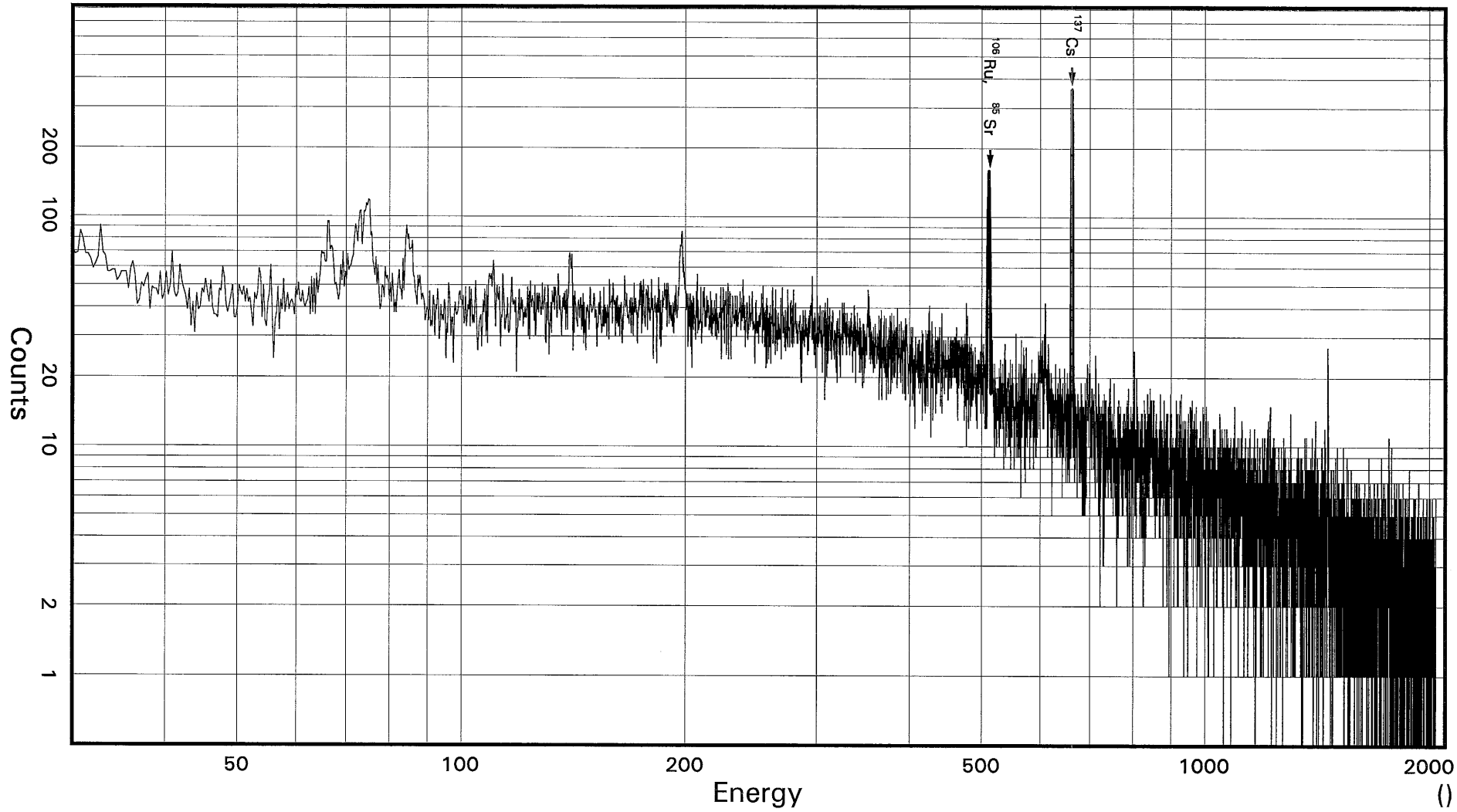
TAL Richland WA.

BRC WATER

Sample ID: L26752AC

Detector ID: GER10 1

Batch ID: 0172162



Acquisition Start: 10-JUL-2010 08:46:10.54

Preset Live Time: 0 16:40:00.00

Elapsed Live Time: 0 16:40:00.00

Energy Coefficients:

Offset: 1.46684E+01

Slope: 2.47206E-01

Quadrature: 1.05073E-08

SAMPLE IDENTIFICATION: L26752AC

CONFIGURATION ID: GER10:L26752AC_100700846
TITLE : BRC WATER
SAMPLE ID : L26752AC

REPORT DATE: 11-JUL-10
ACQUIRE DATE: 10-JUL-10 08:46:10
ELAPSED LIVE TIME: 60000.0 Sec
PRESET LIVE TIME: 0 16:40:00

SAMPLE DATE: 10-JUL-2010 12:00:00.00
CALIB DATE: 10-JUL-2010 05:14:06.32
ELAPSED LIVE TIME: 0 16:40:00
ELAPSED REAL TIME: 0 16:40:06

SAMPLE QUANTITY: 5.0040E-01
SAMPLE GEOMETRY: 500ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: 1.4668E+01 keV
ENERGY SLOPE: 2.4721E-01 keV/C
ENERGY Q COEFF: 1.0507E-08 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 1.5706E+00 keV
FWHM SLOPE: 2.1042E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 11-JUL-2010 01:26:24

```
Configuration     : RDND07$DKA100:[GER10.SAMPLE]L26752AC_100700846.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 10-JUL-2010 12:00:00 Acquisition date : 10-JUL-2010 08:46:10
Sample ID         : L26752AC             Sample quantity  : 0.50040 LITER
Sample type       :                      Sample geometry  : 500ML
Elapsed live time: 0 16:40:00.00         Elapsed real time: 0 16:40:06.27   0.0%
Start energy      :    17.14             End energy       :  2040.49
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	65.86	310	930	0.64	207.09	198	20	5.17E-03	21.2	
2	0	139.95	147	635	1.54	506.78	499	16	2.45E-03	33.8	
3	1	512.83	183	456	2.05	2015.00	1990	36	3.05E-03	28.8	1.99E+00
4	0	661.63	3214	411	2.10	2616.82	2602	34	5.36E-02	2.3	
5	1	1458.96	37	65	2.37	5841.00	5830	39	6.17E-04	58.6	2.91E+00

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

VMS Nuclide Identification Report V3.1 Generated 11-JUL-2010 01:26:24

Configuration : RDND07$DKA100:[GER10.SAMPLE]L26752AC_100700846.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BRC WATER
Sample date : 10-JUL-2010 12:00:00 Acquisition date : 10-JUL-2010 08:46:10
Sample ID : L26752AC Sample quantity : 0.50040 LITER
Sample type : Sample geometry : 500ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:06.27 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 PCI/LITER	Decay Corr PCI/LITER	1-Sigma %Error
SR-85	514.00	183	96.00*	9.672E-01	1.777E+01	1.781E+01	29.47
CS-137	661.65	3214	85.10*	8.102E-01	4.196E+02	4.196E+02	6.48

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : L26752AC Acquisition date : 10-JUL-2010 08:46:10

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	65.86	310	930	0.64	207.09	198	20	5.17E-03	21.2	1.19E+00	
0	139.95	147	635	1.54	506.78	499	16	2.45E-03	33.8	2.03E+00	
1	1458.96	37	65	2.37	5841.00	5830	39	6.17E-04	58.6	4.57E-01	

Flags: "T" = Tentatively associated

Sample ID : L26752AC Acquisition date : 10-JUL-2010 08:46:10

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/LITER)	1-Sigma %Error	Rejected by
RU-106	381.80D	0.00	511.86	20.40	8.365E+01	29.47	Abun.
			621.93*	9.93	--- Not Found ---		

% Abundances Found = 67.26

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 11-JUL-2010 01:26:25

Configuration : RDND07$DKA100:[GER10.SAMPLE]L26752AC_100700846.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 : BRC WATER
Sample date : 10-JUL-2010 12:00:00 Acquisition date : 10-JUL-2010 08:46:10
Sample ID : L26752AC Sample quantity : 0.50040 LITER
Sample type : Sample geometry : 500ML
Elapsed live time: 0 16:40:00.00 Elapsed real time: 0 16:40:06.27 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 (PCI/LITER)	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
SR-85	1.781E+01	5.247E+00	9.875E+00	3.886E-01	1.803
CS-137	4.196E+02	2.719E+01	1.119E+01	3.837E-01	37.510

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	-8.401E+00		2.838E+01	9.457E+01	3.509E+00	-0.089
NA-22	1.005E+00		3.086E+00	1.071E+01	3.388E-01	0.094
K-40	-3.475E+01		6.034E+01	1.594E+02	5.166E+00	-0.218
CR-51	-3.022E+01		2.594E+01	8.591E+01	4.047E+00	-0.352
MN-54	1.114E+00		2.963E+00	1.014E+01	3.375E-01	0.110
CO-57	1.062E+01		2.080E+01	5.905E+01	2.006E+00	0.180
CO-60	-4.817E+00		3.141E+00	1.026E+01	3.313E-01	-0.469
ZN-65	-8.814E+00		6.241E+00	2.064E+01	6.418E-01	-0.427
Y-88	6.162E-01		2.611E+00	9.286E+00	2.824E-01	0.066
RU-106	-3.798E+01		3.007E+01	9.980E+01	3.600E+00	-0.381
SB-125	-2.808E-01		9.456E+00	3.172E+01	1.080E+00	-0.009
I-131	1.892E+00		3.335E+00	1.130E+01	4.328E-01	0.167
BA-133	-1.520E+01		4.557E+00	1.430E+01	5.741E-01	-1.063
CS-134	-1.178E+00		3.336E+00	1.125E+01	3.795E-01	-0.105
CE-144	-4.325E+00		1.806E+01	5.631E+01	1.900E+00	-0.077
EU-152	-1.195E+01		9.848E+00	3.253E+01	1.385E+00	-0.367
EU-154	3.077E+00		8.817E+00	3.062E+01	9.686E-01	0.101
EU-155	-4.212E+01		9.282E+00	2.838E+01	9.353E-01	-1.484
BI-207	4.628E+00		2.962E+00	1.030E+01	3.910E-01	0.449
TL-208	4.536E+00		3.253E+00	1.132E+01	4.249E-01	0.401
BI-212	4.679E+01		4.227E+01	1.468E+02	6.035E+00	0.319
PB-212	4.909E+00		5.352E+00	1.829E+01	7.670E-01	0.268
BI-214	8.078E+01		2.121E+01	8.056E+01	2.502E+00	1.003
PB-214	-1.901E+00		1.113E+01	2.585E+01	1.060E+00	-0.074
RA-223	6.816E-01		1.722E+01	5.826E+01	2.567E+00	0.012
RA-224	4.910E+00		5.353E+00	1.829E+01	7.671E-01	0.268

Sample ID : L26752AC Acquisition date : 10-JUL-2010 08:46:10

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
RA-226	3.620E+01		7.823E+00	2.712E+01	9.922E-01	1.335
AC-227	1.153E+01		1.306E+01	4.369E+01	1.824E+00	0.264
AC-228	-1.688E+01		1.139E+01	3.711E+01	1.199E+00	-0.455
RA-228	-1.688E+01		1.139E+01	3.711E+01	1.199E+00	-0.455
TH-228	1.262E+01		9.052E+00	3.151E+01	1.182E+00	0.401
TH-232	2.033E+01		2.371E+01	8.060E+01	3.527E+00	0.252
TH-234	4.141E+02		3.571E+02	1.262E+03	4.043E+01	0.328
U-234	2.826E+01		1.325E+01	4.542E+01	2.075E+00	0.622
U-235	-4.678E+00		2.001E+01	5.604E+01	1.940E+00	-0.083
U-238	-1.901E+00		1.113E+01	2.585E+01	1.060E+00	-0.074
U-238-TH	2.436E+02		9.086E+01	2.669E+02	9.416E+00	0.913
AM-241	2.081E+00		1.236E+01	3.860E+01	1.430E+00	0.054

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

7/8/2010 8:53:00 AM

Lot No., Due Date: J0F180565; 07/02/2010
Client, Site: 536403; YERINGTON - BRC Yerington Mine, NV
QC Batch No., Method Test: 0172162; RGAMMA Gamma by GER
SDG, Matrix: 41625; WATER

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:
NCM 10-16261

First Level Lisa Autenson **Date** 7/8/10

Clouseau
Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: **10-16261**
NCM Initiated By: Lisa Antonson
Date Opened: 07/08/2010
Date Closed:

Classification: **Anomaly**
Status: **PMREVIEW**
Production Area: Environmental - Prep
Tests: Gamma by GER
Lot #'s (Sample #'s): J0F180565 (1,2,3,4), J0F210000 (162),
QC Batches: 0172162,

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

Problem Description / Root Cause

Name	Date	Description
Lisa Antonson	07/08/2010	None of the CRDL's are met for this batch. The entire batch is being recounted at the max count time of 1000 minutes. The original data will be uploaded for client review at PM request

Corrective Action

Name	Date	Corrective Action
Lisa Antonson	07/08/2010	The batch is being recounted for extended count time.

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: 7/8/2010

TestAmerica Laboratories, Inc.

6/22/2010 11:38:48 AM

Sample Preparation/Analysis

Balance Id:1120482733

536403, Brown and Caldwell and Caldwell , Brown

AW Gamma Prp GAM001
TA Gamma by HPGE
01 STANDARD TEST SET

PRIORITY

Pipet #: _____

AnalyDueDate: 07/02/2010

Sep1 DT/Tm Tech:

Batch: 0172162 WATER pCi/L PM, Quote: EJ , 73181

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ~~Barcoll~~ Jack 6/22/10

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 L25FA-1-AC J0F180565-1-SAMP 06/15/2010 00:00		499.50g,in AmtRec: 1XLP	#Containers: 1		500mL	200	G5 Scr:	1510 Alpha:	6/22/10 Beta:	
2 L25FA-1-AD-X J0F180565-1-DUP 06/15/2010 00:00		AmtRec: 1XLP	#Containers: 1				G7 Scr:	0812 Alpha:	6/23/10 Beta:	
3 L25FK-1-AC J0F180565-2-SAMP 06/15/2010 00:00		198.40g,in AmtRec: 1XLP	#Containers: 1		200mL		G5 Scr:	1837 Alpha:	6/22/10 Beta:	
4 L25FQ-1-AC J0F180565-3-SAMP 06/15/2010 00:00		499.60g,in AmtRec: 1XLP	#Containers: 1		500		G5 Scr:	2203 Alpha:	Beta:	
5 L25FR-1-AC J0F180565-4-SAMP 06/15/2010 00:00		499.60g,in AmtRec: 1XLP	#Containers: 1				G5 Scr:	0133 Alpha:	Beta:	
6 L2675-1-AA-B J0F210000-162-BLK 06/21/2010 13:25 pd		500.40g,in AmtRec:	#Containers: 1				G5 Scr:	0812 Alpha:	6/23/10 Beta:	
7 L2675-1-AC-C J0F210000-162-LCS 06/21/2010 13:25 pd		500.40g,in AmtRec:	GSE1509 06/02/10,pd 06/08/05 r #Containers: 1				G5 Scr:	1137 Alpha:	Beta:	

96

6/22/2010 11:38:49 AM

Sample Preparation/Analysis

AW Gamma Prp GAM001
TA Gamma by HPGE
01 STANDARD TEST SET

Balance Id:1120482733

Pipet #: _____

AnalyDueDate: 07/02/2010

Sep1 DT/Tm Tech:

Batch: 0172162 pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,Barcotl

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

Comments: L25FA-SAMP "Comments. No Dup. poured, due to insuff. volume amount. Please recount on diff. detector. JB 6-22-10"
L25FK-SAMP "Comments. Sample L2FK only poured 200 ml. geo. due to insuff. sample amount. JB 6-22-10"

All Clients for Batch:
536403, Brown and Caldwell Brown and Caldwell , EJ , 73181

L25FA1AC-SAMP Constituent List:

Cs-137	RDL:20	pCi/L	LCL:	UCL:	RPD:	Cs-137DA	RDL:20	pCi/L	LCL:	UCL:	RPD:
RA-228	RDL:1.0	pCi/L	LCL:	UCL:	RPD:	RA-228DA	RDL:1.0	pCi/L	LCL:	UCL:	RPD:
Th-232	RDL:1.0	pCi/L	LCL:	UCL:	RPD:	Th-234	RDL:1.0	pCi/L	LCL:	UCL:	RPD:

L26751AA-BLK:

Cs-137	RDL:20	pCi/L	LCL:	UCL:	RPD:	Cs-137DA	RDL:20	pCi/L	LCL:	UCL:	RPD:
RA-228	RDL:1.0	pCi/L	LCL:	UCL:	RPD:	RA-228DA	RDL:1.0	pCi/L	LCL:	UCL:	RPD:
Th-232	RDL:1.0	pCi/L	LCL:	UCL:	RPD:	Th-234	RDL:1.0	pCi/L	LCL:	UCL:	RPD:

L26751AC-LCS:

Cs-137	RDL:20	pCi/L	LCL:70	UCL:130	RPD:20	Cs-137DA	RDL:20	pCi/L	LCL:70	UCL:130	RPD:20

L25FA1AC-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
L26751AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
L26751AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

7/8/2010 8:49:10 AM

ICOC Fraction Transfer/Status Report

ByDate: 7/8/2009, 7/13/2010, Batch: '0172162', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
0172162						
AC		**Rev1C**	**Barcotl**	6/22/2010 10:17:20		
SC			mcginnist	IsBatched	6/21/2010 2:45:27 PM	ICOC_RADCALC v4.8.40
SC			Barcotl	InPrep	6/22/2010 10:17:20 AM	RL-PRP-004 Revision 1
SC			LoeberL	Prep1C	6/22/2010 11:47:51 AM	RL-PRP-004 REVISION 1
SC			BlackCL	InCnt1	6/22/2010 11:52:23 AM	RL-CI-007 REVISION 1
SC			ClarkR	CalcC	6/23/2010 12:17:47 PM	RL-CI-007 REVISION 1
SC			antonsonl	Rev1C	7/8/2010 8:48:51 AM	RL-DR-001 Rev 0
AC			**LoeberL**	6/22/2010 11:47:51		
AC			**BlackCL**	6/22/2010 11:52:23		
AC			**ClarkR**	6/23/2010 12:17:47		
AC			**antonsonl**	7/8/2010 8:48:51 AM		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Grp Rec Cnt: 5

ICOCFractions v4.8.44

7/8/2010 8:49:09 AM

Rpt DB Transfer log (Batch Results)

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Cnt Uncert	Tot Uncert	Mda	Matrix / Received Date / Units	Sample Date / Expected	Yield	Volumes
41625	**9L25FA10**			**J0F1805651**	S-1 MWMP				WATER 6/18/2010 10:00:00	6/15/2010		
CS-137	AWTA	0		6/22/2010 11:50:36	**8.423E-01**	9.444E+00	9.444E+00	3.418E+01	PCI/LITER			4.995E-1
RA-228	AWTA	0		6/22/2010 11:50:36	**-3.7171E+01**	5.022E+01	5.022E+01	1.748E+02	PCI/LITER			4.995E-1
TH-232	AWTA	0		6/22/2010 11:50:36	**1.4856E+01**	6.442E+01	6.442E+01	2.273E+02	PCI/LITER			4.995E-1
TH-234	AWTA	0		6/22/2010 11:50:36	**-3.6255E+02**	1.08E+03	1.08E+03	3.901E+03	PCI/LITER			4.995E-1
41625	**9L25FK10**			**J0F1805652**	S-12A MWMP				WATER 6/18/2010 10:00:00	6/15/2010		
CS-137	AWTA	0		6/22/2010 3:17:56 PM	**4.5393E+00**	1.333E+01	1.333E+01	4.834E+01	PCI/LITER			1.984E-1
RA-228	AWTA	0		6/22/2010 3:17:56 PM	**-9.1633E+01**	6.155E+01	6.155E+01	2.075E+02	PCI/LITER			1.984E-1
TH-232	AWTA	0		6/22/2010 3:17:56 PM	**1.5081E+02**	8.926E+01	8.926E+01	3.123E+02	PCI/LITER			1.984E-1
TH-234	AWTA	0		6/22/2010 3:17:56 PM	**1.5156E+03**	1.351E+03	1.351E+03	5.304E+03	PCI/LITER			1.984E-1
41625	**9L25FQ10**			**J0F1805653**	S-24 MWMP				WATER 6/18/2010 10:00:00	6/15/2010		
CS-137	AWTA	0		6/22/2010 6:43:43 PM	**-7.2142E+00**	9.743E+00	9.743E+00	3.376E+01	PCI/LITER			4.996E-1
RA-228	AWTA	0		6/22/2010 6:43:43 PM	**-7.7035E+01**	4.984E+01	4.984E+01	1.67E+02	PCI/LITER			4.996E-1
TH-232	AWTA	0		6/22/2010 6:43:43 PM	**-2.9937E+00**	6.982E+01	6.982E+01	2.434E+02	PCI/LITER			4.996E-1
TH-234	AWTA	0		6/22/2010 6:43:43 PM	**1.4525E+03**	1.026E+03	1.026E+03	4.093E+03	PCI/LITER			4.996E-1
41625	**9L25FR10**			**J0F1805654**	S-25 MWMP				WATER 6/18/2010 10:00:00	6/15/2010		
CS-137	AWTA	0		6/22/2010 10:13:36 PM	**-1.829E+01**	9.829E+00	9.829E+00	3.187E+01	PCI/LITER			4.996E-1
RA-228	AWTA	0		6/22/2010 10:13:36 PM	**1.4509E+01**	5.866E+01	5.866E+01	1.814E+02	PCI/LITER			4.996E-1
TH-232	AWTA	0		6/22/2010 10:13:36 PM	**7.2677E+01**	6.986E+01	6.986E+01	2.493E+02	PCI/LITER			4.996E-1
TH-234	AWTA	0		6/22/2010 10:13:36 PM	**-4.0949E+02**	9.452E+02	9.452E+02	3.429E+03	PCI/LITER			4.996E-1
41625	**L25FA1DR**			**J0F1805651**	S-1 MWMP DUP				WATER 6/18/2010 10:00:00	6/15/2010		
CS-137	AWTA	0	R	6/23/2010 4:51:38 AM	**-7.3563E+00**	8.912E+00	8.912E+00	3.053E+01	PCI/LITER			4.995E-1
RA-228	AWTA	0	R	6/23/2010 4:51:38 AM	**9.8386E+01**	4.812E+01	4.812E+01	1.69E+02	PCI/LITER			4.995E-1
TH-232	AWTA	0	R	6/23/2010 4:51:38 AM	**1.0923E+01**	6.024E+01	6.024E+01	2.094E+02	PCI/LITER			4.995E-1
TH-234	AWTA	0	R	6/23/2010 4:51:38 AM	**8.3479E+02**	1.124E+03	1.124E+03	4.201E+03	PCI/LITER			4.995E-1
41625	**L26751AB**			**J0F210000162**	INTRA-LAB BLANK				WATER 6/18/2010 10:00:00	6/15/2010		
CS-137	AWTA	0	B	6/23/2010 4:52:07 AM	**9.686E+00**	9.016E+00	9.016E+00	3.42E+01	PCI/LITER			5.004E-1
RA-228	AWTA	0	B	6/23/2010 4:52:07 AM	**1.4872E+00**	6.121E+01	6.121E+01	1.74E+02	PCI/LITER			5.004E-1
TH-232	AWTA	0	B	6/23/2010 4:52:07 AM	**4.9688E+01**	6.885E+01	6.885E+01	2.436E+02	PCI/LITER			5.004E-1
TH-234	AWTA	0	B	6/23/2010 4:52:07 AM	**-6.2036E+01**	1.212E+03	1.212E+03	4.405E+03	PCI/LITER			5.004E-1
41625	**L26751CS**			**J0F210000162**	INTRA-LAB CHECK				WATER 6/18/2010 10:00:00	6/15/2010		
CS-137	AWTA	0	S	6/23/2010 8:17:31 AM	**4.2203E+02**	3.897E+01	3.897E+01	3.752E+01	PCI/LITER	4.1231E+02		5.004E-1

0172162,0172162, **Samples Inserted | Updated | NotUpdated => 7 | 0 | 0,
**Results Inserted | ReTestInserted | Updated | NotInserted => 25 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

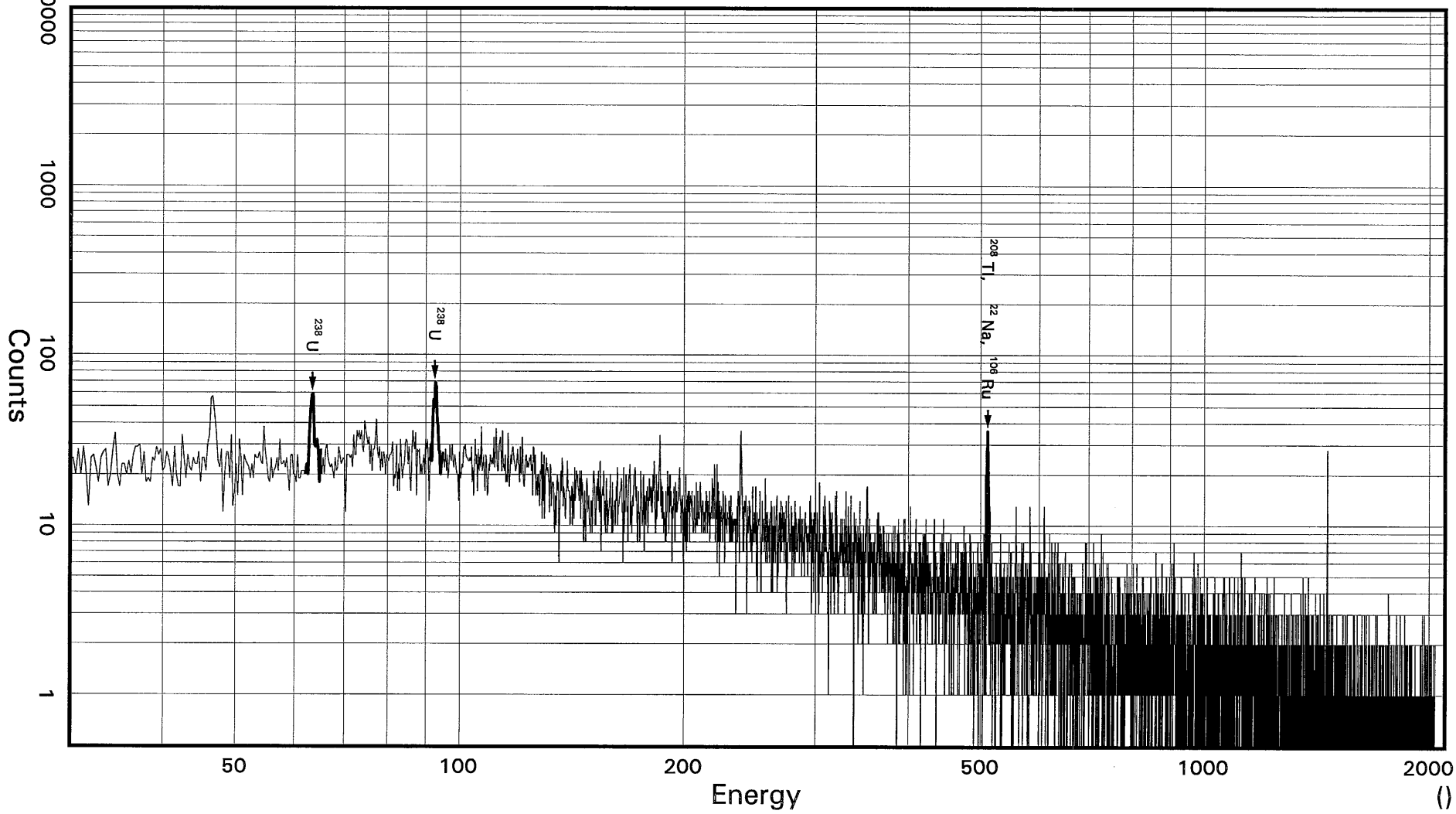
TAL Richland WA.

BRC WATER

Sample ID: L25FA1AC

Detector ID: GER5 1

Batch ID: 0172162



Acquisition Start: 22-JUN-2010 11:50:36.03

Preset Live Time: 0 03:20:00.00

Elapsed Live Time: 0 03:20:00.00

Energy Coefficients:

Offset: -3.45676E-01

Slope: 2.48775E-01

Quadrature: 2.91129E-09

SAMPLE IDENTIFICATION: L25FA1AC

CONFIGURATION ID: GER5:L25FA1AC_220601150
TITLE : BRC WATER
SAMPLE ID : L25FA1AC

REPORT DATE: 22-JUN-10
ACQUIRE DATE: 22-JUN-10 11:50:36
ELAPSED LIVE TIME: 12000.0 Sec
PRESET LIVE TIME: 0 03:20:00

SAMPLE DATE: 15-JUN-2010 00:00:00.00
CALIB DATE: 22-JUN-2010 04:06:40.12
ELAPSED LIVE TIME: 0 03:20:00
ELAPSED REAL TIME: 0 03:20:31

SAMPLE QUANTITY: 4.9950E-01
SAMPLE GEOMETRY: E500ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: -.3457E+00 keV
ENERGY SLOPE: 2.4878E-01 keV/C
ENERGY Q COEFF: 2.9113E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 8.5260E-01 keV
FWHM SLOPE: 2.3098E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 22-JUN-2010 15:11:18

