

Analytical Data Package Prepared For
Pacific Northwest National Lab

Radiochemical Analysis By

STL Richland STLRL

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

Data Package Contains 37 Pages

Report Nbr: 29495

SDG Nbr	ORDER Nbr	CLIENT ID NUMBER	LOT Nbr	WORK ORDER	RPT DB ID	BATCH
W04694	U05-008	B1D2L0	J5F290389-1	HEMRC1AA	9HEMRC10	5186527
		B1D2L0	J5F290389-1	HEMRC1AC	9HEMRC10	5186525
		B1D2L1	J5F290389-2	HEMRG1AA	9HEMRG10	5186527
		B1D2L1	J5F290389-2	HEMRG1AC	9HEMRG10	5186525
		B1D2K6	J5F290389-3	HEMRJ1AA	9HEMRJ10	5186527
		B1D2K6	J5F290389-3	HEMRJ1AC	9HEMRJ10	5186525
		B1D2L5	J5F290392-1	HEMRL1AA	9HEMRL10	5186527
		B1D2L5	J5F290392-1	HEMRL1AC	9HEMRL10	5186525
		B1D2L3	J5F290392-2	HEMRP1AA	9HEMRP10	5186527
		B1D2L3	J5F290392-2	HEMRP1AC	9HEMRP10	5186525
		B1D2L4	J5F290392-3	HEMRT1AA	9HEMRT10	5186527
		B1D2L4	J5F290392-3	HEMRT1AC	9HEMRT10	5186525
		B1D2K5	J5F290393-1	HEMR41AA	9HEMR410	5186527
		B1D2K5	J5F290393-1	HEMR41AC	9HEMR410	5186525



Comments:

1214349

Certificate of Analysis

Pacific Northwest National Laboratories
Sigma V Building
Richland, WA 99352

July 21, 2005

Attention: Dot Stewart

SAF Number : U05-008
Date SDG Closed : June 29, 2005
Number of Samples : Seven (7)
Sample Type : Water
SDG Number : W04694
Data Deliverable : 30-Day / Priority

CASE NARRATIVE

I. Introduction

On June 29, 2005, seven water samples were received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Pacific Northwest National Laboratories (PGW) specific IDs:

<u>PGW ID#</u>	<u>STLR ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B1D2L0	HEMRC	WATER	6/29/05
B1D2L1	HEMRG	WATER	6/29/05
B1D2K6	HEMRJ	WATER	6/29/05
B1D2L5	HEMRL	WATER	6/29/05
B1D2L3	HEMRP	WATER	6/29/05
B1D2L4	HEMRT	WATER	6/29/05
B1D2K5	HEMR4	WATER	6/29/05

II. Sample Receipt

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

III. Analytical Results/Methodology

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

The requested analyses were:

Liquid Scintillation Counting
Technetium-99 by method RICH-RC-5065
Laser Induced Phosphorimetry
Total Uranium by method RICH-RC-5058

IV. Quality Control

The analytical results for each analysis performed under SDG W04694 includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Liquid Scintillation Counting

Technetium-99 by method RICH-RC-5065:

The LCS, batch blank, samples and sample duplicate (B1D2L1), and sample matrix spike (B1D2L0) results are within contractual requirements.

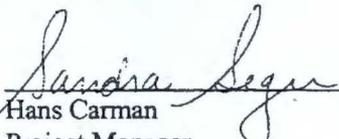
Laser Induced Phosphorimetry

Total Uranium by method RICH-RC-5058:

The achieved MDA for samples B1D2K6 is greater than the CRDL due to reduced volumes analyzed based on elevated screen results. The detected activity exceeds the achieved MDA. The results are accepted for reporting with the MDAs achieved. Except as noted, the LCS, batch blank, samples, sample duplicate (B1D2K5), and sample matrix spike (B1D2K5) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:


Hans Carman
Project Manager

for

Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, $R = \text{constants} * f(x,y,z,...)$. 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/\sqrt{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 STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) <i>u_c - Combined Uncertainty.</i>	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, <i>u_c the combined uncertainty</i> . The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$. 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%. $MDC = (4.65 * \text{Sqrt}((\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin}) + 2.71/\text{SCntMin}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$. 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 = $(S-D)/[\text{sqrt}(\text{TPUs}^2 + \text{TPUd}^2)]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

7/25/2005 2:01:00 PM

STL Richland Report

Lab Code: STLRL

FormNbr: R FormatType: FEAD Version: 05 Rpt Nbr: 29495 File Name: h:\Reportdb\edd\FeadIV\Rad\W04694.Edd, h:\Reportdb\edd\FeadIV\Rad\29495.Edd

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/Solids%*:	Distilled Volume	Sample On Date:	Collection Date:				
9HEMR410	B1D2K5		MW6-SBB-A1	U05-008	W04694					06/29/2005 12:30				
Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
5186527	TC-99	14133-76-7	1.30E+02	pCi/L	7.5E+00	1.4E+01		1.02E+01	100.0	TC99_ETVDSK_LS	1.284E-01	L	07/14/200 12:51	I
5186525	Uranium	7440-61-1	1.14E+00	ug/L	1.2E-01	1.2E-01		6.67E-02		UTOT_KPA	3.14E-02	ML	07/19/200 15:09	I

