

**SAF-RC-005**  
**100-NR-1 TSD Sites**  
**R. A. Verification Sampling - Soil**  
**FINAL DATA PACKAGE**

**COMPLETE COPY OF DATA PACKAGE TO:**

Jon Fancher	X5-57	<u>        </u> NB 2/8/06 INITIAL/DATE
Jeanette Duncan	H9-02	<u>        </u> NB 2/8/06 INITIAL/DATE

**COMMENTS:**

SDG        J00024                          SAF-RC-005

Rad only      Chem only    X Rad & Chem

                 X Complete                      Partial

**Including Re-analysis Am-241**

**Waste Site: 116-N-1 Trench Deep Zone**

**RECEIVED**  
FEB 23 2006  
**EDMC**

Analytical Data Package Prepared For  
**Washington Closure Hanford**



Radiochemical Analysis By

**STL Richland**

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

Assigned Laboratory Code: STLRL

Data Package Contains 22 Pages

Report No.: 31312

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
J00024A	RC-005	J10FH1	J5L210247-1	HTKDG1AC	9HTKDG10	5364466
		J10FH1	J5L210247-1	HTKDG1AA	9HTKDG10	5364467

## Certificate of Analysis

Washington Closure Hanford  
3190 George Washington Way  
Richland, WA 99352

February 7, 2006

Attention: Joan Kessner

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SAF Number : RC-005  
Date SDG Closed : December 27, 2005  
Number of Samples : One (1)  
Sample Type : Soil  
SDG Number : J00024A  
Data Deliverable : 21-Day / Summary

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### CASE NARRATIVE

#### I. Introduction

On December 27, 2005, a request for a reanalysis of one soil sample was received at STL Richland (STLR) for radiochemical and wet chemistry analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Washington Closure Hanford (BHI) specific ID:

<u>BHI ID#</u>	<u>STLR ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
J10FH1(HQK0A)	HTKDG	SOIL	11/17/05

#### II. Sample Receipt

The sample was 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:

**Alpha Spectroscopy**

Americium-241 by method RICH-RC-5087

**Gas Proportional Counting**

Total Strontium by method RICH-RC-5006

**IV. Quality Control**

The analytical results for each analysis performed under SDG J00024 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**

**Alpha Spectroscopy**

Americium-241 by method RICH-RC-5087:

The LCS, batch blank, sample and sample duplicate (J10FH1) results are within contractual requirements.

**Gas Proportional Counting**

Total Strontium by method RICH-RC-5006:

The LCS, batch blank, sample and sample duplicate (J10FH1) 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

### 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,  $R = \text{constants} * f(x,y,z, \dots)$ . 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

<b>Action Lev</b>	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.
<b>Batch</b>	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
<b>Bias</b>	Defined by the equation $(\text{Result}/\text{Expected})-1$ as defined by ANSI N13.30.
<b>COC No</b>	Chain of Custody Number assigned by the Client or STL Richland.
<b>Count Error (#s)</b>	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.
<b>Total Uncert (#s) <math>u_c</math> - Combined Uncertainty.</b>	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.
<b>(#s), Coverage Factor</b>	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
<b>CRDL (RL)</b>	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)
<b>Lc</b>	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%. $Lc = (1.645 * \sqrt{2 * (\text{BkgndCnt}/\text{BkgndCntMin}) / \text{SCntMin}}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$ . 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.
<b>Lot-Sample No</b>	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.
<b>MDC MDA</b>	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%. $MDC = (4.65 * \sqrt{((\text{BkgndCnt}/\text{BkgndCntMin}) / \text{SCntMin}) + 2.71 / \text{SCntMin}}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$ . For LSC methods the batch blank is used as a measure of the background variability.
<b>Primary Detector</b>	The instrument identifier associated with the analysis of the sample aliquot.
<b>Ratio U-234/U-238</b>	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.
<b>Rst/MDC</b>	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.
<b>Rst/TotUcert</b>	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.
<b>Report DB No</b>	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
<b>RER</b>	The equation Replicate Error Ratio = $(S-D)/[\sqrt{(\text{TPUs}^2 + \text{TPUd}^2)}]$ 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.
<b>SDG</b>	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
<b>Sum Rpt Alpha Spec Rst(s)</b>	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.
<b>Work Order</b>	The LIMS software assign test specific identifier.
<b>Yield</b>	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: 07-Feb-06

**STL Richland STLRL**

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

Report No. : 31312

SDG No: J00024A

Batch	Client Id Work Order	Parameter	Result +- Uncertainty ( 2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
5364467	RICHRC5080								
	J10FH1								
	HTKDG1AA	AM-241	1.66E+00 +- 4.9E-01		pCi/g	90%	1.27E-01	1.00E+00	
	J10FH1 DUP								
	HTKDG1AE	AM-241	1.69E+00 +- 4.8E-01		pCi/g	89%	5.15E-02	1.00E+00	1.6
5364466	SRTOT_SEP_PRECIP_GPC								
	J10FH1								
	HTKDG1AC	STRONTIUM	3.40E+02 +- 9.7E+01		pCi/g	77%	9.22E-01		
	J10FH1 DUP								
	HTKDG1AD	STRONTIUM	3.30E+02 +- 8.9E+01		pCi/g	80%	8.08E-01		2.9
No. of Results: 4									

STL Richland RPD - Relative Percent Difference.  
 rptSTLRchSaSum  
 mary2 V4.14.4 A97

**QC Results Summary**  
**STL Richland STLRL**  
 Ordered by Method, Batch No, QC Type,.

Date: 07-Feb-06

Report No. : 31312

SDG No.: J00024A

Batch	Work Order	Parameter	Result +/- Uncertainty ( 2s)	Qual	Units	Yield	Recovery	Bias	MDC MDA
<b>RICHRC5080</b>									
5364467 BLANK QC									
	HT13J1AA	AM-241	5.18E-02 +- 4.5E-02		pCi/g	96%			4.28E-02
	HT13J1AD	AM-241	1.11E-02 +- 2.2E-02	U	pCi/g	80%			3.01E-02
5364467 LCS									
	HT13J1AE	AM-241	9.37E+00 +- 1.6E+00		pCi/g	109%	105%	0.1	2.30E-02
	HT13J1AC	AM-241	8.91E+00 +- 1.6E+00		pCi/g	87%	98%	0.0	4.64E-02
<b>SRTOT_SEP_PRECIP_GPC</b>									
5364466 BLANK QC									
	HT13G1AA	STRONTIUM	6.59E-02 +- 7.3E-02	U	pCi/g	82%			1.51E-01
5364466 LCS									
	HT13G1AC	STRONTIUM	1.33E+00 +- 3.8E-01		pCi/g	83%	117%	0.2	1.43E-01
<b>No. of Results: 6</b>									

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLRchQcSummary V4.14.4 A97 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I  
SAMPLE RESULTS

Date: 07-Feb-06

Lab Name: STL Richland

SDG: J00024A

Collection Date: 11/10/2005 10:25:00 AM

Lot-Sample No.: J5L210247-1

Report No.: 31312

Received Date: 11/17/2005 11:25:00 AM

Client Sample ID: J10FH1

COC No.: RC-005-008

Matrix: SOIL

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: 5364466	SRTOT_SEP_PRECIP_GPC			Work Order: HTKDG1AC		Report DB ID: 9HTKDG10					
STRONTIUM	<b>3.40E+02</b>	5.9E+00	9.7E+01	9.22E-01	pCi/g	77%	(368.4)	1/24/06 08:26 p		1.02	GPC26C
					4.26E-01		(7.)			G	
Batch: 5364467	RICHRC5080			Work Order: HTKDG1AA		Report DB ID: 9HTKDG10					
AM-241	<b>1.66E+00</b>	3.7E-01	4.9E-01	1.27E-01	pCi/g	90%	(13.1)	2/3/06 02:25 p		0.5	ALP127
					3.64E-02	1.00E+00	(6.8)			G	

No. of Results: 2

Comments:

## FORM II

Date: 07-Feb-06

## DUPLICATE RESULTS

Lab Name: STL Richland

SDG: J00024A

Collection Date: 11/10/2005 10:25:00 AM

Lot-Sample No.: J5L210247-1

Report No.: 31312

Received Date: 11/17/2005 11:25:00 AM

Client Sample ID: J10FH1 DUP

COC No.: RC-005-008

Matrix: SOIL

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: 5364466	SRTOT_SEP_PRECIP_GPC			Work Order: HTKDG1AD		Report DB ID: HTKDG1DR		Orig Sa DB ID: 9HTKDG10				
STRONTIUM	3.30E+02		5.5E+00	8.9E+01	8.08E-01	pCi/g	80%	(408.4)	1/24/06 08:26 p		1.09	GPC26D
	3.40E+02		RPD 2.9					(7.4)			G	
Batch: 5364467	RICHRC5080			Work Order: HTKDG1AE		Report DB ID: HTKDG1ER		Orig Sa DB ID: 9HTKDG10				
AM-241	1.69E+00		3.6E-01	4.8E-01	5.15E-02	pCi/g	89%	(32.8)	2/3/06 02:26 p		0.51	ALP128
	1.66E+00		RPD 1.6			1.00E+00		(7.)			G	

Alpha Spec Result Sum = 1.7E+00

No. of Results: 2    Comments:

STL Richland    RPD - Relative Percent Difference.

rptSTLRchDupV4.1 MDC|MDA,Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
4.4 A97

**FORM II**  
**BLANK RESULTS**

Date: 07-Feb-06

Lab Name: STL Richland  
Matrix: SOIL

SDG: J00024A  
Report No.: 31312

Parameter	Result	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 5364467	RICHRC5080											
AM-241	5.18E-02		4.4E-02	4.5E-02	4.28E-02	pCi/g	96%	(1.2)	2/3/06 02:27 p		1.0	ALP129
					9.29E-03	1.00E+00		(2.3)			G	
Batch: 5364467	RICHRC5080											
AM-241	1.11E-02	U	2.2E-02	2.2E-02	3.01E-02	pCi/g	80%	0.37	2/3/06 02:28 p		1.01	ALP131
						1.00E+00		1.			G	
Batch: 5364466	SRTOT_SEP_PRECIP_GPC											
STRONTIUM	6.59E-02	U	7.1E-02	7.3E-02	1.51E-01	pCi/g	82%	0.44	1/24/06 08:26 p		6.0	GPC27C
					7.02E-02			(1.8)			G	
No. of Results:	3	Comments:										

**FORM II**  
**LCS RESULTS**

Date: 07-Feb-06

Lab Name: STL Richland

SDG: J00024A

Matrix: SOIL

Report No.: 31312

Parameter	Result	Count Qual 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: 5364467	RICHRC5080				Work Order: HT13J1AC		Report DB ID: HT13J1CS					
AM-241	8.91E+00	5.9E-01	1.6E+00	4.64E-02	pCi/g	87%	9.07E+00	2.6E-01	98%	2/3/06 02:27 p	1.0	ALP130
						Rec Limits:	70	130	0.0		G	
Batch: 5364467	RICHRC5080				Work Order: HT13J1AE		Report DB ID: HT13J1EM					
AM-241	9.37E+00	5.6E-01	1.6E+00	2.30E-02	pCi/g	109%	8.90E+00	2.6E-01	105%	2/3/06 02:28 p	1.02	ALP132
						Rec Limits:	70	130	0.1		G	
Batch: 5364466	SRTOT_SEP_PRECIP_GPC				Work Order: HT13G1AC		Report DB ID: HT13G1CS					
STRONTIUM	1.33E+00	1.6E-01	3.8E-01	1.43E-01	pCi/g	83%	1.13E+00	8.1E-03	117%	1/24/06 08:26 p	6.0	GPC27D
						Rec Limits:	20	105	0.2		G	
No. of Results: 3		Comments:										