```
Configuration     : RDND06$DKA100:[GER5.SAMPLE]L25FA1AC_220601150.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 22-JUN-2010 11:50:36
Sample ID         : L25FA1AC             Sample quantity  : 0.49950 LITER
Sample type       :                      Sample geometry  : E500ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:31.96   0.3%
Start energy      :    19.56             End energy       :  2037.82
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.43*	12	262	0.77	256.34	251	12	9.88E-04	314.8	
2	0	92.52*	85	340	1.11	373.28	368	15	7.08E-03	55.3	
3	0	510.92*	4	83	2.82	2055.09	2042	30	3.64E-04	814.1	

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

VMS Nuclide Identification Report V3.1 Generated 22-JUN-2010 15:11:18

Configuration : RDND06$DKA100:[GER5.SAMPLE]L25FA1AC_220601150.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 22-JUN-2010 11:50:36
Sample ID : L25FA1AC Sample quantity : 0.49950 LITER
Sample type : Sample geometry : E500ML
Elapsed live time: 0 03:20:00.00 Elapsed real time: 0 03:20:31.96 0.3%
Energy tolerance : 1.50 Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 5.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/LITER	Decay Corr PCI/LITER	1-Sigma %Error
U-238-TH	63.29	12	4.80*	1.627E+00	6.843E+01	6.843E+01	314.83
	92.59	85	5.58	1.845E+00	3.722E+02	3.722E+02	55.60

Flag: "*" = Keyline

Sample ID : L25FA1AC Acquisition date : 22-JUN-2010 11:50:36

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	510.92	4	83	2.82	2055.09	2042	30	3.64E-04	****	6.46E-01	T

Flags: "T" = Tentatively associated

Sample ID : L25FA1AC Acquisition date : 22-JUN-2010 11:50:36

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/LITER)	1-Sigma %Error	Rejected by
NA-22	2.60Y	0.01	511.00	180.76	1.698E+00	814.08	Abun.
			1274.54*	99.94	--- Not Found ---		
		% Abundances Found =		64.40			
RU-106	381.80D	0.02	511.86	20.40	1.517E+01	814.08	Abun.
			621.93*	9.93	--- Not Found ---		
		% Abundances Found =		67.26			
TL-208	1.41E+10Y	0.00	277.37	6.60	--- Not Found ---		Abun.
			510.77	22.60	1.350E+01	814.08	
			583.19*	85.00	--- Not Found ---		
			860.56	12.50	--- Not Found ---		
		% Abundances Found =		17.84			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 22-JUN-2010 15:11:19

Configuration : RDND06$DKA100:[GER5.SAMPLE]L25FA1AC_220601150.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 : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 22-JUN-2010 11:50:36
Sample ID : L25FA1AC Sample quantity : 0.49950 LITER
Sample type : Sample geometry : E500ML
Elapsed live time: 0 03:20:00.00 Elapsed real time: 0 03:20:31.96 0.3%
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 (PCI/LITER)	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
U-238-TH	6.843E+01	2.155E+02	4.707E+02	1.478E+01	0.145

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	1.609E+01		8.524E+01	2.997E+02	1.340E+01	0.054
NA-22	-1.346E+01		9.380E+00	3.088E+01	9.686E-01	-0.436
K-40	-1.110E+03		2.525E+02	9.987E+02	3.104E+01	-1.112
CR-51	5.317E+01		8.442E+01	3.012E+02	3.899E+01	0.177
MN-54	-3.983E+00		8.870E+00	3.108E+01	1.089E+00	-0.128
CO-57	3.750E+01		5.292E+01	1.851E+02	6.878E+00	0.203
CO-60	-3.847E+00		9.784E+00	3.502E+01	1.070E+00	-0.110
ZN-65	-4.567E+01		2.187E+01	6.922E+01	2.266E+00	-0.660
SR-85	3.644E+01		1.330E+01	4.336E+01	2.183E+00	0.840
Y-88	5.778E+00		8.168E+00	3.432E+01	1.062E+00	0.168
RU-106	-3.623E+01		8.478E+01	2.986E+02	1.278E+01	-0.121
SB-125	1.732E+01		2.365E+01	8.553E+01	3.205E+00	0.203
I-131	2.693E+01		1.813E+01	6.577E+01	4.848E+00	0.410
BA-133	1.155E+00		1.195E+01	4.197E+01	3.587E+00	0.028
CS-134	-7.152E+00		1.076E+01	3.713E+01	1.347E+00	-0.193
CS-137	8.423E-01		9.444E+00	3.418E+01	1.326E+00	0.025
CE-144	-6.738E+01		5.110E+01	1.703E+02	6.307E+00	-0.396
EU-152	1.056E-01		2.705E+01	9.484E+01	9.565E+00	0.001
EU-154	-3.827E+01		2.668E+01	8.783E+01	2.755E+00	-0.436
EU-155	7.152E+00		2.879E+01	9.978E+01	3.429E+00	0.072
BI-207	1.019E+01		8.653E+00	3.160E+01	1.488E+00	0.322
TL-208	-1.342E+01		1.212E+01	4.247E+01	1.957E+00	-0.316
BI-212	8.241E+01		1.376E+02	5.051E+02	2.234E+01	0.163
PB-212	-2.810E+01		2.136E+01	6.647E+01	5.066E+00	-0.423
BI-214	-8.326E+01		8.537E+01	3.462E+02	1.078E+01	-0.240
PB-214	-1.617E+01		2.416E+01	8.110E+01	7.374E+00	-0.199
RA-223	3.841E+00		5.181E+01	1.763E+02	1.669E+01	0.022

Sample ID : L25FA1AC Acquisition date : 22-JUN-2010 11:50:36

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
RA-224	-2.832E+01		2.152E+01	6.697E+01	5.104E+00	-0.423
RA-226	-6.792E+01		2.630E+01	8.248E+01	3.625E+00	-0.824
AC-227	-1.903E+02		4.568E+01	1.267E+02	9.466E+00	-1.502
AC-228	-3.708E+01		5.009E+01	1.744E+02	5.693E+00	-0.213
RA-228	-3.717E+01		5.022E+01	1.748E+02	5.707E+00	-0.213
TH-228	-3.761E+01		3.397E+01	1.191E+02	5.487E+00	-0.316
TH-232	1.486E+01		6.442E+01	2.273E+02	2.461E+01	0.065
TH-234	-3.626E+02		1.080E+03	3.901E+03	1.285E+02	-0.093
U-234	-5.267E+01		4.375E+01	1.335E+02	1.491E+01	-0.395
U-235	8.907E+01		5.136E+01	1.827E+02	6.848E+00	0.488
U-238	-1.617E+01		2.416E+01	8.110E+01	7.374E+00	-0.199
AM-241	-1.503E+01		2.101E+01	6.423E+01	2.054E+00	-0.234

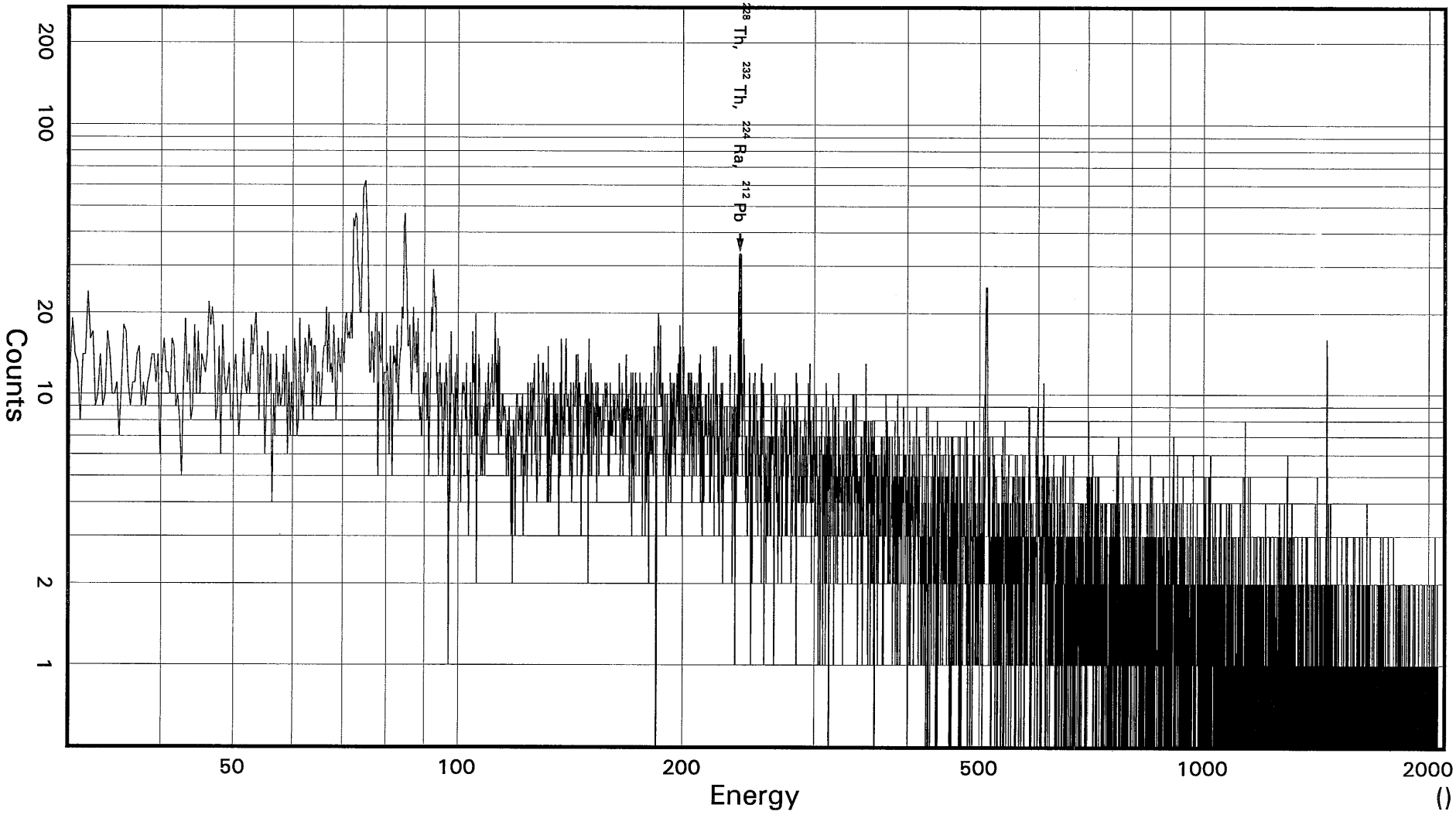
TAL Richland WA.

BRC WATER

Sample ID: L25FA1AD

Detector ID: GER7 1

Batch ID: 0172162



Acquisition Start: 23-JUN-2010 04:51:37.96

Preset Live Time: 0 08:20:00.00

Elapsed Live Time: 0 03:20:00.00

Energy Coefficients:

Offset: 7.01771E-01

Slope: 2.49518E-01

Quadrature: 2.31484E-07

SAMPLE IDENTIFICATION: L25FA1AD

CONFIGURATION ID: GER7:L25FA1AD_230600451
TITLE : BRC WATER
SAMPLE ID : L25FA1AD

REPORT DATE: 23-JUN-10
ACQUIRE DATE: 23-JUN-10 04:51:37
ELAPSED LIVE TIME: 12000.0 Sec
PRESET LIVE TIME: 0 08:20:00

SAMPLE DATE: 15-JUN-2010 00:00:00.00
CALIB DATE: 23-JUN-2010 04:23:58.62
ELAPSED LIVE TIME: 0 03:20:00
ELAPSED REAL TIME: 0 03:20:01

SAMPLE QUANTITY: 4.9950E-01
SAMPLE GEOMETRY: 500ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: 7.0177E-01 keV
ENERGY SLOPE: 2.4952E-01 keV/C
ENERGY Q COEFF: 2.3148E-07 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 5.0476E-01 keV
FWHM SLOPE: 3.9117E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 23-JUN-2010 08:11:49

```
Configuration     : RDND07$DKA100:[GER7.SAMPLE]L25FA1AD_230600451.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 23-JUN-2010 04:51:37
Sample ID         : L25FA1AD             Sample quantity  : 0.49950 LITER
Sample type       :                      Sample geometry  : 500ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:01.09   0.0%
Start energy      :    20.66             End energy       :  2060.28
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	238.48*	4	80	0.73	952.10	948	9	3.19E-04	518.1	0.00E+00

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

VMS Nuclide Identification Report V3.1 Generated 23-JUN-2010 08:11:49

```
Configuration     : RDND07$DKA100:[GER7.SAMPLE]L25FA1AD_230600451.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 23-JUN-2010 04:51:37
Sample ID         : L25FA1AD             Sample quantity  : 0.49950 LITER
Sample type       :                      Sample geometry  : 500ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:01.09   0.0%
Energy tolerance :     1.50              Half life ratio  :     8.00
Errors propagated: Yes                   Systematic Error :     5.00 %
Efficiency type  : Empirical             Efficiencies at  : Peak Energy
Abundance limit  :    80.00
```

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/LITER	Decay Corr PCI/LITER	1-Sigma %Error
PB-212	238.63	4	43.60*	1.139E+00	3.478E+00	3.478E+00	518.17
	300.09	------	3.30	9.537E-01	------	Line Not Found	------

Flag: "*" = Keyline

None

Flags: "T" = Tentatively associated

Sample ID : L25FA1AD Acquisition date : 23-JUN-2010 04:51:37

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/LITER)	1-Sigma %Error	Rejected by
RA-224	1.91Y	0.01	238.63*	43.60	3.506E+00	518.17	Abun.
			240.99	4.10	--- Not Found ---		
			583.19	30.55	--- Not Found ---		
			860.56	4.49	--- Not Found ---		
		% Abundances Found =		52.70			
TH-228	1.91Y	0.01	238.63	43.60	3.506E+00	518.17	Abun.
			240.98	4.10	--- Not Found ---		
			583.19*	30.55	--- Not Found ---		
			860.56	4.49	--- Not Found ---		
		% Abundances Found =		52.70			
TH-232	1.41E+10Y	0.00	238.63	43.60	3.478E+00	518.17	Abun.
			338.32*	11.27	--- Not Found ---		
			583.19	30.55	--- Not Found ---		
			911.20	25.80	--- Not Found ---		
			968.97	15.80	--- Not Found ---		
		% Abundances Found =		34.33			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 23-JUN-2010 08:11:50

Configuration : RDND07$DKA100:[GER7.SAMPLE]L25FA1AD_230600451.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 : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 23-JUN-2010 04:51:37
Sample ID : L25FA1AD Sample quantity : 0.49950 LITER
Sample type : Sample geometry : 500ML
Elapsed live time: 0 03:20:00.00 Elapsed real time: 0 03:20:01.09 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 (PCI/LITER)	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
PB-212	3.478E+00	1.802E+01	4.587E+01	1.870E+00	0.076

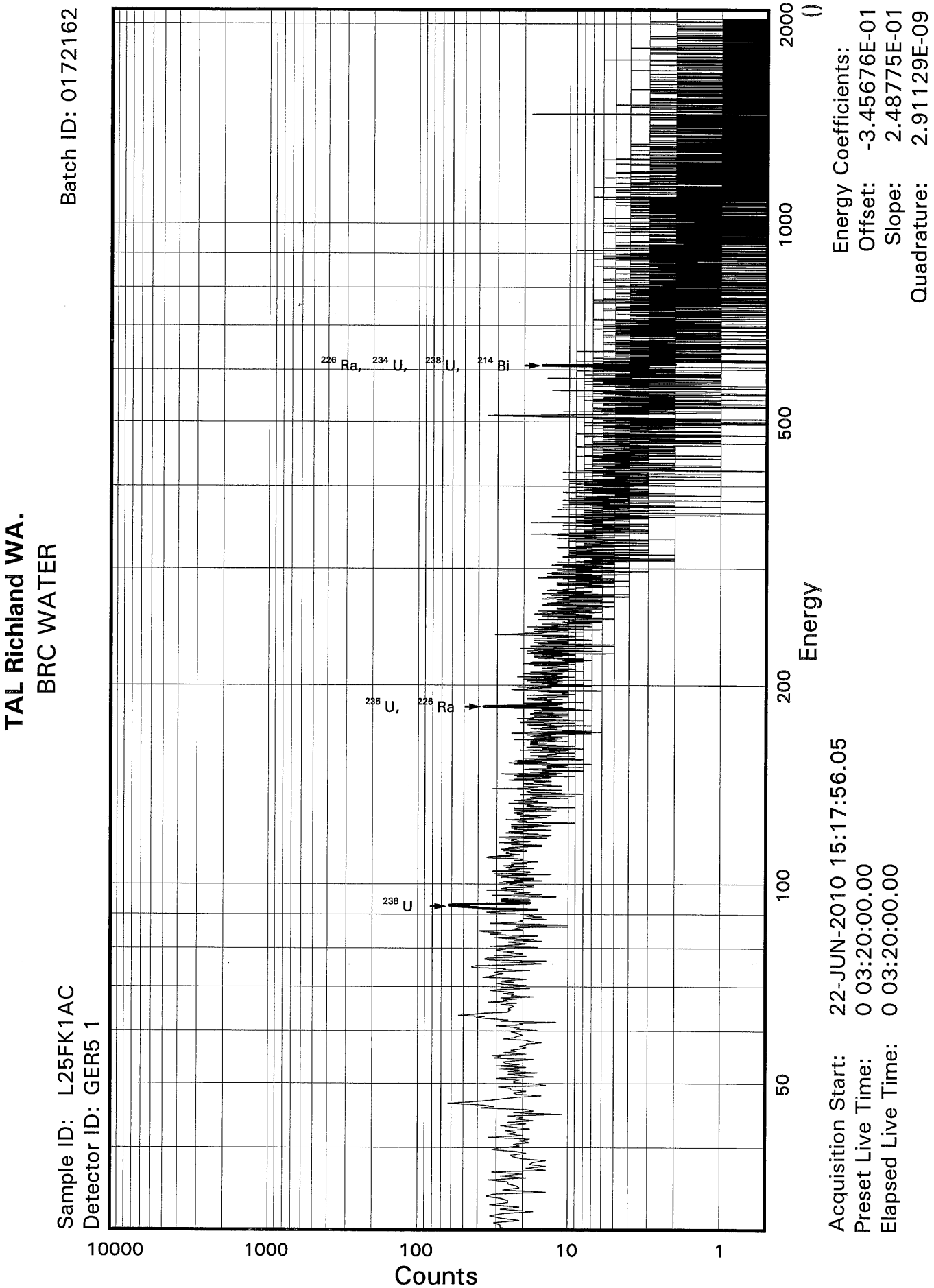
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	1.270E+01		7.861E+01	2.786E+02	1.171E+01	0.046
NA-22	8.777E+00		8.280E+00	3.319E+01	1.398E+00	0.264
K-40	-3.578E+02		2.007E+02	7.933E+02	3.445E+01	-0.451
CR-51	-2.875E+01		7.697E+01	2.636E+02	1.155E+01	-0.109
MN-54	1.548E+01		8.297E+00	3.309E+01	1.182E+00	0.468
CO-57	-2.556E+01		3.808E+01	1.307E+02	4.537E+00	-0.196
CO-60	-7.748E+00		7.094E+00	2.467E+01	1.135E+00	-0.314
ZN-65	-3.533E+01		1.937E+01	6.214E+01	2.214E+00	-0.569
SR-85	-8.461E+01		1.526E+01	3.914E+01	1.708E+00	-2.162
Y-88	1.169E+01		9.711E+00	4.082E+01	1.272E+00	0.286
RU-106	-5.478E+01		7.961E+01	2.755E+02	1.099E+01	-0.199
SB-125	-2.265E+00		2.013E+01	7.170E+01	2.835E+00	-0.032
I-131	-1.249E+00		1.487E+01	5.318E+01	2.151E+00	-0.023
BA-133	2.699E+00		1.033E+01	3.615E+01	1.490E+00	0.075
CS-134	2.321E-01		9.030E+00	3.316E+01	1.209E+00	0.007
CS-137	-7.356E+00		8.912E+00	3.053E+01	1.152E+00	-0.241
CE-144	-2.054E+01		3.383E+01	1.168E+02	4.049E+00	-0.176
EU-152	-3.399E+01		2.315E+01	7.489E+01	3.159E+00	-0.454
EU-154	2.844E+01		2.312E+01	9.399E+01	3.959E+00	0.303
EU-155	5.996E+01		1.878E+01	7.013E+01	2.435E+00	0.855
BI-207	-3.305E+00		7.548E+00	2.664E+01	1.122E+00	-0.124
TL-208	7.884E+00		1.169E+01	4.131E+01	1.718E+00	0.191
BI-212	-1.936E+01		1.228E+02	4.341E+02	1.900E+01	-0.045
BI-214	-8.296E+01		7.717E+01	2.736E+02	9.310E+00	-0.303
PB-214	-1.071E+01		2.188E+01	6.809E+01	2.831E+00	-0.157
RA-223	-6.457E+01		3.873E+01	1.267E+02	5.357E+00	-0.510
RA-224	3.506E+00	+	1.817E+01	5.764E+01	2.350E+00	0.061

Sample ID : L25FA1AD Acquisition date : 23-JUN-2010 04:51:37

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
RA-226	-5.884E+00		2.607E+01	8.033E+01	3.252E+00	-0.073
AC-227	-1.665E+01		3.300E+01	9.725E+01	3.950E+00	-0.171
AC-228	9.812E+01		4.798E+01	1.686E+02	5.788E+00	0.582
RA-228	9.839E+01		4.812E+01	1.690E+02	5.804E+00	0.582
TH-228	2.212E+01		3.279E+01	1.159E+02	4.820E+00	0.191
TH-232	1.092E+01		6.024E+01	2.094E+02	8.929E+00	0.052
TH-234	8.348E+02		1.124E+03	4.201E+03	1.474E+02	0.199
U-234	6.614E+01		3.254E+01	1.202E+02	5.195E+00	0.550
U-235	5.863E+01		3.733E+01	1.367E+02	4.781E+00	0.429
U-238	-1.071E+01		2.188E+01	6.809E+01	2.831E+00	-0.157
U-238-TH	-1.058E+02		1.989E+02	5.932E+02	2.124E+01	-0.178
AM-241	2.089E+00		2.323E+01	8.156E+01	3.028E+00	0.026


TAL Richland WA.
BRC WATER
Batch ID: 0172162
Sample ID: L25FK1AC
Detector ID: GER5 1
226 Ra, 234 U, 238 U, 214 Bi
235 U, 226 Ra
238 U
10000
1000
100
10
1
Counts
50
100
200
500
1000
2000
()
Energy
Acquisition Start: 22-JUN-2010 15:17:56.05
Preset Live Time: 0 03:20:00.00
Elapsed Live Time: 0 03:20:00.00
Energy Coefficients:
Offset: -3.45676E-01
Slope: 2.48775E-01
Quadrature: 2.91129E-09

SAMPLE IDENTIFICATION: L25FK1AC

CONFIGURATION ID: GER5:L25FK1AC_220601517
TITLE : BRC WATER
SAMPLE ID : L25FK1AC

REPORT DATE: 22-JUN-10
ACQUIRE DATE: 22-JUN-10 15:17:56
ELAPSED LIVE TIME: 12000.0 Sec
PRESET LIVE TIME: 0 03:20:00

SAMPLE DATE: 15-JUN-2010 00:00:00.00
CALIB DATE: 22-JUN-2010 04:06:40.12
ELAPSED LIVE TIME: 0 03:20:00
ELAPSED REAL TIME: 0 03:20:31

SAMPLE QUANTITY: 1.9840E-01
SAMPLE GEOMETRY: E200ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: -.3457E+00 keV
ENERGY SLOPE: 2.4878E-01 keV/C
ENERGY Q COEFF: 2.9113E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 8.5260E-01 keV
FWHM SLOPE: 2.3098E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 22-JUN-2010 18:38:35