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/Solids%*:	Distilled Volume	Sample On Date:	Collection Date:				
9HEMRC10	B1D2L0		MW6-SBB-A1	U05-008	W04694					06/29/2005 10:32				
Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
5186527	TC-99	14133-76-7	4.87E+02	pCi/L	1.3E+01	3.4E+01		1.00E+01	100.0	TC99_ETVDSK_LS	1.326E-01	L	07/14/200 04:32	I
5186525	Uranium	7440-61-1	9.52E+01	ug/L	1.1E+01	1.1E+01		8.62E-02		UTOT_KPA	2.43E-02	ML	07/19/200 14:34	I

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/Solids%*:	Distilled Volume	Sample On Date:	Collection Date:				
9HEMRG10	B1D2L1		MW6-SBB-A1	U05-008	W04694					06/29/2005 11:45				
Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
5186527	TC-99	14133-76-7	2.41E+02	pCi/L	9.5E+00	2.0E+01		1.04E+01	100.0	TC99_ETVDSK_LS	1.246E-01	L	07/14/200 06:37	I
5186525	Uranium	7440-61-1	1.00E+02	ug/L	1.2E+01	1.2E+01		8.25E-02		UTOT_KPA	2.54E-02	ML	07/19/200 14:38	I

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/Solids%*:	Distilled Volume	Sample On Date:	Collection Date:				
9HEMRJ10	B1D2K6		MW6-SBB-A1	U05-008	W04694					06/29/2005 12:47				
Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
5186527	TC-99	14133-76-7	1.43E+03	pCi/L	2.0E+01	8.9E+01		9.83E+00	100.0	TC99_ETVDSK_LS	1.319E-01	L	07/14/200 08:41	I
5186525	Uranium	7440-61-1	4.23E+01	ug/L	4.3E+00	4.3E+00		2.14E-01		UTOT_KPA	9.80E-03	ML	07/19/200 14:42	I

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/Solids%*:	Distilled Volume	Sample On Date:	Collection Date:				
9HEMRL10	B1D2L5		MW6-SBB-A1	U05-008	W04694					06/29/2005 09:36				
Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
5186527	TC-99	14133-76-7	-2.30E+00	pCi/L	4.1E+00	5.8E+00	U	9.95E+00	100.0	TC99_ETVDSK_LS	1.326E-01	L	07/14/200 09:44	I
5186525	Uranium	7440-61-1	9.58E-01	ug/L	9.8E-02	9.8E-02		8.62E-02		UTOT_KPA	2.43E-02	ML	07/19/200 14:46	I

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/Solids%*:	Distilled Volume	Sample On Date:	Collection Date:				
9HEMRP10	B1D2L3		MW6-SBB-A1	U05-008	W04694					06/29/2005 10:30				
Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
5186527	TC-99	14133-76-7	1.35E+02	pCi/L	7.5E+00	1.4E+01		1.02E+01	100.0	TC99_ETVDSK_LS	1.30E-01	L	07/14/200 10:46	I

STL Richland U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide. 1
 rptFeadRadSummaryEdd v3.48 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
 B Qual- Analyte was found in the associated laboratory blank above the MDC.

7/25/2005 2:01:01 PM

STL Richland Report

Lab Code: STLRL

FormNbr: R FormatType: FEAD Version: 05 Rpt Nbr: 29495 File Name: h:\Reportdb\edd\Fead\VRad\W04694.Edd, h:\Reportdb\edd\Fead\VRad\29495.Edd

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:	Act			
5186525	Uranium	7440-61-1	1.48E+02	ug/L	1.5E+01	1.5E+01	8.09E-02	UTOT_KPA	2.59E-02	ML 07/19/200 14:54	I			
9HEMRT10	B1D2L4		MW6-SBB-A1	U05-008	W04694					06/29/2005 11:36				
Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
5186527	TC-99	14133-76-7	3.09E+02	pCi/L	1.1E+01	2.4E+01		1.06E+01	100.0	TC99_ETVDSK_LS	1.245E-01	L	07/14/200 11:49	I
5186525	Uranium	7440-61-1	2.60E+02	ug/L	3.1E+01	3.1E+01		7.94E-02		UTOT_KPA	2.64E-02	ML	07/19/200 15:03	I

Monday, July 25, 2005

STL Richland QC Blank Report

Lab Code: STLRL

FormNbr: R

FormatType: FEAD

VersionNbr: 05

File Name: h:\Reportdb\ledd\Fead\VRad\W04694.Edd, h:\Reportdb\ledd\Fead\VRad\29495.Edd

Lab Sample Id: HEWTG1AB

Sdg/Rept Nbr: W04694 29495

Collection Date: 06/29/2005 12:30

Client Id: NA

Matrix: WATER WATER

Sample On Date:

Moisture/Solids%*:

QC Type: BLK

Received Date: 06/29/2005

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp					
	MW6-SBB-A19981								AL	H					
Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/ ML	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
5186525 BLK	Uranium 7440-61-1	2.50E-02	ug/L	3.2E-03 3.2E-03	U	6.59E-02			UTOT_KPA	3.18E-02	07/19/2005 14:21				D