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.36.

rptSTLRchLcs  
V4.14.4 A97

Lot No., Due Date: J5L210247; 01/06/2006  
 Client, Site: 127642; HANFORD  
 QC Batch No., Method Test: 5364467; RAMISO Amlso by ALP  
 SDG, Matrix: J00024A; SOIL

Section	Question	Yes	No	N/A
<b>1.0 COC</b>				
1.1	Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		
<b>2.0 QC Batch</b>				
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?	✓		
<b>3.0 QC &amp; Samples</b>				
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?	✓		
<b>4.0 Raw Data</b>				
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?	✓		
<b>5.0 Other</b>				
5.1	Are all nonconformances included and noted?			✓
5.2	Are all required forms filled out?	✓		
5.3	Was the correct methodology used?	✓		
5.4	Was transcription checked?	✓		
5.5	Were all calculations checked at a minimum frequency?	✓		
5.6	Are worksheet entries complete and correct?	✓		
6.0	Comments on any No response:			

First Level Review *Thomas E. [Signature]* Date 2/6/06



# STL

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 5364467

Review Item	Yes (✓)	No (✓)	N/A (✓)
<b>A. Sample Analysis</b>			
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>B. QC Samples</b>			
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?	✓		
<b>C. Other</b>			
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: *[Signature]* Date: 2-7-06

Lot No., Due Date: J5L210247; 01/06/2006  
Client, Site: 127642; HANFORD  
QC Batch No., Method Test: 5364466; RSRTOT SrTot by GPC  
SDG, Matrix: J00024A; SOIL

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 Paul Anderson

Date 1-27-06



# STL

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 536446C

Review Item	Yes (✓)	No (✓)	N/A (✓)
<b>A. Sample Analysis</b>			
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>B. QC Samples</b>			
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?	✓		
<b>C. Other</b>			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	<del>✓</del>		
3. Was the correct methodology used?	<del>✓</del>		
4. Was transcription checked?	<del>✓</del>		
5. Were all calculations checked at a minimum frequency?	<del>✓</del>		
6. Were units checked?	<del>✓</del>		

Comments on any "No" response: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Second Level Review: *[Signature]* Date: 1-7-06

BHI 27038

STL RICHLAND

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			RC-005-008	Page 1 of 1
Collector R.B. Kerkow	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH		Price Code 8L	Data Turnaround 21 Days
Project Designation 100-NR-1 TSD Sites R. A. Verification Sampling - Soil		Sample Location 116-N-1 Trench Deep Zone		SAF No. RC-005	Air Quality <input type="checkbox"/>	
Ice Chest No. AFS-04-053	Field Logbook No. EL-1524-4	COA R1301N2F00	Method of Shipment Hand Delivery			
Shipped To Severn Trent Incorporated, Richland		Offsite Property No. ESR NO. 106716	Bill of Lading/Air Bill No. N/A			

POSSIBLE SAMPLE HAZARDS/REMARKS Potential Radiological contamination DOT REGULATED Special Handling and/or Storage None	Preservation	Cool 4C	Cool 4C	Cool 4C	None	None					
	Type of Container	aG	aG	G	P	P					
	No. of Container(s)	1	1	1	1	1					
	Volume	60mL	60mL	120mL	1000mL 125mL	20mL					

J00024  
J5K190374  
Dm  
120805

SAMPLE ANALYSIS				ICP Metals - 6010A (TAL) (Chromium)	7106_CR6: Hexavalent Chromium (1)	NO2/NO3 - 353.1	See item (1) in Special Instructions.	Activity Scans					
Sample No.	Matrix *	Sample Date	Sample Time										
J10FH1	HOKOA	11-10-05	1025	X	X	X	X	X			J10FNS	D2T-05	

DAS 11/16/05

T16 To Ref

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From RB Kerkow/RB Kerkow	Date/Time 1530 4/1/05	Received By/Stored In LEF IC, 3728 RBK	Date/Time 1530 11/4/05	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Isotopic Plutonium (Plutonium-239/240); Americium-241; Strontium-89,90 - Total Sr; Nickel-63; Tritium - H3  DAS 11/17/05  . 22 mR/hr  HTK D67 15 TAT  J00024A J5L210297 Dm 010606				S=Soil SB=Sediment SC=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trace W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From 3728 Ref IC	Date/Time 11/17/05 0900	Received By/Stored In B...	Date/Time 11/17/05 0900					
Relinquished By/Removed From <del>...</del>	Date/Time 11/17/05 0900	Received By/Stored In FRD EX	Date/Time					
Relinquished By/Removed From Jeff Jensen	Date/Time 11/17/05 1125	Received By/Stored In Jeff Jensen	Date/Time 11/17/05 1125					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time



STL RICHLAND

1/18/2006 4:37:47 PM

Sample Preparation/Analysis **PRIORITY**

Balance Id:1120373922

8E Am PrpRC5013/RC5019, SepRC5080(5003)  
 SX Americium-241 by Alpha Spec  
 5I CLIENT: HANFORD

Pipet #: NA

Report Due: 01/06/2006

Sep1 DT/Tm Tech: 

Sep2 DT/Tm Tech:

Prep Tech: ,WAGNERJ

Batch: 5364467 pCi/g  
 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:
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Comments: *UAWA sand Ukd for samples HT135 BY JCM. Samples were muffled. 1-18-06*

All Clients for Batch:  
 127642, Bechtel Hanford, Inc. Bechtel Hanford, Inc. , HC , 27038

HTKDG1AA-SAMP Constituent List:

Am-241	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35
HT13J1AA-BLK:											
Am-241	RDL:1	pCi/g	LCL:	UCL:	RPD:	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35
HT13J1AC-LCS:											
Am-241	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35
HT13J1AD-MBLK:											
Am-241	RDL:1	pCi/g	LCL:	UCL:	RPD:	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35
HT13J1AE-MLCS:											
Am-241	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

HTKDG1AA-SAMP Calc Info:

Uncert Level (#): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
HT13J1AA-BLK:				
Uncert Level (#): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
HT13J1AC-LCS:				
Uncert Level (#): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
HT13J1AD-MBLK:				
Uncert Level (#): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
HT13J1AE-MLCS:				
Uncert Level (#): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B

Approved By \_\_\_\_\_ Date: \_\_\_\_\_

2/6/2006 10:54:05 AM

# ICOC Fraction Transfer/Status Report

ByDate: 2/6/2005, 2/11/2006, Batch: '5364467', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
<b>5364467</b>				
AC	CalcC	WAGNERJ	1/18/2006 1:57:53 PM	
SC		wagarr	IsBatched 12/30/2005 4:25:44 PM	ICOC_RADCALC v4.8.16
SC		WAGNERJ	InPrep2 1/18/2006 1:57:53 PM	RICH-RC-5019 REVISION 5
SC		HansenM	Prep2C 1/25/2006 5:48:58 PM	RICH-RC-5019 REVISION 5
SC		AntonsonL	InSep1 1/26/2006 9:21:32 AM	RICH-RC-5080 REVISION 2
SC		FABREM	InSep2 2/3/2006 6:42:08 AM	RICH-RC-5003 REV 6
SC		FABREM	Sep2C 2/3/2006 12:22:20 PM	RICH-RC-5003 REVISION 6
SC		BlackCL	InCnt1 2/3/2006 12:27:03 PM	RICH-RD-0008 REVISION 4
SC		DAWKINSO	CalcC 2/3/2006 6:54:54 PM	RICH-RD-0008 REVISION 4
AC		HansenM	1/25/2006 5:48:58 PM	
AC		AntonsonL	1/26/2006 9:21:32	
AC		FABREM	2/3/2006 6:42:08 AM	
AC		FABREM	2/3/2006 12:22:20 PM	
AC		BlackCL	2/3/2006 12:27:03 PM	
AC		DAWKINSO	2/3/2006 6:54:54 PM	

AC: Accepting Entry; SC: Status Change

STL Richland  
Richland Wa.



STL RICHLAND

12/30/2005 4:25:22 PM

Sample Preparation/Analysis

Balance Id: \_\_\_\_\_

CH Sr-Total PrpRC5013, SepRC5006  
 TH Total Strontium by GPC  
 5I CLIENT: HANFORD

Pipet #: \_\_\_\_\_

Report Due: 01/06/2006

**PRIORITY**

Sep1 DT/Tm Tech: \_\_\_\_\_

Batch: 5364466

pCi/g

Sep2 DT/Tm Tech: \_\_\_\_\_

SEQ Batch, Test: None

Prep Tech: \_\_\_\_\_

Work Order, Lot, Sample Date/Time	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:
Uncert Level (#s): 2 RT13G1AA-BLK:		Decay to SaDt: Y	Blk Subt.: N	Sci.Mot.: Y		ODRs: B				
Uncert Level (#s): 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Mot.: Y		ODRs: B				
RT13G1AC-LCS:										
Uncert Level (#s): 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Mot.: Y		ODRs: B				

Approved By \_\_\_\_\_

Date: \_\_\_\_\_

1/27/2006 9:22:48 AM

# ICOC Fraction Transfer/Status Report

ByDate: 1/27/2005, 2/1/2006, Batch: '5364466', User: \*ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting	Comments
	5364466				
AC		CalcC	WAGNERJ	1/18/2006 1:57:42 PM	
SC			wagarr	IsBatched 12/30/2005 4:25:44 PM	ICOC_RADCALC v4.8.16
SC			WAGNERJ	InPrep2 1/18/2006 1:57:42 PM	RICH-RC-5013 REVISION 5
SC			HansenM	Prep2C 1/19/2006 5:26:57 PM	RICH-RC-5013 REVISION 5
SC			FABREM	InSep1 1/19/2006 8:24:59 PM	RICH-RC-5006 REVISION 6
SC			FABREM	Sep1C 1/24/2006 6:15:00 PM	RICH-RC-5006 REVISION 6
SC			DAWKINSO	InCnt1 1/24/2006 6:55:20 PM	RICH-RD-0003 REVISION 4
SC			DAWKINSO	CalcC 1/24/2006 10:28:34 PM	RICH-RD-0003 REVISION 4
AC			HansenM	1/19/2006 5:26:57 PM	
AC			FABREM	1/19/2006 8:24:59 PM	
AC			FABREM	1/24/2006 6:15:00 PM	
AC			DAWKINSO	1/24/2006 6:55:20 PM	
AC			DAWKINSO	1/24/2006 10:28:34	

AC: Accepting Entry, SC: Status Change

STL Richland  
Richland Wa.

STL St. Louis  
13715 Rider Trail North  
Earth City, MO 63045

Tel: 314 298 8566 Fax: 314 298 8757  
www.stl-inc.com

## ANALYTICAL REPORT



PROJECT NO. 100NR1 TSD SITE

RC-005

Lot #: F5K220109

SDG #: J00024

Joan Kessner

Washington Closure Hanford  
3190 George Washington Way  
MSIN H9-02  
Richland, WA 99352

SEVERN TRENT LABORATORIES, INC.

A handwritten signature in black ink, appearing to read "Melania Harris".

Melania Harris  
Project Manager

December 7, 2005

**Case Narrative**  
LOT NUMBER: F5K220109

This report contains the analytical results for the sample received under chain of custody by STL St. Louis on November 18, 2005. This sample is associated with your RC-005 project.