```
Configuration     : RDND06$DKA100:[GER5.SAMPLE]L25FK1AC_220601517.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 22-JUN-2010 15:17:56
Sample ID         : L25FK1AC             Sample quantity  : 0.19840 LITER
Sample type       :                      Sample geometry  : E200ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:31.08   0.3%
Start energy      :    19.56             End energy       :  2037.82
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.55*	26	214	0.54	188.52	183	12	2.13E-03	136.2	
2	0	92.54*	55	249	1.37	373.36	369	12	4.55E-03	72.4	
3	0	185.63*	40	161	0.84	747.54	740	16	3.31E-03	85.8	
4	0	608.81*	2	78	1.26	2448.55	2437	26	1.95E-04	*****	

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

VMS Nuclide Identification Report V3.1 Generated 22-JUN-2010 18:38:36

```
Configuration     : RDND06$DKA100:[GER5.SAMPLE]L25FK1AC_220601517.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 22-JUN-2010 15:17:56
Sample ID         : L25FK1AC             Sample quantity  : 0.19840 LITER
Sample type       :                      Sample geometry  : E200ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:31.08   0.3%
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

Flag: "*" = Keyline

Unidentified Energy Lines

Sample ID : L25FK1AC

Acquisition date : 22-JUN-2010 15:17:56

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.55	26	214	0.54	188.52	183	12	2.13E-03	****	2.79E+00	
0	92.54	55	249	1.37	373.36	369	12	4.55E-03	72.4	4.01E+00	T
0	185.63	40	161	0.84	747.54	740	16	3.31E-03	85.8	3.03E+00	T
0	608.81	2	78	1.26	2448.55	2437	26	1.95E-04	****	1.11E+00	T

Flags: "T" = Tentatively associated

Sample ID : L25FK1AC Acquisition date : 22-JUN-2010 15:17:56

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/LITER)	1-Sigma %Error	Rejected by
BI-214	4.47E+09Y	0.00	609.31	46.10	5.179E+00	1168.77	Abun.
			1120.29	15.10	--- Not Found ---		
			1764.49*	15.40	--- Not Found ---		
		% Abundances Found =		60.18			
RA-226	1600.00Y	0.00	186.21	3.59	4.143E+02	86.14	Abun.
			295.22	19.30	--- Not Found ---		
			351.93	37.60	--- Not Found ---		
			609.31*	46.10	5.179E+00	1168.77	
			1120.29	15.10	--- Not Found ---		
			1764.49	15.40	--- Not Found ---		
		% Abundances Found =		36.25			
U-234	4.47E+09Y	0.00	242.00	7.43	--- Not Found ---		Abun.
			295.22*	19.30	--- Not Found ---		
			351.93	37.60	--- Not Found ---		
			609.31	46.10	5.179E+00	1168.77	
		% Abundances Found =		41.75			
U-235	7.04E+08Y	0.00	143.76*	10.96	--- Not Found ---		Abun.
			185.71	57.20	2.600E+01	86.14	
			205.31	5.01	--- Not Found ---		
		% Abundances Found =		78.17			
U-238	4.47E+09Y	0.00	242.00	7.43	--- Not Found ---		Abun.
			295.22	19.30	--- Not Found ---		
			351.93*	37.60	--- Not Found ---		
			609.31	46.10	5.179E+00	1168.77	
		% Abundances Found =		41.75			
U-238-TH	4.47E+09Y	0.00	63.29*	4.80	--- Not Found ---		Abun.
			92.59	5.58	2.772E+02	72.66	
		% Abundances Found =		53.76			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 22-JUN-2010 18:38:37

Configuration : RDND06$DKA100:[GER5.SAMPLE]L25FK1AC_220601517.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 : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 22-JUN-2010 15:17:56
Sample ID : L25FK1AC Sample quantity : 0.19840 LITER
Sample type : Sample geometry : E200ML
Elapsed live time: 0 03:20:00.00 Elapsed real time: 0 03:20:31.08 0.3%
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

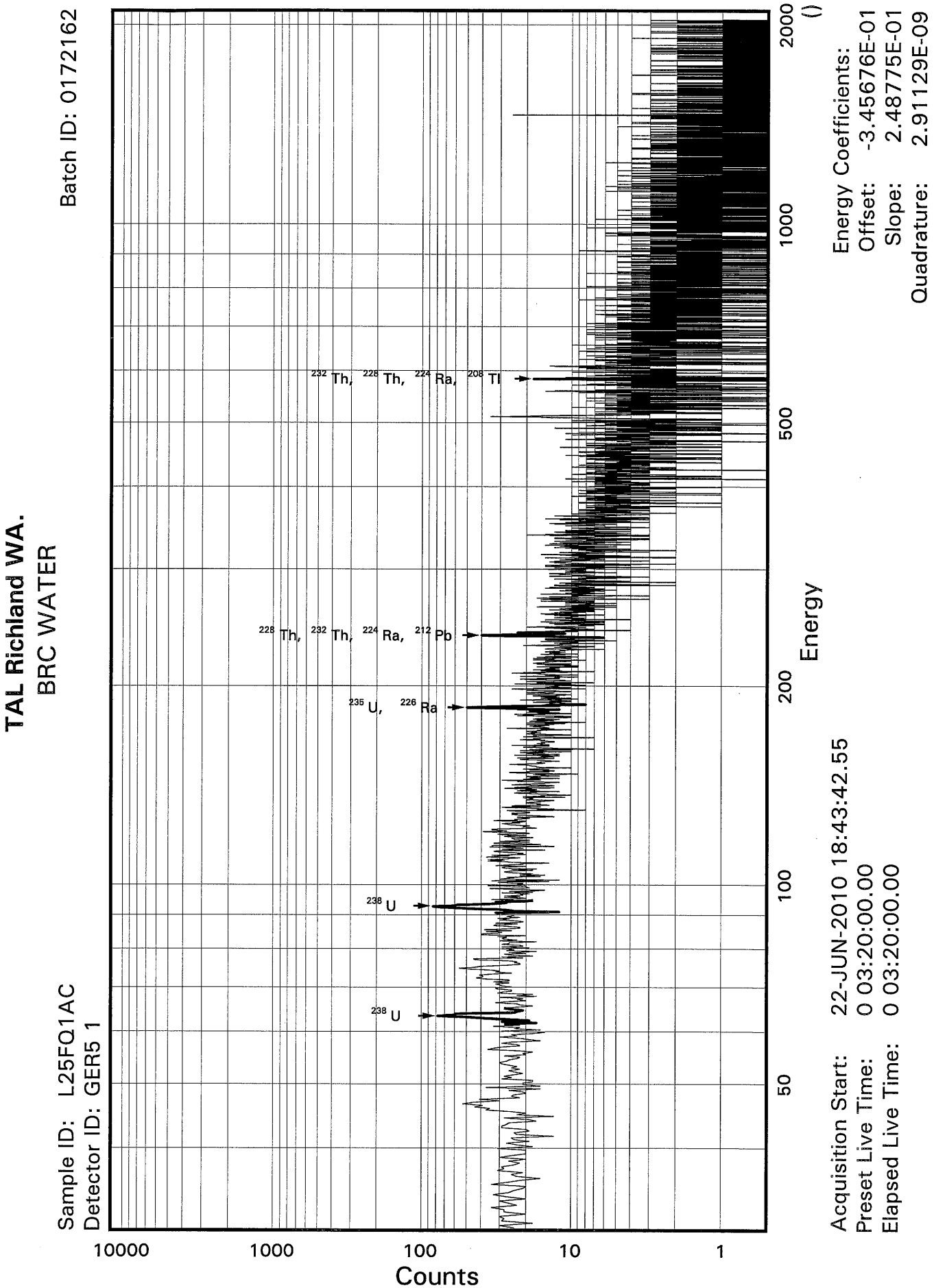
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	-1.297E+02		1.060E+02	3.505E+02	1.445E+01	-0.370
NA-22	9.228E+00		1.101E+01	4.378E+01	1.368E+00	0.211
K-40	-2.031E+03		3.295E+02	1.230E+03	3.903E+01	-1.651
CR-51	-3.924E+01		1.029E+02	3.561E+02	7.326E+01	-0.110
MN-54	-4.584E+00		1.145E+01	4.022E+01	1.637E+00	-0.114
CO-57	-1.616E+02		6.383E+01	2.046E+02	6.969E+00	-0.790
CO-60	2.095E+00		1.218E+01	4.572E+01	1.432E+00	0.046
ZN-65	-3.325E+01		2.626E+01	8.848E+01	2.847E+00	-0.376
SR-85	-1.208E+02		2.049E+01	5.208E+01	2.314E+00	-2.320
Y-88	1.063E+01		1.154E+01	4.903E+01	1.528E+00	0.217
RU-106	-1.471E+02		1.050E+02	3.512E+02	1.743E+01	-0.419
SB-125	1.345E+01		3.002E+01	1.073E+02	3.953E+00	0.125
I-131	-3.043E+01		2.063E+01	6.756E+01	7.246E+00	-0.450
BA-133	-2.387E+01		1.431E+01	4.599E+01	5.894E+00	-0.519
CS-134	2.089E+01		1.367E+01	5.242E+01	2.296E+00	0.399
CS-137	4.539E+00		1.333E+01	4.834E+01	2.478E+00	0.094
CE-144	1.189E+02		6.020E+01	2.149E+02	7.265E+00	0.553
EU-152	-8.748E+00		3.243E+01	1.127E+02	1.752E+01	-0.078
EU-154	2.625E+01		3.133E+01	1.245E+02	3.891E+00	0.211
EU-155	2.148E+01		3.251E+01	1.136E+02	3.683E+00	0.189
BI-207	2.292E+01		1.135E+01	4.239E+01	2.004E+00	0.541
TL-208	-3.037E+01		1.507E+01	5.082E+01	2.435E+00	-0.598
BI-212	1.319E+02		1.737E+02	6.428E+02	3.430E+01	0.205
PB-212	-4.792E+01		2.614E+01	7.911E+01	8.217E+00	-0.606
BI-214	-2.252E+02		1.179E+02	4.517E+02	1.421E+01	-0.499
PB-214	-6.195E+01		2.994E+01	9.177E+01	1.265E+01	-0.675
RA-223	5.844E+01		6.077E+01	2.104E+02	2.915E+01	0.278
RA-224	-4.828E+01		2.634E+01	7.972E+01	8.280E+00	-0.606
RA-226	5.179E+00	+	6.053E+01	1.194E+02	5.863E+00	0.043
AC-227	-1.805E+02		5.468E+01	1.563E+02	1.580E+01	-1.155
AC-228	-9.140E+01		6.139E+01	2.069E+02	7.187E+00	-0.442
RA-228	-9.163E+01		6.155E+01	2.075E+02	7.206E+00	-0.442
TH-228	-8.515E+01		4.225E+01	1.425E+02	6.826E+00	-0.598

Sample ID : L25FK1AC Acquisition date : 22-JUN-2010 15:17:56

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
TH-232	1.508E+02		8.926E+01	3.123E+02	5.263E+01	0.483
TH-234	1.516E+03		1.351E+03	5.304E+03	1.802E+02	0.286
U-234	-5.804E+01		5.279E+01	1.598E+02	2.735E+01	-0.363
U-235	4.271E+01		6.162E+01	2.150E+02	7.466E+00	0.199
U-238	-6.195E+01		2.994E+01	9.177E+01	1.265E+01	-0.675
U-238-TH	-2.406E+02		1.974E+02	6.165E+02	1.922E+01	-0.390
AM-241	1.447E+01		2.099E+01	7.182E+01	2.270E+00	0.201


TAL Richland WA.
BRC WATER
Batch ID: 0172162
Sample ID: L25FQ1AC
Detector ID: GER5 1
232 Th, 228 Th, 224 Ra, 208 Tl
228 Th, 232 Th, 224 Ra, 212 Pb
235 U, 226 Ra
238 U
238 U
Counts
10000
1000
100
10
1
Energy
50
100
200
500
1000
2000
()
Acquisition Start: 22-JUN-2010 18:43:42.55
Preset Live Time: 0 03:20:00.00
Elapsed Live Time: 0 03:20:00.00
Energy Coefficients:
Offset: -3.45676E-01
Slope: 2.48775E-01
Quadrature: 2.91129E-09

SAMPLE IDENTIFICATION: L25FQ1AC

CONFIGURATION ID: GER5:L25FQ1AC_220601843
TITLE : BRC WATER
SAMPLE ID : L25FQ1AC

REPORT DATE: 22-JUN-10
ACQUIRE DATE: 22-JUN-10 18:43:42
ELAPSED LIVE TIME: 12000.0 Sec
PRESET LIVE TIME: 0 03:20:00

SAMPLE DATE: 15-JUN-2010 00:00:00.00
CALIB DATE: 22-JUN-2010 04:06:40.12
ELAPSED LIVE TIME: 0 03:20:00
ELAPSED REAL TIME: 0 03:20:32

SAMPLE QUANTITY: 4.9960E-01
SAMPLE GEOMETRY: E500ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: -.3457E+00 keV
ENERGY SLOPE: 2.4878E-01 keV/C
ENERGY Q COEFF: 2.9113E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 8.5260E-01 keV
FWHM SLOPE: 2.3098E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 22-JUN-2010 22:04:26

```
Configuration     : RDND06$DKA100:[GER5.SAMPLE]L25FQ1AC_220601843.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 22-JUN-2010 18:43:42
Sample ID         : L25FQ1AC             Sample quantity  : 0.49960 LITER
Sample type       :                      Sample geometry  : E500ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:32.04   0.3%
Start energy      :    19.56             End energy       :  2037.82
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.39*	10	361	0.77	256.18	249	14	8.45E-04	437.4	
2	0	77.15*	15	271	0.48	311.50	307	12	1.27E-03	233.1	
3	0	92.91*	140	406	1.11	374.85	365	17	1.17E-02	37.8	
4	0	185.65*	92	240	0.96	747.63	737	19	7.66E-03	46.2	
5	0	238.61*	24	193	0.97	960.51	953	19	1.99E-03	157.9	
6	0	583.25*	28	25	1.78	2345.83	2337	18	2.34E-03	58.3	

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

VMS Nuclide Identification Report V3.1 Generated 22-JUN-2010 22:04:26

```
Configuration     : RDND06$DKA100:[GER5.SAMPLE]L25FQ1AC_220601843.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 22-JUN-2010 18:43:42
Sample ID         : L25FQ1AC             Sample quantity  : 0.49960 LITER
Sample type       :                      Sample geometry  : E500ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:32.04   0.3%
Energy tolerance :     1.50              Half life ratio  :     8.00
Errors propagated: Yes                   Systematic Error :     5.00 %
Efficiency type  : Empirical             Efficiencies at  : Peak Energy
Abundance limit  :    80.00
```

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/LITER	Decay Corr PCI/LITER	1-Sigma %Error
PB-212	238.63	24	43.60*	1.192E+00	2.066E+01	2.066E+01	158.16
	300.09	------	3.30	9.987E-01	------	Line Not Found	------
RA-224	238.63	24	43.60*	1.192E+00	2.066E+01	2.082E+01	158.16
	240.99	------	4.10	1.183E+00	------	Line Not Found	------
	583.19	28	30.55	5.795E-01	7.149E+01	7.205E+01	58.71
	860.56	------	4.49	4.231E-01	------	Line Not Found	------
TH-228	238.63	24	43.60	1.192E+00	2.066E+01	2.082E+01	158.16
	240.98	------	4.10	1.183E+00	------	Line Not Found	------
	583.19	28	30.55*	5.795E-01	7.149E+01	7.205E+01	58.71
	860.56	------	4.49	4.231E-01	------	Line Not Found	------
U-238-TH	63.29	10	4.80*	1.626E+00	5.857E+01	5.857E+01	437.46
	92.59	140	5.58	1.845E+00	6.148E+02	6.148E+02	38.24

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : L25FQ1AC Acquisition date : 22-JUN-2010 18:43:42

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	77.15	15	271	0.48	311.50	307	12	1.27E-03	****	1.80E+00	
0	185.65	92	240	0.96	747.63	737	19	7.66E-03	46.2	1.42E+00	T

Flags: "T" = Tentatively associated

Sample ID : L25FQ1AC Acquisition date : 22-JUN-2010 18:43:42

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/LITER)	1-Sigma %Error	Rejected by
TL-208	1.41E+10Y	0.00	277.37	6.60	--- Not Found ---		Abun.
			510.77	22.60	--- Not Found ---		
			583.19*	85.00	2.569E+01	58.71	
			860.56	12.50	--- Not Found ---		
		% Abundances Found =		67.09			
RA-226	1600.00Y	0.00	186.21	3.59	8.132E+02	46.71	Abun.
			295.22	19.30	--- Not Found ---		
			351.93	37.60	--- Not Found ---		
			609.31*	46.10	--- Not Found ---		
			1120.29	15.10	--- Not Found ---		
			1764.49	15.40	--- Not Found ---		
		% Abundances Found =		2.62			
TH-232	1.41E+10Y	0.00	238.63	43.60	2.066E+01	158.16	Abun.
			338.32*	11.27	--- Not Found ---		
			583.19	30.55	7.149E+01	58.71	
			911.20	25.80	--- Not Found ---		
			968.97	15.80	--- Not Found ---		
		% Abundances Found =		58.38			
U-235	7.04E+08Y	0.00	143.76*	10.96	--- Not Found ---		Abun.
			185.71	57.20	5.103E+01	46.71	
			205.31	5.01	--- Not Found ---		
		% Abundances Found =		78.17			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 22-JUN-2010 22:04:27

Configuration : RDND06$DKA100:[GER5.SAMPLE]L25FQ1AC_220601843.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 : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 22-JUN-2010 18:43:42
Sample ID : L25FQ1AC Sample quantity : 0.49960 LITER
Sample type : Sample geometry : E500ML
Elapsed live time: 0 03:20:00.00 Elapsed real time: 0 03:20:32.04 0.3%
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 (PCI/LITER)	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
PB-212	2.066E+01	3.268E+01	5.192E+01	3.957E+00	0.398
RA-224	2.082E+01	3.294E+01	5.233E+01	3.988E+00	0.398
TH-228	7.205E+01	4.230E+01	8.474E+01	3.906E+00	0.850
U-238-TH	5.857E+01	2.562E+02	4.845E+02	1.521E+01	0.121

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	-5.326E+01		8.272E+01	2.815E+02	1.258E+01	-0.189
NA-22	-6.905E+00		8.448E+00	2.954E+01	9.267E-01	-0.234
K-40	-1.228E+03		2.528E+02	9.839E+02	3.058E+01	-1.248
CR-51	-1.368E+02		9.160E+01	2.994E+02	3.875E+01	-0.457
MN-54	-8.890E-01		8.664E+00	3.104E+01	1.088E+00	-0.029
CO-57	-4.755E+01		5.568E+01	1.877E+02	6.975E+00	-0.253
CO-60	-8.125E+00		8.429E+00	2.903E+01	8.873E-01	-0.280
ZN-65	-3.861E+01		1.969E+01	6.270E+01	2.053E+00	-0.616
SR-85	-8.966E+01		1.641E+01	4.268E+01	2.149E+00	-2.101
Y-88	2.700E+00		8.751E+00	3.503E+01	1.084E+00	0.077
RU-106	2.710E+02		9.220E+01	3.609E+02	1.545E+01	0.751
SB-125	9.547E+00		2.614E+01	9.259E+01	3.470E+00	0.103
I-131	-1.033E+01		1.806E+01	6.194E+01	4.566E+00	-0.167
BA-133	4.048E+00		1.183E+01	4.189E+01	3.579E+00	0.097
CS-134	2.564E+01		1.070E+01	4.235E+01	1.536E+00	0.605
CS-137	-7.214E+00		9.743E+00	3.376E+01	1.310E+00	-0.214
CE-144	-1.710E+01		5.237E+01	1.790E+02	6.630E+00	-0.096
EU-152	7.528E+00		2.842E+01	1.001E+02	1.010E+01	0.075
EU-154	-1.964E+01		2.402E+01	8.402E+01	2.635E+00	-0.234
EU-155	3.960E+00		2.907E+01	1.005E+02	3.454E+00	0.039
BI-207	1.193E+01		8.815E+00	3.233E+01	1.522E+00	0.369
TL-208	2.569E+01	+	1.509E+01	4.602E+01	2.121E+00	0.558
BI-212	-1.367E+02		1.407E+02	4.783E+02	2.116E+01	-0.286
BI-214	-2.477E+02		7.442E+01	2.705E+02	8.424E+00	-0.916

Sample ID : L25FQ1AC Acquisition date : 22-JUN-2010 18:43:42

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
PB-214	-5.877E+01		2.461E+01	7.608E+01	6.917E+00	-0.773
RA-223	5.578E+01		5.306E+01	1.842E+02	1.745E+01	0.303
RA-226	-7.839E+01		2.807E+01	8.746E+01	3.844E+00	-0.896
AC-227	2.038E+01		4.228E+01	1.251E+02	9.343E+00	0.163
AC-228	-7.684E+01		4.971E+01	1.666E+02	5.439E+00	-0.461
RA-228	-7.703E+01		4.984E+01	1.670E+02	5.453E+00	-0.461
TH-232	-2.994E+00		6.982E+01	2.434E+02	2.635E+01	-0.012
TH-234	1.453E+03		1.026E+03	4.093E+03	1.348E+02	0.355
U-234	-1.662E+01		4.326E+01	1.366E+02	1.527E+01	-0.122
U-235	4.168E+01		5.432E+01	1.895E+02	7.102E+00	0.220
U-238	-5.877E+01		2.461E+01	7.608E+01	6.917E+00	-0.773
AM-241	-4.192E+01		2.379E+01	6.458E+01	2.065E+00	-0.649

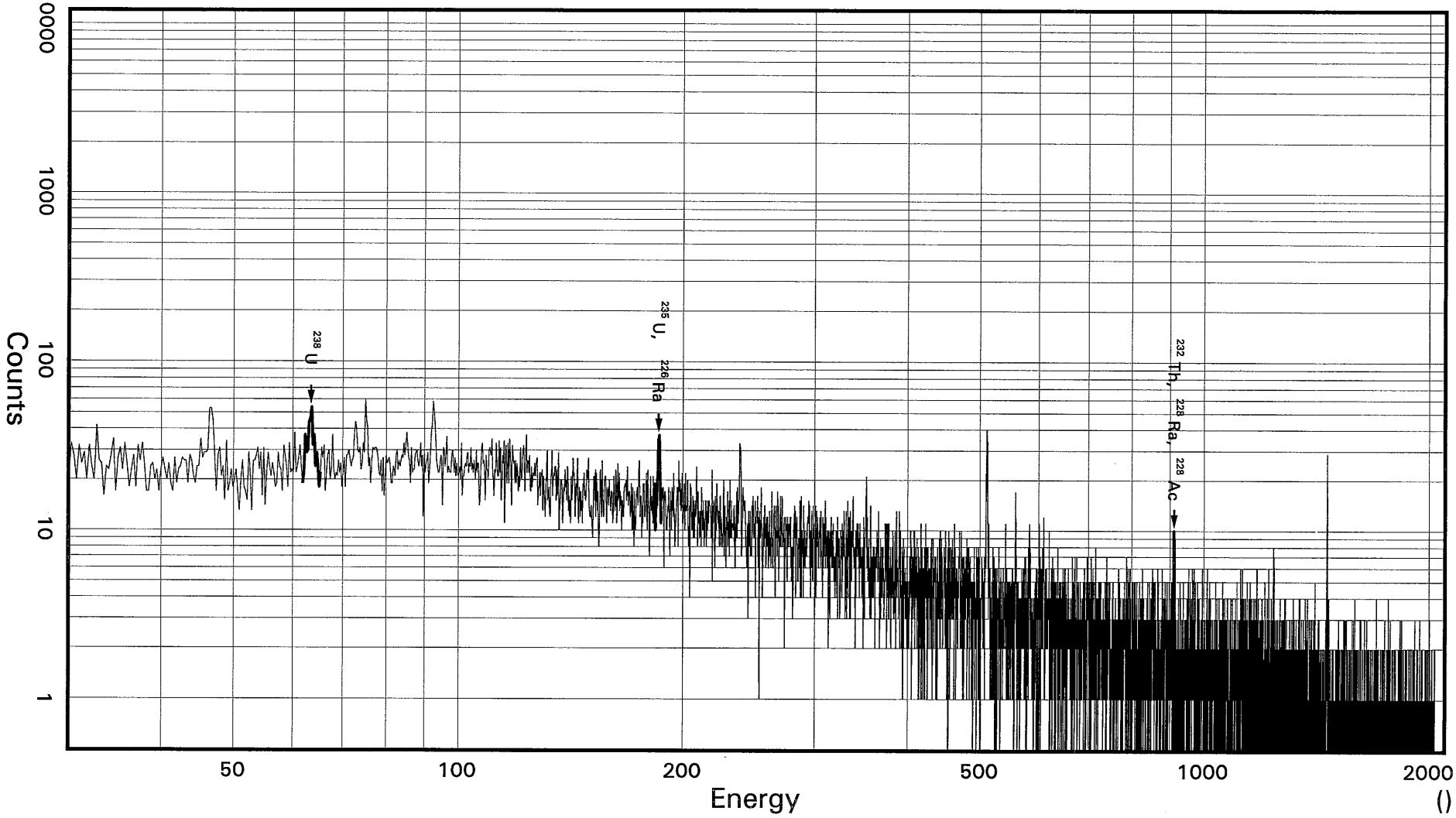
TAL Richland WA.