Monday, July 25, 2005

STL Richland QC Blank Report

Lab Code: STLRL

FormNbr: R

FormatType: FEAD

VersionNbr: 05

File Name: h:\Reportdb\edd\Fead\IVRad\W04694.Edd, h:\Reportdb\edd\Fead\IVRad\29495.Edd

Lab Sample Id: HEWTK1AB

Sdg/Rept Nbr: W04694 29495

Collection Date: 06/29/2005 10:32

Client Id: NA

Matrix: WATER WATER

Sample On Date:

Moisture/Solids%*:

QC Type: BLK

Received Date: 06/29/2005

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp					
	MW6-SBB-A19981								AN	H					
Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/ L	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
5186527 BLK	TC-99 14133-76-7	-5.15E+00	pCi/L	6.1E+00 4.2E+00	U	1.06E+01	100.0		TC99_ETVDSK	1.241E-01	07/14/2005 13:53				D

Monday, July 25, 2005

STL Richland QC Control Sample Report

Lab Code: STLRL

FormNbr: R

FormatType: FEAD

VersionNbr: 05

File Name: h:\Reportdb\edd\Fead\VRad\W04694.Edd, h:\Reportdb\edd\Fead\VRad\29495.Edd

Lab Sample Id: HEWTG1CS

Sdg/Rept Nbr: W04694 29495

Collection Date: 06/29/2005 12:30

Client Id: NA

Matrix: WATER WATER

Sample On Date:

Moisture/Solids%*:

QC Type: BS

Received Date: 06/29/2005

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp					
	MW6-SBB-A19981								AM	H					
Batch #/ Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	To/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
5186525 BS	Uranium 7440-61-1	3.51E+01	ug/L	4.2E+00 4.2E+00		8.00E-02		3.55E+01 98.8	UTOT_KPA	2.62E-02 ML	07/19/2005 14:31			70 130	D

STL RICHLAND

Monday, July 25, 2005

STL Richland QC Control Sample Report

Lab Code: STLRL

FormNbr: R FormatType: FEAD VersionNbr: 05 File Name: h:\Reportdb\edd\FeadIVRad\W04694.Edd, h:\Reportdb\edd\FeadIVRad\29495.Edd

Lab Sample Id: HEWTK1CS **Sdg/Rept Nbr:** W04694 29495 **Collection Date:** 06/29/2005 10:32
Client Id: NA **Matrix:** WATER WATER **Sample On Date:**
Moisture/Solids%*: **QC Type:** BS **Received Date:** 06/29/2005

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp					
	MW6-SBB-A19981								AO	H					
Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/ L	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
5186527 BS	TC-99 14133-76-7	4.90E+02	pCi/L	3.5E+01 1.3E+01		1.05E+01	100.0	5.43E+02 90.4	TC99_ETVDSK	1.243E-01	07/14/2005 14:56			70 130	D

11

Monday, July 25, 2005

STL Richland QC Duplicate Report

Lab Code: STLR

FormNbr: R

FormatType: FEAD

VersionNbr: 05

File Name: h:\Reportdb\edd\Fead\VRad\W04694.Edd, h:\Reportdb\edd\Fead\VRad\29495.Edd

Lab Sample Id: HEMR41ER

Sdg/Rept Nbr: W04694 29495

Collection Date: 06/29/2005 12:30

Client Id: B1D2K5

Matrix: WATER WATER

Sample On Date:

Moisture/Solids%*:

QC Type: DUP

Received Date: 06/29/2005

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp					
U05-008	MW6-SBB-A19981								AI	H					
Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/ ML	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
5186525 DUP	Uranium 7440-61-1	1.14E+00 1.14E+00	ug/L	1.2E-01 1.2E-01		6.43E-02			UTOT_KPA	3.26E-02	07/19/2005 15:21	.3 20.0	0. 3		D

Monday, July 25, 2005

STL Richland QC Duplicate Report

Lab Code: STLRL

FormNbr: R

FormatType: FEAD

VersionNbr: 05

File Name: h:\Reportdb\edd\Fead\VRad\W04694.Edd, h:\Reportdb\edd\Fead\VRad\29495.Edd

Lab Sample Id: HEMRG1DR

Sdg/Rept Nbr: W04694 29495

Collection Date: 06/29/2005 11:45

Client Id: B1D2L1

Matrix: WATER WATER

Sample On Date:

Moisture/Solids%*:

QC Type: DUP

Received Date: 06/29/2005

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp					
U05-008	MW6-SBB-A19981								AK	H					
Batch #/ Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Allq Size/ L	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
5186527 DUP	TC-99 14133-76-7	2.18E+02 2.41E+02	pCi/L	1.9E+01 9.2E+00		1.05E+01	100.0		TC99_ETVDSK	1.241E-01	07/14/2005 07:39	9.9 20.0	1.7 3		D

Monday, July 25, 2005

STL Richland Qc Matrix Spike Report

Lab Code: STLRL

FormNbr: R

FormatType: FEAD

VersionNbr: 05

File Name: h:\Reportdb\edd\Fead\Rad\W04694.Edd, h:\Reportdb\edd\Fead\Rad\29495.Edd