The analytical results included in this report meet all applicable quality control procedure requirements.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by STL St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

**EXECUTIVE SUMMARY - Detection Highlights**

F5K220109

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
J10FHI 11/10/05 10:25 001				
Chromium	6.2	1.0	mg/kg	SW846 6010B
Nitrate/Nitrite as N	4.8	0.52	mg/kg	MCAWW 353.1
Percent Moisture	3.8	0.10	%	MCAWW 160.3 MOD

**METHODS SUMMARY**

F5K220109

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Hexavalent Chromium	SW846 7196A	SW846 3060A
Nitrate-Nitrite	MCAWW 353.1	
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B

**References:**

MCAWW "Methods for Chemical Analysis of Water and Wastes",  
EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical  
Methods", Third Edition, November 1986 and its updates.

**SAMPLE SUMMARY**

F5K220109

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
HQPNH	001	J10FH1	11/10/05	10:25

**NOTE (S) :**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

**F5K220109**

**CLIENT ANALYSIS SUMMARY**

Storage Loc: **C138**

Project Manager: MLH      Quote #: 43915      SDG: J00024  
 Project: 100NR1 TSD SITE      RC-005  
 PO#: MRC-SBB-A-19981      Report to: Joan Kessner  
 Client: 127642      Bechtel Hanford, Inc.

Date Received: 2005-11-18  
 Analytical Due Date: 2005-12-06  
 Report Due Date: 2005-12-07

Report Type: B      Standard Report  
 EDD Code: FEADII

#SMPS in LOT: 0

Anions/Metals: CRDL standard required +/-25% Batch Hanford samples by themselves correct results for moisture

Anions: CCV/CCB criteria +/-10% Samples are potentially radioactive!!! Take precautions!

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
1	J10FH1			2005-11-10 / 1025	HQPNH	SOLID
<b>SAMPLE COMMENTS:</b>						
CR QM	SW846 8010B	46	Inductively Coupled Plasma (8010B Trace)	METALS, TOTAL - Soils	01 STANDARD TEST SET	PROT: A WRK LOC 06
XX ZV	RAD SCREEN	RA	RAD SCREEN	IN-HOUSE RAD SCREEN	01 STANDARD TEST SET	PROT: A WRK LOC 06
XX EA	SW846 7196A	DW	Chromium, Hexavalent (7196A)	Alkaline Digestion by method 3060A	01 STANDARD TEST SET	PROT: A WRK LOC 06
XX HN	MCAW 353.1 W	OR	Nitrate-Nitrite (353.1)	LEACHATE, DI (Routine) -> REDUCTION	01 STANDARD TEST SET	PROT: A WRK LOC 06
XX WM	MCAW 160.3 W MOD	88	Moisture, Percent (160.3)	NO SAMPLE PREPARATION PERFORMED / DIRECT	01 STANDARD TEST SET	PROT: A WRK LOC 06
D CR QM	SW846 6010B	46	Inductively Coupled Plasma (8010B Trace)	METALS, TOTAL - Soils	01 STANDARD TEST SET	PROT: A WRK LOC 06
S CR QM	SW846 6010B	46	Inductively Coupled Plasma (8010B Trace)	METALS, TOTAL - Soils	01 STANDARD TEST SET	PROT: A WRK LOC 06
S XX EA	SW846 7196A	DW	Chromium, Hexavalent (7196A)	Alkaline Digestion by method 3060A	01 STANDARD TEST SET	PROT: A WRK LOC 06
S XX HN	MCAW 353.1 W	OR	Nitrate-Nitrite (353.1)	LEACHATE, DI (Routine) -> REDUCTION	01 STANDARD TEST SET	PROT: A WRK LOC 06
X XX EA	SW846 7196A	DW	Chromium, Hexavalent (7196A)	Alkaline Digestion by method 3060A	01 STANDARD TEST SET	PROT: A WRK LOC 06
X XX HN	MCAW 353.1 W	OR	Nitrate-Nitrite (353.1)	LEACHATE, DI (Routine) -> REDUCTION	01 STANDARD TEST SET	PROT: A WRK LOC 06

**F5K220109**

**CLIENT COMMENTS SUMMARY**

Project Manager: MLH      Quote #: 43915      SDG: J00024  
Project: 100NR1 TSD SITE      RC-005  
PO#: MRC-SBB-A-19981      Report to: Joan Kessner  
Client: 127642      Bechtel Hanford, Inc.

Storage Loc: **C138**  
Date Received: 2005-11-18  
Analytical Due Date: 2005-12-06  
Report Due Date: 2005-12-07  
Report Type: B      Standard Report  
EDD Code: FEADII

#SMPS in LOT: 0

Anions/Metals: CRDL standard required +/-25%  
Batch Hanford samples by themselves  
correct results for moisture  
Anions: CCV/CCB criteria +/-10%  
Samples are potentially radioactive!!! Take precautions!

SDG: J00024

LOT# FSK220109

SDG# J00024

LOT# 26

Washington Closure Hanford				CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					RC-005-008		Page 1 of 1					
Collector R.B. Kerkow				Company Contact Joan Kessner		Telephone No. 375-4688		Project Coordinator KESSNER, JH		Price Code 8L		Data Turnaround				
Project Designation 100-NR-1 TSD Sites R. A. Verification Sampling - Soil				Sampling Location 116-N-1 Trench Deep Zone		SAF No. RC-005		Air Quality <input type="checkbox"/>		21 Days						
Ice Chest No. AFS-04-121				Field Logbook No. EL-1524-4		COA R1301N2F00		Method of Shipment Fed Ex								
Shipped To Severn Trent Incorporated, <sup>MO 11/605</sup> <del>Richland</del> St. Louis				Offsite Property No. RSR NO. 106717		Bill of Lading/Air Bill No. See OSPC										
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> Potential Radiological contamination DOT REGULATED Special Handling and/or Storage Home - 11/605 Cool 4°C DAS 11/17/05				Preservation		Cool 4C	Cool 4C	Cool 4C	None	None						
				Type of Container		aG	aG	G	P	P						
				No. of Container(s)		1	1	1	1	1						
				Volume		60mL	60mL	120mL	1000mL 125mL	20mL						
<b>SAMPLE ANALYSIS</b>				ICP Metals - 6010A (TAL) (Chromium)		7196_CR6 Hexavalent Chromium (I)		NO2/NO3- 353.1		See item (1) in Special Instructions.		Activity Scan				
														TIE TO RCF		
Sample No.	Matrix *	Sample Date	Sample Time													
J10FH1	SOIL	11-10-05	1025	X	X	X	X	X			J10FNS	DET-05				
<b>CHAIN OF POSSESSION</b>				<b>Sign/Print Names</b>				<b>SPECIAL INSTRUCTIONS</b>				<b>Matrix *</b>				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Isotopic Plutonium (Plutonium-239/240); Americium-241; Strontium-89,90 -- Total Sr; Nickel-63; Tritium - H3				S=Soil SB=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other				
RB KERKOW/RB Kerkow		11/10/05 1530		REF IC, 3728 RBK		11/14/05										
3728 RCF IC		11/17/05 0900		David St. Louis		11/17/05 0900										
David St. Louis		11/17/05 0900		Fed Ex												
B-K		11/18/05 0900														
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time										
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time										
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time										
<b>LABORATORY SECTION</b>		Received By		Title				Date/Time								
<b>FINAL SAMPLE DISPOSITION</b>		Disposal Method		Disposed By				Date/Time								

Washington Closure Hanford

11/7/2005 3:55:24PM

Page 1 of 3

**Radiological Counting Facility**

Analysis Report for RCF13599

J10FN5 SAF: RC-005 116-N-1 Trench Deep zone

**GAMMA SPECTRUM ANALYSIS**

Sample Identification : RCF13599  
 Sample Description : J10FN5 SAF: RC-005 116-N-1 Trench Deep zone  
 Sample Type : 80 gram pill box  
 Unit :  
 Sample Point :  
  
 Sample Size : 9.600E+01 grams  
 Facility : Default  
  
 Sample Taken On : 11/3/2005 9:05:00AM  
 Acquisition Started : 11/7/2005 2:54:10PM  
  
 Procedure : 80 gram pill box  
 Operator : RKZ  
 Detector Name : BEGE  
 Geometry : 80 Gram Pill Box  
 Live Time : 3600.0 seconds  
 Real Time : 3656.8 seconds  
  
 Dead Time : 1.55 %  
  
 Peak Locate Threshold : 3.00  
 Peak Locate Range (in channels) : 40 - 4096  
 Peak Area Range (in channels) : 40 - 4096  
 Identification Energy Tolerance : 1.000 keV  
  
 Energy Calibration Used Done On : 5/13/2005  
 Efficiency Calibration Used Done On : 3/26/2005  
 Efficiency Calibration Description : Efficiency calibration BEGe 80 gram pill box  
  
 Sample Number : 5454

**INTERFERENCE CORRECTED REPORT**

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	0.991	8.13E+00	2.66E+00	
CO-60	0.997	4.80E+01	2.60E+00	
CS-137	1.000	2.57E+03	2.41E+02	
AM-241 < MDA	0.995	<del>2.00E+00</del>	1.30E+00	

Analysis Report for RCF13599

J10FN5 SAF: RC-005 116-N-1 Trench Deep zone

- ? = nuclide is part of an undetermined solution
- X = nuclide rejected by the interference analysis
- @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000 sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 11/7/2005 3:55:12PM  
 Peak Locate From Channel : 40  
 Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Rate (CPS)	Peak Rate (%) Uncertainty
M 1	CS-137 32.25	1.50E+01	0.51
m 2	CS-137 36.54	4.17E+00	1.26

M = First peak in a multiplet region  
 m = Other peak in a multiplet region  
 F = Fitted singlet  
 NP = No Peak  
 UK = Unknown  
 Errors quoted at 2.000 sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\GOZERA\apex\root\Default\Library\RCF UNKNOWN.NLB

Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+ K-40	1460.83	* 10.67	8.13E+00	3.39E+00	3.39E+00
+ CO-60	1173.24	* 99.90	4.83E+01	1.03E+00	1.14E+00
	1332.50	* 99.98	4.78E+01		1.03E+00
AG-108m	433.94	90.50	-2.21E+00	8.21E-01	2.77E+00
	614.28	89.80	3.42E-01		1.68E+00
	722.94	90.80	3.31E-01		8.21E-01
+ CS-137	661.66	* 85.21	2.57E+03	5.57E+00	5.57E+00
EU-152	121.78	28.40	-4.37E-01	2.45E+00	2.56E+00
	344.29	26.60	1.45E+00		6.27E+00
	964.11	14.50	8.49E+00		8.32E+00
	1408.00	20.80	6.81E-01		2.45E+00
EU-154	123.10	40.50	8.86E-01	1.71E+00	1.81E+00
	723.36	19.70	1.53E+00		3.79E+00
	873.23	11.45	3.48E+00		8.97E+00
	1004.78	17.90	-3.08E+00		6.26E+00
	1274.54	35.50	-3.96E-01		1.71E+00
EU-155	86.54	34.00	-1.17E+00	2.03E+00	2.03E+00
	105.31	20.60	1.10E+00		3.38E+00
RA-226	186.11	3.28	8.20E+01	3.42E+01	3.42E+01

Analysis Report for RCF13599

J10FN5 SAF: RC-005 116-N-1 Trench Deep zone

Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
AC-228	338.42	12.40	2.56E+00	6.65E+00	1.32E+01
	968.97	17.40	-4.71E+00		6.65E+00
TH-234	63.29	3.80	3.23E+00	1.27E+01	1.64E+01
	92.56	5.41	2.91E+00		1.27E+01
U-235	143.79	10.50	2.38E+00	2.11E+00	7.67E+00
	163.38	4.70	5.29E-01		1.97E+01
	185.74	53.00	5.07E+00		2.11E+00
	205.33	4.70	1.53E+01		2.53E+01
+ AM-241	59.54 *	35.70	2.08E+00	2.10E+00	2.10E+00

- + = Nuclide identified during the nuclide identification
- \* = Energy line found in the spectrum
- > = MDA value not calculated
- @ = Half-life too short to be able to perform the decay correction


  
**MARK J. NOTEMAN**
**NOV 08 2005**



STL

Lot No(s) F5K220109

(Note all associated lot No's)

Condition Upon Receipt Form  
St. Louis Laboratory

Client: Washington Closure Hanford COC/RFA No: \_\_\_\_\_ Date: 11/17/05  
Quote No: \_\_\_\_\_ Initiated By: BJ Time: 8:40

Shipping Information

Shipper Name: FE Multiple Packages: Y 8 N/A  
Shipper No(s):\* 1. W2584023876 Sample Temperature(s):\*\* 1. 3  
2. \_\_\_\_\_ 2. \_\_\_\_\_  
3. \_\_\_\_\_ 3. \_\_\_\_\_  
4. \_\_\_\_\_ 4. \_\_\_\_\_  
5. \_\_\_\_\_ 5. \_\_\_\_\_

\*Numbered shipping lines correspond to Numbered Sample Temp lines.