BRC WATER

Sample ID: L25FR1AC

Detector ID: GER5 1

Batch ID: 0172162



Acquisition Start: 22-JUN-2010 22:13:35.80

Preset Live Time: 0 03:20:00.00

Elapsed Live Time: 0 03:20:00.00

Energy Coefficients:

Offset: -3.45676E-01

Slope: 2.48775E-01

Quadrature: 2.91129E-09

SAMPLE IDENTIFICATION: L25FR1AC

CONFIGURATION ID: GER5:L25FR1AC_220602213
TITLE : BRC WATER
SAMPLE ID : L25FR1AC

REPORT DATE: 23-JUN-10
ACQUIRE DATE: 22-JUN-10 22:13:35
ELAPSED LIVE TIME: 12000.0 Sec
PRESET LIVE TIME: 0 03:20:00

SAMPLE DATE: 15-JUN-2010 00:00:00.00
CALIB DATE: 22-JUN-2010 04:06:40.12
ELAPSED LIVE TIME: 0 03:20:00
ELAPSED REAL TIME: 0 03:20:31

SAMPLE QUANTITY: 4.9960E-01
SAMPLE GEOMETRY: E500ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: -.3457E+00 keV
ENERGY SLOPE: 2.4878E-01 keV/C
ENERGY Q COEFF: 2.9113E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 8.5260E-01 keV
FWHM SLOPE: 2.3098E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 23-JUN-2010 01:34:14

```
Configuration     : RDND06$DKA100:[GER5.SAMPLE]L25FR1AC_220602213.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 22-JUN-2010 22:13:35
Sample ID         : L25FR1AC             Sample quantity  : 0.49960 LITER
Sample type       :                      Sample geometry  : E500ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:31.37   0.3%
Start energy      :    19.56             End energy       :  2037.82
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.44*	29	290	0.79	256.38	250	14	2.45E-03	138.9	
2	0	185.54*	29	213	0.91	747.22	737	17	2.38E-03	133.8	
3	0	911.30*	3	25	1.53	3664.39	3653	19	2.79E-04	404.2	

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

VMS Nuclide Identification Report V3.1 Generated 23-JUN-2010 01:34:15

```
Configuration     : RDND06$DKA100:[GER5.SAMPLE]L25FR1AC_220602213.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BRC WATER
Sample date       : 15-JUN-2010 00:00:00 Acquisition date : 22-JUN-2010 22:13:35
Sample ID         : L25FR1AC             Sample quantity  : 0.49960 LITER
Sample type       :                      Sample geometry  : E500ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:31.37   0.3%
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

Flag: "*" = Keyline

Sample ID : L25FR1AC Acquisition date : 22-JUN-2010 22:13:35

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	63.44	29	290	0.79	256.38	250	14	2.45E-03	****	1.63E+00	T
0	185.54	29	213	0.91	747.22	737	17	2.38E-03	****	1.42E+00	T
0	911.30	3	25	1.53	3664.39	3653	19	2.79E-04	****	4.04E-01	T

Flags: "T" = Tentatively associated

Sample ID : L25FR1AC Acquisition date : 22-JUN-2010 22:13:35

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/LITER)	1-Sigma %Error	Rejected by
RA-226	1600.00Y	0.00	186.21	3.59	2.528E+02	134.02	Abun.
			295.22	19.30	--- Not Found ---		
			351.93	37.60	--- Not Found ---		
			609.31*	46.10	--- Not Found ---		
			1120.29	15.10	--- Not Found ---		
			1764.49	15.40	--- Not Found ---		
		% Abundances Found =		2.62			
AC-228	1.41E+10Y	0.00	209.25	3.89	--- Not Found ---		Abun.
			338.32	11.27	--- Not Found ---		
			911.20*	25.80	1.447E+01	404.29	
			968.97	15.80	--- Not Found ---		
		% Abundances Found =		45.45			
RA-228	5.75Y	0.00	209.25	3.89	--- Not Found ---		Abun.
			338.32	11.27	--- Not Found ---		
			911.20*	25.80	1.451E+01	404.29	
			964.77	4.99	--- Not Found ---		
			968.97	15.80	--- Not Found ---		
		% Abundances Found =		41.78			
TH-232	1.41E+10Y	0.00	238.63	43.60	--- Not Found ---		Abun.
			338.32*	11.27	--- Not Found ---		
			583.19	30.55	--- Not Found ---		
			911.20	25.80	1.447E+01	404.29	
			968.97	15.80	--- Not Found ---		
		% Abundances Found =		20.31			
U-235	7.04E+08Y	0.00	143.76*	10.96	--- Not Found ---		Abun.
			185.71	57.20	1.587E+01	134.02	
			205.31	5.01	--- Not Found ---		
		% Abundances Found =		78.17			
U-238-TH	4.47E+09Y	0.00	63.29*	4.80	1.699E+02	139.01	Abun.
			92.59	5.58	--- Not Found ---		
		% Abundances Found =		46.24			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 23-JUN-2010 01:34:16

Configuration : RDND06$DKA100:[GER5.SAMPLE]L25FR1AC_220602213.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 : BRC WATER
Sample date : 15-JUN-2010 00:00:00 Acquisition date : 22-JUN-2010 22:13:35
Sample ID : L25FR1AC Sample quantity : 0.49960 LITER
Sample type : Sample geometry : E500ML
Elapsed live time: 0 03:20:00.00 Elapsed real time: 0 03:20:31.37 0.3%
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

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	-8.299E+01		8.538E+01	2.858E+02	1.278E+01	-0.290
NA-22	2.979E+00		9.251E+00	3.501E+01	1.098E+00	0.085
K-40	-1.039E+03		2.600E+02	1.028E+03	3.196E+01	-1.010
CR-51	-1.044E+02		8.788E+01	2.928E+02	3.790E+01	-0.357
MN-54	-9.070E+00		8.847E+00	2.989E+01	1.047E+00	-0.303
CO-57	-7.648E+01		5.824E+01	1.939E+02	7.203E+00	-0.394
CO-60	-9.561E+00		8.307E+00	2.808E+01	8.584E-01	-0.340
ZN-65	-5.775E+01		2.126E+01	6.350E+01	2.079E+00	-0.909
SR-85	-1.132E+02		1.746E+01	4.163E+01	2.096E+00	-2.718
Y-88	7.628E+00		1.051E+01	4.208E+01	1.302E+00	0.181
RU-106	-1.751E+02		8.945E+01	2.899E+02	1.241E+01	-0.604
SB-125	2.412E+01		2.448E+01	8.901E+01	3.335E+00	0.271
I-131	3.439E+01		1.844E+01	6.747E+01	4.973E+00	0.510
BA-133	-1.444E+01		1.205E+01	4.023E+01	3.438E+00	-0.359
CS-134	2.241E+00		1.034E+01	3.754E+01	1.362E+00	0.060
CS-137	-1.829E+01		9.829E+00	3.187E+01	1.237E+00	-0.574
CE-144	2.902E+01		5.514E+01	1.915E+02	7.090E+00	0.152
EU-152	2.388E+01		2.907E+01	1.036E+02	1.045E+01	0.231
EU-154	1.013E+01		2.644E+01	1.004E+02	3.149E+00	0.101
EU-155	-2.924E+01		2.923E+01	9.876E+01	3.394E+00	-0.296
BI-207	6.346E+00		8.458E+00	3.048E+01	1.435E+00	0.208
TL-208	-2.462E+01		1.228E+01	4.138E+01	1.907E+00	-0.595
BI-212	1.891E+01		1.311E+02	4.740E+02	2.097E+01	0.040
PB-212	-4.307E+01		2.200E+01	6.691E+01	5.100E+00	-0.644
BI-214	-2.241E+02		8.624E+01	3.163E+02	9.851E+00	-0.709
PB-214	-2.251E+01		2.447E+01	8.139E+01	7.400E+00	-0.277
RA-223	3.862E+01		5.314E+01	1.834E+02	1.737E+01	0.211
RA-224	-4.341E+01		2.217E+01	6.744E+01	5.140E+00	-0.644
RA-226	-9.094E+01		2.691E+01	8.090E+01	3.555E+00	-1.124
AC-227	-1.769E+02		4.613E+01	1.314E+02	9.821E+00	-1.346
AC-228	1.447E+01	+	5.850E+01	1.810E+02	5.909E+00	0.080
RA-228	1.451E+01	+	5.866E+01	1.814E+02	5.925E+00	0.080
TH-228	-6.906E+01		3.444E+01	1.161E+02	5.349E+00	-0.595

Sample ID : L25FR1AC Acquisition date : 22-JUN-2010 22:13:35

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
TH-232	7.268E+01		6.986E+01	2.493E+02	2.699E+01	0.292
TH-234	-4.095E+02		9.452E+02	3.429E+03	1.129E+02	-0.119
U-234	-1.635E+01		4.393E+01	1.392E+02	1.555E+01	-0.118
U-235	1.059E+02		5.393E+01	1.918E+02	7.188E+00	0.552
U-238	-2.251E+01		2.447E+01	8.139E+01	7.400E+00	-0.277
U-238-TH	1.699E+02	+	2.361E+02	5.634E+02	1.769E+01	0.302
AM-241	1.453E+01		2.262E+01	6.913E+01	2.211E+00	0.210

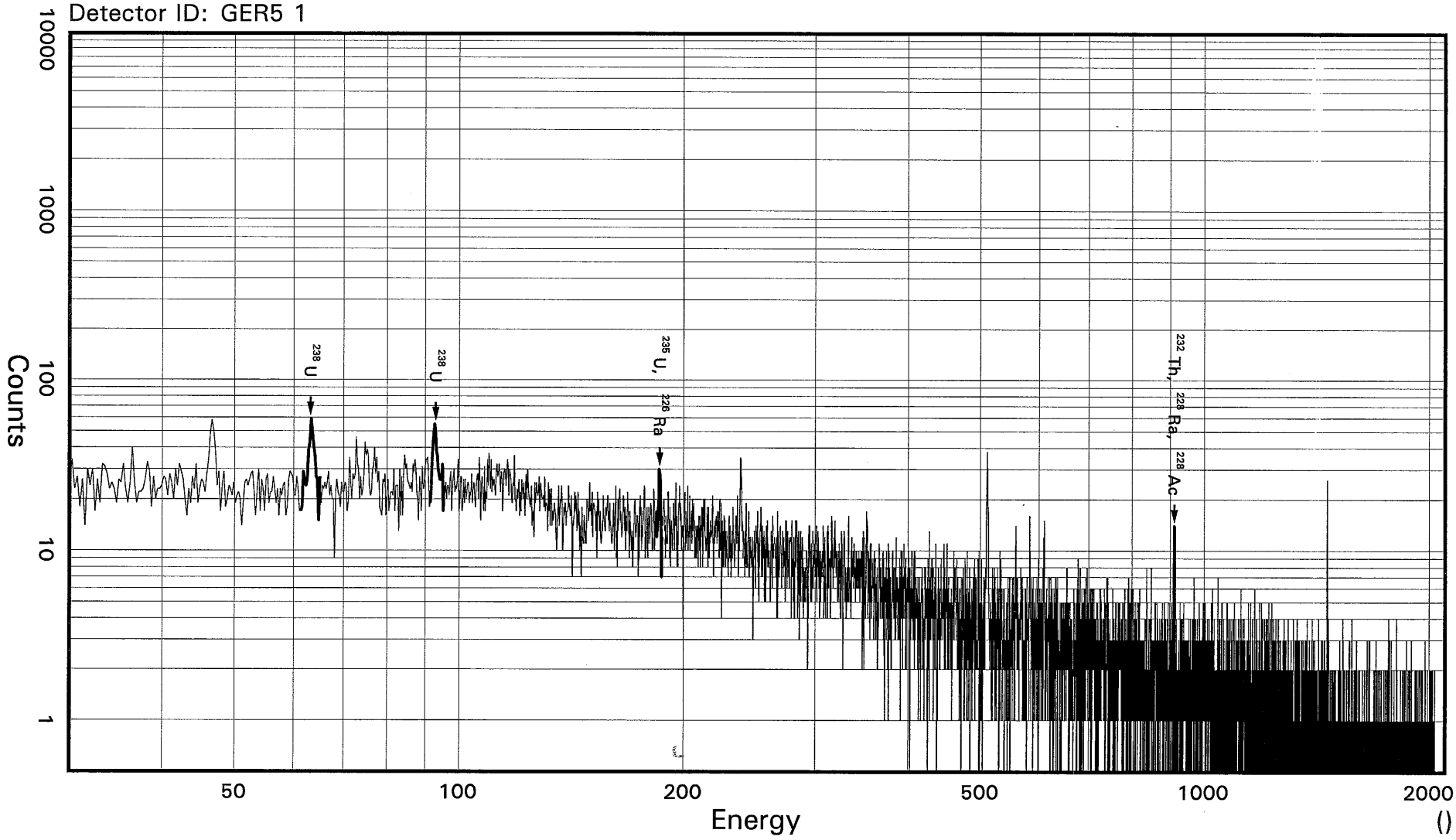
TAL Richland WA.

BRC WATER

Sample ID: L26751AA

Detector ID: GER5 1

Batch ID: 0172162



Acquisition Start: 23-JUN-2010 04:52:06.93

Preset Live Time: 0 03:20:00.00

Elapsed Live Time: 0 03:20:00.00

Energy Coefficients:

Offset: -3.69137E-01

Slope: 2.48779E-01

Quadrature: 1.51934E-09

SAMPLE IDENTIFICATION: L26751AA

CONFIGURATION ID: GER5:L26751AA_230600452
TITLE : BRC WATER
SAMPLE ID : L26751AA

REPORT DATE: 23-JUN-10
ACQUIRE DATE: 23-JUN-10 04:52:06
ELAPSED LIVE TIME: 12000.0 Sec
PRESET LIVE TIME: 0 03:20:00

SAMPLE DATE: 21-JUN-2010 13:25:00.00
CALIB DATE: 23-JUN-2010 04:23:47.25
ELAPSED LIVE TIME: 0 03:20:00
ELAPSED REAL TIME: 0 03:20:31

SAMPLE QUANTITY: 5.0040E-01
SAMPLE GEOMETRY: E500ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: -.3691E+00 keV
ENERGY SLOPE: 2.4878E-01 keV/C
ENERGY Q COEFF: 1.5193E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.1339E-01 keV
FWHM SLOPE: 2.1140E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 23-JUN-2010 08:12:48

```
Configuration     : RDND06$DKA100:[GER5.SAMPLE]L26751AA_230600452.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 21-JUN-2010 13:25:00 Acquisition date : 23-JUN-2010 04:52:06
Sample ID         : L26751AA             Sample quantity  : 0.50040 LITER
Sample type       :                      Sample geometry  : E500ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:31.11   0.3%
Start energy      :    19.53             End energy       :  2037.73
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.68*	1	268	0.86	189.13	183	12	7.69E-05	*****	
2	0	63.20*	64	285	1.05	255.51	248	15	5.30E-03	65.9	
3	0	92.96*	83	314	1.22	375.13	369	16	6.90E-03	56.3	
4	0	185.82*	8	160	1.06	748.39	740	14	6.80E-04	397.5	
5	0	499.47	50	65	5.65	2009.14	1993	29	4.20E-03	48.1	
6	0	911.47*	0	28	0.50	3665.17	3654	21	2.87E-05	*****	

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

VMS Nuclide Identification Report V3.1 Generated 23-JUN-2010 08:12:49

```
Configuration     : RDND06$DKA100:[GER5.SAMPLE]L26751AA_230600452.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BRC WATER
Sample date       : 21-JUN-2010 13:25:00 Acquisition date : 23-JUN-2010 04:52:06
Sample ID         : L26751AA             Sample quantity  : 0.50040 LITER
Sample type       :                      Sample geometry  : E500ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:31.11   0.3%
Energy tolerance :     1.50              Half life ratio  :     8.00
Errors propagated: Yes                   Systematic Error :     5.00 %
Efficiency type  : Empirical             Efficiencies at  : Peak Energy
Abundance limit  :    80.00
```

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/LITER	Decay Corr PCI/LITER	1-Sigma %Error
U-238-TH	63.29	64	4.80*	1.623E+00	3.672E+02	3.672E+02	66.14
	92.59	83	5.58	1.845E+00	3.621E+02	3.621E+02	56.63

Flag: "*" = Keyline

Sample ID : L26751AA Acquisition date : 23-JUN-2010 04:52:06

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	46.68	1	268	0.86	189.13	183	12	7.69E-05	****	1.16E+00	
0	185.82	8	160	1.06	748.39	740	14	6.80E-04	****	1.42E+00	T
0	499.47	50	65	5.65	2009.14	1993	29	4.20E-03	48.1	6.58E-01	

Flags: "T" = Tentatively associated

Sample ID : L26751AA Acquisition date : 23-JUN-2010 04:52:06

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (PCI/LITER)	1-Sigma %Error	Rejected by
RA-226	1600.00Y	0.00	186.21	3.59	7.210E+01	397.56	Abun.
			295.22	19.30	--- Not Found ---		
			351.93	37.60	--- Not Found ---		
			609.31*	46.10	--- Not Found ---		
			1120.29	15.10	--- Not Found ---		
			1764.49	15.40	--- Not Found ---		
		% Abundances Found =		2.62			
AC-228	1.41E+10Y	0.00	209.25	3.89	--- Not Found ---		Abun.
			338.32	11.27	--- Not Found ---		
			911.20*	25.80	1.486E+00	4115.87	
			968.97	15.80	--- Not Found ---		
		% Abundances Found =		45.45			
RA-228	5.75Y	0.00	209.25	3.89	--- Not Found ---		Abun.
			338.32	11.27	--- Not Found ---		
			911.20*	25.80	1.487E+00	4115.87	
			964.77	4.99	--- Not Found ---		
			968.97	15.80	--- Not Found ---		
		% Abundances Found =		41.78			
TH-232	1.41E+10Y	0.00	238.63	43.60	--- Not Found ---		Abun.
			338.32*	11.27	--- Not Found ---		
			583.19	30.55	--- Not Found ---		
			911.20	25.80	1.486E+00	4115.87	
			968.97	15.80	--- Not Found ---		
		% Abundances Found =		20.31			
U-235	7.04E+08Y	0.00	143.76*	10.96	--- Not Found ---		Abun.
			185.71	57.20	4.525E+00	397.56	
			205.31	5.01	--- Not Found ---		
		% Abundances Found =		78.17			

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 23-JUN-2010 08:12:50

Configuration : RDND06$DKA100:[GER5.SAMPLE]L26751AA_230600452.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 : BRC WATER
Sample date : 21-JUN-2010 13:25:00 Acquisition date : 23-JUN-2010 04:52:06
Sample ID : L26751AA Sample quantity : 0.50040 LITER
Sample type : Sample geometry : E500ML
Elapsed live time: 0 03:20:00.00 Elapsed real time: 0 03:20:31.11 0.3%
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 (PCI/LITER)	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
U-238-TH	3.672E+02	2.429E+02	4.862E+02	1.527E+01	0.755

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	-7.822E+01		7.763E+01	2.586E+02	1.156E+01	-0.303
NA-22	2.938E+00		8.924E+00	3.396E+01	1.065E+00	0.086
K-40	-1.192E+03		2.545E+02	9.929E+02	3.086E+01	-1.201
CR-51	4.680E+01		8.306E+01	2.921E+02	3.781E+01	0.160
MN-54	5.089E-01		8.236E+00	2.986E+01	1.046E+00	0.017
CO-57	-2.997E+01		5.443E+01	1.834E+02	6.814E+00	-0.163
CO-60	3.142E+00		9.528E+00	3.602E+01	1.101E+00	0.087
ZN-65	-5.096E+01		2.139E+01	6.613E+01	2.165E+00	-0.771
SR-85	-1.034E+02		1.618E+01	3.866E+01	1.946E+00	-2.675
Y-88	-5.651E+00		5.682E+00	2.038E+01	6.305E-01	-0.277
RU-106	2.885E-01		8.448E+01	3.026E+02	1.296E+01	0.001
SB-125	-1.756E+01		2.621E+01	8.891E+01	3.332E+00	-0.198
I-131	7.050E-01		1.036E+01	3.624E+01	2.671E+00	0.019
BA-133	-1.797E+01		1.283E+01	4.218E+01	3.604E+00	-0.426
CS-134	4.096E+00		1.130E+01	4.090E+01	1.484E+00	0.100
CS-137	9.686E+00		9.016E+00	3.420E+01	1.327E+00	0.283
CE-144	-3.030E+01		5.342E+01	1.799E+02	6.662E+00	-0.168
EU-152	-9.064E+00		2.917E+01	1.004E+02	1.013E+01	-0.090
EU-154	3.660E+00		2.574E+01	9.659E+01	3.030E+00	0.038
EU-155	1.878E+01		2.913E+01	1.007E+02	3.461E+00	0.186
BI-207	5.534E+00		8.282E+00	3.047E+01	1.434E+00	0.182
TL-208	-2.514E+01		1.292E+01	4.346E+01	2.003E+00	-0.578
BI-212	1.703E+02		1.412E+02	5.289E+02	2.340E+01	0.322
PB-212	-4.073E+01		2.222E+01	6.771E+01	5.161E+00	-0.602
BI-214	-1.139E+02		7.788E+01	3.173E+02	9.882E+00	-0.359
PB-214	-4.663E+01		2.543E+01	8.098E+01	7.362E+00	-0.576
RA-223	-9.384E+00		5.022E+01	1.744E+02	1.652E+01	-0.054

Sample ID : L26751AA Acquisition date : 23-JUN-2010 04:52:06

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
RA-224	-4.080E+01		2.225E+01	6.783E+01	5.170E+00	-0.602
RA-226	-4.804E+01		2.679E+01	8.717E+01	3.831E+00	-0.551
AC-227	-1.794E+02		4.798E+01	1.368E+02	1.022E+01	-1.311
AC-228	1.486E+00	+	6.118E+01	1.739E+02	5.679E+00	0.009
RA-228	1.487E+00	+	6.121E+01	1.740E+02	5.683E+00	0.009
TH-228	-7.007E+01		3.600E+01	1.211E+02	5.582E+00	-0.578
TH-232	4.969E+01		6.885E+01	2.436E+02	2.638E+01	0.204
TH-234	-6.204E+01		1.212E+03	4.405E+03	1.451E+02	-0.014
U-234	-4.914E+01		4.328E+01	1.317E+02	1.471E+01	-0.373
U-235	3.392E+01		5.288E+01	1.829E+02	6.856E+00	0.185
U-238	-4.663E+01		2.543E+01	8.098E+01	7.362E+00	-0.576
AM-241	2.263E+01		2.312E+01	6.770E+01	2.165E+00	0.334

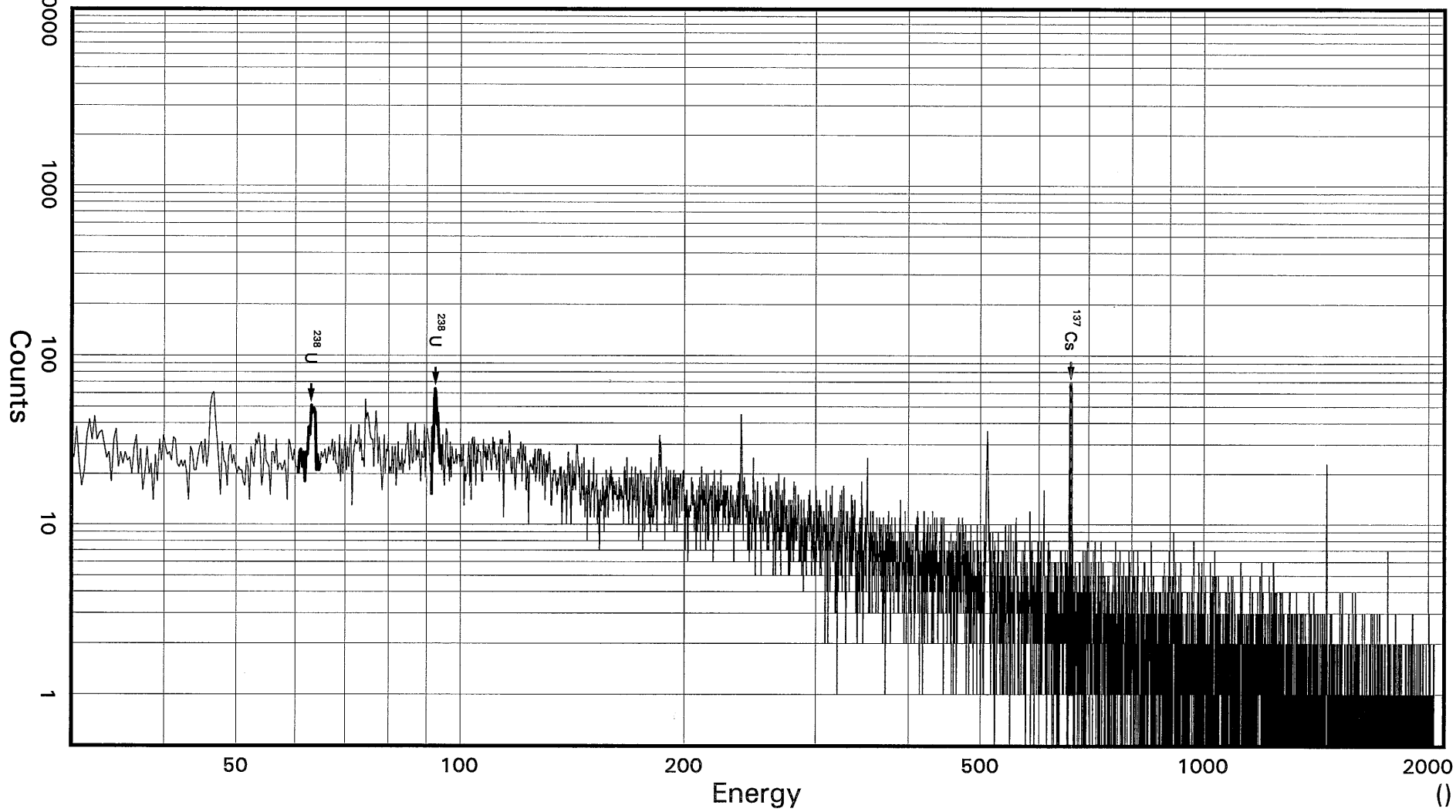
TAL Richland WA.

BRC WATER

Sample ID: L26751AC

Detector ID: GER5 1

Batch ID: 0172162



Acquisition Start: 23-JUN-2010 08:17:31.40

Preset Live Time: 0 03:20:00.00

Elapsed Live Time: 0 03:20:00.00

Energy Coefficients:

Offset: -3.69137E-01

Slope: 2.48779E-01

Quadrature: 1.51934E-09

SAMPLE IDENTIFICATION: L26751AC

CONFIGURATION ID: GER5:L26751AC_230600817
TITLE : BRC WATER
SAMPLE ID : L26751AC

REPORT DATE: 23-JUN-10
ACQUIRE DATE: 23-JUN-10 08:17:31
ELAPSED LIVE TIME: 12000.0 Sec
PRESET LIVE TIME: 0 03:20:00

SAMPLE DATE: 23-JUN-2010 12:00:00.00
CALIB DATE: 23-JUN-2010 04:23:47.25
ELAPSED LIVE TIME: 0 03:20:00
ELAPSED REAL TIME: 0 03:20:31

SAMPLE QUANTITY: 5.0040E-01
SAMPLE GEOMETRY: E500ML

UNITS: LITER
SAMPLE TYPE:

ENERGY OFFSET: -.3691E+00 keV
ENERGY SLOPE: 2.4878E-01 keV/C
ENERGY Q COEFF: 1.5193E-09 keV/C^^2
PEAK SENSITIVITY: 5.000

FWHM OFFSET: 9.1339E-01 keV
FWHM SLOPE: 2.1140E-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: 1.0000E+06
LIBRARY: [NUC_LIBR]TRL.NLB

VMS Peak Search Report V1.9 Generated 23-JUN-2010 11:38:15