Lab Sample Id: HEMR41DW

Sdg/Rept Nbr: W04694 29495

Collection Date: 06/29/2005 12:30

Client Id: B1D2K5

Matrix: WATER WATER

Sample On Date:

Moisture/Solids%*:

QC Type: MS

Received Date: 06/29/2005

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RType					
U05-008	MW6-SBB-A19981								AH	H					
Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	ToI/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Allq Size/ ML	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
5186525 MS	Uranium 7440-61-1	3.12E+01	ug/L	3.9E+00 3.9E+00		6.92E-02		3.07E+01 101.5	UTOT_KPA	3.03E-02	07/19/2005 15:17			60 140	D

Monday, July 25, 2005

STL Richland Qc Matrix Spike Report

Lab Code: STLRL

FormNbr: R

FormatType: FEAD

VersionNbr: 05

File Name: h:\Reportdb\ledd\Fead\VRad\W04694.Edd, h:\Reportdb\ledd\Fead\VRad\29495.Edd

Lab Sample Id: HEMRC1DW Sdg/Rept Nbr: W04694 29495 Collection Date: 06/29/2005 10:32
 Client Id: B1D2L0 Matrix: WATER WATER Sample On Date:
 Moisture/Solids%*: QC Type: MS Received Date: 06/29/2005

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp					
U05-008	MW6-SBB-A19981								AJ	H					
Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Concl/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
5186527 MS	TC-99 14133-76-7	3.83E+03	pCi/L	2.3E+02 3.4E+01		1.03E+01	100.0	3.56E+03 107.5	TC99_ETVDSK	1.259E-01 L	07/14/2005 05:34			60 140	D

STL Richland
 rptFeadRadEdd v3.68

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
 B Qual- Analyte was found in the associated laboratory blank above the MDC.

8

Lot No., Due Date: J5F290393,J5F290389,J5F290392; 07/29/2005
Client, Site: 384868; PGW 615HANFORD HANFORD
QC Batch No., Method Test: 5186527; RTC99 Tc-99 by LSC
SDG, Matrix: W04694; 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:

First Level Review

Handwritten signature

Date

7/15/05



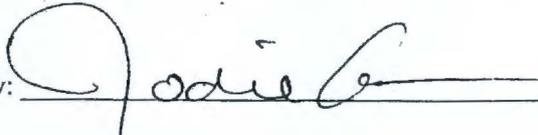
STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 5186527

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

Comments on any "No" response: _____

Second Level Review:  Date: 7/21/05

Lot No., Due Date: J5F290393,J5F290389,J5F290392; 07/29/2005
 Client, Site: 384868; PGW 615HANFORD HANFORD
 QC Batch No., Method Test: 5186525; RUNAT UNat by KPA
 SDG, Matrix: W04694; WATER

1.0 COC

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

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

Yes No N/A

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

Yes No N/A

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

Yes No N/A

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

Yes No N/A

3.0 QC & Samples

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

Yes No N/A

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

Yes No N/A

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

Yes No N/A

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

Yes No N/A

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

Yes No N/A

4.0 Raw Data

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

Yes No N/A

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

Yes No N/A

4.3 Were Yields entered correctly? Yes No N/A

Yes No N/A

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

Yes No N/A

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

Yes No N/A

5.0 Other

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

Yes No N/A

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

Yes No N/A

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

Yes No N/A

5.4 Was transcription checked? Yes No N/A

Yes No N/A

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

Yes No N/A

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

Yes No N/A

6.0 Comments on any No response:

First Level Review *Paul Anderson*

Date 7.20.05



STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 5786525

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

Comments on any "No" response: BIDZK activity > MDA > CRDL

Second Level Review: Jodie

Date: 7/21/05

Collector **K.J. YOUNG** Contact/Requester **DL STEWART** Telephone No. **509-376-5056** MSIN FAX
 SAF No. **U05-008** Sampling Origin **HANFORD SITE** Purchase Order/Charge Code
 Project Title **2U1I REBOUND, JUNE 2005** Ice Chest No. **SAWS-113** Temp.
 Shipped To (Lab) **Severn Trent Incorporated, Richland** Method of Shipment **GOVT. VEHICLE** Bill of Lading/Air Bill No.
 Protocol **LTMC** Priority: 30 Days **PRIORITY** Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS **W0769+**
75F2.90389
Due 072705

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes No
 Batch all PNNL GW samples submitted under "U" SAF's into one SDG, not to exceed rapid turnaround time of 15 or 30 days.
 Submit invoices & deliverables to DL Stewart, PNNL.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1D2L0		W	6/29/05	1032	1x20-mL P	Activity Scan HEMRL	None
B1D2L0		W	↓	↓	1x500-mL P	TC99_ETVDSK_LSC: Tc-99 (1)	HCl to pH <2
B1D2L0		W	↓	↓	1x500-mL G/P	UTOT_KPA: Uranium (1)	HNO3 to pH <2

Relinquished By K.J. YOUNG Print Sign [Signature] Date/Time JUN 29 2005 440	Received By Jeff Jensen Print Sign [Signature] Date/Time JUN 29 2005 1440	Matrix * S = Soil DS = Drum Solid SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wine W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By _____ Date/Time _____	Received By _____ Date/Time _____		
Relinquished By _____ Date/Time _____	Received By _____ Date/Time _____		
Relinquished By _____ Date/Time _____	Received By _____ Date/Time _____		
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By _____	Date/Time _____

<100 CPM

Collector K.J. YOUNG	Contact/Requester DL STEWART	Telephone No. 509-376-5056	MSIN FAX
SAF No. U05-008	Sampling Origin HANFORD SITE	Purchase Order/Charge Code	
Project Title 2U1 REBOUND, JUNE 2005	Method of Shipment GOVT. VEHICLE	Ice Chest No. SAWS-113	Temp.
Shipped To (Lab) Severn Trent Incorporated, Richland	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No.	
Protocol LTMC	Priority: 30 Days	PRIORITY	
Offsite Property No.			