\*\*Sample must be received at 4°C ± 2°C-If not, note contents below.  
Temperature variance does NOT affect the following analysis/matrix: Metals-Liquid  
Rad tests-Liquids or Solids.

Condition/Variance (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	<input checked="" type="radio"/> Y <input type="radio"/> N	Sample received in undamaged condition?	7.	<input checked="" type="radio"/> Y <input type="radio"/> N	Sample received with Chain of Custody?
2.	<input type="radio"/> Y <input type="radio"/> N <input checked="" type="radio"/> N/A	Sample received with proper pH <sup>1</sup> ? (N/A for soil samples) If NO: sample ID _____ Preservative _____ Lot _____ Date _____ Time _____ Sticker applied Y/N	8.	<input checked="" type="radio"/> Y <input type="radio"/> N	Chain of Custody matches sample IDs on container(s)?
3.	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N	If N/A- Was pH taken by original STL Lab?	9.	<input checked="" type="radio"/> Y <input type="radio"/> N <input type="radio"/> N/A	Custody seal received intact?
4.	<input checked="" type="radio"/> Y <input type="radio"/> N	Sample received in proper containers?	10.	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N <input type="radio"/> N/A	Custody seal tamper evident?
5.	<input checked="" type="radio"/> Y <input type="radio"/> N	Sample volume sufficient for analysis?	11.	<input checked="" type="radio"/> Y <input type="radio"/> N <input type="radio"/> N/A	Custody seal on bottles intact?
6.	<input type="radio"/> Y <input type="radio"/> N <input checked="" type="radio"/> N/A	Headspace in VOA or TOX liquid samples? (If yes, note sample ID's below)	12.	<input type="radio"/> Y <input checked="" type="radio"/> N <input type="radio"/> N/A	Custody seal tamper evident?
<sup>1</sup> For DOE-AL (Pantex, LANL, Sandia) sites, verify pH of all containers received, EXCEPT VOA, TOX, and soils.			13.	<input type="radio"/> Y <input type="radio"/> N <input checked="" type="radio"/> N/A	Was Internal COC/CUR rec'd?

Notes:

PM Notified of Short Hold samples: Y N PM Initials: \_\_\_\_\_

Corrective Action:

- Client's Name: \_\_\_\_\_ Informed by: \_\_\_\_\_ By: \_\_\_\_\_
- Sample(s) processed "as is". \_\_\_\_\_
- Sample(s) on hold until: \_\_\_\_\_ If released, notify: \_\_\_\_\_

Project Management Review: JA Date: 11-22-05

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

2242

# METALS

Bechtel Hanford, Inc.

Client Sample ID: J10FH1

TOTAL Metals

Lot-Sample #...: F5K220109-001

Matrix.....: SOLID

Date Sampled...: 11/10/05

Date Received...: 11/18/05

% Moisture.....: 3.8

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 5332541						
Chromium	6.2	1.0	mg/kg	SW846 6010B	11/29/05	HQPNH1AD
		Dilution Factor: 1		MDL.....: 0.19		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F5K220109

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>WORK</u> <u>ORDER #</u>
<b>MB Lot-Sample #: F5K280000-541 Prep Batch #...: 5332541</b>						
Chromium	ND	1.0	mg/kg	SW846 6010B	11/29/05	HQ1221AA
Dilution Factor: 1						

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F5K220109

Matrix.....: SOLID

<u>PARAMETER</u>	<u>SPIKE</u> <u>AMOUNT</u>	<u>MEASURED</u> <u>AMOUNT</u>	<u>UNITS</u>	<u>PERCNT</u> <u>RECVRY</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>WORK</u> <u>ORDER #</u>
------------------	-------------------------------	----------------------------------	--------------	--------------------------------	---------------	---	-------------------------------

LCS Lot-Sample#: F5K280000-541 Prep Batch #...: 5332541

Chromium	69.5	71.6	mg/kg	103	SW846 6010B	11/29/05	HQ1221AC
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Dilution Factor: 1

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE DATA REPORT

## TOTAL Metals

Client Lot #...: F5K220109

Matrix.....: SOLID

Date Sampled...: 11/10/05

Date Received...: 11/18/05

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
-----------	---------------	-----------	---------------	-------	---------------	-----	--------	----------------------------	--------------

MS Lot-Sample #: F5K220109-001 Prep Batch #....: 5332541

% Moisture.....: 3.8

Chromium

6.2	20.8	27.7	mg/kg	104			SW846 6010B	11/29/05	HQPNH1AG
6.2	20.8	28.1	mg/kg	105	1.4		SW846 6010B	11/29/05	HQPNH1AH

Dilution Factor: 1

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

# WET CHEMISTRY

Bechtel Hanford, Inc.

Client Sample ID: J10FH1

General Chemistry

Lot-Sample #...: F5K220109-001

Work Order #...: HQPNH

Matrix.....: SOLID

Date Sampled...: 11/10/05

Date Received...: 11/18/05

% Moisture.....: 3.8

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Hexavalent Chromium	ND	0.42	mg/kg	SW846 7196A	11/29/05	5340497
		Dilution Factor: 1		MDL.....: 0.15		
Nitrate/Nitrite as N	4.8	0.52	mg/kg	MCAWW 353.1	11/29/05	5333139
		Dilution Factor: 1		MDL.....: 0.028		
Percent Moisture	3.8	0.10	%	MCAWW 160.3 MOD	11/23/05	5327159
		Dilution Factor: 1		MDL.....:		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

## METHOD BLANK REPORT

## General Chemistry

Client Lot #...: F5K220109

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>	<u>PREPARATION-</u>	<u>PREP</u>	
		<u>LIMIT</u>	<u>UNITS</u>		<u>ANALYSIS DATE</u>	<u>BATCH #</u>	
Hexavalent Chromium	ND	0.40	mg/kg	SW846 7196A	11/29/05	5340497	
		Dilution Factor: 1					
Nitrate/Nitrite as N	ND	0.50	mg/kg	MCAWW 353.1	11/29/05	5333139	
		Dilution Factor: 1					

**NOTE(S) :**


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 Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Lot-Sample #...: F5K220109

Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Nitrate/Nitrite as N								
	4.00	4.12	mg/kg	103		MCAWW 353.1	11/29/05	5333139
	4.00	4.20	mg/kg	105	1.9	MCAWW 353.1	11/29/05	5333139

Dilution Factor: 1

NOTE (S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #...: F5K220109

Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECVRY	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Hexavalent Chromium	2.00	1.84	mg/kg	92	SW846 7196A	11/29/05	5340497
				Work Order #: HRJE11AC LCS Lot-Sample#: F5L060000-497			
				Dilution Factor: 1			

**NOTE (S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE DATA REPORT

## General Chemistry

Client Lot #...: F5K220109

Matrix.....: SOLID

Date Sampled...: 11/10/05

Date Received...: 11/18/05

Percent Moisture: 76

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Hexavalent Chromium	ND	41.5	38.4	mg/kg	93	SW846 7196A	11/29/05	5340497
			Work Order #...: HQPN31AJ MS Lot-Sample #: F5K220112-001					
			Dilution Factor: 1					
Nitrate/Nitrite as N	4.8	5.20	10.0	mg/kg	100	MCAWW 353.1	11/29/05	5333139
			Work Order #...: HQPNH1AM MS Lot-Sample #: F5K220109-001					
			Dilution Factor: 1					

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.







Analytical Data Package Prepared For  
**Washington Closure Hanford**



Radiochemical Analysis By

**STL Richland**

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

Assigned Laboratory Code: STLRL

Data Package Contains 04 Pages

Report No.: 30851

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
J00024	RC-005	J10FH1	J5K180374-1	HQK0A1AD	9HQK0A10	5326256
		J10FH1	J5K180374-1	HQK0A1AE	9HQK0A10	5326257
		J10FH1	J5K180374-1	HQK0A1AC	9HQK0A10	5326258
		J10FH1	J5K180374-1	HQK0A1AG	9HQK0A10	5326259
		J10FH1	J5K180374-1	HQK0A1AH	9HQK0A10	5326261
		J10FH1	J5K180374-1	HQK0A1AA	9HQK0A10	5326262



## Certificate of Analysis

Washington Closure Hanford  
3190 George Washington Way  
Richland, WA 99352

December 27, 2005

Attention: Joan Kessner

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SAF Number : RC-005  
Date SDG Closed : November 17, 2005  
Number of Samples : One (1)  
Sample Type : Soil  
SDG Number : J00024  
Data Deliverable : 21-Day / Summary

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### CASE NARRATIVE

#### I. Introduction

On November 17, 2005, one soil sample was received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Washington Closure Hanford (BHI) specific ID:

<u>BHI ID#</u>	<u>STLR ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
J10FH1	HQK0A	SOIL	11/17/05

#### II. Sample Receipt

The sample was 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:

**Alpha Spectroscopy**  
Americium-241 by method RICH-RC-5087  
Plutonium-238, - 239/240 by method RICH-RC-5087

**Gas Proportional Counting**

Total Strontium by method RICH-RC-5006

**Gamma Spectroscopy**

Gamma Spec by method RICH-RC-5017

**Liquid Scintillation Counter**

Nickel-63 by method RICH-RC-5069

Tritium by method RICH-RC-5007

**IV. Quality Control**

The analytical results for each analysis performed under SDG J00024 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**

**Alpha Spectroscopy**

Americium-241 by method RICH-RC-5087:

The LCS and blank data did not meet acceptance limits. The data is reported for client review. The sample will be reprocessed and reported in SDG J00024A.

Plutonium-238, - 239/240 by method RICH-RC-5087:

The LCS, batch blank, sample and sample duplicate (J10FH1) results are within contractual requirements.

**Gas Proportional Counting**

Total Strontium by method RICH-RC-5006:

The duplicate agreement is outside acceptance limits. This was attributed to matrix effect. The sample will be reprocessed and reported in SDG J00024A.