```
Configuration     : RDND06$DKA100:[GER5.SAMPLE]L26751AC_230600817.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title      : BRC WATER
Sample date       : 23-JUN-2010 12:00:00 Acquisition date : 23-JUN-2010 08:17:31
Sample ID         : L26751AC             Sample quantity  : 0.50040 LITER
Sample type       :                      Sample geometry  : E500ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:31.78   0.3%
Start energy      :    19.53             End energy       :  2037.73
Sensitivity       :     5.00             Gaussian         :    10.00
Critical level    : No
```

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.00*	36	365	1.36	254.74	245	17	2.97E-03	134.4	
2	0	74.09*	47	437	2.34	299.31	290	19	3.93E-03	113.8	
3	0	92.51*	43	249	1.11	373.35	369	11	3.62E-03	89.1	
4	0	661.67	417	72	1.70	2661.10	2650	23	3.48E-02	6.7	

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

VMS Nuclide Identification Report V3.1 Generated 23-JUN-2010 11:38:15

```
Configuration     : RDND06$DKA100:[GER5.SAMPLE]L26751AC_230600817.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title      : BRC WATER
Sample date       : 23-JUN-2010 12:00:00 Acquisition date : 23-JUN-2010 08:17:31
Sample ID         : L26751AC             Sample quantity  : 0.50040 LITER
Sample type       :                      Sample geometry  : E500ML
Elapsed live time: 0 03:20:00.00         Elapsed real time: 0 03:20:31.78   0.3%
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 PCI/LITER	Decay Corr PCI/LITER	1-Sigma %Error
CS-137	661.65	417	85.10*	5.227E-01	4.220E+02	4.220E+02	9.23

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected PCI/LITER	Decay Corr PCI/LITER	1-Sigma %Error
U-238-TH	63.29	36	4.80*	1.619E+00	2.062E+02	2.062E+02	134.49
	92.59	43	5.58	1.845E+00	1.898E+02	1.898E+02	89.30

Flag: "*" = Keyline

Sample ID : L26751AC Acquisition date : 23-JUN-2010 08:17:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	74.09	47	437	2.34	299.31	290	19	3.93E-03	****	1.77E+00	

Flags: "T" = Tentatively associated

Flag: "*" = Keyline

VMS Nuclide Identification Report V3.1 Generated 23-JUN-2010 11:38:16

Configuration : RDND06$DKA100:[GER5.SAMPLE]L26751AC_230600817.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 : BRC WATER
Sample date : 23-JUN-2010 12:00:00 Acquisition date : 23-JUN-2010 08:17:31
Sample ID : L26751AC Sample quantity : 0.50040 LITER
Sample type : Sample geometry : E500ML
Elapsed live time: 0 03:20:00.00 Elapsed real time: 0 03:20:31.78 0.3%
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 (PCI/LITER)	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
CS-137	4.220E+02	3.897E+01	3.752E+01	1.456E+00	11.248
U-238-TH	2.062E+02	2.774E+02	5.075E+02	1.594E+01	0.406

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
BE-7	1.106E+00		8.195E+01	2.842E+02	1.270E+01	0.004
NA-22	1.457E+01		9.843E+00	3.944E+01	1.237E+00	0.369
K-40	-1.414E+03		2.528E+02	9.574E+02	2.976E+01	-1.477
CR-51	-1.558E+02		7.571E+01	2.359E+02	3.054E+01	-0.660
MN-54	-2.197E+00		8.436E+00	2.994E+01	1.049E+00	-0.073
CO-57	-4.543E+01		5.714E+01	1.911E+02	7.101E+00	-0.238
CO-60	-7.228E-02		8.764E+00	3.270E+01	9.995E-01	-0.002
ZN-65	-4.353E+01		2.075E+01	6.562E+01	2.149E+00	-0.663
SR-85	-9.765E+01		1.661E+01	4.218E+01	2.124E+00	-2.315
Y-88	9.404E+00		8.589E+00	3.645E+01	1.128E+00	0.258
RU-106	-1.353E+00		8.639E+01	3.086E+02	1.321E+01	-0.004
SB-125	-2.250E+01		2.905E+01	9.778E+01	3.664E+00	-0.230
I-131	2.160E+00		9.548E+00	3.342E+01	2.463E+00	0.065
BA-133	-2.316E+01		1.362E+01	4.411E+01	3.769E+00	-0.525
CS-134	-5.459E+00		1.065E+01	3.704E+01	1.344E+00	-0.147
CE-144	-3.651E+01		5.516E+01	1.852E+02	6.858E+00	-0.197
EU-152	6.361E+01		2.927E+01	1.055E+02	1.063E+01	0.603
EU-154	3.748E+01		2.839E+01	1.126E+02	3.533E+00	0.333
EU-155	1.960E+01		3.045E+01	1.051E+02	3.610E+00	0.187
BI-207	-1.682E+00		8.541E+00	3.030E+01	1.427E+00	-0.056
TL-208	-3.527E+01		1.242E+01	4.004E+01	1.845E+00	-0.881
BI-212	2.789E+02		1.446E+02	5.534E+02	2.448E+01	0.504
PB-212	-4.591E+01		2.308E+01	7.011E+01	5.343E+00	-0.655
BI-214	-1.382E+02		8.618E+01	3.368E+02	1.049E+01	-0.410
PB-214	-3.039E+01		2.531E+01	8.302E+01	7.548E+00	-0.366
RA-223	-6.937E+01		5.557E+01	1.854E+02	1.756E+01	-0.374

Sample ID : L26751AC Acquisition date : 23-JUN-2010 08:17:31

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

Nuclide	Key-Line Activity (PCI/LITER)	K.L. Ided	Act error	MDA (PCI/LITER)	MDA error	Act/MDA
RA-224	-4.591E+01		2.307E+01	7.010E+01	5.343E+00	-0.655
RA-226	-1.667E+01		2.700E+01	9.191E+01	4.039E+00	-0.181
AC-227	-1.676E+02		4.837E+01	1.406E+02	1.051E+01	-1.192
AC-228	-3.465E+01		4.770E+01	1.669E+02	5.449E+00	-0.208
RA-228	-3.465E+01		4.770E+01	1.669E+02	5.449E+00	-0.208
TH-228	-9.813E+01		3.455E+01	1.114E+02	5.133E+00	-0.881
TH-232	1.046E+02		7.064E+01	2.521E+02	2.730E+01	0.415
TH-234	3.797E+02		1.091E+03	4.093E+03	1.348E+02	0.093
U-234	-1.373E+01		4.541E+01	1.443E+02	1.612E+01	-0.095
U-235	1.180E+02		5.839E+01	2.052E+02	7.691E+00	0.575
U-238	-3.039E+01		2.531E+01	8.302E+01	7.548E+00	-0.366
AM-241	7.633E+00		2.408E+01	6.909E+01	2.210E+00	0.110

TOTAL RADIUM

SAMPLE AND QC DATA

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

7/21/2010 9:33:44 AM

Lot No., Due Date: J0F180565; 07/02/2010
Client, Site: 536403; YERINGTON - BRC Yerington Mine, NV
QC Batch No., Method Test: 0201283; RRATOT RaTot by GPC
SDG, Matrix: 41625; WATER

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:
NCM 10-16322

Thomas [signature]

First Level _____ **Date** 7/21/10

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

Batch Number: 0201283

Review Item	Yes (√)	No (√)	NA (√)
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 within contract acceptance criteria?	√		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	√		
7. Do the MS/MSD results and yields meet acceptance criteria?			√
8. Do the duplicate sample results and yields meet acceptance criteria?			√
C. Other 1. Are all Non-conformances 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: Erika Jordan Date: 7/26/10

LS-038B, Rev. 10, 9/07

Clouseau
Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: **10-16322**
NCM Initiated By: Tom Mcginnis
Date Opened: 07/21/2010
Date Closed:

Classification: **Deficiency**
Status: **PMREVIEW**
Production Area: Environmental - Sep
Tests: RaTot by GPC
Lot #'s (Sample #'s): J0F180565 (1,2,3,4), J0F210000 (163),
QC Batches: 0201283,

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

Problem Description / Root Cause

Name	Date	Description
Tom Mcginnis	07/21/2010	Batch 0201283 is a complete recount of batch 0172163 per client agreement. Final results meet all acceptance criteria. There was insufficient sample provide to run a duplicate analysis.

Corrective Action

Name	Date	Corrective Action
Tom Mcginnis	07/21/2010	PM was notified of all batch deficiencies.

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: 7/21/2010

7/20/2010 12:04:14 PM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown
and Caldwell

BQ Total Alpha Radium Prp/Sep RA002
TD Total Alpha Radium by GPC
01 STANDARD TEST SET

AnalyDueDate: 07/02/2010

Batch: 0201283 WATER pCi/L PM, Quote: EJ , 73181
SEQ Batch, Test: None

Balance Id:
Pipet #:
Sep1 DT/Tm Tech: 6/30/10 1153 DC
Sep2 DT/Tm Tech:
Prep Tech:

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 L25FA-2-AA J0F180565-1-SAMP 06/15/2010 00:00	320.00	AmtRec: 1XLP	RATC11438 6/4/10	1.5"	15.9	#Containers: 1	10C	1608	7/20 lm Scr: Alpha: 5.20E-05 uCi/Sa	Beta: 4.98E-05 uCi/Sa
2 L25FK-2-AA J0F180565-2-SAMP 06/15/2010 00:00	286.10	AmtRec: 1XLP	RATC 11439 6/4/10		18.2	#Containers: 1	10B	1413	7/20 lm Scr: Alpha: 2.37E-04 uCi/Sa	Beta: -5.74E-05 uCi/Sa
3 L25FQ-2-AA J0F180565-3-SAMP 06/15/2010 00:00	331.80	AmtRec: 1XLP	RATC 11440 6/4/10		17.2	#Containers: 1	10A		Scr: Alpha: 2.25E-03 uCi/Sa 8.0E-02L	Beta: 7.12E-05 uCi/Sa
4 L25FR-2-AA J0F180565-4-SAMP 06/15/2010 00:00	239.10	AmtRec: 1XLP	RATC11442 6/4/10		17.1	#Containers: 1	10E		Scr: Alpha: -4.80E-05 uCi/Sa	Beta: 2.84E-05 uCi/Sa
5 L2677-2-AA-B J0F210000-163-BLK 07/20/2010 12:04 pd	500.70	AmtRec:	RATC 11443 6/4/10		16.5	#Containers: 1	10D		Scr: Alpha:	Beta:
6 L2677-4-AC-C J0F210000-163-LCS 07/20/2010 12:04 pd	501.20	AmtRec:	RTSA 1532 6/4/10		15.8	#Containers: 1	10C		Scr: Alpha:	Beta:

TestAmerica Laboratories, Inc.

Sample Preparation/Analysis

BQ Total Alpha Radium Prp/Sep RA002
TD Total Alpha Radium by GPC
01 STANDARD TEST SET

Balance Id:

Pipet #: _____

AnalyDueDate: 07/02/2010

Sep1 DT/Tm Tech:

Batch: 0201283 **pCi/L**

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech:

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

Comments: L25FA-SAMP "Comments. No Dup. poured, due to insuff. volume amount. Please recount on diff. detector. JB 6-22-10; All samples' alliquots are poured up with what was ","left of samples.- DL 6
L25FK-SAMP "Comments. Sample L2FK only poured 200 ml. geo. due to insuff. sample amount. JB 6-22-10; All samples' alliquots are poured up with what was left of ","samples.- DL 6/28/10",
L25FQ-SAMP "Comments: All samples' alliquots are poured up with what was left of samples.- DL 6/28/10"
L25FR-SAMP "Comments: All samples' alliquots are poured up with what was left of samples.- DL 6/28/10"

All Clients for Batch:
536403, Brown and Caldwell Brown and Caldwell , EJ , 73181

L25FA2AA-SAMP Constituent List:

L26772AA-BLK:

L26774AC-LCS:

L25FA2AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
L26772AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
L26774AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

TestAmerica Laboratories, Inc.

7/21/2010 9:28:07 AM

ICOC Fraction Transfer/Status Report

ByDate: 7/21/2009, 7/26/2010, Batch: '0201283', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
0201283						
AC		**Rev1C**	**ClarkR**	7/20/2010 12:19:03		
SC			ClarkR	InCnt1	7/20/2010 12:19:03 PM	RL-CI-006 REVISION 1
SC			DAWKINSO	CalcC	7/20/2010 6:00:51 PM	RL-CI-006 REVISION 1
SC			mcginnist	Rev1C	7/21/2010 9:27:53 AM	RL-DR-001 Rev 0
AC			**DAWKINSO**	7/20/2010 6:00:51 PM		
AC			**mcginnist**	7/21/2010 9:27:53		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Page 1

Grp Rec Cnt: 3

ICOCFractions v4.8.44

7/21/2010 9:28:05 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
41625	**9L25FA20**			**J0F1805651**	S-1 MWMP	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	1		7/9/2010 10:31:24 AM	**1.3301E+00**	3.752E+00	3.752E+00	1.291E+01	PCI/LITER			4.995E-1
RA	BQTD	1		7/20/2010 3:17:37 PM	**8.3461E-01**	1.044E-01	1.341E-01	1.677E-01	pCi/L		0.935	3.2E-1
RA-228	AWTA	1		7/9/2010 10:31:24 AM	**3.3141E+01**	1.423E+01	1.423E+01	5.132E+01	PCI/LITER			4.995E-1
TH-232	AWTA	1		7/9/2010 10:31:24 AM	**2.8145E+01**	2.262E+01	2.262E+01	7.912E+01	PCI/LITER			4.995E-1
TH-234	AWTA	1		7/9/2010 10:31:24 AM	**-6.4752E+01**	4.032E+02	4.032E+02	1.377E+03	PCI/LITER			4.995E-1
41625	**9L25FK20**			**J0F1805652**	S-12A MWMP	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	1		7/9/2010 10:32:31 AM	**1.5384E+01**	3.603E+00	3.603E+00	1.289E+01	PCI/LITER			1.984E-1
K-40	AWTA	1		7/9/2010 10:32:31 AM	**1.3372E+01**	1.122E+02	1.122E+02	1.057E+02	PCI/LITER			1.984E-1
RA	BQTD	1		7/20/2010 1:23:01 PM	**5.4164E-01**	8.573E-02	1.029E-01	1.325E-01	pCi/L		1.0	2.861E-1
RA-228	AWTA	1		7/9/2010 10:32:31 AM	**2.971E+01**	1.258E+01	1.258E+01	4.509E+01	PCI/LITER			1.984E-1
TH-232	AWTA	1		7/9/2010 10:32:31 AM	**-1.9327E+01**	1.793E+01	1.793E+01	5.855E+01	PCI/LITER			1.984E-1
TH-234	AWTA	1		7/9/2010 10:32:31 AM	**1.0272E+03**	3.81E+02	3.81E+02	1.402E+03	PCI/LITER			1.984E-1
41625	**9L25FQ20**			**J0F1805653**	S-24 MWMP	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	1		7/9/2010 10:33:21 AM	**-3.8073E+00**	3.958E+00	3.958E+00	1.336E+01	PCI/LITER			4.996E-1
RA	BQTD	1		7/20/2010 1:23:01 PM	**1.1353E-01**	3.861E-02	4.024E-02	9.088E-02	pCi/L		1.0	3.318E-1
RA-228	AWTA	1		7/9/2010 10:33:21 AM	**2.5796E+01**	3.594E+01	3.594E+01	6.439E+01	PCI/LITER			4.996E-1
SR-85	AWTA	1		7/9/2010 10:33:21 AM	**5.0844E+01**	1.095E+01	1.095E+01	1.401E+01	PCI/LITER			4.996E-1
TH-232	AWTA	1		7/9/2010 10:33:21 AM	**4.3912E+01**	2.518E+01	2.518E+01	8.792E+01	PCI/LITER			4.996E-1
TH-234	AWTA	1		7/9/2010 10:33:21 AM	**9.0218E+02**	4.68E+02	4.68E+02	1.69E+03	PCI/LITER			4.996E-1
U-235	AWTA	1		7/9/2010 10:33:21 AM	**7.0923E+01**	3.36E+01	3.36E+01	6.001E+01	PCI/LITER			4.996E-1
U-238-TH	AWTA	1		7/9/2010 10:33:21 AM	**8.7224E+02**	1.293E+02	1.293E+02	2.665E+02	PCI/LITER			4.996E-1
41625	**9L25FR20**			**J0F1805654**	S-25 MWMP	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	1		7/9/2010 10:33:38 AM	**3.2492E-01**	3.262E+00	3.262E+00	1.104E+01	PCI/LITER			4.996E-1
RA	BQTD	1		7/20/2010 1:23:01 PM	**1.9632E-01**	5.717E-02	6.044E-02	9.42E-02	pCi/L		1.0	2.391E-1
RA-228	AWTA	1		7/9/2010 10:33:38 AM	**2.0718E+01**	1.173E+01	1.173E+01	4.147E+01	PCI/LITER			4.996E-1
SR-85	AWTA	1		7/9/2010 10:33:38 AM	**5.4514E+01**	7.875E+00	7.875E+00	1.179E+01	PCI/LITER			4.996E-1
TH-232	AWTA	1		7/9/2010 10:33:38 AM	**-2.6136E+01**	2.156E+01	2.156E+01	7.065E+01	PCI/LITER			4.996E-1
TH-234	AWTA	1		7/9/2010 10:33:38 AM	**-1.494E+02**	3.571E+02	3.571E+02	1.208E+03	PCI/LITER			4.996E-1
41625	**L26772AB**			**J0F210000163**	INTRA-LAB BLANK	WATER	6/18/2010 10:00:00	6/15/2010				
RA	BQTD	1	B	7/20/2010 1:23:01 PM	**-1.454E-02**	1.705E-02	1.711E-02	9.53E-02	pCi/L		0.971	5.007E-1
41625	**L26774CS**			**J0F210000163**	INTRA-LAB CHECK	WATER	6/18/2010 10:00:00	6/15/2010				
RA	BQTD	3	S	7/20/2010 1:23:01 PM	**6.0076E+00**	2.12E-01	6.421E-01	1.077E-01	pCi/L	6.3351E+00	0.929	5.012E-1

0201283, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 4,
**Results Inserted | ReTestInserted | Updated | NotInserted => 6 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 0201283 Alpha Beta, RaTot by GPC , Results 7/20/2010 5:53:21 PM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	ILcC	`IDC	QC	Trc Yld	LCS Yld
RaTot by GPC			Richland Standard Total Radium Wo Blk Subt. *CntU: 0+1, + *SystU, `MDCConst:2.71											
Calc	TD	WATER	**L25FA2AA**	RA	**8.35E-01**	**(1.34E-01)**		pCi/L	R	6.83E-02	1.68E-01		94%	
Calc	TD	WATER	**L25FK2AA**	RA	**5.42E-01**	**(1.03E-01)**		pCi/L	R	4.96E-02	1.33E-01		100%	
Calc	TD	WATER	**L25FQ2AA**	RA	**1.14E-01**	**(4.02E-02)**		pCi/L	R	3.08E-02	9.09E-02		100%	
Calc	TD	WATER	**L25FR2AA**	RA	**1.96E-01**	**(6.04E-02)**		pCi/L	R	2.58E-02	9.42E-02		100%	
Calc	TD	WATER	**L26772AA**	RA	**-1.45E-02**	**(1.71E-02)**	**U4**	pCi/L	R	3.78E-02	9.53E-02	**B**	97%	
Calc	TD	WATER	**L26774AC**	RA	**6.01E+00**	**(6.42E-01)**		pCi/L	R	4.39E-02	1.08E-01	**S**	93%	95%

Tom D[illegible] 7/21/10

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

Page 1

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

RecCnt:6
RADCALC v4.8.34
TestAmerica

Batch Nbr: 0201283

Alpha Beta, RaTot by GPC , Calculated Results

7/20/2010 5:53:22 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	TD	WATER	*STLE	TotalRAWoBS	L25FA2AA	pCi/L		06/15/10 00:00	07/20/10 15:17	06/30/10 11:53		1	g	
536403,S-1 MWMP					,J0F180565-1		WATER			15.9				320.00 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/20/10 16:07	RA	79	13	GPC10C	1.5	N	N	3.3333E-01	1.0000E+00	N	94%	N		2.5496E-01	4.5045E+02	1.0000E+00	
			100	200			Y		(1.144E-02)	(0.000E+00)		7%			(0.000E+00)	0.003125		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/20/10	RA	R	**0.834608**		7.25000E-01	0.592906	0.592906	0.32 L	94%		0.167672		
				(0.134127)		(9.0692E-02)	(0.09036)	(0.09036)	(0.0032)			0.068278		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	L25FK2AA	pCi/L		06/15/10 00:00	07/20/10 13:23	06/30/10 11:53		1	g	
536403,S-12A MWMP					,J0F180565-2		WATER			18.2				286.10 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/20/10 14:13	RA	47	6	GPC10B	1.5	N	N	3.2619E-01	1.0000E+00	N	100%	N		2.5504E-01	4.5045E+02	1.0000E+00	
			100	200			Y		(1.084E-02)	(0.000E+00)		9%			(0.000E+00)	0.003495		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/20/10	RA	R	**0.541643**		4.40000E-01	0.344021	0.344021	0.2861 L	100%		0.132506		
				(0.102901)		(6.9642E-02)	(0.062959)	(0.062959)	(0.002861)			0.049602		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	L25FQ2AA	pCi/L		06/15/10 00:00	07/20/10 13:23	06/30/10 11:53		1	g	
536403,S-24 MWMP					,J0F180565-3		WATER			17.2				331.80 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/20/10 14:13	RA	12	3	GPC10A	1.5	N	N	3.2023E-01	1.0000E+00	N	100%	N		2.5504E-01	4.5045E+02	1.0000E+00	
			100	200			Y		(9.239E-03)	(0.000E+00)		8%			(0.000E+00)	0.003014		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/20/10	RA	R	**0.113528**		1.05000E-01	0.083624	0.083624	0.3318 L	100%		0.090877		
				(0.040239)		(3.5707E-02)	(0.029332)	(0.029332)	(0.003318)			0.030806		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	L25FR2AA	pCi/L		06/15/10 00:00	07/20/10 13:23	06/30/10 11:53		1	g	
536403,S-25 MWMP					,J0F180565-4		WATER			17.1				239.10 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/20/10 14:13	RA	13	1	GPC10E	1.5	N	N	3.0592E-01	1.0000E+00	N	100%	N		2.5504E-01	4.5045E+02	1.0000E+00	
			100	200			Y		(9.254E-03)	(0.000E+00)		8%			(0.000E+00)	0.004182		

() - (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 v4.8.34

TestAmerica

Batch Nbr: 0201283

Alpha Beta, RaTot by GPC , Calculated Results

7/20/2010 5:53:22 PM

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/20/10	RA	R	**0.196324**		1.25000E-01	0.104209	0.104209	0.2391 L	100%		0.094205		
				(0.060444)		(3.6401E-02)	(0.031641)	(0.031641)	(0.002391)			0.025836		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L26772AA**	**pCi/L**	B	06/15/10 00:00	07/20/10 13:23	06/30/10 11:53		1	g	
0,INTRA-LAB BLANK					,J0F210000-163		WATER			16.5				500.70 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/20/10 14:13	RA	3	10	GPC10D	1.5	N	N	3.2515E-01	1.0000E+00	N	97%	N		2.5504E-01	4.5045E+02	1.0000E+00	
			100	200			Y		(1.169E-02)	(0.000E+00)		8%			(0.000E+00)	0.001997		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/20/10	RA	R	**-0.01454**	**U4**	-2.00000E-02	-0.016162	-0.016162	0.5007 L	97%		0.095296		
				(0.017114)		(2.3452E-02)	(0.019005)	(0.019005)	(0.005007)			0.037819		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L26774AC**	**pCi/L**	S	06/15/10 00:00	07/20/10 13:23	06/30/10 11:53	RTSA1532	1	g	
0,INTRA-LAB CHECK					,J0F210000-163		WATER			15.8				501.20 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/20/10 14:13	RA	819	13	GPC10C	1.5	N	N	3.3354E-01	1.0000E+00	N	93%	N		2.5504E-01	4.5045E+02	1.0000E+00	
			100	200			Y		(1.145E-02)	(0.000E+00)		7%			(0.000E+00)	0.001995		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/20/10	RA	R	**6.00762**		8.12500E+00	6.684469	6.684469	0.5012 L	93%	95%	0.107695		
				(0.642116)		(2.8675E-01)	(0.627916)	(0.627916)	(0.005012)			0.043855		