POSSIBLE SAMPLE HAZARDS/REMARKS
 ** ** *W04699*

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No
 Batch all PNNL GW samples submitted under "U" SAF's into one SDG, not to exceed rapid turnaround time of 15 or 30 days.
 Submit invoices & deliverables to DL Stewart, PNNL

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1D2L1		W	<i>6/29/05</i>	<i>1145</i>	1x20-mL P	Activity Scan <i>HEMRC</i>	None
B1D2L1		W	↓	↓	1x500-mL P	TC99_ETVDSK_LSC: Tc-99 (1)	HCl to pH <2
B1D2L1		W	↓	↓	1x500-mL G/P	UTOT_KPA: Uranium (1)	HNO3 to pH <2

Relinquished By K.J. YOUNG <i>[Signature]</i> JUN 29 2005 ¹⁴⁴⁰	Received By Jeff Jensen <i>[Signature]</i> JUN 29 2005 ¹⁴⁴⁰	Matrix *
Relinquished By	Received By	S = Soil DS = Drum Solid
Relinquished By	Received By	SF = Sediment DI = Drum Liquid
Relinquished By	Received By	SO = Solid T = Tissue
Relinquished By	Received By	SL = Sludge WI = Wine
Relinquished By	Received By	W = Water L = Liquid
Relinquished By	Received By	O = Oil V = Vegetation
Relinquished By	Received By	A = Air X = Other
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By
		Date/Time

<100 GPM

Collector **K.J. YOUNG** Contact/Requester **DL STEWART** Telephone No. **509-376-5056** MSIN FAX
 SAF No. **U05-008** Sampling Origin **HANFORD SITE** Purchase Order/Charge Code
 Project Title **2U/PI REBOUND, JUNE 2005** Ice Chest No. **SAWS-113** Temp.
 Shipped To (Lab) **Severn Trent Incorporated, Richland** Method of Shipment **GOVT. VEHICLE** Bill of Lading/Air Bill No.
 Protocol **LPMC** Priority: 30 Days **PRIORITY** Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS **W09699** SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes No
 Batch all PNNL GW samples submitted under "U" SAF's into one SDG, not to exceed rapid turnaround time of 15 or 30 days.
 Submit invoices & deliverables to DL Stewart, PNNL

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1D2K6		W	6/29/05	1247	1x20-mL P	Activity Scan HEMRT	None
B1D2K6		W	↓	↓	1x500-mL P	TC99_ETVDSK_LSC: Tc-99 (1)	HCl to pH <2
B1D2K6		W	↓	↓	1x500-mL G/P	UTOT_KPA: Uranium (1)	HNO3 to pH <2

Relinquished By **K.J. YOUNG** Print Sign **JUN 29 2005 1440** Received By **Jeff Jensen** Print Sign **JUN 29 2005 1440** Matrix *

Relinquished By Date/Time Received By Date/Time

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

- S = Soil
- SE = Sediment
- SO = Solid
- SL = Sludge
- W = Water
- O = Oil
- A = Air
- DS = Dism Solid
- DI = Dism Liquid
- T = Tissue
- WI = Wine
- L = Liquid
- V = Vegetation
- X = Other



STL

Sample Check-in List

Date/Time Received: 06 29 05 1440

Client: POW SDG #: W09694 NA [] SAF #: 405-008 NA []

Work Order Number: JSF270389 Chain of Custody # 405-008-2,9,7,11,3,4

Shipping Container ID: SAWS 113 Air Bill # _____

1. Custody Seals on shipping container intact? NA [] Yes No []
2. Custody Seals dated and signed? NA [] Yes No []
3. Chain of Custody record present? Yes No []
4. Cooler temperature: _____ NA 5. Vermiculite/packing materials is NA [] Wet [] Dry
6. Number of samples in shipping container: 18
7. Sample holding times exceeded? NA Yes [] No []
8. Samples have:
 - tape _____ hazard labels
 - custody seals _____ appropriate samples labels
9. Samples are:
 - in good condition _____ leaking
 - broken _____ have air bubbles
 (Only for samples requiring head space)
10. Sample pH taken? NA [] pH < 2 pH > 2 [] pH > 9 []
11. Sample Location, Sample Collector Listed? * Yes No []
*For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [] No
13. Description of anomalies (include sample numbers): _____

Sample Custodian: [Signature] Date: 06 29 05

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 9/03, Rev. 5

Collector DURATEK F. M. HALL	Contact/Requester DL STEWART	Telephone No. 509-376-5056	MSIN FAX
SAF No. U05-008	Sampling Origin HANFORD SITE	Purchase Order/Charge Code	
Project Title 21/PL REBOUND, JUNE 2005	JTS - SAWS H90	Ice Chest No. SAWS101	Temp.
Shipped To (Lab) Severn Trent Incorporated, Richland	Method of Shipment GOVT VEHICLE	Bill of Lading/Air Bill No.	
Protocol LTMC	Priority: 30 Days PRIORITY	Offsite Property No.	