**Gamma Spectroscopy**

Gamma Spec by method RICH-RC-5017:

The LCS, batch blank, sample and sample duplicate (J10FH1) results are within contractual requirements.

**Liquid Scintillation Counting**

Nickel-63 by method RICH-RC-5069:

The tSIE for the instrument blank was slight elevated indicating quenching. Approval to elevate the quenching limit was given by the QA department before samples were reported. Other than as noted, the LCS, batch blank, sample and sample duplicate (J10FH1) results are within contractual requirements.

Tritium by method RICH-RC-5007

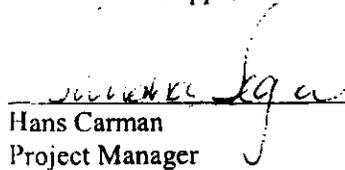
The LCS, batch blank, sample and sample duplicate (J10FH1) results are within contractual requirements.

Washington Closure Hanford  
December 27, 2005

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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

### 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,  $R = \text{constants} * f(x,y,z,\dots)$ . 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

<b>Action Lev</b>	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.
<b>Batch</b>	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
<b>Bias</b>	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
<b>COC No</b>	Chain of Custody Number assigned by the Client or STL Richland.
<b>Count Error (#s)</b>	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.
<b>Total Uncert (#s) <i>u<sub>c</sub> - Combined Uncertainty.</i></b>	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<sub>c</sub> the combined uncertainty</i> . The uncertainty is absolute and in the same units as the result.
<b>(#s), Coverage Factor</b>	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
<b>CRDL (RL)</b>	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)
<b>Lc</b>	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%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgrndCnt} / \text{BkgrndCntMin}) / \text{SCntMin})) * (\text{ConvFct} / (\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$ . 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.
<b>Lot-Sample No</b>	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.
<b>MDC MDA</b>	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%. $MDC = (4.65 * \text{Sqrt}((\text{BkgrndCnt} / \text{BkgrndCntMin}) / \text{SCntMin}) + 2.71 / \text{SCntMin}) * (\text{ConvFct} / (\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$ . For LSC methods the batch blank is used as a measure of the background variability.
<b>Primary Detector</b>	The instrument identifier associated with the analysis of the sample aliquot.
<b>Ratio U-234/U-238</b>	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.
<b>Rst/MDC</b>	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.
<b>Rst/TotUcert</b>	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.
<b>Report DB No</b>	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
<b>RER</b>	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.
<b>SDG</b>	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
<b>Sum Rpt Alpha Spec Rst(s)</b>	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.
<b>Work Order</b>	The LIMS software assign test specific identifier.
<b>Yield</b>	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: 21-Dec-05

STL Richland STLRL

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

Report No. : 30851

SDG No: J00024

Client Id	Batch	Work Order	Parameter	Result +/- Uncertainty ( 2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
5326256 PUIISO_PLATE_AEA										
J10FH1										
	HQK0A1AD	PU-238		7.56E-01 +/- 1.2E+00	U	pCi/g	76%	9.28E-01	1.00E+00	
		PU239/40		3.25E+00 +/- 4.5E+00	U	pCi/g	76%	7.86E-01	1.00E+00	
J10FH1 DUP										
	HQK0A1AJ	PU-238		6.65E-01 +/- 1.1E+00	U	pCi/g	73%	8.38E-01	1.00E+00	12.8
		PU239/40		1.75E+00 +/- 2.6E+00	U	pCi/g	73%	4.74E-01	1.00E+00	60.1
5326257 AMCMISO_EIE_PLT_AEA										
J10FH1										
	HQK0A1AE	AM-241		2.60E+00 +/- 3.9E+00	U	pCi/g	51%	1.60E+00	1.00E+00	
J10FH1 DUP										
	HQK0A1AK	AM-241		1.75E+00 +/- 2.8E+00	U	pCi/g	58%	7.91E-01	1.00E+00	39.2
5326261 GAMMA_GS										
J10FH1										
	HQK0A1AH	AM-241		9.87E-01 +/- 3.5E-01		pCi/g		3.82E-01		
		CO-60		1.08E+01 +/- 1.5E+00		pCi/g		4.60E-02	5.00E-02	
		CS-137		3.52E+02 +/- 4.2E+01		pCi/g		1.11E-01	1.00E-01	
		EU-154		3.33E-01 +/- 1.3E-01	U	pCi/g		1.63E-01	1.00E-01	
		EU-155		1.38E-01 +/- 2.0E-01	U	pCi/g		3.31E-01	1.00E-01	
J10FH1 DUP										
	HQK0A1AN	AM-241		8.32E-01 +/- 4.0E-01		pCi/g		6.13E-01		
		CO-60		1.23E+01 +/- 1.7E+00		pCi/g		4.27E-02	5.00E-02	
		CS-137		3.88E+02 +/- 4.6E+01		pCi/g		1.07E-01	1.00E-01	
		EU-154		2.85E-01 +/- 8.9E-02	U	pCi/g		1.51E-01	1.00E-01	
		EU-155		1.11E-01 +/- 1.8E-01	U	pCi/g		2.97E-01	1.00E-01	
5326262 SRTOT_SEP_PRECIP_GPC										
J10FH1										
	HQK0A1AA	STRONTIUM		5.98E+02 +/- 1.6E+02		pCi/g	54%	1.10E+00		
J10FH1 DUP										
	HQK0A1AP	STRONTIUM		3.34E+02 +/- 9.3E+01		pCi/g	60%	1.01E+00		56.5
5326258 NI63_LSC										
J10FH1										
	HQK0A1AC	NI-63		4.44E-01 +/- 4.8E+00	U	pCi/g	85%	6.73E+00	3.00E+01	
J10FH1 DUP										
	HQK0A1AL	NI-63		7.77E+00 +/- 5.3E+00		pCi/g	84%	6.70E+00	3.00E+01	178.4
5326259 906.0_H3_LSC										
J10FH1										
	HQK0A1AG	H-3		-6.33E-01 +/- 8.8E-01	U	pCi/g	100%	1.98E+00	4.00E+02	
J10FH1 DUP										
	HQK0A1AM	H-3		4.69E-01 +/- 9.4E-01	U	pCi/g	100%	1.97E+00	4.00E+02	-1345.4

STL Richland RPD - Relative Percent Difference.

rptSTLRchSaSummary2 V4.14.4 A97 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

**Sample Results Summary**

**Date:** 21-Dec-05

**STL Richland STLRL**

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

**Report No. :** 30851

**SDG No:** J00024

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Client Id		Parameter	Result +/- Uncertainty ( 2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
Batch	Work Order								

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No. of Results: 22

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STL Richland RPD - Relative Percent Difference.

rptSTLRchSaSummary2 V4.14.4 A97

**QC Results Summary**  
**STL Richland STLRL**  
 Ordered by Method, Batch No, QC Type,.

Date: 21-Dec-05

Report No. : 30851

SDG No.: J00024

Batch	Work Order	Parameter	Result +/- Uncertainty ( 2σ)	Qual	Units	Yield	Recovery	Bias	MDC MDA
<b>PUISO_PLATE_AEA</b>									
5326256 BLANK QC									
	HQP6K1AD	PU-238	0.00E+00 +/- 2.6E-02	U	pCi/g	61%			2.84E-02
		PU239/40	0.00E+00 +/- 2.6E-02	U	pCi/g	61%			2.84E-02
5326256 LCS									
	HQP6K1AE	PU239/40	6.31E+00 +/- 1.2E+00		pCi/g	81%	96%	0.0	2.16E-02
<b>AMCMISO_EIE_PLT_AEA</b>									
5326257 BLANK QC									
	HQP6N1AA	AM-241	-2.76E-02 +/- 4.0E-02	U	pCi/g	12%			3.89E-01
5326257 LCS									
	HQP6N1AC	AM-241	4.17E+00 +/- 1.3E+00		pCi/g	20%	46%	-0.5	1.94E-01
<b>GAMMA_GS</b>									
5326261 BLANK QC									
	HQP641AA	AM-241	9.80E-03 +/- 1.7E-02	U	pCi/g				2.50E-02
		CO-60	-2.47E-03 +/- 1.6E-02	U	pCi/g				2.80E-02
		CS-137	-1.12E-04 +/- 1.4E-02	U	pCi/g				2.35E-02
		EU-154	-1.23E-04 +/- 4.2E-02	U	pCi/g				7.53E-02
		EU-155	-4.11E-03 +/- 2.3E-02	U	pCi/g				3.97E-02
5326261 LCS									
	HQP641AC	CS-137	8.35E-01 +/- 1.3E-01		pCi/g		97%	0.0	6.50E-02
<b>SRTOT_SEP_PRECIP_GPC</b>									
5326262 BLANK QC									
	HQP671AA	STRONTIUM	2.87E-02 +/- 5.5E-02	U	pCi/g	93%			1.21E-01
5326262 LCS									
	HQP671AC	STRONTIUM	1.02E+00 +/- 3.0E-01		pCi/g	92%	90%	-0.1	1.25E-01
<b>Ni63_LSC</b>									
5326258 BLANK QC									
	HQP6P1AA	NI-63	4.23E+00 +/- 4.9E+00	U	pCi/g	87%			6.44E+00
5326258 LCS									
	HQP6P1AC	NI-63	4.92E+02 +/- 3.9E+01		pCi/g	89%	96%	0.0	6.29E+00
<b>906.0_H3_LSC</b>									
5326259 BLANK QC									
	HQP6V1AA	H-3	-7.82E-02 +/- 1.5E-01	U	pCi/g	100%			3.34E-01
5326259 LCS									
	HQP6V1AC	H-3	2.40E+00 +/- 2.7E-01		pCi/g	100%	86%	-0.1	3.31E-01
No. of Results: 17									

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLRchQcSummary V4.14.4 A97 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I  
SAMPLE RESULTS

Date: 21-Dec-05

Lab Name: STL Richland  
Lot-Sample No.: J5K180374-1  
Client Sample ID: J10FH1

SDG: J00024  
Report No.: 30851  
COC No.: RC-005-008

Collection Date: 11/10/2005 10:25:00 AM  
Received Date: 11/17/2005 11:25:00 AM  
Matrix: SOIL

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: 5326256	PUISO_PLATE_AEA				Work Order: HQK0A1AD		Report DB ID: 9HQK0A10					
PU-238	<b>7.56E-01</b>	U	7.4E-01	1.2E+00	9.28E-01	pCi/g	76%	0.81	12/14/05 02:07 p		0.0529	ALP37
							2.42E-01	1.00E+00			G	
PU239/40	<b>3.25E+00</b>	U	1.5E+00	4.5E+00	7.86E-01	pCi/g	76%	(4.1)	12/14/05 02:07 p		0.0529	ALP37
							1.71E-01	1.00E+00			G	
Batch: 5326257	AMCMISO_EIE_PLT_AEA				Work Order: HQK0A1AE		Report DB ID: 9HQK0A10					
AM-241	<b>2.60E+00</b>	U	1.9E+00	3.9E+00	1.60E+00	pCi/g	51%	(1.6)	12/14/05 02:15 p		0.0529	ALP131
							3.47E-01	1.00E+00			G	
Batch: 5326258	NI63_LSC				Work Order: HQK0A1AC		Report DB ID: 9HQK0A10					
NI-63	<b>4.44E-01</b>	U	2.8E+00	4.8E+00	6.73E+00	pCi/g	85%	0.07	12/16/05 09:17 a		0.2542	LSC4
							3.27E+00	3.00E+01			G	
Batch: 5326259	906.0_H3_LSC				Work Order: HQK0A1AG		Report DB ID: 9HQK0A10					
H-3	<b>-6.33E-01</b>	U	7.5E-01	8.8E-01	1.98E+00	pCi/g	100%	-0.32	12/5/05 09:26 p		5.042	LSC4
							9.24E-01	4.00E+02			G	
Batch: 5326261	GAMMA_GS				Work Order: HQK0A1AH		Report DB ID: 9HQK0A10					
AM-241	<b>9.87E-01</b>		3.5E-01	3.5E-01	3.82E-01	pCi/g		(2.6)	11/26/05 11:18 a		46.2	GER10\$1
								(5.7)			g	
CO-60	<b>1.08E+01</b>		1.5E+00	1.5E+00	4.60E-02	pCi/g		(235.)	11/26/05 11:18 a		46.2	GER10\$1
							5.00E-02	(14.6)			g	
CS-137	<b>3.52E+02</b>		4.2E+01	4.2E+01	1.11E-01	pCi/g		(3180.7)	11/26/05 11:18 a		46.2	GER10\$1
							1.00E-01	(16.7)			g	