() - (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 v4.8.34

TestAmerica

Batch Nbr: 0201283

Calculation Log

7/20/2010 5:53:22 PM

Time Stamp	Log Entry	User
7/20/2010 5:48:39	Loaded IDB Rows => 6	DawkinsO
7/20/2010 5:48:39	Updated Sep Date => 6	DawkinsO
7/20/2010 5:48:46	Inserted IDB Rows => 6	DawkinsO
7/20/2010 5:50:23	********** Calculating .... _AB_v, 7/20/2010 5:50:02 PM	DawkinsO
7/20/2010 5:50:23	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	DawkinsO
7/20/2010 5:50:23	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	DawkinsO
7/20/2010 5:50:39	=>Start 280568, L25FA2AA, 0, RA	DawkinsO
7/20/2010 5:50:39	PptWt/tSie Out of Equation Range... -1; 2.89000010490417-52; GPC10C, RA-226: , Aborting...	DawkinsO
7/20/2010 5:50:39	=>Skip 280568, CalDpmWOBlk	DawkinsO
7/20/2010 5:52:00	********** Calculating .... _AB_v, 7/20/2010 5:51:24 PM	DawkinsO
7/20/2010 5:52:00	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	DawkinsO
7/20/2010 5:52:00	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	DawkinsO
7/20/2010 5:52:00	=>Start 280568, L25FA2AA, 0, RA	DawkinsO
7/20/2010 5:52:01	=> Calc	DawkinsO
7/20/2010 5:52:01	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	DawkinsO
7/20/2010 5:52:01	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	DawkinsO
7/20/2010 5:52:01	=>Start 280569, L25FK2AA, 0, RA	DawkinsO
7/20/2010 5:52:01	=> Calc	DawkinsO
7/20/2010 5:52:01	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	DawkinsO
7/20/2010 5:52:01	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	DawkinsO
7/20/2010 5:52:01	=>Start 280570, L25FQ2AA, 0, RA	DawkinsO
7/20/2010 5:52:01	=> Calc	DawkinsO
7/20/2010 5:52:01	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	DawkinsO
7/20/2010 5:52:01	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	DawkinsO
7/20/2010 5:52:02	=>Start 280571, L25FR2AA, 0, RA	DawkinsO
7/20/2010 5:52:02	=> Calc	DawkinsO
7/20/2010 5:52:02	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	DawkinsO
7/20/2010 5:52:02	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	DawkinsO
7/20/2010 5:52:02	=>Start 280572, L26772AA, 0, RA	DawkinsO
7/20/2010 5:52:02	=> Calc	DawkinsO
7/20/2010 5:52:02	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	DawkinsO
7/20/2010 5:52:02	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	DawkinsO
7/20/2010 5:52:02	=>Start 280573, L26774AC, 0, RA	DawkinsO
7/20/2010 5:52:22	=> Calc	DawkinsO
7/20/2010 5:52:22	********** Calculation Complete... _AB_v, 7/20/2010 5:52:22 PM	DawkinsO

UST Number: L25FA2AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-C File: [quad10.sample.C]L25FA2AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.C_15;5767

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00079	00000	0100	00000	1000	20-JUL-2010 16:07:37.29

Bkg File: [quad10.bkgrnd]2010-07-20_0252.C_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00013	0200	0.07	00000	1000	20-JUL-2010 02:52:35.94

UST Number: L25FK2AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-B File: [quad10.sample.B]L25FK2AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.B_15;5751

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00047	00000	0100	00000	1000	20-JUL-2010 14:13:01.94

Bkg File: [quad10.bkgrnd]2010-07-20_0252.B_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00006	0200	0.03	00000	1000	20-JUL-2010 02:52:35.94

UST Number: L25FQ2AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-A File: [quad10.sample.A]L25FQ2AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.A_15;5751

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00012	00000	0100	00000	1000	20-JUL-2010 14:13:01.94

Bkg File: [quad10.bkgrnd]2010-07-20_0252.A_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00003	0200	0.02	00000	1000	20-JUL-2010 02:52:35.94

UST Number: L25FR2AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-E File: [quad10.sample.E]L25FR2AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.E_15;5746

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00013	00000	0100	00000	1000	20-JUL-2010 14:13:01.94

Bkg File: [quad10.bkgrnd]2010-07-20_0252.E_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00001	0200	0.01	00000	1000	20-JUL-2010 02:52:35.94

UST Number: L26772AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-D File: [quad10.sample.D]L26772AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.D_15;5757

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00003	00000	0100	00000	1000	20-JUL-2010 14:13:01.94

Bkg File: [quad10.bkgrnd]2010-07-20_0731.D_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00010	0200	0.05	00000	1000	20-JUL-2010 07:31:46.22

UST Number: L26774AC Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-C File: [quad10.sample.C]L26774AC.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.C_15;5767

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00819	00000	0100	00000	1000	20-JUL-2010 14:13:01.94

Bkg File: [quad10.bkgrnd]2010-07-20_0252.C_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00013	0200	0.07	00000	1000	20-JUL-2010 02:52:35.94

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

7/8/2010 8:59:48 AM

Lot No., Due Date: J0F180565; 07/02/2010
Client, Site: 536403; YERINGTON - BRC Yerington Mine, NV
QC Batch No., Method Test: 0172163; RRATOT RaTot by GPC
SDG, Matrix: 41625; WATER

	Yes	No	N/A
1.0 COC			
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		
2.0 QC Batch			
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2.2 Are the QC appropriate for the analysis included in the batch?	✓		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓		
2.4 Does the Worksheets include a Tracer Vial label for each sample?	✓		
3.0 QC & Samples			
3.1 Is the blank results, yield, and MDA within contract limits?	✓		
3.2 Is the LCS result, yield, and MDA within contract limits?		✓	
3.3 Are the MS/MSD results, yields, and MDA within contract limits?			✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?			✓
3.5 Are the sample yields and MDAs within contract limits?	✓		
4.0 Raw Data			
4.1 Were results calculated in the correct units?	✓		
4.2 Were analysis volumes entered correctly?	✓		
4.3 Were Yields entered correctly?			✓
4.4 Were spectra reviewed/meet contractual requirements?			✓
4.5 Were raw counts reviewed for anomalies?	✓		
5.0 Other			
5.1 Are all nonconformances included and noted?	✓		
5.2 Are all required forms filled out?	✓		
5.3 Was the correct methodology used?	✓		
5.4 Was transcription checked?	✓		
5.5 Were all calculations checked at a minimum frequency?	✓		
5.6 Are worksheet entries complete and correct?	✓		

6.0 Comments on any No response:
NCM 10-16262

First Level Lisa Autopson **Date** 7/8/10

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist

RADIOCHEMISTRY

Second Level Review

Batch Number: 0172163

Review Item	Yes (√)	No (√)	NA (√)
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 within contract acceptance criteria?	√	√	
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	√		
7. Do the MS/MSD results and yields meet acceptance criteria?			√
8. Do the duplicate sample results and yields meet acceptance criteria?		√	
C. Other 1. Are all Non-conformances 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: Erika Jordan Date: 7/18/10

LS-038B, Rev. 10, 9/07

Clouseau
Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: **10-16262**
NCM Initiated By: Lisa Antonson
Date Opened: 07/08/2010
Date Closed:

Classification: **Anomaly**
Status: **PMREVIEW**
Production Area: Environmental - Prep
Tests: RaTot by GPC
Lot #'s (Sample #'s): J0F180565 (1,2,3,4), J0F210000 (163),
QC Batches: 0172163,

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

Problem Description / Root Cause

Name	Date	Description
Lisa Antonson	07/08/2010	The LCS was recovered low in the original count. A recount brought it within limits. There is no duplicate in this batch due to insufficient volume.

Corrective Action

Name	Date	Corrective Action
Lisa Antonson	07/08/2010	The LCS was recounted.

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: 7/8/2010

Page 1 of 1

6/29/2010 9:03:32 AM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown
and Caldwell

BQ Total Alpha Radium Prp/Sep RA002
TD Total Alpha Radium by GPC
01 STANDARD TEST SET

Balance Id:1120403183

Pipet #:

Sep1 DT/Tm Tech: 6/30/10 11:53 DL

Sep2 DT/Tm Tech:

Prep Tech: LucasD

AnalyDueDate: 07/02/2010

Batch: 0172163 WATER pCi/L PM, Quote: EJ , 73181

SEQ Batch, Test: None All Tests: BQTD, 0172162 AWTA, 0172163 BQTD,

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 L25FA-1-AA J0F180565-1-SAMP 06/15/2010 00:00		320.00g,in AmtRec: 1XLP	RATC11438 06/04/10 #Containers: 1	1½"	15.9		10A Scr:	0900 Alpha: 5.20E-05 uCi/Sa	7/1/10 ME Beta: 4.98E-05 uCi/Sa	
2 L25FK-1-AA J0F180565-2-SAMP 06/15/2010 00:00		286.10g,in AmtRec: 1XLP	RATC11439 06/04/10 #Containers: 1		18.2		10B Scr:	Alpha: 2.37E-04 uCi/Sa	Beta: -5.74E-05 uCi/Sa	
3 L25FK-1-AD-X J0F180565-2-DUP 06/15/2010 00:00		AmtRec: 1XLP	#Containers: 1	ISV			Scr:	Alpha: 2.37E-04 uCi/Sa	Beta: -5.74E-05 uCi/Sa	
4 L25FQ-1-AA J0F180565-3-SAMP 06/15/2010 00:00		331.80g,in AmtRec: 1XLP	RATC11440 06/04/10 #Containers: 1		17.2		10C Scr:	0900 Alpha: 2.25E-03 uCi/Sa 8.0E-02L	7/1/10 ME Beta: 7.12E-05 uCi/Sa	
5 L25FR-1-AA J0F180565-4-SAMP 06/15/2010 00:00		239.10g,in AmtRec: 1XLP	RATC11442 06/04/10 #Containers: 1		17.1		10E Scr:	Alpha: -4.80E-05 uCi/Sa	Beta: 2.84E-05 uCi/Sa	
6 L2677-1-AA-B J0F210000-163-BLK 06/21/2010 13:25 pd		500.70g,in AmtRec:	RATC11443 06/04/10 #Containers: 1		16.5		10A Scr:	1102 Alpha:	7/1/10 ME Beta:	
7 L2677-1-AC-C J0F210000-163-LCS 06/21/2010 13:25 pd		501.20g,in AmtRec:	RTSA1532 06/04/10 #Containers: 1		15.8		10B Scr:	Alpha:	Beta:	

TestAmerica Laboratories, Inc.

6/29/2010 9:03:33 AM

Sample Preparation/Analysis

BQ Total Alpha Radium Prp/Sep RA002
TD Total Alpha Radium by GPC
01 STANDARD TEST SET

Balance Id:1120482733,1120482733,1120

Pipet #: _____

AnalyDueDate: 07/02/2010

Sep1 DT/Tm Tech:

Batch: 0172163 **pCi/L**
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: ,LucasD

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

Comments: L25FA-SAMP "Comments. No Dup. poured, due to insuff. volume amount. Please recount on diff. detector. JB 6-22-10; All samples' alliquots are poured up with what was ","left of samples.- DL 6
L25FK-SAMP "Comments. Sample L2FK only poured 200 ml. geo. due to insuff. sample amount. JB 6-22-10; All samples' alliquots are poured up with what was left of ","samples.- DL 6/28/10",
L25FQ-SAMP "Comments: All samples' alliquots are poured up with what was left of samples.- DL 6/28/10"
L25FR-SAMP "Comments: All samples' alliquots are poured up with what was left of samples.- DL 6/28/10"

```
All Clients for Batch:
   536403, Brown and Caldwell                    Brown and Caldwell          ,  EJ , 73181
```

```
L25FA1AA-SAMP Constituent List:
 RA          RDL:1.00E+00    pCi/L     LCL:        UCL:        RPD:
L26771AA-BLK:
 RA          RDL:1.00E+00    pCi/L     LCL:        UCL:        RPD:
L26771AC-LCS:

L25FA1AA-SAMP Calc Info:
    Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
L26771AA-BLK:
    Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
L26771AC-LCS:
    Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

7/1/2010 4:03:58 PM

Sample Preparation/Analysis

536403, Brown and Caldwell Brown
and Caldwell

BQ Total Alpha Radium Prp/Sep RA002
TD Total Alpha Radium by GPC
01 STANDARD TEST SET

Balance Id:1120403183
Pipet #:

AnalyDueDate: 07/02/2010

Sep1 DT/Tm Tech: 6/30/10 11:53

Batch: 0172163 WATER pCi/L PM, Quote: EJ , 73181

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: LucasD

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 L25FA-1-AA J0F180565-1-SAMP 06/15/2010 00:00		320.00g,in AmtRec: 1XLP	RATC11438 06/04/10 #Containers: 1						Scr: Alpha: 5.20E-05 uCi/Sa	Beta: 4.98E-05 uCi/Sa
2 L25FK-1-AA J0F180565-2-SAMP 06/15/2010 00:00		286.10g,in AmtRec: 1XLP	RATC11439 06/04/10 #Containers: 1						Scr: Alpha: 2.37E-04 uCi/Sa	Beta: -5.74E-05 uCi/Sa
3 L25FQ-1-AA J0F180565-3-SAMP 06/15/2010 00:00		331.80g,in AmtRec: 1XLP	RATC11440 06/04/10 #Containers: 1						Scr: Alpha: 2.25E-03 uCi/Sa 8.0E-02L	Beta: 7.12E-05 uCi/Sa
4 L25FR-1-AA J0F180565-4-SAMP 06/15/2010 00:00		239.10g,in AmtRec: 1XLP	RATC11442 06/04/10 #Containers: 1						Scr: Alpha: -4.80E-05 uCi/Sa	Beta: 2.84E-05 uCi/Sa
5 L2677-1-AA-B J0F210000-163-BLK 06/21/2010 13:25 pd		500.70g,in AmtRec:	RATC11443 06/04/10 #Containers: 1						Scr: Alpha:	Beta:
6 L2677-1-AC-C J0F210000-163-LCS 06/21/2010 13:25 pd		501.20g,in AmtRec:	RTSA1532 06/04/10 #Containers: 1						Scr: Alpha:	Beta:
7 L2677-2-AC-C J0F210000-163-LCS 07/01/2010 16:03 pd		501.2gs AmtRec:	RTSA 1532 #Containers: 1	15.8		10A		1840	7/1/10 OD Scr: Alpha:	Beta:

TestAmerica Laboratories, Inc.

Sample Preparation/Analysis

BQ Total Alpha Radium Prp/Sep RA002
TD Total Alpha Radium by GPC
01 STANDARD TEST SET

AnalyDueDate: 07/02/2010

Batch: 0172163 pCi/L
SEQ Batch, Test: None

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

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 L2677-3-AC-C J0F210000-163-LCS 07/01/2010 16:03 pd		AmtRec:	#Containers: 1					Scr:	Alpha:	Beta:

Comments:
L25FA-SAMP "Comments. No Dup. poured, due to insuff. volume amount. Please recount on diff. detector. JB 6-22-10; All samples' alliquots are poured up with what was ","left of samples.- DL 6
L25FK-SAMP "Comments. Sample L2FK only poured 200 ml. geo. due to insuff. sample amount. JB 6-22-10; All samples' alliquots are poured up with what was left of ","samples.- DL 6/28/10",
L25FQ-SAMP "Comments: All samples' alliquots are poured up with what was left of samples.- DL 6/28/10"
L25FR-SAMP "Comments: All samples' alliquots are poured up with what was left of samples.- DL 6/28/10"

```
All Clients for Batch:
   536403, Brown and Caldwell                    Brown and Caldwell          ,  EJ , 73181
```

```
L25FA1AA-SAMP Constituent List:
  RA          RDL:1.00E+00    pCi/L     LCL:        UCL:        RPD:
L26771AA-BLK:
  RA          RDL:1.00E+00    pCi/L     LCL:        UCL:        RPD:
L26771AC-LCS:

L26772AC-LCS:

L26773AC-LCS:

L25FA1AA-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
L26771AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
L26771AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
L26772AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
L26773AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```


TestAmerica Laboratories, Inc.

7/8/2010 8:58:52 AM

ICOC Fraction Transfer/Status Report

ByDate: 7/8/2009, 7/13/2010, Batch: '0172163', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
0172163						
AC		Rev1C	LucasD	6/29/2010 8:31:46		
SC			mcginnist	IsBatched	6/21/2010 2:45:33 PM	ICOC_RADCALC v4.8.40
SC			LucasD	InPrep	6/29/2010 8:31:46 AM	RL-RA-002 REVISION 1
SC			LucasD	Sep1C	6/30/2010 12:00:31 PM	RL-RA-002 REVISION 1
SC			DAWKINSO	InCnt1	6/30/2010 4:16:21 PM	RL-CI-006 REVISION 1
SC			ClarkR	CalcC	7/1/2010 12:41:16 PM	RL-CI-006 REVISION 1
SC			DAWKINSO	CalcC	7/1/2010 8:24:56 PM	RL-CI-006 REVISION 1
SC			antonsonl	Rev1C	7/8/2010 8:58:43 AM	RL-DR-001 Rev 0
AC			LucasD	6/30/2010 12:00:31		
AC			DAWKINSO	6/30/2010 4:16:21 PM		
AC			ClarkR	7/1/2010 12:41:16 PM		
AC			DAWKINSO	7/1/2010 8:24:56 PM		
AC			antonsonl	7/8/2010 8:58:43 AM		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Grp Rec Cnt: 6

ICOCFractions v4.8.44

7/8/2010 8:58:51 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
41625	**9L25FA10**			**J0F1805651**	S-1 MWMP	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	0		6/22/2010 11:50:36	**8.423E-01**	9.444E+00	9.444E+00	3.418E+01	PCI/LITER			4.995E-1
RA	BQTD	0		7/1/2010 8:09:51 AM	**1.7468E+00**	2.485E-01	3.024E-01	3.772E-01	pCi/L		0.935	3.2E-1
RA-228	AWTA	0		6/22/2010 11:50:36	**-3.7171E+01**	5.022E+01	5.022E+01	1.748E+02	PCI/LITER			4.995E-1
TH-232	AWTA	0		6/22/2010 11:50:36	**1.4856E+01**	6.442E+01	6.442E+01	2.273E+02	PCI/LITER			4.995E-1
TH-234	AWTA	0		6/22/2010 11:50:36	**-3.6255E+02**	1.08E+03	1.08E+03	3.901E+03	PCI/LITER			4.995E-1
41625	**9L25FK10**			**J0F1805652**	S-12A MWMP	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	0		6/22/2010 3:17:56 PM	**4.5393E+00**	1.333E+01	1.333E+01	4.834E+01	PCI/LITER			1.984E-1
RA	BQTD	0		7/1/2010 8:09:51 AM	**1.3741E+00**	2.169E-01	2.602E-01	1.913E-01	pCi/L		1.0	2.861E-1
RA-228	AWTA	0		6/22/2010 3:17:56 PM	**-9.1633E+01**	6.155E+01	6.155E+01	2.075E+02	PCI/LITER			1.984E-1
TH-232	AWTA	0		6/22/2010 3:17:56 PM	**1.5081E+02**	8.926E+01	8.926E+01	3.123E+02	PCI/LITER			1.984E-1
TH-234	AWTA	0		6/22/2010 3:17:56 PM	**1.5156E+03**	1.351E+03	1.351E+03	5.304E+03	PCI/LITER			1.984E-1
41625	**9L25FQ10**			**J0F1805653**	S-24 MWMP	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	0		6/22/2010 6:43:43 PM	**-7.2142E+00**	9.743E+00	9.743E+00	3.376E+01	PCI/LITER			4.996E-1
RA	BQTD	0		7/1/2010 8:09:51 AM	**3.7998E+00**	3.425E-01	5.148E-01	4.566E-01	pCi/L		1.0	3.318E-1
RA-228	AWTA	0		6/22/2010 6:43:43 PM	**-7.7035E+01**	4.984E+01	4.984E+01	1.67E+02	PCI/LITER			4.996E-1
TH-232	AWTA	0		6/22/2010 6:43:43 PM	**-2.9937E+00**	6.982E+01	6.982E+01	2.434E+02	PCI/LITER			4.996E-1
TH-234	AWTA	0		6/22/2010 6:43:43 PM	**1.4525E+03**	1.026E+03	1.026E+03	4.093E+03	PCI/LITER			4.996E-1
41625	**9L25FR10**			**J0F1805654**	S-25 MWMP	WATER	6/18/2010 10:00:00	6/15/2010				
CS-137	AWTA	0		6/22/2010 10:13:36 PM	**-1.829E+01**	9.829E+00	9.829E+00	3.187E+01	PCI/LITER			4.996E-1
RA	BQTD	0		7/1/2010 8:09:51 AM	**1.2091E-01**	8.892E-02	8.973E-02	3.37E-01	pCi/L		1.0	2.391E-1
RA-228	AWTA	0		6/22/2010 10:13:36 PM	**1.4509E+01**	5.866E+01	5.866E+01	1.814E+02	PCI/LITER			4.996E-1
TH-232	AWTA	0		6/22/2010 10:13:36 PM	**7.2677E+01**	6.986E+01	6.986E+01	2.493E+02	PCI/LITER			4.996E-1
TH-234	AWTA	0		6/22/2010 10:13:36 PM	**-4.0949E+02**	9.452E+02	9.452E+02	3.429E+03	PCI/LITER			4.996E-1
41625	**L26771AB**			**J0F210000163**	INTRA-LAB BLANK	WATER	6/18/2010 10:00:00	6/15/2010				
RA	BQTD	0	B	7/1/2010 10:11:50 AM	**6.6892E-02**	5.466E-02	5.506E-02	2.269E-01	pCi/L		0.971	5.007E-1
41625	**L26772CS**			**J0F210000163**	INTRA-LAB CHECK	WATER	6/18/2010 10:00:00	6/15/2010				
RA	BQTD	1	S	7/1/2010 5:49:25 PM	**5.6547E+00**	3.269E-01	6.491E-01	2.149E-01	pCi/L	6.3353E+00	0.929	5.012E-1

0172163, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 4,
**Results Inserted | ReTestInserted | Updated | NotInserted => 6 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 0172163 Alpha Beta, RaTot by GPC , Results 7/1/2010 7:58:40 PM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	ILcC	`IDC	QC	Trc Yld	LCS Yld
RaTot by GPC			Richland Standard Total Radium Wo Blk Subt. *CntU: 0+1, + *SystU, `MDCConst:2.71											
Calc	TD	WATER	**L25FA1AA**	RA	**1.75E+00**	**(3.02E-01)**		pCi/L	R	1.44E-01	3.77E-01		94%	
Calc	TD	WATER	**L25FK1AA**	RA	**1.37E+00**	**(2.60E-01)**		pCi/L	R	4.98E-02	1.91E-01		100%	
Calc	TD	WATER	**L25FQ1AA**	RA	**3.80E+00**	**(5.15E-01)**		pCi/L	R	1.89E-01	4.57E-01		100%	
Calc	TD	WATER	**L25FR1AA**	RA	**1.21E-01**	**(8.97E-02)**	**U4**	pCi/L	R	1.10E-01	3.37E-01		100%	
Calc	TD	WATER	**L26771AA**	RA	**6.69E-02**	**(5.51E-02)**	**U4**	pCi/L	R	8.68E-02	2.27E-01	**B**	97%	
Calc	TD	WATER	**L26771AC**	RA	**2.75E+00**	**(3.61E-01)**		pCi/L	R	2.94E-02	1.13E-01	**S**	93%	43%
Calc	TD	WATER	**L26772AC**	RA	**5.65E+00**	**(6.49E-01)**		pCi/L	R	8.23E-02	2.15E-01	**S**	93%	89%

OK

VMA

7/8/10

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

Page 1

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

RecCnt:7
RADCALC v4.8.34
TestAmerica

Batch Nbr: 0172163

Alpha Beta, RaTot by GPC , Calculated Results

7/1/2010 7:58:40 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	TD	WATER	*STLE	TotalRAWoBS	**L25FA1AA**	**pCi/L**		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53	RATC11438	1	g	
536403,S-1 MWMP					,J0F180565-1		WATER			15.9		RATC11438 Alq		320.00 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	57	18	GPC10A	1.5	N	N	3.2263E-01	1.0000E+00	N	94%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.308E-03)	(0.000E+00)		7%			(0.000E+00)	0.003125		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**1.746756**		5.34000E-01	1.240896	1.240896	0.32 L	94%		0.377245		
				(0.302417)		(7.5974E-02)	(0.205682)	(0.205682)	(0.173205)			0.144385		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L25FK1AA**	**pCi/L**		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53		1	g	
536403,S-12A MWMP					,J0F180565-2		WATER			18.2		RATC11439 Alq		286.10 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	41	2	GPC10B	1.5	N	N	3.2619E-01	1.0000E+00	N	100%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(1.084E-02)	(0.000E+00)		9%			(0.000E+00)	0.003495		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**1.374144**		4.06000E-01	0.872778	0.872778	0.2861 L	100%		0.191261		
				(0.260227)		(6.4094E-02)	(0.159415)	(0.159415)	(0.173205)			0.049799		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L25FQ1AA**	**pCi/L**		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53		1	g	
536403,S-24 MWMP					,J0F180565-3		WATER			17.2		RATC11440 Alq		331.80 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	140	40	GPC10C	1.5	N	N	3.3070E-01	1.0000E+00	N	100%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(1.135E-02)	(0.000E+00)		8%			(0.000E+00)	0.003014		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**3.799827**		1.32000E+00	2.79894	2.79894	0.3318 L	100%		0.456618		
				(0.514831)		(1.1900E-01)	(0.352452)	(0.352452)	(0.173205)			0.189416		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L25FR1AA**	**pCi/L**		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53		1	g	
536403,S-25 MWMP					,J0F180565-4		WATER			17.1		RATC11442 Alq		239.10 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	4	6	GPC10E	1.5	N	N	3.0592E-01	1.0000E+00	N	100%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.254E-03)	(0.000E+00)		8%			(0.000E+00)	0.004182		