POSSIBLE SAMPLE HAZARDS/REMARKS
 **W04694**
J5F29039L
Due 072905

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No
 Batch all PNNL GW samples submitted under "U" SAF's into one SDG, not to exceed rapid turnaround time of 15 or 30 days.
 Submit invoices & deliverables to DL Stewart, PNNL

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1D2L5		W	6-29-05	0936	1x20-mL P	Activity Scan HEMRL	None
B1D2L5		W	↓	↓	1x500-mL P	TC99_ETVDSK_LSC: Tc-99 (1)	HCl to pH <2
B1D2L5		W	↓	↓	1x500-mL G/P	UTOT_KPA: Uranium (1)	HNO3 to pH <2

Relinquished By DURATEK F. M. HALL	Print		Date/Time JUN 29 2005	Received By Jeff Jensen	Print		Date/Time JUN 29 2005	Matrix *
Relinquished By	Date/Time	Received By	Date/Time	S = Soil DS = Drum Solid SE = Sediment DI = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wine W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other				
Relinquished By	Date/Time	Received By	Date/Time					
Relinquished By	Date/Time	Received By	Date/Time					
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By		Date/Time		

<100 CPM



STL

Sample Check-in List

Date/Time Received: 06 29 05 1445

Client: PCW SDG #: L04694 NA SAF #: 405-008 NA

Work Order Number: J5F290392 Chain of Custody # 405-008-17,13,15

Shipping Container ID: SAWS 101 Air Bill # _____

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

Sample Custodian: [Signature] Date: 06 29 05

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 9/03, Rev. 5



STL

Sample Check-in List

Date/Time Received: 06 29 05 1500

Client: PLW SDG #: L69694 NA [] SAF #: 405-008 NA []

Work Order Number: BF290373 Chain of Custody # 405-008-1

Shipping Container ID: SML 584 Air Bill # _____

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

Sample Custodian: [Signature] Date: 06 29 05

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 9/03, Rev. 5

7/5/2005 4:41:24 PM

Sample Preparation/Analysis

Balance Id:

384868, Pacific Northwest National Laboratories,
Pacific Northwest National Lab

FP Tc-99 Prp/SepRC5065
S5 Technetium-99 by Liquid Scint
SI CLIENT: HANFORD

TEVA

Pipet #:

Report Due: 07/29/2005 *WO 46-94*

Sep1 DT/Tm Tech: *TCSE LAS*

Batch: 5186527 WATER pCi/L

PM, Quote: SS, 57671

Sep2 DT/Tm Tech: *TC SG-MS*

SEQ Batch, Test: None

Prep Tech: *125ml*



Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 HEMRC-1-AA										
J5F290389-1-SAMP										
06/29/2005 10:32			AmtRec: 20ML,2X500P	#Containers: 3				Scr Rst:	Alpha:	Beta:
2 HEMRC-1-AD-S										
J5F290389-1-MS										
06/29/2005 10:32			AmtRec: 20ML,2X500P	#Containers: 3				Scr Rst:	Alpha:	Beta:
3 HEMRG-1-AA										
J5F290389-2-SAMP										
06/29/2005 11:45			AmtRec: 20ML,2X500P	#Containers: 3				Scr Rst:	Alpha:	Beta:
4 HEMRG-1-AD-X										
J5F290389-2-DUP										
06/29/2005 11:45			AmtRec: 20ML,2X500P	#Containers: 3				Scr Rst:	Alpha:	Beta:
5 HEMRJ-1-AA										
J5F290389-3-SAMP										
06/29/2005 12:47			AmtRec: 20ML,2X500P	#Containers: 3				Scr Rst:	Alpha:	Beta:
6 HEMRL-1-AA										
J5F290392-1-SAMP										
06/29/2005 09:36			AmtRec: 20ML,2X500P	#Containers: 3				Scr Rst:	Alpha:	Beta:
7 HEMRP-1-AA										
J5F290392-2-SAMP										
06/29/2005 10:30			AmtRec: 20ML,2X500P	#Containers: 3				Scr Rst:	Alpha:	Beta:

7/5/2005 4:41:27 PM

Sample Preparation/Analysis

Balance Id: _____

384868, Pacific Northwest National Laboratories ,
Pacific Northwest National Lab

FP Tc-99 Prp/SepRC5065
S5 Technetium-99 by Liquid Scint
SI CLIENT: HANFORD

Pipet #: _____

Report Due: 07/29/2005

Sep1 DT/Tm Tech: _____

Batch: 5186527 WATER pCi/L

PM, Quote: SS , 57671

Sep2 DT/Tm Tech: _____

SEQ Batch, Test: None

Prep Tech: _____



Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
8 HEMRT-1-AA										
J5F290392-3-SAMP										
06/29/2005 11:36			AmtRec: 20ML,2X500P	#Containers: 3				Scr Rst:	Alpha:	Beta:
9 HEMR4-1-AA										
J5F290393-1-SAMP										
06/29/2005 12:30			AmtRec: 20ML,2X500P	#Containers: 3				Scr Rst:	Alpha:	Beta:
10 HEWTK-1-AA-B										
J5G050000-527-BLK										
06/29/2005 10:32			AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:
11 HEWTK-1-AC-C										
J5G050000-527-LCS										
06/29/2005 10:32			AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:
12 HEWTK-1-AD-BN										
J5G050000-527-IBLK										
06/29/2005 10:32			AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:
13 HEWTK-1-AE-BN										
J5G050000-527-IBLK										
06/29/2005 10:32			AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:

7/5/2005 4:41:33 PM

Sample Preparation/Analysis

Balance Id:

FP Tc-99 Prp/SepRC5065
 S5 Technetium-99 by Liquid Scint
 51 CLIENT: HANFORD

Pipet #:

Report Due: 07/29/2005

Sep1 DT/Tm Tech:

Batch: 5186527

pCi/L

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech:



Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
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Comments:

All Clients for Batch:
 384868, Pacific Northwest National Laboratories Pacific Northwest National Lab, SS , 57671

HEMRC1AA-SAMP Constituent List:

Tc-99 RDL:15 pCi/L LCL:70 UCL:130 RPD:20

HEMRC1AD-MS Constituent List:

HEWTK1AA-BLK:

Tc-99 RDL:15 pCi/L LCL: UCL: RPD:

HEWTK1AC-LCS:

Tc-99 RDL:15 pCi/L LCL:70 UCL:130 RPD:20

HEWTK1AD-IBLK:

Tc-99 RDL:15 pCi/L LCL: UCL: RPD:

HEWTK1AE-IBLK:

Tc-99 RDL:15 pCi/L LCL: UCL: RPD:

HEMRC1AA-SAMP Calc Info:

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

HEMRC1AD-MS Calc Info:

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

HEWTK1AA-BLK:

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

HEWTK1AC-LCS:

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

HEWTK1AD-IBLK:

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

HEWTK1AE-IBLK:

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

Approved By _____

Date: _____

7/15/2005 10:24:32 AM

ICOC Fraction Transfer/Status Report

ByDate: 7/15/2004, 7/20/2005, Batch: '5186527', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
5186527				
AC	CalcC	GiroirB	7/13/2005 8:39:58	
SC		andersonp	IsBatched 7/5/2005 4:41:22 PM	ICOC_RADCALC v4.8.08
SC		GiroirB	Prep1C 7/13/2005 8:39:58 AM	RICH-RC-5016 REVISION 5
SC		FinchA	Sep1C 7/13/2005 4:26:25 PM	RICH-RC-5065 REVISION 5
SC		DAWKINSO	InCnt1 7/13/2005 4:39:47 PM	RICH-RD-0001 REVISION 3
SC		DAWKINSO	CalcC 7/14/2005 7:18:37 PM	RICH-RD-0001 REVISION 3
AC		FinchA	7/13/2005 4:26:25 PM	doOne
AC		DAWKINSO	7/13/2005 4:39:47 PM	
AC		DAWKINSO	7/14/2005 7:18:37 PM	

AC: Accepting Entry; SC: Status Change

STL Richland
Richland Wa.

7/13/2005 9:06:41 AM

Sample Preparation/Analysis

Balance Id:1120482733

384868, Pacific Northwest National Laboratories ,
Pacific Northwest National Lab

DH UNat_Laser PrpRC5015
SS Total Uranium by KPA
SI CLIENT: HANFORD

Pipet #: _____

Report Due: 07/29/2005

W04694

Sep1 DT/Tm Tech: _____

Batch: 5186525 WATER ug/L
SEQ Batch, Test: None

PM, Quote: SS , 57671

Sep2 DT/Tm Tech: _____

Prep Tech: ,GiroirB



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 HEMRC-1-AC J5F290389-1-SAMP 06/29/2005 10:32	24.30g,in							
			AmtRec: 20ML,2X500P	#Containers: 3		Scr Rst: Alpha: 6.36E+02 pCi/L	Beta: 3.37E+02 pCi/L	
2 HEMRG-1-AC J5F290389-2-SAMP 06/29/2005 11:45	25.40g,in							
			AmtRec: 20ML,2X500P	#Containers: 3		Scr Rst: Alpha: 5.09E+02 pCi/L	Beta: 1.85E+02 pCi/L	
3 HEMRJ-1-AC J5F290389-3-SAMP 06/29/2005 12:47	9.80g,in							
			AmtRec: 20ML,2X500P	#Containers: 3		Scr Rst: Alpha: 1.24E+03 pCi/L	Beta: 5.79E+02 pCi/L	
4 HEMRL-1-AC J5F290392-1-SAMP 06/29/2005 09:36	24.30g,in							
			AmtRec: 20ML,2X500P	#Containers: 3		Scr Rst: Alpha: 1.27E+02 pCi/L	Beta: 2.27E+01 pCi/L	
5 HEMRP-1-AC J5F290392-2-SAMP 06/29/2005 10:30	25.90g,in							
			AmtRec: 20ML,2X500P	#Containers: 3		Scr Rst: Alpha: 3.50E+02 pCi/L	Beta: 1.69E+02 pCi/L	
6 HEMRT-1-AC J5F290392-3-SAMP 06/29/2005 11:36	26.40g,in							
			AmtRec: 20ML,2X500P	#Containers: 3		Scr Rst: Alpha: 6.45E+02 pCi/L	Beta: 3.32E+02 pCi/L	
7 HEMR4-1-AC J5F290393-1-SAMP 06/29/2005 12:30	31.40g,in							
			AmtRec: 20ML,2X500P	#Containers: 3		Scr Rst: Alpha: 2.57E+02 pCi/L	Beta: 1.34E+02 pCi/L	