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
rptSTLRchSample U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.  
V4.14.4 A97

FORM I  
SAMPLE RESULTS

Date: 21-Dec-05

Lab Name: STL Richland

SDG: J00024

Collection Date: 11/10/2005 10:25:00 AM

Lot-Sample No.: J5K180374-1

Report No.: 30851

Received Date: 11/17/2005 11:25:00 AM

Client Sample ID: J10FH1

COC No.: RC-005-008

Matrix: SOIL

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/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
EU-154	<b>3.33E-01</b>	U	1.3E-01	1.3E-01	1.63E-01	pCi/g		(2.)	11/26/05 11:18 a		46.2	GER10\$1
							1.00E-01	(5.1)			g	
EU-155	<b>1.38E-01</b>	U	2.0E-01	2.0E-01	3.31E-01	pCi/g		0.42	11/26/05 11:18 a		46.2	GER10\$1
							1.00E-01	(1.4)			g	
Batch: 5326262	SRTOT_SEP_PRECIP_GPC				Work Order: HQK0A1AA			Report DB ID: 9HQK0A10				
STRONTIUM	<b>5.98E+02</b>		8.4E+00	1.6E+02	1.10E+00	pCi/g	54%	(542.3)	12/8/05 06:41 a		1.086	GPC27A
						5.12E-01		(7.4)			G	

No. of Results: 11    Comments:

STL Richland    MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample    U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.  
 V4.14.4 A97

## FORM II

Date: 21-Dec-05

## DUPLICATE RESULTS

Lab Name: STL Richland  
 Lot-Sample No.: J5K180374-1  
 Client Sample ID: J10FH1 DUP

SDG: J00024  
 Report No.: 30851  
 COC No.: RC-005-008

Collection Date: 11/10/2005 10:25:00 AM  
 Received Date: 11/17/2005 11:25:00 AM  
 Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 5326256	PUIISO_PLATE_AEA		Work Order: HQK0A1AJ		Report DB ID: HQK0A1JR		Orig Sa DB ID: 9HQK0A10					
PU-238	6.65E-01	U	7.0E-01	1.1E+00	8.38E-01	pCi/g	73%	0.79	12/14/05 02:08 p		0.051	ALP38
	7.56E-01	U	RPD 12.8			1.00E+00		(1.2)			G	
PU239/40	1.75E+00	U	1.1E+00	2.6E+00	4.74E-01	pCi/g	73%	(3.7)	12/14/05 02:08 p		0.051	ALP38
	3.25E+00	U	RPD 60.1			1.00E+00		(1.3)			G	
<i>Alpha Spec Result Sum = 2.4E+00</i>												
Batch: 5326257	AMCMISO_EIE_PLT_AEA		Work Order: HQK0A1AK		Report DB ID: HQK0A1KR		Orig Sa DB ID: 9HQK0A10					
AM-241	1.75E+00	U	1.4E+00	2.8E+00	7.91E-01	pCi/g	58%	(2.2)	12/14/05 02:16 p		0.051	ALP132
	2.60E+00	U	RPD 39.2			1.00E+00		(1.3)			G	
<i>Alpha Spec Result Sum = 4.2E+00</i>												
Batch: 5326258	NI63_LSC		Work Order: HQK0A1AL		Report DB ID: HQK0A1LR		Orig Sa DB ID: 9HQK0A10					
NI-63	7.77E+00		3.0E+00	5.3E+00	6.70E+00	pCi/g	84%	(1.2)	12/16/05 10:59 a		0.251	LSC4
	4.44E-01	U	RPD 178.4			3.00E+01		(2.9)			G	
<i>Alpha Spec Result Sum = 4.2E+00</i>												
Batch: 5326259	906.0_H3_LSC		Work Order: HQK0A1AM		Report DB ID: HQK0A1MR		Orig Sa DB ID: 9HQK0A10					
H-3	4.69E-01	U	8.2E-01	9.4E-01	1.97E+00	pCi/g	100%	0.24	12/5/05 10:09 p		5.054	LSC4
	-6.33E-01	U	RPD -1345.4			4.00E+02		1.			G	
<i>Alpha Spec Result Sum = 4.2E+00</i>												
Batch: 5326261	GAMMA_GS		Work Order: HQK0A1AN		Report DB ID: HQK0A1NR		Orig Sa DB ID: 9HQK0A10					
AM-241	8.32E-01		4.0E-01	4.0E-01	6.13E-01	pCi/g		(1.4)	11/26/05 11:19 a		51.5	GER11\$1
	9.87E-01		RPD 17.1					(4.1)			g	

STL Richland

RPD - Relative Percent Difference.

rptSTLRchDupV4.1  
4.4 A97

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

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

## FORM II

Date: 21-Dec-05

## DUPLICATE RESULTS

Lab Name: STL Richland  
 Lot-Sample No.: J5K180374-1  
 Client Sample ID: J10FH1 DUP

SDG: J00024  
 Report No.: 30851  
 COC No.: RC-005-008

Collection Date: 11/10/2005 10:25:00 AM  
 Received Date: 11/17/2005 11:25:00 AM  
 Matrix: SOIL

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
CO-60	1.23E+01		1.7E+00	1.7E+00	4.27E-02	pCi/g		(288.1)	11/26/05 11:19 a		51.5	GER11\$1
	1.08E+01		RPD 12.7			5.00E-02		(14.1)			g	
CS-137	3.88E+02		4.6E+01	4.6E+01	1.07E-01	pCi/g		(3629.8)	11/26/05 11:19 a		51.5	GER11\$1
	3.52E+02		RPD 9.7			1.00E-01		(16.8)			g	
EU-154	2.85E-01	U	8.9E-02	8.9E-02	1.51E-01	pCi/g		(1.9)	11/26/05 11:19 a		51.5	GER11\$1
	3.33E-01	U	RPD 15.6			1.00E-01		(6.4)			g	
EU-155	1.11E-01	U	1.8E-01	1.8E-01	2.97E-01	pCi/g		0.37	11/26/05 11:19 a		51.5	GER11\$1
	1.38E-01	U	RPD 21.5			1.00E-01		(1.2)			g	
Batch: 5326262	SRTOT_SEP_PRECIP_GPC		Work Order: HQK0A1AP	Report DB ID: HQK0A1PR	Orig Sa DB ID: 9HQK0A10							
STRONTIUM	3.34E+02		6.1E+00	9.3E+01	1.01E+00	pCi/g	60%	(331.3)	12/8/05 06:41 a		1.039	GPC27B
	5.98E+02		RPD 56.5					(7.2)			G	

No. of Results: 11    Comments:

STL Richland    RPD - Relative Percent Difference.  
 rptSTLRchDupV4.1    MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 4,4 A97    U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II  
BLANK RESULTS

Date: 21-Dec-05

Lab Name: STL Richland  
Matrix: SOIL

SDG: J00024  
Report No.: 30851

Parameter	Result	Qual	Count Error (2 s)	Total Uncert( 2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 5326256	PUISO_PLATE_AEA			Work Order: HQP6K1AD		Report DB ID: HQP6K1DB						
PU-238	0.00E+00	U	0.0E+00	2.6E-02	2.84E-02	pCi/g	61%	0.	12/14/05 02:09 p		1.06	ALP41
						1.00E+00		0.			G	
PU239/40	0.00E+00	U	0.0E+00	2.6E-02	2.84E-02	pCi/g	61%	0.	12/14/05 02:09 p		1.06	ALP41
						1.00E+00		0.			G	
Batch: 5326257	AMCMISO_EIE_PLT_AEA			Work Order: HQP6N1AA		Report DB ID: HQP6N1AX						
AM-241	-2.76E-02	U	3.9E-02	4.0E-02	3.89E-01	pCi/g	12%	-0.07	12/14/05 07:36 p		1.0	ALP37
					1.01E-01	1.00E+00		-(1.4)			G	
Batch: 5326258	NI63_LSC			Work Order: HQP6P1AA		Report DB ID: HQP6P1AB						
NI-63	4.23E+00	U	2.8E+00	4.9E+00	6.44E+00	pCi/g	87%	0.66	12/16/05 12:41 p		0.25	LSC4
					3.13E+00	3.00E+01		(1.7)			G	
Batch: 5326259	906.0_H3_LSC			Work Order: HQP6V1AA		Report DB ID: HQP6V1AB						
H-3	-7.82E-02	U	1.3E-01	1.5E-01	3.34E-01	pCi/g	100%	-0.23	12/5/05 08:01 p		10.0	LSC4
					1.56E-01	4.00E+02		-(1.)			G	
Batch: 5326261	GAMMA_GS			Work Order: HQP641AA		Report DB ID: HQP641AB						
AM-241	9.80E-03	U	1.7E-02	1.7E-02	2.50E-02	pCi/g		0.39	11/26/05 01:07 p		52.0	GER8\$1
								(1.2)			g	
CO-60	-2.47E-03	U	1.6E-02	1.6E-02	2.80E-02	pCi/g		-0.09	11/26/05 01:07 p		52.0	GER8\$1
						5.00E-02		-0.31			g	
CS-137	-1.12E-04	U	1.4E-02	1.4E-02	2.35E-02	pCi/g		0.	11/26/05 01:07 p		52.0	GER8\$1
						1.00E-01		-0.02			g	
EU-154	-1.23E-04	U	4.2E-02	4.2E-02	7.53E-02	pCi/g		0.	11/26/05 01:07 p		52.0	GER8\$1
						1.00E-01		-0.01			g	

STL Richland  
rptSTLRchBlank  
V4.14.4 A97

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

**FORM II**  
**BLANK RESULTS**

Date: 21-Dec-05

Lab Name: STL Richland  
Matrix: SOIL

SDG: J00024  
Report No. : 30851

Parameter	Result	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA ,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
EU-155	-4.11E-03	U	2.3E-02	2.3E-02	3.97E-02	pCi/g		-0.1	11/26/05 01:07 p		52.0	GER8\$1
						1.00E-01		-0.35			g	
Batch: 5326262			SRTOT_SEP_PRECIP_GPC		Work Order: HQP671AA		Report DB ID: HQP671AB					
STRONTIUM	2.87E-02	U	5.4E-02	5.5E-02	1.21E-01	pCi/g	93%	0.24	12/8/05 06:41 a		6.0	GPC27C
					5.59E-02			(1.)			G	
No. of Results: 11			Comments:									