() - (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 v4.8.34

TestAmerica

Batch Nbr: 0172163 — Alpha Beta, RaTot by GPC , Calculated Results — 7/1/2010 7:58:40 PM

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**0.120912**	**U4**	2.80000E-02	0.06418	0.06418	0.2391 L	100%		0.33699		
				(0.089728)		(2.0591E-02)	(0.04752)	(0.04752)	(0.173205)			0.110048		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L26771AA**	**pCi/L**	**B**	06/15/10 00:00	07/01/10 10:11	06/30/10 11:53		1	g	
0,INTRA-LAB BLANK					,J0F210000-163		WATER			16.5		RATC11443 Alq		500.70 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 11:01	RA	7	18	GPC10A	1.5	N	N	3.2152E-01	1.0000E+00	N	97%	N		6.8244E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.276E-03)	(0.000E+00)		8%			(0.000E+00)	0.001997		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**0.066892**	**U4**	3.40000E-02	0.074354	0.074354	0.5007 L	97%		0.226895		
				(0.055061)		(2.7785E-02)	(0.06109)	(0.06109)	(0.173205)			0.086841		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L26771AC**	**pCi/L**	**S**	06/15/10 00:00	07/01/10 10:11	06/30/10 11:53	RTSA1532	1	g	
0,INTRA-LAB CHECK					,J0F210000-163		WATER			15.8		RTSA1532 Alq		501.20 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 11:01	RA	138	2	GPC10B	1.5	N	N	3.3048E-01	1.0000E+00	N	93%	N		6.8244E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(1.099E-02)	(0.000E+00)		7%			(0.000E+00)	0.001995		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**2.747651**		1.37600E+00	3.057216	3.057216	0.5012 L	93%	43%	0.11284		
				(0.361374)		(1.1751E-01)	(0.371897)	(0.371897)	(0.173205)			0.02938		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L26772AC**	**pCi/L**	**S**	06/15/10 00:00	07/01/10 17:49	06/30/10 11:53	RTSA1532	1	g	
0,INTRA-LAB CHECK					,J0F210000-163		WATER			15.8				501.20 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 18:39	RA	307	18	GPC10A	1.5	N	N	3.2282E-01	1.0000E+00	N	93%	N		6.2219E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.313E-03)	(0.000E+00)		7%			(0.000E+00)	0.001995		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**5.654732**		3.03400E+00	6.291823	6.291823	0.5012 L	93%	89%	0.214946		
				(0.649069)		(1.7542E-01)	(0.647026)	(0.647026)	(0.005012)			0.082268		

() - (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 v4.8.34 TestAmerica

Batch Nbr: 0172163

Calculation Log

7/1/2010 7:58:41 PM

Time Stamp	Log Entry	User
7/1/2010 12:35:53	Loaded IDB Rows => 6	ClarkRJr
7/1/2010 12:35:53	Updated Sep Date => 6	ClarkRJr
7/1/2010 12:35:55	Inserted IDB Rows => 6	ClarkRJr
7/1/2010 12:38:37	********** Calculating .... _AB_v, 7/1/2010 12:38:05 PM	ClarkRJr
7/1/2010 12:38:37	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:37	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:37	=>Start 279299, L25FA1AA, 0, RA	ClarkRJr
7/1/2010 12:38:37	=> Calc	ClarkRJr
7/1/2010 12:38:37	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:37	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:38	=>Start 279300, L25FK1AA, 0, RA	ClarkRJr
7/1/2010 12:38:38	=> Calc	ClarkRJr
7/1/2010 12:38:38	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:38	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:38	=>Start 279301, L25FQ1AA, 0, RA	ClarkRJr
7/1/2010 12:38:38	=> Calc	ClarkRJr
7/1/2010 12:38:38	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:38	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:39	=>Start 279302, L25FR1AA, 0, RA	ClarkRJr
7/1/2010 12:38:39	=> Calc	ClarkRJr
7/1/2010 12:38:39	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:39	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:39	=>Start 279303, L26771AA, 0, RA	ClarkRJr
7/1/2010 12:38:39	=> Calc	ClarkRJr
7/1/2010 12:38:39	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:39	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:40	=>Start 279304, L26771AC, 0, RA	ClarkRJr
7/1/2010 12:39:00	=> Calc	ClarkRJr
7/1/2010 12:39:00	********** Calculation Complete... _AB_v, 7/1/2010 12:38:59 PM	ClarkRJr
7/1/2010 7:56:50	Loaded IDB Rows => 1	DawkinsO
7/1/2010 7:56:50	Updated Sep Date => 7	DawkinsO
7/1/2010 7:56:53	Inserted IDB Rows => 1	DawkinsO
7/1/2010 7:58:14	********** Calculating .... _AB_v, 7/1/2010 7:57:36 PM	DawkinsO
7/1/2010 7:58:14	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	DawkinsO
7/1/2010 7:58:14	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	DawkinsO
7/1/2010 7:58:14	=>Start 279323, L26772AC, 0, RA	DawkinsO
7/1/2010 7:58:34	=> Calc	DawkinsO
7/1/2010 7:58:34	********** Calculation Complete... _AB_v, 7/1/2010 7:58:34 PM	DawkinsO

UST Number: L25FA1AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-A File: [quad10.sample.A]L25FA1AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.A_15;5733

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00057	00000	0100	00000	1000	1-JUL-2010 08:59:51.40

Bkg File: [quad10.bkgrnd]2010-07-01_0333.A_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00018	0500	0.04	00000	1000	1-JUL-2010 03:33:07.07

```
UST Number: L25FK1AA   Isotope: 181       (QREPORT Rev 28-JAN-10)

  Detector: 10-B          File: [quad10.sample.B]L25FK1AA.181
 Dish Size: 15        Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.B_15;5733

Cycle  Alpha   Beta     Min   Guard   Volts      Finish Date/Time
   1   00041   00000   0100   00000   1000    1-JUL-2010 08:59:51.40

   Bkg File: [quad10.bkgrnd]2010-07-01_0333.B_15        (QREPORT Rev 28-JAN-10)

Cycle  Count    Min      CPM     Guard   Volts         Date/Time
 Bkg   00002   0500       0.00   00000   1000    1-JUL-2010 03:33:07.07
```

UST Number: L25FQ1AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-C File: [quad10.sample.C]L25FQ1AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.C_15;5749

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00140	00000	0100	00000	1000	1-JUL-2010 08:59:51.40

Bkg File: [quad10.bkgrnd]2010-07-01_0333.C_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00040	0500	0.08	00000	1000	1-JUL-2010 03:33:07.07

UST Number: L25FR1AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-E File: [quad10.sample.E]L25FR1AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.E_15;5728

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00004	00000	0100	00000	1000	1-JUL-2010 08:59:51.40

Bkg File: [quad10.bkgrnd]2010-07-01_0333.E_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00006	0500	0.01	00000	1000	1-JUL-2010 03:33:07.07

UST Number: L26771AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-A File: [quad10.sample.A]L26771AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.A_15;5733

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00007	00000	0100	00000	1000	1-JUL-2010 11:01:50.82

Bkg File: [quad10.bkgrnd]2010-07-01_0333.A_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00018	0500	0.04	00000	1000	1-JUL-2010 03:33:07.07

UST Number: L26771AC Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-B File: [quad10.sample.B]L26771AC.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.B_15;5733

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00138	00000	0100	00000	1000	1-JUL-2010 11:01:50.82

Bkg File: [quad10.bkgrnd]2010-07-01_0333.B_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00002	0500	0.00	00000	1000	1-JUL-2010 03:33:07.07

```
UST Number: L26772AC   Isotope: 181       (QREPORT Rev 28-JAN-10)

  Detector: 10-A          File: [quad10.sample.A]L26772AC.181
 Dish Size: 15        Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.A_15;5733

Cycle  Alpha   Beta     Min   Guard   Volts      Finish Date/Time
   1   00307   00000   0100   00000   1000    1-JUL-2010 18:39:25.51

   Bkg File: [quad10.bkgrnd]2010-07-01_0333.A_15        (QREPORT Rev 28-JAN-10)

Cycle  Count    Min      CPM     Guard   Volts         Date/Time
 Bkg   00018   0500       0.04   00000   1000    1-JUL-2010 03:33:07.07
```

Batch Nbr: 0172163

Alpha Beta, RaTot by GPC , Results

7/1/2010 12:39:06 PM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	ILcC	`IDC	QC	Trc Yld	LCS Yld
RaTot by GPC			Richland Standard Total Radium Wo Blk Subt. *CntU: 0+1, + *SystU, `MDCConst:2.71											
Calc	TD	WATER	**L25FA1AA**	RA	**1.75E+00**	**(3.02E-01)**		pCi/L	R	1.44E-01	3.77E-01		94%	
Calc	TD	WATER	**L25FK1AA**	RA	**1.37E+00**	**(2.60E-01)**		pCi/L	R	4.98E-02	1.91E-01		100%	
Calc	TD	WATER	**L25FQ1AA**	RA	**3.80E+00**	**(5.15E-01)**		pCi/L	R	1.89E-01	4.57E-01		100%	
Calc	TD	WATER	**L25FR1AA**	RA	**1.21E-01**	**(8.97E-02)**	**U4**	pCi/L	R	1.10E-01	3.37E-01		100%	
Calc	TD	WATER	**L26771AA**	RA	**6.69E-02**	**(5.51E-02)**	**U4**	pCi/L	R	8.68E-02	2.27E-01	**B**	97%	
Calc	TD	WATER	**L26771AC**	RA	**2.75E+00**	**(3.61E-01)**		pCi/L	R	2.94E-02	1.13E-01	**S**	93%	43%

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

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

RecCnt:6
RADCALC v4.8.34
TestAmerica

Batch Nbr: 0172163

Alpha Beta, RaTot by GPC , Calculated Results

7/1/2010 12:39:07 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	TD	WATER	*STLE	TotalRAWoBS	**L25FA1AA**	**pCi/L**		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53	RATC11438	1	g	
536403,S-1 MWMP					,J0F180565-1		WATER			15.9		RATC11438 Alq		320.00 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	57	18	GPC10A	1.5	N	N	3.2263E-01	1.0000E+00	N	94%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.308E-03)	(0.000E+00)		7%			(0.000E+00)	0.003125		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**1.746756**		5.34000E-01	1.240896	1.240896	0.32 L	94%		0.377245		
				(0.302417)		(7.5974E-02)	(0.205682)	(0.205682)	(0.173205)			0.144385		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L25FK1AA**	**pCi/L**		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53		1	g	
536403,S-12A MWMP					,J0F180565-2		WATER			18.2		RATC11439 Alq		286.10 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	41	2	GPC10B	1.5	N	N	3.2619E-01	1.0000E+00	N	100%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(1.084E-02)	(0.000E+00)		9%			(0.000E+00)	0.003495		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**1.374144**		4.06000E-01	0.872778	0.872778	0.2861 L	100%		0.191261		
				(0.260227)		(6.4094E-02)	(0.159415)	(0.159415)	(0.173205)			0.049799		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L25FQ1AA**	**pCi/L**		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53		1	g	
536403,S-24 MWMP					,J0F180565-3		WATER			17.2		RATC11440 Alq		331.80 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	140	40	GPC10C	1.5	N	N	3.3070E-01	1.0000E+00	N	100%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(1.135E-02)	(0.000E+00)		8%			(0.000E+00)	0.003014		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**3.799827**		1.32000E+00	2.79894	2.79894	0.3318 L	100%		0.456618		
				(0.514831)		(1.1900E-01)	(0.352452)	(0.352452)	(0.173205)			0.189416		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L25FR1AA**	**pCi/L**		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53		1	g	
536403,S-25 MWMP					,J0F180565-4		WATER			17.1		RATC11442 Alq		239.10 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	4	6	GPC10E	1.5	N	N	3.0592E-01	1.0000E+00	N	100%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.254E-03)	(0.000E+00)		8%			(0.000E+00)	0.004182		

() - (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 v4.8.34

TestAmerica

Batch Nbr: 0172163 — Alpha Beta, RaTot by GPC , Calculated Results — 7/1/2010 12:39:07 PM

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**0.120912**	**U4**	2.80000E-02	0.06418	0.06418	0.2391 L	100%		0.33699		
				(0.089728)		(2.0591E-02)	(0.04752)	(0.04752)	(0.173205)			0.110048		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L26771AA**	**pCi/L**	**B**	06/15/10 00:00	07/01/10 10:11	06/30/10 11:53		1	g	
0,INTRA-LAB BLANK					,J0F210000-163		WATER			16.5		RATC11443 Alq		500.70 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 11:01	RA	7	18	GPC10A	1.5	N	N	3.2152E-01	1.0000E+00	N	97%	N		6.8244E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.276E-03)	(0.000E+00)		8%			(0.000E+00)	0.001997		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**0.066892**	**U4**	3.40000E-02	0.074354	0.074354	0.5007 L	97%		0.226895		
				(0.055061)		(2.7785E-02)	(0.06109)	(0.06109)	(0.173205)			0.086841		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L26771AC**	**pCi/L**	**S**	06/15/10 00:00	07/01/10 10:11	06/30/10 11:53	RTSA1532	1	g	
0,INTRA-LAB CHECK					,J0F210000-163		WATER			15.8		RTSA1532 Alq		501.20 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 11:01	RA	138	2	GPC10B	1.5	N	N	3.3048E-01	1.0000E+00	N	93%	N		6.8244E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(1.099E-02)	(0.000E+00)		7%			(0.000E+00)	0.001995		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**2.747651**		1.37600E+00	3.057216	3.057216	0.5012 L	93%	43%	0.11284		
				(0.361374)		(1.1751E-01)	(0.371897)	(0.371897)	(0.173205)			0.02938		

() - (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 v4.8.34 TestAmerica

Batch Nbr: 0172163

Calculation Log

7/1/2010 12:39:07 PM

Time Stamp	Log Entry	User
7/1/2010 12:35:53	Loaded IDB Rows => 6	ClarkRJr
7/1/2010 12:35:53	Updated Sep Date => 6	ClarkRJr
7/1/2010 12:35:55	Inserted IDB Rows => 6	ClarkRJr
7/1/2010 12:38:37	********** Calculating .... _AB_v, 7/1/2010 12:38:05 PM	ClarkRJr
7/1/2010 12:38:37	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:37	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:37	=>Start 279299, L25FA1AA, 0, RA	ClarkRJr
7/1/2010 12:38:37	=> Calc	ClarkRJr
7/1/2010 12:38:37	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:37	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:38	=>Start 279300, L25FK1AA, 0, RA	ClarkRJr
7/1/2010 12:38:38	=> Calc	ClarkRJr
7/1/2010 12:38:38	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:38	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:38	=>Start 279301, L25FQ1AA, 0, RA	ClarkRJr
7/1/2010 12:38:38	=> Calc	ClarkRJr
7/1/2010 12:38:38	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:38	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:39	=>Start 279302, L25FR1AA, 0, RA	ClarkRJr
7/1/2010 12:38:39	=> Calc	ClarkRJr
7/1/2010 12:38:39	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:39	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:39	=>Start 279303, L26771AA, 0, RA	ClarkRJr
7/1/2010 12:38:39	=> Calc	ClarkRJr
7/1/2010 12:38:39	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:39	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:40	=>Start 279304, L26771AC, 0, RA	ClarkRJr
7/1/2010 12:39:00	=> Calc	ClarkRJr
7/1/2010 12:39:00	********** Calculation Complete... _AB_v, 7/1/2010 12:38:59 PM	ClarkRJr

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

7/8/2010 8:59:48 AM

Lot No., Due Date: J0F180565; 07/02/2010
Client, Site: 536403; YERINGTON - BRC Yerington Mine, NV
QC Batch No., Method Test: 0172163; RRATOT RaTot by GPC
SDG, Matrix: 41625; WATER

	Yes	No	N/A
1.0 COC			
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		
2.0 QC Batch			
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2.2 Are the QC appropriate for the analysis included in the batch?	✓		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓		
2.4 Does the Worksheets include a Tracer Vial label for each sample?	✓		
3.0 QC & Samples			
3.1 Is the blank results, yield, and MDA within contract limits?	✓		
3.2 Is the LCS result, yield, and MDA within contract limits?		✓	
3.3 Are the MS/MSD results, yields, and MDA within contract limits?			✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?			✓
3.5 Are the sample yields and MDAs within contract limits?	✓		
4.0 Raw Data			
4.1 Were results calculated in the correct units?	✓		
4.2 Were analysis volumes entered correctly?	✓		
4.3 Were Yields entered correctly?			✓
4.4 Were spectra reviewed/meet contractual requirements?			✓
4.5 Were raw counts reviewed for anomalies?	✓		
5.0 Other			
5.1 Are all nonconformances included and noted?	✓		
5.2 Are all required forms filled out?	✓		
5.3 Was the correct methodology used?	✓		
5.4 Was transcription checked?	✓		
5.5 Were all calculations checked at a minimum frequency?	✓		
5.6 Are worksheet entries complete and correct?	✓		

6.0 Comments on any No response:
NCM 10-16262

First Level Lisa Autopson **Date** 7/8/10

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist

RADIOCHEMISTRY

Second Level Review

Batch Number: 0172163

Review Item	Yes (√)	No (√)	NA (√)
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 within contract acceptance criteria?	√	√	
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	√		
7. Do the MS/MSD results and yields meet acceptance criteria?			√
8. Do the duplicate sample results and yields meet acceptance criteria?		√	
C. Other 1. Are all Non-conformances 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: Erika Jordan Date: 7/18/10

LS-038B, Rev. 10, 9/07

Clouseau Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: **10-16262**
NCM Initiated By: Lisa Antonson
Date Opened: 07/08/2010
Date Closed:

Classification: **Anomaly**
Status: **PMREVIEW**
Production Area: Environmental - Prep
Tests: RaTot by GPC
Lot #'s (Sample #'s): J0F180565 (1,2,3,4), J0F210000 (163),
QC Batches: 0172163,

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

Problem Description / Root Cause

Name	Date	Description
Lisa Antonson	07/08/2010	The LCS was recovered low in the original count. A recount brought it within limits. There is no duplicate in this batch due to insufficient volume.

Corrective Action

Name	Date	Corrective Action
Lisa Antonson	07/08/2010	The LCS was recounted.

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: 7/8/2010

6/29/2010 9:03:32 AM

Sample Preparation/Analysis

536403, Brown and Caldwell , Brown
and Caldwell

BQ Total Alpha Radium Prp/Sep RA002
TD Total Alpha Radium by GPC
01 STANDARD TEST SET

AnalyDueDate: 07/02/2010

Balance Id:1120403183

Pipet #:

Sep1 DT/Tm Tech: 6/30/10 11:53 DL

Sep2 DT/Tm Tech:

Prep Tech: LucasD

Batch: 0172163 WATER pCi/L PM, Quote: EJ , 73181

SEQ Batch, Test: None All Tests: BQTD, 0172162 AWTA, 0172163 BQTD,

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 **L25FA-1-AA** J0F180565-1-SAMP 06/15/2010 00:00		320.00g,in AmtRec: 1XLP #Containers: 1	RATC11438 06/04/10	1½"	15.9		10A Scr:	0900 Alpha: 5.20E-05 uCi/Sa	7/1/10m Beta: 4.98E-05 uCi/Sa	
2 **L25FK-1-AA** J0F180565-2-SAMP 06/15/2010 00:00		286.10g,in AmtRec: 1XLP #Containers: 1	RATC11439 06/04/10		18.2		10B Scr:	Alpha: 2.37E-04 uCi/Sa	Beta: -5.74E-05 uCi/Sa	
3 **L25FK-1-AD-X** J0F180565-2-DUP 06/15/2010 00:00		AmtRec: 1XLP #Containers: 1		ISV			Scr:	Alpha: 2.37E-04 uCi/Sa	Beta: -5.74E-05 uCi/Sa	
4 **L25FQ-1-AA** J0F180565-3-SAMP 06/15/2010 00:00		331.80g,in AmtRec: 1XLP #Containers: 1	RATC11440 06/04/10		17.2		10C Scr:	0900 Alpha: 2.25E-03 uCi/Sa 8.0E-02L	7/1/10m Beta: 7.12E-05 uCi/Sa	
5 **L25FR-1-AA** J0F180565-4-SAMP 06/15/2010 00:00		239.10g,in AmtRec: 1XLP #Containers: 1	RATC11442 06/04/10		17.1		10E Scr:	Alpha: -4.80E-05 uCi/Sa	Beta: 2.84E-05 uCi/Sa	
6 **L2677-1-AA-B** J0F210000-163-BLK 06/21/2010 13:25 pd		500.70g,in AmtRec: #Containers: 1	RATC11443 06/04/10		16.5		10A Scr:	1102 Alpha:	7/1/10m Beta:	
7 **L2677-1-AC-C** J0F210000-163-LCS 06/21/2010 13:25 pd		501.20g,in AmtRec: #Containers: 1	RTSA1532 06/04/10		15.8		10B Scr:	Alpha:	Beta:	

TestAmerica Laboratories, Inc.

201

6/29/2010 9:03:33 AM

Sample Preparation/Analysis

BQ Total Alpha Radium Prp/Sep RA002
TD Total Alpha Radium by GPC
01 STANDARD TEST SET

Balance Id:1120482733,1120482733,1120

Pipet #: _____

AnalyDueDate: 07/02/2010

Sep1 DT/Tm Tech:

Batch: 0172163 pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,LucasD

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

Comments: L25FA-SAMP "Comments. No Dup. poured, due to insuff. volume amount. Please recount on diff. detector. JB 6-22-10; All samples' alliquots are poured up with what was ","left of samples.- DL 6
L25FK-SAMP "Comments. Sample L2FK only poured 200 ml. geo. due to insuff. sample amount. JB 6-22-10; All samples' alliquots are poured up with what was left of ","samples.- DL 6/28/10",
L25FQ-SAMP "Comments: All samples' alliquots are poured up with what was left of samples.- DL 6/28/10"
L25FR-SAMP "Comments: All samples' alliquots are poured up with what was left of samples.- DL 6/28/10"

```
All Clients for Batch:
   536403, Brown and Caldwell                    Brown and Caldwell          ,  EJ , 73181
```

```
L25FA1AA-SAMP Constituent List:
 RA          RDL:1.00E+00    pCi/L     LCL:        UCL:        RPD:
L26771AA-BLK:
 RA          RDL:1.00E+00    pCi/L     LCL:        UCL:        RPD:
L26771AC-LCS:

L25FA1AA-SAMP Calc Info:
    Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
L26771AA-BLK:
    Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
L26771AC-LCS:
    Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

7/1/2010 4:03:58 PM

Sample Preparation/Analysis

536403, Brown and Caldwell Brown
and Caldwell

BQ Total Alpha Radium Prp/Sep RA002
TD Total Alpha Radium by GPC
01 STANDARD TEST SET

Balance Id:1120403183
Pipet #:

AnalyDueDate: 07/02/2010

Sep1 DT/Tm Tech: 6/30/10 11:53

Batch: 0172163 WATER pCi/L PM, Quote: EJ , 73181

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: LucasD

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 L25FA-1-AA J0F180565-1-SAMP 06/15/2010 00:00		320.00g,in AmtRec: 1XLP	RATC11438 06/04/10 #Containers: 1					Scr:	Alpha: 5.20E-05 uCi/Sa	Beta: 4.98E-05 uCi/Sa
2 L25FK-1-AA J0F180565-2-SAMP 06/15/2010 00:00		286.10g,in AmtRec: 1XLP	RATC11439 06/04/10 #Containers: 1					Scr:	Alpha: 2.37E-04 uCi/Sa	Beta: -5.74E-05 uCi/Sa
3 L25FQ-1-AA J0F180565-3-SAMP 06/15/2010 00:00		331.80g,in AmtRec: 1XLP	RATC11440 06/04/10 #Containers: 1					Scr:	Alpha: 2.25E-03 uCi/Sa 8.0E-02L	Beta: 7.12E-05 uCi/Sa
4 L25FR-1-AA J0F180565-4-SAMP 06/15/2010 00:00		239.10g,in AmtRec: 1XLP	RATC11442 06/04/10 #Containers: 1					Scr:	Alpha: -4.80E-05 uCi/Sa	Beta: 2.84E-05 uCi/Sa
5 L2677-1-AA-B J0F210000-163-BLK 06/21/2010 13:25 pd		500.70g,in AmtRec:	RATC11443 06/04/10 #Containers: 1					Scr:	Alpha:	Beta:
6 L2677-1-AC-C J0F210000-163-LCS 06/21/2010 13:25 pd		501.20g,in AmtRec:	RTSA1532 06/04/10 #Containers: 1					Scr:	Alpha:	Beta:
7 L2677-2-AC-C J0F210000-163-LCS 07/01/2010 16:03 pd		501.20g AmtRec:	RTSA 1532 #Containers: 1	15.8		10A		1840 Scr:	7/1/10 OD Alpha:	Beta:

TestAmerica Laboratories, Inc.

Sample Preparation/Analysis

BQ Total Alpha Radium Prp/Sep RA002
TD Total Alpha Radium by GPC
01 STANDARD TEST SET

AnalyDueDate: 07/02/2010

Batch: 0172163 pCi/L
SEQ Batch, Test: None

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

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 L2677-3-AC-C J0F210000-163-LCS 07/01/2010 16:03 pd		AmtRec:	#Containers: 1					Scr:	Alpha:	Beta:

Comments:
L25FA-SAMP "Comments. No Dup. poured, due to insuff. volume amount. Please recount on diff. detector. JB 6-22-10; All samples' alliquots are poured up with what was ","left of samples.- DL 6
L25FK-SAMP "Comments. Sample L2FK only poured 200 ml. geo. due to insuff. sample amount. JB 6-22-10; All samples' alliquots are poured up with what was left of ","samples.- DL 6/28/10",
L25FQ-SAMP "Comments: All samples' alliquots are poured up with what was left of samples.- DL 6/28/10"
L25FR-SAMP "Comments: All samples' alliquots are poured up with what was left of samples.- DL 6/28/10"

```
All Clients for Batch:
   536403, Brown and Caldwell                    Brown and Caldwell          ,  EJ , 73181
```

```
L25FA1AA-SAMP Constituent List:
  RA          RDL:1.00E+00    pCi/L     LCL:        UCL:        RPD:
L26771AA-BLK:
  RA          RDL:1.00E+00    pCi/L     LCL:        UCL:        RPD:
L26771AC-LCS:

L26772AC-LCS:

L26773AC-LCS:

L25FA1AA-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
L26771AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
L26771AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
L26772AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
L26773AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```


TestAmerica Laboratories, Inc.