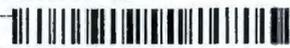
STL RICHLAND

34

STL RICHLAND

384868, Pacific Northwest National Laboratories , Pacific Northwest National Lab DH UNat_Laser PrpRC5015 Pipet #: _____
 Report Due: 07/29/2005 SS Total Uranium by KPA Sep1 DT/Tm Tech: _____
5I CLIENT: HANFORD Sep2 DT/Tm Tech: _____

Batch: 5186525 WATER ug/L PM, Quote: SS , 57671 Prep Tech: ,GiroirB
 SEQ Batch, Test: None

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
8 HEMR4-1-AD-S J5F290393-1-MS  06/29/2005 12:30		30.30g,in	UNSF2486 06/23/05,pd 09/16/04,r					
		AmtRec: 20ML,2X500P	#Containers: 3			Scr Rst: Alpha: 2.57E+02 pCi/L	Beta: 1.34E+02 pCi/L	
9 HEMR4-1-AE-X J5F290393-1-DUP  06/29/2005 12:30		32.60g,in						
		AmtRec: 20ML,2X500P	#Containers: 3			Scr Rst: Alpha: 2.57E+02 pCi/L	Beta: 1.34E+02 pCi/L	
10HEWTG-1-AA-B J5G050000-525-BLK  06/29/2005 12:30		31.80g,in						
		AmtRec:	#Containers: 1			Scr Rst: Alpha:	Beta:	
11HEWTG-1-AC-C J5G050000-525-LCS  06/29/2005 12:30		26.20g,in	UNSF2487 06/23/05,pd 09/16/04,r					
		AmtRec:	#Containers: 1			Scr Rst: Alpha:	Beta:	

Comments: HEMRJ-SAMP "Comments: Unat-activity screen determined reduce volume. Bg"
pHuenfield @ EZ prep.
8/2-13 05

All Clients for Batch:
 384868, Pacific Northwest National Laboratories Pacific Northwest National Lab, SS , 57671

HEMRC1AC-SAMP Constituent List:
 Uranium RDL:1.44E-01 ug/L LCL: UCL: RPD:
 HEMR41AD-MS:
 HEWTG1AA-BLK:
 Uranium RDL:1.44E-01 ug/L LCL: UCL: RPD:
 HEWTG1AC-LCS:

35

STL RICHLAND

7/13/2005 9:06:49 AM

Sample Preparation/Analysis

Balance Id:1120482733

DH UNat_Laser PrpRC5015
 SS Total Uranium by KPA
 SI CLIENT: HANFORD

Pipet #: _____

Report Due: 07/29/2005

Sep1 DT/Tm Tech: _____

Batch: 5186525 ug/L
 SEQ Batch, Test: None

Sep2 DT/Tm Tech: _____

Prep Tech: ,GiroirB



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
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Uranium	RDL:0.144343	ug/L	LCL:70	UCL:130	RPD:20			
HEMRC1AC-SAMP Calc Info:								
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B			
HEMR41AD-MS:								
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B			
HEWTG1AA-BLK:								
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B			
HEWTG1AC-LCS:								
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B			

Approved By _____ Date: _____

ICOC Fraction Transfer/Status Report

ByDate: 7/20/2004, 7/25/2005, Batch: '5186525', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
5186525				
AC	Cnt1C	GiroirB	7/13/2005 5:48:17	
SC		andersonp	IsBatched	7/5/2005 4:37:08 PM
SC		GiroirB	InPrep	7/13/2005 5:48:17 AM
SC		GiroirB	Prep1C	7/13/2005 9:08:33 AM
SC		ScottM	Prep1C	7/18/2005 3:54:33 PM
SC		BarbosaH	InCnt1	7/19/2005 2:20:34 PM
SC		BarbosaH	Cnt1C	7/19/2005 3:38:58 PM
AC		GiroirB	7/13/2005 9:08:33	ICOC_RADCALC v4.8.08
AC		ScottM	7/18/2005 3:54:33 PM	RICH-RC-5016 REVISION 5
AC		BarbosaH	7/19/2005 2:20:34 PM	RICH-RC-5016 REVISION 5
AC		BarbosaH	7/19/2005 3:38:58 PM	RICH-RC-5016 REVISION 5
				RICH-RC-5015 REVISION 4
				RICH-RC-5058 REVISION 6
				RICH-RC-5058 REVISION 6

AC: Accepting Entry; SC: Status Change

STL Richland