**FORM II**  
**LCS RESULTS**

Date: 21-Dec-05

Lab Name: STL Richland

SDG: J00024

Matrix: SOIL

Report No.: 30851

Parameter	Result	Count Qual 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: 5326256	PUISO_PLATE_AEA				Work Order: HQP6K1AE		Report DB ID: HQP6K1ES					
PU239/40	6.31E+00	4.5E-01	1.2E+00	2.16E-02	pCi/g	81%	6.57E+00	3.4E-01	96%	12/14/05 02:09 p	1.05	ALP42
						Rec Limits:	70	130	0.0		G	
Batch: 5326257	AMCMISO_EIE_PLT_AEA				Work Order: HQP6N1AC		Report DB ID: HQP6N1CM					
AM-241	4.17E+00	8.2E-01	1.3E+00	1.94E-01	pCi/g	20%	9.15E+00	3.0E-01	46%	12/14/05 07:37 p	1.0	ALP38
						Rec Limits:	70	130	-0.5		G	
Batch: 5326258	NI63_LSC				Work Order: HQP6P1AC		Report DB ID: HQP6P1CS					
NI-63	4.92E+02	8.5E+00	3.9E+01	6.29E+00	pCi/g	89%	5.15E+02	1.5E+00	96%	12/16/05 02:24 p	0.25	LSC4
						Rec Limits:	70	130	0.0		G	
Batch: 5326259	906.0_H3_LSC				Work Order: HQP6V1AC		Report DB ID: HQP6V1CS					
H-3	2.40E+00	2.4E-01	2.7E-01	3.31E-01	pCi/g	100%	2.80E+00	8.4E-02	86%	12/5/05 08:44 p	10.0	LSC4
						Rec Limits:	70	130	-0.1		G	
Batch: 5326261	GAMMA_GS				Work Order: HQP641AC		Report DB ID: HQP641CS					
CS-137	8.35E-01	1.3E-01	1.3E-01	6.50E-02	pCi/g		8.58E-01	6.8E-02	97%	11/26/05 11:20 a	26.61	GER13\$1
						Rec Limits:	70	130	0.0		g	
Batch: 5326262	SRTOT_SEP_PRECIP_GPC				Work Order: HQP671AC		Report DB ID: HQP671CS					
STRONTIUM	1.02E+00	1.3E-01	3.0E-01	1.25E-01	pCi/g	92%	1.13E+00	8.1E-03	90%	12/8/05 06:41 a	6.0	GPC27D
						Rec Limits:	20	105	-0.1		G	
No. of Results:	6	Comments:										

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs  
V4.14.4 A97

Lot No., Due Date: J5K180374; 12/08/2005  
 Client, Site: 127642; HANFORD  
 QC Batch No., Method Test: 5326257; RAMISO Amlso by ALP  
 SDG, Matrix: J00024; SOIL

**1.0 COC**

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

**2.0 QC Batch**

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

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

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

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

**3.0 QC & Samples**

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

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

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

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

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

**4.0 Raw Data**

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

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

4.3 Were Yields entered correctly?  Yes  No  N/A

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

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

**5.0 Other**

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

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

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

5.4 Was transcription checked?  Yes  No  N/A

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

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

6.0 Comments on any No response:  
 See NCM. 10-07162

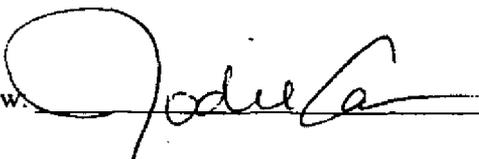
First Level Review Pam Anderson Date 12-15-05

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 5326257

Review Item	Yes (✓)	No (✓)	N/A (✓)
<b>A. Sample Analysis</b>			
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>B. QC Samples</b>			
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?		✓	
<b>C. Other</b>			
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: QC data failed - Client instructed lab to report and also reanalyze.

Second Level Review: 

Date: 12/21/05

# Clouseau Nonconformance Memo

**SEVERN  
TRENT  
SERVICES**

NCM #: <b>10-07162</b> NCM Initiated By: Pam Anderson Date Opened: 12/15/2005 Date Closed:	Classification: <b>Anomaly</b> Status: <b>GLREVIEW</b> Production Area: Environmental - Sep Tests: Amlso by ALP Lot #'s (Sample #'s): J5K180374 (1), J5K220000 (257), QC Batches: 5326257
Nonconformance: Tracer yield out of limits Subcategory: Unknown	

**Problem Description / Root Cause**

<u>Name</u>	<u>Date</u>	<u>Description</u>
Pam Anderson	12/15/2005	The QC in this batch fail with low yields. The client was notified. The sample are to be reported "as is" at this time.

**Corrective Action**

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Pam Anderson	12/15/2005	The client will decide if the samples are to be reanalyzed.

**Client Notification Summary**

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
			<u>Response</u>		<u>Response Note</u>

**Quality Assurance Verification**

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
		This section not yet completed by QA.	

**Approval History**

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>
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Lot No., Due Date: J5K180374; 12/08/2005  
Client, Site: 127642; HANFORD  
QC Batch No., Method Test: 5326256; RPUISO Pulso by ALP  
SDG, Matrix: J00024; SOIL

1.0 COC

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

2.0 QC Batch

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

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

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

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

3.0 QC & Samples

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

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

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

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

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

4.0 Raw Data

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

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

4.3 Were Yields entered correctly?  Yes  No  N/A

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

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

5.0 Other

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

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

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

5.4 Was transcription checked?  Yes  No  N/A

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

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

6.0 Comments on any No response:  
See NCM.

10-07164

First Level Review Paw Anderson

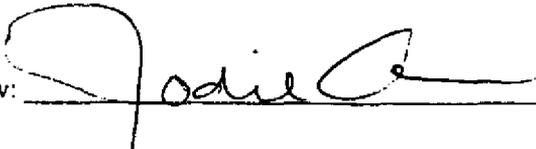
Date 12-15-05

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 5326256

Review Item	Yes (✓)	No (✓)	N/A (✓)
<b>A. Sample Analysis</b>			
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>B. QC Samples</b>			
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?		✓	
<b>C. Other</b>			
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: duplicate agreement out -  
attributed to soil matrix

Second Level Review:  Date: 12/21/05

# Clouseau Nonconformance Memo

**SEVERN**  
**TRENT**  
SERVICES

NCM #: <b>10-07164</b> NCM Initiated By: Pam Anderson Date Opened: 12/15/2005 Date Closed:	Classification: <b>Anomaly</b> Status: <b>GLREVIEW</b> Production Area: Environmental - Sep Tests: Pulso by ALP Lot #'s (Sample #'s): J5K180374 (1), QC Batches: 5326256
Nonconformance: Dups not within acceptance limits Subcategory: Matrix effect	

**Problem Description / Root Cause**

<u>Name</u>	<u>Date</u>	<u>Description</u>
Pam Anderson	12/15/2005	The sample and the dup are not within limits. The matrix is soil, an inconsistent matrix. Data will be accepted.

**Corrective Action**

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Pam Anderson	12/15/2005	Note in case narrative.

**Client Notification Summary**

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
			<u>Response</u>		<u>Response Note</u>

**Quality Assurance Verification**

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
			This section not yet completed by QA.

**Approval History**

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>
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Lot No., Due Date: J5K180374; 12/08/2005  
Client, Site: 127642; HANFORD  
QC Batch No., Method Test: 5326261; RGAMMA Gamma by GER  
SDG, Matrix: J00024; SOIL

Section	Question	Yes	No	N/A
1.0	<b>COC</b>			
1.1	Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		
2.0	<b>QC Batch</b>			
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	<b>QC &amp; Samples</b>			
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	<b>Raw Data</b>			
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	<b>Other</b>			
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: MDA's > CRDL see NCM			

First Level Review



Date

11/29/05

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 5326261

Review Item	Yes (✓)	No (✓)	N/A (✓)
<b>A. Sample Analysis</b>			
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>B. QC Samples</b>			
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?	✓		
<b>C. Other</b>			
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: Jodie Date: 12/21/05

# Clouseau Nonconformance Memo

**SEVERN**  
**TRENT**  
SERVICES

NCM #: <b>10-07063</b> NCM Initiated By: <b>Steven Wheland</b> Date Opened: <b>11/29/2005</b> Date Closed:	Classification: <b>Anomaly</b> Status: <b>GLREVIEW</b> Production Area: <b>Environmental - Prep</b> Tests: <b>Gamma by GER</b> Lot #'s (Sample #'s): <b>J5K180374 (1),</b> QC Batches: <b>5326261</b>
Nonconformance: <b>MDA not met</b> Subcategory: <b>Data accepted</b>	

**Problem Description / Root Cause**

<u>Name</u>	<u>Date</u>	<u>Description</u>
Steven Wheland	11/29/2005	MDA's elevated due to the increased background associated with the high level of this sample Note the Co-60 results. The Cs-137 is also even higher and thus the Eu's are elevated even more due to the Compton.

**Corrective Action**

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Steven Wheland	11/29/2005	report data

**Client Notification Summary**

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
	<u>Response</u>	<u>Response Note</u>			

**Quality Assurance Verification**

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
		This section not yet completed by QA.	

**Approval History**

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>

Lot No., Due Date: J5K180374; 12/08/2005  
 Client, Site: 127642; HANFORD  
 QC Batch No., Method Test: 5326262; RSRTOT SrTot by GPC  
 SDG, Matrix: J00024; SOIL

**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:

See NCM.

*12-07-18*

First Level Review *Pamela Anderson*

Date *12-9-05*



# STL

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 5326262

Review Item	Yes (✓)	No (✓)	N/A (✓)
<b>A. Sample Analysis</b>			
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>B. QC Samples</b>			
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?		✓	
<b>C. Other</b>			
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: duplicate agreement out-  
attributed to soil matrix

Second Level Review: Jodie G Date: 12/21/05

# Clouseau Nonconformance Memo



NCM #: <b>10-07118</b> NCM Initiated By: Pam Anderson Date Opened: 12/09/2005 Date Closed:	Classification: <b>Anomaly</b> Status: <b>GLREVIEW</b> Production Area: Environmental - Sep Tests: SrTot by GPC Lot #'s (Sample #'s): J5K180374 (1), QC Batches: 5326262
Nonconformance: Dups not within acceptance limits Subcategory: Matrix effect	

### Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Pam Anderson	12/09/2005	The dup was out of limits. The sample is soil, an inconsistent matrix. Data will be accepted.

### Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Pam Anderson	12/09/2005	Report the data.

### Client Notification Summary

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
			<u>Response</u>		<u>Response Note</u>

### Quality Assurance Verification

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
			This section not yet completed by QA.