7/8/2010 8:58:52 AM

ICOC Fraction Transfer/Status Report

ByDate: 7/8/2009, 7/13/2010, Batch: '0172163', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
0172163						
AC		Rev1C	LucasD	6/29/2010 8:31:46		
SC			mcginnist	IsBatched	6/21/2010 2:45:33 PM	ICOC_RADCALC v4.8.40
SC			LucasD	InPrep	6/29/2010 8:31:46 AM	RL-RA-002 REVISION 1
SC			LucasD	Sep1C	6/30/2010 12:00:31 PM	RL-RA-002 REVISION 1
SC			DAWKINSO	InCnt1	6/30/2010 4:16:21 PM	RL-CI-006 REVISION 1
SC			ClarkR	CalcC	7/1/2010 12:41:16 PM	RL-CI-006 REVISION 1
SC			DAWKINSO	CalcC	7/1/2010 8:24:56 PM	RL-CI-006 REVISION 1
SC			antonsonl	Rev1C	7/8/2010 8:58:43 AM	RL-DR-001 Rev 0
AC			LucasD	6/30/2010 12:00:31		
AC			DAWKINSO	6/30/2010 4:16:21 PM		
AC			ClarkR	7/1/2010 12:41:16 PM		
AC			DAWKINSO	7/1/2010 8:24:56 PM		
AC			antonsonl	7/8/2010 8:58:43 AM		

AC: Accepting Entry; SC: Status Change

7/8/2010 8:58:51 AM

Rpt DB Transfer log (Batch Results)

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Cnt Uncert	Tot Uncert	Mda	Matrix / Received Date / Units	Sample Date / Expected	Yield	Volumes
41625	**9L25FA10**			**J0F1805651**	S-1 MWMP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	0		6/22/2010 11:50:36	**8.423E-01**	9.444E+00	9.444E+00	3.418E+01	PCI/LITER			4.995E-1
RA	BQTD	0		7/1/2010 8:09:51 AM	**1.7468E+00**	2.485E-01	3.024E-01	3.772E-01	pCi/L		0.935	3.2E-1
RA-228	AWTA	0		6/22/2010 11:50:36	**-3.7171E+01**	5.022E+01	5.022E+01	1.748E+02	PCI/LITER			4.995E-1
TH-232	AWTA	0		6/22/2010 11:50:36	**1.4856E+01**	6.442E+01	6.442E+01	2.273E+02	PCI/LITER			4.995E-1
TH-234	AWTA	0		6/22/2010 11:50:36	**-3.6255E+02**	1.08E+03	1.08E+03	3.901E+03	PCI/LITER			4.995E-1
41625	**9L25FK10**			**J0F1805652**	S-12A MWMP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	0		6/22/2010 3:17:56 PM	**4.5393E+00**	1.333E+01	1.333E+01	4.834E+01	PCI/LITER			1.984E-1
RA	BQTD	0		7/1/2010 8:09:51 AM	**1.3741E+00**	2.169E-01	2.602E-01	1.913E-01	pCi/L		1.0	2.861E-1
RA-228	AWTA	0		6/22/2010 3:17:56 PM	**-9.1633E+01**	6.155E+01	6.155E+01	2.075E+02	PCI/LITER			1.984E-1
TH-232	AWTA	0		6/22/2010 3:17:56 PM	**1.5081E+02**	8.926E+01	8.926E+01	3.123E+02	PCI/LITER			1.984E-1
TH-234	AWTA	0		6/22/2010 3:17:56 PM	**1.5156E+03**	1.351E+03	1.351E+03	5.304E+03	PCI/LITER			1.984E-1
41625	**9L25FQ10**			**J0F1805653**	S-24 MWMP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	0		6/22/2010 6:43:43 PM	**-7.2142E+00**	9.743E+00	9.743E+00	3.376E+01	PCI/LITER			4.996E-1
RA	BQTD	0		7/1/2010 8:09:51 AM	**3.7998E+00**	3.425E-01	5.148E-01	4.566E-01	pCi/L		1.0	3.318E-1
RA-228	AWTA	0		6/22/2010 6:43:43 PM	**-7.7035E+01**	4.984E+01	4.984E+01	1.67E+02	PCI/LITER			4.996E-1
TH-232	AWTA	0		6/22/2010 6:43:43 PM	**-2.9937E+00**	6.982E+01	6.982E+01	2.434E+02	PCI/LITER			4.996E-1
TH-234	AWTA	0		6/22/2010 6:43:43 PM	**1.4525E+03**	1.026E+03	1.026E+03	4.093E+03	PCI/LITER			4.996E-1
41625	**9L25FR10**			**J0F1805654**	S-25 MWMP	WATER	6/18/2010 10:00:00		6/15/2010			
CS-137	AWTA	0		6/22/2010 10:13:36 PM	**-1.829E+01**	9.829E+00	9.829E+00	3.187E+01	PCI/LITER			4.996E-1
RA	BQTD	0		7/1/2010 8:09:51 AM	**1.2091E-01**	8.892E-02	8.973E-02	3.37E-01	pCi/L		1.0	2.391E-1
RA-228	AWTA	0		6/22/2010 10:13:36 PM	**1.4509E+01**	5.866E+01	5.866E+01	1.814E+02	PCI/LITER			4.996E-1
TH-232	AWTA	0		6/22/2010 10:13:36 PM	**7.2677E+01**	6.986E+01	6.986E+01	2.493E+02	PCI/LITER			4.996E-1
TH-234	AWTA	0		6/22/2010 10:13:36 PM	**-4.0949E+02**	9.452E+02	9.452E+02	3.429E+03	PCI/LITER			4.996E-1
41625	**L26771AB**			**J0F210000163**	INTRA-LAB BLANK	WATER	6/18/2010 10:00:00		6/15/2010			
RA	BQTD	0	B	7/1/2010 10:11:50 AM	**6.6892E-02**	5.466E-02	5.506E-02	2.269E-01	pCi/L		0.971	5.007E-1
41625	**L26772CS**			**J0F210000163**	INTRA-LAB CHECK	WATER	6/18/2010 10:00:00		6/15/2010			
RA	BQTD	1	S	7/1/2010 5:49:25 PM	**5.6547E+00**	3.269E-01	6.491E-01	2.149E-01	pCi/L	6.3353E+00	0.929	5.012E-1

0172163, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 4,
**Results Inserted | ReTestInserted | Updated | NotInserted => 6 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

Batch Nbr: 0172163 Alpha Beta, RaTot by GPC , Results 7/1/2010 7:58:40 PM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	ILcC	`IDC	QC	Trc Yld	LCS Yld
RaTot by GPC			Richland Standard Total Radium Wo Blk Subt. *CntU: 0+1, + *SystU, `MDCConst:2.71											
Calc	TD	WATER	**L25FA1AA**	RA	**1.75E+00**	**(3.02E-01)**		pCi/L	R	1.44E-01	3.77E-01		94%	
Calc	TD	WATER	**L25FK1AA**	RA	**1.37E+00**	**(2.60E-01)**		pCi/L	R	4.98E-02	1.91E-01		100%	
Calc	TD	WATER	**L25FQ1AA**	RA	**3.80E+00**	**(5.15E-01)**		pCi/L	R	1.89E-01	4.57E-01		100%	
Calc	TD	WATER	**L25FR1AA**	RA	**1.21E-01**	**(8.97E-02)**	**U4**	pCi/L	R	1.10E-01	3.37E-01		100%	
Calc	TD	WATER	**L26771AA**	RA	**6.69E-02**	**(5.51E-02)**	**U4**	pCi/L	R	8.68E-02	2.27E-01	**B**	97%	
Calc	TD	WATER	**L26771AC**	RA	**2.75E+00**	**(3.61E-01)**		pCi/L	R	2.94E-02	1.13E-01	**S**	93%	43%
Calc	TD	WATER	**L26772AC**	RA	**5.65E+00**	**(6.49E-01)**		pCi/L	R	8.23E-02	2.15E-01	**S**	93%	89%

OK

VMA

7/8/10

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

Page 1

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

RecCnt:7
RADCALC v4.8.34
TestAmerica

Batch Nbr: 0172163

Alpha Beta, RaTot by GPC , Calculated Results

7/1/2010 7:58:40 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	TD	WATER	*STLE	TotalRAWoBS	**L25FA1AA**	**pCi/L**		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53	RATC11438	1	g	
536403,S-1 MWMP					,J0F180565-1		WATER			15.9		RATC11438 Alq		320.00 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	57	18	GPC10A	1.5	N	N	3.2263E-01	1.0000E+00	N	94%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.308E-03)	(0.000E+00)		7%			(0.000E+00)	0.003125		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**1.746756**		5.34000E-01	1.240896	1.240896	0.32 L	94%		0.377245		
				(0.302417)		(7.5974E-02)	(0.205682)	(0.205682)	(0.173205)			0.144385		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L25FK1AA**	**pCi/L**		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53		1	g	
536403,S-12A MWMP					,J0F180565-2		WATER			18.2		RATC11439 Alq		286.10 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	41	2	GPC10B	1.5	N	N	3.2619E-01	1.0000E+00	N	100%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(1.084E-02)	(0.000E+00)		9%			(0.000E+00)	0.003495		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**1.374144**		4.06000E-01	0.872778	0.872778	0.2861 L	100%		0.191261		
				(0.260227)		(6.4094E-02)	(0.159415)	(0.159415)	(0.173205)			0.049799		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L25FQ1AA**	**pCi/L**		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53		1	g	
536403,S-24 MWMP					,J0F180565-3		WATER			17.2		RATC11440 Alq		331.80 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	140	40	GPC10C	1.5	N	N	3.3070E-01	1.0000E+00	N	100%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(1.135E-02)	(0.000E+00)		8%			(0.000E+00)	0.003014		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**3.799827**		1.32000E+00	2.79894	2.79894	0.3318 L	100%		0.456618		
				(0.514831)		(1.1900E-01)	(0.352452)	(0.352452)	(0.173205)			0.189416		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L25FR1AA**	**pCi/L**		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53		1	g	
536403,S-25 MWMP					,J0F180565-4		WATER			17.1		RATC11442 Alq		239.10 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	4	6	GPC10E	1.5	N	N	3.0592E-01	1.0000E+00	N	100%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.254E-03)	(0.000E+00)		8%			(0.000E+00)	0.004182		

() - (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 v4.8.34

TestAmerica

Batch Nbr: 0172163 — Alpha Beta, RaTot by GPC , Calculated Results — 7/1/2010 7:58:40 PM

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**0.120912**	**U4**	2.80000E-02	0.06418	0.06418	0.2391 L	100%		0.33699		
				(0.089728)		(2.0591E-02)	(0.04752)	(0.04752)	(0.173205)			0.110048		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L26771AA**	**pCi/L**	**B**	06/15/10 00:00	07/01/10 10:11	06/30/10 11:53		1	g	
0,INTRA-LAB BLANK					,J0F210000-163		WATER			16.5		RATC11443 Alq		500.70 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 11:01	RA	7	18	GPC10A	1.5	N	N	3.2152E-01	1.0000E+00	N	97%	N		6.8244E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.276E-03)	(0.000E+00)		8%			(0.000E+00)	0.001997		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**0.066892**	**U4**	3.40000E-02	0.074354	0.074354	0.5007 L	97%		0.226895		
				(0.055061)		(2.7785E-02)	(0.06109)	(0.06109)	(0.173205)			0.086841		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L26771AC**	**pCi/L**	**S**	06/15/10 00:00	07/01/10 10:11	06/30/10 11:53	RTSA1532	1	g	
0,INTRA-LAB CHECK					,J0F210000-163		WATER			15.8		RTSA1532 Alq		501.20 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 11:01	RA	138	2	GPC10B	1.5	N	N	3.3048E-01	1.0000E+00	N	93%	N		6.8244E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(1.099E-02)	(0.000E+00)		7%			(0.000E+00)	0.001995		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**2.747651**		1.37600E+00	3.057216	3.057216	0.5012 L	93%	43%	0.11284		
				(0.361374)		(1.1751E-01)	(0.371897)	(0.371897)	(0.173205)			0.02938		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L26772AC**	**pCi/L**	**S**	06/15/10 00:00	07/01/10 17:49	06/30/10 11:53	RTSA1532	1	g	
0,INTRA-LAB CHECK					,J0F210000-163		WATER			15.8				501.20 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 18:39	RA	307	18	GPC10A	1.5	N	N	3.2282E-01	1.0000E+00	N	93%	N		6.2219E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.313E-03)	(0.000E+00)		7%			(0.000E+00)	0.001995		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**5.654732**		3.03400E+00	6.291823	6.291823	0.5012 L	93%	89%	0.214946		
				(0.649069)		(1.7542E-01)	(0.647026)	(0.647026)	(0.005012)			0.082268		

() - (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 v4.8.34 TestAmerica

Batch Nbr: 0172163

Calculation Log

7/1/2010 7:58:41 PM

Time Stamp	Log Entry	User
7/1/2010 12:35:53	Loaded IDB Rows => 6	ClarkRJr
7/1/2010 12:35:53	Updated Sep Date => 6	ClarkRJr
7/1/2010 12:35:55	Inserted IDB Rows => 6	ClarkRJr
7/1/2010 12:38:37	********** Calculating .... _AB_v, 7/1/2010 12:38:05 PM	ClarkRJr
7/1/2010 12:38:37	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:37	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:37	=>Start 279299, L25FA1AA, 0, RA	ClarkRJr
7/1/2010 12:38:37	=> Calc	ClarkRJr
7/1/2010 12:38:37	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:37	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:38	=>Start 279300, L25FK1AA, 0, RA	ClarkRJr
7/1/2010 12:38:38	=> Calc	ClarkRJr
7/1/2010 12:38:38	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:38	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:38	=>Start 279301, L25FQ1AA, 0, RA	ClarkRJr
7/1/2010 12:38:38	=> Calc	ClarkRJr
7/1/2010 12:38:38	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:38	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:39	=>Start 279302, L25FR1AA, 0, RA	ClarkRJr
7/1/2010 12:38:39	=> Calc	ClarkRJr
7/1/2010 12:38:39	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:39	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:39	=>Start 279303, L26771AA, 0, RA	ClarkRJr
7/1/2010 12:38:39	=> Calc	ClarkRJr
7/1/2010 12:38:39	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:39	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:40	=>Start 279304, L26771AC, 0, RA	ClarkRJr
7/1/2010 12:39:00	=> Calc	ClarkRJr
7/1/2010 12:39:00	********** Calculation Complete... _AB_v, 7/1/2010 12:38:59 PM	ClarkRJr
7/1/2010 7:56:50	Loaded IDB Rows => 1	DawkinsO
7/1/2010 7:56:50	Updated Sep Date => 7	DawkinsO
7/1/2010 7:56:53	Inserted IDB Rows => 1	DawkinsO
7/1/2010 7:58:14	********** Calculating .... _AB_v, 7/1/2010 7:57:36 PM	DawkinsO
7/1/2010 7:58:14	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	DawkinsO
7/1/2010 7:58:14	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	DawkinsO
7/1/2010 7:58:14	=>Start 279323, L26772AC, 0, RA	DawkinsO
7/1/2010 7:58:34	=> Calc	DawkinsO
7/1/2010 7:58:34	********** Calculation Complete... _AB_v, 7/1/2010 7:58:34 PM	DawkinsO

UST Number: L25FA1AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-A File: [quad10.sample.A]L25FA1AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.A_15;5733

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00057	00000	0100	00000	1000	1-JUL-2010 08:59:51.40

Bkg File: [quad10.bkgrnd]2010-07-01_0333.A_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00018	0500	0.04	00000	1000	1-JUL-2010 03:33:07.07

UST Number: L25FK1AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-B File: [quad10.sample.B]L25FK1AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.B_15;5733

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00041	00000	0100	00000	1000	1-JUL-2010 08:59:51.40

Bkg File: [quad10.bkgrnd]2010-07-01_0333.B_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00002	0500	0.00	00000	1000	1-JUL-2010 03:33:07.07

UST Number: L25FQ1AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-C File: [quad10.sample.C]L25FQ1AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.C_15;5749

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00140	00000	0100	00000	1000	1-JUL-2010 08:59:51.40

Bkg File: [quad10.bkgrnd]2010-07-01_0333.C_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00040	0500	0.08	00000	1000	1-JUL-2010 03:33:07.07

UST Number: L25FR1AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-E File: [quad10.sample.E]L25FR1AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.E_15;5728

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00004	00000	0100	00000	1000	1-JUL-2010 08:59:51.40

Bkg File: [quad10.bkgrnd]2010-07-01_0333.E_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00006	0500	0.01	00000	1000	1-JUL-2010 03:33:07.07

UST Number: L26771AA Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-A File: [quad10.sample.A]L26771AA.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.A_15;5733

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00007	00000	0100	00000	1000	1-JUL-2010 11:01:50.82

Bkg File: [quad10.bkgrnd]2010-07-01_0333.A_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00018	0500	0.04	00000	1000	1-JUL-2010 03:33:07.07

UST Number: L26771AC Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-B File: [quad10.sample.B]L26771AC.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.B_15;5733

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00138	00000	0100	00000	1000	1-JUL-2010 11:01:50.82

Bkg File: [quad10.bkgrnd]2010-07-01_0333.B_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00002	0500	0.00	00000	1000	1-JUL-2010 03:33:07.07

UST Number: L26772AC Isotope: 181 (QREPORT Rev 28-JAN-10)

Detector: 10-A File: [quad10.sample.A]L26772AC.181
Dish Size: 15 Bkg File: RDND07$DKA100:[QUAD10.BKGRND]CURRENT.A_15;5733

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00307	00000	0100	00000	1000	1-JUL-2010 18:39:25.51

Bkg File: [quad10.bkgrnd]2010-07-01_0333.A_15 (QREPORT Rev 28-JAN-10)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00018	0500	0.04	00000	1000	1-JUL-2010 03:33:07.07

Batch Nbr: 0172163 Alpha Beta, RaTot by GPC , Results 7/1/2010 12:39:06 PM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	ILcC	`IDC	QC	Trc Yld	LCS Yld
RaTot by GPC			Richland Standard Total Radium Wo Blk Subt. *CntU: 0+1, + *SystU, `MDCConst:2.71											
Calc	TD	WATER	**L25FA1AA**	RA	**1.75E+00**	**(3.02E-01)**		pCi/L	R	1.44E-01	3.77E-01		94%	
Calc	TD	WATER	**L25FK1AA**	RA	**1.37E+00**	**(2.60E-01)**		pCi/L	R	4.98E-02	1.91E-01		100%	
Calc	TD	WATER	**L25FQ1AA**	RA	**3.80E+00**	**(5.15E-01)**		pCi/L	R	1.89E-01	4.57E-01		100%	
Calc	TD	WATER	**L25FR1AA**	RA	**1.21E-01**	**(8.97E-02)**	**U4**	pCi/L	R	1.10E-01	3.37E-01		100%	
Calc	TD	WATER	**L26771AA**	RA	**6.69E-02**	**(5.51E-02)**	**U4**	pCi/L	R	8.68E-02	2.27E-01	**B**	97%	
Calc	TD	WATER	**L26771AC**	RA	**2.75E+00**	**(3.61E-01)**		pCi/L	R	2.94E-02	1.13E-01	**S**	93%	43%

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

Page 1

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

RecCnt:6
RADCALC v4.8.34
TestAmerica

Batch Nbr: 0172163

Alpha Beta, RaTot by GPC , Calculated Results

7/1/2010 12:39:07 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	TD	WATER	*STLE	TotalRAWoBS	L25FA1AA	pCi/L		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53	RATC11438	1	g	
536403,S-1 MWMP					,J0F180565-1		WATER			15.9		RATC11438 Alq		320.00 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	57	18	GPC10A	1.5	N	N	3.2263E-01	1.0000E+00	N	94%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.308E-03)	(0.000E+00)		7%			(0.000E+00)	0.003125		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**1.746756**		5.34000E-01	1.240896	1.240896	0.32 L	94%		0.377245		
				(0.302417)		(7.5974E-02)	(0.205682)	(0.205682)	(0.173205)			0.144385		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	L25FK1AA	pCi/L		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53		1	g	
536403,S-12A MWMP					,J0F180565-2		WATER			18.2		RATC11439 Alq		286.10 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	41	2	GPC10B	1.5	N	N	3.2619E-01	1.0000E+00	N	100%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(1.084E-02)	(0.000E+00)		9%			(0.000E+00)	0.003495		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**1.374144**		4.06000E-01	0.872778	0.872778	0.2861 L	100%		0.191261		
				(0.260227)		(6.4094E-02)	(0.159415)	(0.159415)	(0.173205)			0.049799		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	L25FQ1AA	pCi/L		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53		1	g	
536403,S-24 MWMP					,J0F180565-3		WATER			17.2		RATC11440 Alq		331.80 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	140	40	GPC10C	1.5	N	N	3.3070E-01	1.0000E+00	N	100%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(1.135E-02)	(0.000E+00)		8%			(0.000E+00)	0.003014		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**3.799827**		1.32000E+00	2.79894	2.79894	0.3318 L	100%		0.456618		
				(0.514831)		(1.1900E-01)	(0.352452)	(0.352452)	(0.173205)			0.189416		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	L25FR1AA	pCi/L		06/15/10 00:00	07/01/10 08:09	06/30/10 11:53		1	g	
536403,S-25 MWMP					,J0F180565-4		WATER			17.1		RATC11442 Alq		239.10 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 08:59	RA	4	6	GPC10E	1.5	N	N	3.0592E-01	1.0000E+00	N	100%	N		7.0121E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.254E-03)	(0.000E+00)		8%			(0.000E+00)	0.004182		

() - (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 v4.8.34

TestAmerica

Batch Nbr: 0172163 — Alpha Beta, RaTot by GPC , Calculated Results — 7/1/2010 12:39:07 PM

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**0.120912**	**U4**	2.80000E-02	0.06418	0.06418	0.2391 L	100%		0.33699		
				(0.089728)		(2.0591E-02)	(0.04752)	(0.04752)	(0.173205)			0.110048		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L26771AA**	**pCi/L**	**B**	06/15/10 00:00	07/01/10 10:11	06/30/10 11:53		1	g	
0,INTRA-LAB BLANK					,J0F210000-163		WATER			16.5		RATC11443 Alq		500.70 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 11:01	RA	7	18	GPC10A	1.5	N	N	3.2152E-01	1.0000E+00	N	97%	N		6.8244E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(9.276E-03)	(0.000E+00)		8%			(0.000E+00)	0.001997		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**0.066892**	**U4**	3.40000E-02	0.074354	0.074354	0.5007 L	97%		0.226895		
				(0.055061)		(2.7785E-02)	(0.06109)	(0.06109)	(0.173205)			0.086841		

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk 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	TD	WATER	*STLE	TotalRAWoBS	**L26771AC**	**pCi/L**	**S**	06/15/10 00:00	07/01/10 10:11	06/30/10 11:53	RTSA1532	1	g	
0,INTRA-LAB CHECK					,J0F210000-163		WATER			15.8		RTSA1532 Alq		501.20 g	

Sq	Cnt Date	Parameter	Sample Cnt	Bkgrnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	07/01/10 11:01	RA	138	2	GPC10B	1.5	N	N	3.3048E-01	1.0000E+00	N	93%	N		6.8244E-01	4.5045E+02	1.0000E+00	
			100	500			Y		(1.099E-02)	(0.000E+00)		7%			(0.000E+00)	0.001995		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	07/01/10	RA	R	**2.747651**		1.37600E+00	3.057216	3.057216	0.5012 L	93%	43%	0.11284		
				(0.361374)		(1.1751E-01)	(0.371897)	(0.371897)	(0.173205)			0.02938		

() - (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 v4.8.34 TestAmerica

Batch Nbr: 0172163

Calculation Log

7/1/2010 12:39:07 PM

Time Stamp	Log Entry	User
7/1/2010 12:35:53	Loaded IDB Rows => 6	ClarkRJr
7/1/2010 12:35:53	Updated Sep Date => 6	ClarkRJr
7/1/2010 12:35:55	Inserted IDB Rows => 6	ClarkRJr
7/1/2010 12:38:37	********** Calculating .... _AB_v, 7/1/2010 12:38:05 PM	ClarkRJr
7/1/2010 12:38:37	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:37	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:37	=>Start 279299, L25FA1AA, 0, RA	ClarkRJr
7/1/2010 12:38:37	=> Calc	ClarkRJr
7/1/2010 12:38:37	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:37	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:38	=>Start 279300, L25FK1AA, 0, RA	ClarkRJr
7/1/2010 12:38:38	=> Calc	ClarkRJr
7/1/2010 12:38:38	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:38	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:38	=>Start 279301, L25FQ1AA, 0, RA	ClarkRJr
7/1/2010 12:38:38	=> Calc	ClarkRJr
7/1/2010 12:38:38	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:38	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:39	=>Start 279302, L25FR1AA, 0, RA	ClarkRJr
7/1/2010 12:38:39	=> Calc	ClarkRJr
7/1/2010 12:38:39	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:39	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:39	=>Start 279303, L26771AA, 0, RA	ClarkRJr
7/1/2010 12:38:39	=> Calc	ClarkRJr
7/1/2010 12:38:39	Project=>*STLE,TD,30,pCi/unit,BlkSubt:N,MDAc:2.71E00,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:	ClarkRJr
7/1/2010 12:38:39	,TrcRelU:3.00E-02,Sep1:RN-222,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	ClarkRJr
7/1/2010 12:38:40	=>Start 279304, L26771AC, 0, RA	ClarkRJr
7/1/2010 12:39:00	=> Calc	ClarkRJr
7/1/2010 12:39:00	********** Calculation Complete... _AB_v, 7/1/2010 12:38:59 PM	ClarkRJr

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