### Approval History

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>
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Lot No., Due Date: J5K180374; 12/08/2005  
Client, Site: 127642; HANFORD  
QC Batch No., Method Test: 5326258; RNI63 Ni-63 by LSC  
SDG, Matrix: J00024; SOIL

<b>1.0 COC</b>			
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓	No	N/A
<b>2.0 QC Batch</b>			
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓	No	N/A
2.2 Are the QC appropriate for the analysis included in the batch?	✓	No	N/A
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓	No	N/A
2.4 Does the Worksheets include a Tracer Vial label for each sample?	✓	No	N/A
<b>3.0 QC &amp; Samples</b>			
3.1 Is the blank results, yield, and MDA within contract limits?	✓	No	N/A
3.2 Is the LCS result, yield, and MDA within contract limits?	✓	No	N/A
3.3 Are the MS/MSD results, yields, and MDA within contract limits?	✓	No	✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?	✓	No	N/A
3.5 Are the sample yields and MDAs within contract limits?	✓	No	N/A
<b>4.0 Raw Data</b>			
4.1 Were results calculated in the correct units?	✓	No	N/A
4.2 Were analysis volumes entered correctly?	✓	No	N/A
4.3 Were Yields entered correctly?	✓	No	N/A
4.4 Were spectra reviewed/meet contractual requirements?	✓	No	N/A
4.5 Were raw counts reviewed for anomalies?	✓	No	N/A
<b>5.0 Other</b>			
5.1 Are all nonconformances included and noted?	✓	No	N/A
5.2 Are all required forms filled out?	✓	No	N/A
5.3 Was the correct methodology used?	✓	No	N/A
5.4 Was transcription checked?	✓	No	N/A
5.5 Were all calculations checked at a minimum frequency?	✓	No	N/A
5.6 Are worksheet entries complete and correct?	✓	No	N/A
6.0 Comments on any No response: See NCM. 10-07189			

First Level Review Pam Anderson Date 12-19-05

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 5326258

Review Item	Yes (✓)	No (✓)	N/A (✓)
<b>A. Sample Analysis</b>			
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>B. QC Samples</b>			
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?	✓		
<b>C. Other</b>			
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: instrument blank +SIF slightly elevated.

Second Level Review: *[Signature]*

Date: 12/21/05

# Clouseau Nonconformance Memo

**SEVERN**  
**TRENT**  
**SERVICES**

NCM #: <b>10-07189</b> NCM Initiated By: Pam Anderson Date Opened: 12/19/2005 Date Closed:	Classification: <b>Anomaly</b> Status: <b>GLREVIEW</b> Production Area: Environmental - Sep Tests: Ni-63 by LSC Lot #'s (Sample #'s): J5K160429 (1), J5K160433 (1), J5K180000 (324,332), J5K180374 (1), J5K180376 (1), J5K220000 (258,273), QC Batches: 5322324, 5322332, 5326258, 5326273
Nonconformance: Other (describe in detail) Subcategory: Other (explanation required)	

**Problem Description / Root Cause**

<u>Name</u>	<u>Date</u>	<u>Description</u>
Pam Anderson	12/19/2005	The TSIE was just over the calibration limit for the N blank only for these 4 batches. They were analyzed together. With QA approval the limits were changed and the samples calculated. The reason for this will be discussed at the next technical meeting to see what can be done to correct it.

**Corrective Action**

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Pam Anderson	12/19/2005	Note in case narrative.

**Client Notification Summary**

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
			<u>Response</u>		<u>Response Note</u>

**Quality Assurance Verification**

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
		This section not yet completed by QA.	

**Approval History**

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>
----------------------	--------------------	-----------------

Lot No., Due Date: J5K180374; 12/08/2005  
Client, Site: 127642; HANFORD  
QC Batch No., Method Test: 5326259; RTRITIUM H-3 by LSC  
SDG, Matrix: J00024; SOIL

1.0 COC

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

2.0 QC Batch

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

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

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

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

3.0 QC & Samples

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

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

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

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

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

4.0 Raw Data

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

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

4.3 Were Yields entered correctly?  Yes  No  N/A

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

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

5.0 Other

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

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

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

5.4 Was transcription checked?  Yes  No  N/A

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

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

6.0 Comments on any No response:

First Level Review Pam Anderson

Date 12/12/05

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 5326259

Review Item	Yes (✓)	No (✓)	N/A (✓)
<b>A. Sample Analysis</b>			
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>B. QC Samples</b>			
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?	✓		
<b>C. Other</b>			
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: Jodie Ca Date: 12/21/05

BHI 27038

Washington Closure Hanford			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						RC-005-008		Page 1 of 1				
Collector R.B. Kerkow			Company Contact Joan Kessner			Telephone No. 375-4688			Project Coordinator KESSNER, JH		Price Code 8L		Data Turnaround 21 Days		
Project Designation 100-NR-1 TSD Sites R. A. Verification Sampling - Soil			Sampling Location 116-N-1 Trench Deep Zone			SAF No. RC-005			Air Quality <input type="checkbox"/>						
Ice Chest No. AFS-04-053			Field Logbook No. EL-1524-4			COA R1301N2F00			Method of Shipment Hand Delivery						
Shipped To Severn Trent Incorporated, Richland			Offsite Property No. PSR NO. 106716			Bill of Lading/Air Bill No. N/A									
POSSIBLE SAMPLE HAZARDS/REMARKS Potential Radiological contamination DOT REGULATED Special Handling and/or Storage None				Preservation Type of Container No. of Container(s) Volume		Cool 4C aG 1 60ml.		Cool 4C aG 1 60mL.		Cool 4C G 1 120mL.		None P 1 1000mL 125mL		None P 1 20mL.	
SAMPLE ANALYSIS J00021 JSK190374 DW 12 08 05				ICP Metals - 6010A (TAL) (Chromium) 7106 CR6: Hexavalent Chromium (1) NO2/NO3 - 353.1 See item (1) in Special Instructions. Activity Scan		DAS 11/16/05						T16 TO REF			
Sample No.	Matrix *	Sample Date	Sample Time												
J10FH1	HOKOA	SOIL	11-10-05	1025	X	X	X	X	X				J10FN5	D2T-05	
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Isotopic Plutonium (Plutonium-239/240); Americium-241; Strontium-89,90 - Total Sr; Nickel-63; Tritium - H3  DAS 11/17/05  . 22 mR/hr				S=Soil SE=Settlement SO=Solid SL=Sludge W=Water OW=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WJ=Wipe L=Liquid V=Vegetation X=Other			
PB KERKOW/PB KUR		4/1/05 1530		REF IC, 3728 RBK		4/4/05 1530									
3728 Ref IC		11/17/05 0900		B. J. Jensen		11/17/05 0900									
<del>David Jensen</del>		<del>11/17/05 0900</del>		<del>Fred EX</del>		<del></del>									
David Jensen		11/17/05 1125		Jeff Jensen		11/17/05 1125									
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time									
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time									
LABORATORY SECTION		Received By		Title				Date/Time							
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time							

**Radiological Counting Facility**

Analysis Report for RCF13589  
 J10FM5 SAF: RC-005 116-N-1 Crib Deep zone

**GAMMA SPECTRUM ANALYSIS**

Sample Identification : RCF13589  
 Sample Description : J10FM5 SAF: RC-005 116-N-1 Crib Deep zone  
 Sample Type : 80 gram pill box  
 Unit :  
 Sample Point :  
  
 Sample Size : 8.800E+01 grams  
 Facility : Default  
  
 Sample Taken On : 11/3/2005 8:20:00AM  
 Acquisition Started : 11/7/2005 9:36:28AM  
  
 Procedure : 80 gram pill box  
 Operator : RKZ  
 Detector Name : BEGE  
 Geometry : 80 Gram Pill Box  
 Live Time : 3600.0 seconds  
 Real Time : 3606.4 seconds  
  
 Dead Time : 0.18 %  
  
 Peak Locate Threshold : 3.00  
 Peak Locate Range (in channels) : 40 - 4096  
 Peak Area Range (in channels) : 40 - 4096  
 Identification Energy Tolerance : 1.000 keV  
  
 Energy Calibration Used Done On : 5/13/2005  
 Efficiency Calibration Used Done On : 3/28/2005  
 Efficiency Calibration Description : Efficiency calibration BEGe 80 gram pill box  
  
 Sample Number : 5438

**INTERFERENCE CORRECTED REPORT**

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	0.920	1.03E+01	2.82E+00	
CO-60	0.966	3.48E+01	1.93E+00	
CS-137	0.991	3.15E+02	2.96E+01	
EU-154	0.331	1.04E+00	5.21E-01	

Analysis Report for RCF13589

J10FM5 SAF: RC-005 116-N-1 Crib Deep zone

- ? = nuclide is part of an undetermined solution
- X = nuclide rejected by the interference analysis
- @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000 sigma

### UNIDENTIFIED PEAKS

Peak Locate Performed on : 11/7/2005 10:36:42AM  
 Peak Locate From Channel : 40  
 Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Rate (CPS)	Peak Rate (%) Uncertainty
M 1	CS-137 32.09	2.06E+00	1.42
m 2	CS-137 36.39	5.90E-01	3.62
3	Py-212 77.00	1.03E-01	43.16
5	Py-212 238.40	4.72E-02	59.50
9	NP 1370.32	4.02E-03	57.45

M = First peak in a multiplet region  
 m = Other peak in a multiplet region  
 F = Fitted singlet  
 Errors quoted at 2.000 sigma

NP = No Peak  
 UK = Unknown

### NUCLIDE MDA REPORT

Nuclide Library Used : \\GOZERA\apexRoot\DefaultLibrary\RCF UNKNOWN.NLB

Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+ K-40	1460.83 *	10.67	1.03E+01	3.12E+00	3.12E+00
+ CO-60	1173.24 *	99.90	3.47E+01	5.89E-01	8.64E-01
	1332.50 *	99.98	3.49E+01		5.89E-01
AG-108m	433.94	90.50	-1.06E+00	7.72E-01	1.02E+00
	614.28	89.80	-1.10E-01		8.10E-01
	722.94	90.80	2.81E-01		7.72E-01
+ CS-137	661.66 *	85.21	3.15E+02	1.15E+00	1.15E+00
EU-152	121.78	28.40	-2.84E-01	1.16E+00	1.16E+00
	344.29	26.60	-4.34E-01		2.37E+00
	964.11	14.50	7.26E+00		7.55E+00
	1408.00	20.80	-1.71E-02		2.24E+00
+ EU-154	123.10 *	40.50	1.04E+00	8.39E-01	8.39E-01
	723.36	19.70	1.30E+00		3.56E+00
	873.23	11.45	-3.11E-01		8.01E+00
	1004.78	17.90	-4.36E+00		5.51E+00
	1274.54	35.50	5.11E-01		1.67E+00

Analysis Report for RCF13589

J10FM5 SAF: RC-005 116-N-1 Crib Deep zone

Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
EU-155	86.54	34.00	6.48E-01	1.00E+00	1.00E+00
	105.31	20.60	-5.06E-01		1.56E+00
RA-226	186.11	3.28	6.76E+00	1.33E+01	1.33E+01
AC-228	338.42	12.40	-1.10E+00	5.03E+00	5.03E+00
	968.97	17.40	-1.43E+00		6.11E+00
TH-234	63.29	3.80	5.81E-01	6.09E+00	8.45E+00
	92.56	5.41	-1.87E+00		6.09E+00
U-235	143.79	10.50	1.65E+00	8.22E-01	3.26E+00
	163.38	4.70	3.81E+00		8.10E+00
	185.74	53.00	4.18E-01		8.22E-01
	205.33	4.70	8.37E-02		9.71E+00
AM-241	59.54	35.70	4.64E-01	9.54E-01	9.54E-01

- + = Nuclide identified during the nuclide identification
- \* = Energy line found in the spectrum
- > = MDA value not calculated
- @ = Half-life too short to be able to perform the decay correction



MARK J. COSTELLO

NOV 08 2005



# STL

### Sample Check-in List

Date/Time Received: 11/17/05 1125

Client: BHE SDG #: J00024 NA  SAF #: RC-005 NA

Work Order Number: JSK180374 Chain of Custody # RC-005-008, 007

Shipping Container ID: AFS 09 053 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: 4
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: JMA Date: 11/17/05

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on \_\_\_\_\_ by \_\_\_\_\_ Person contacted \_\_\_\_\_

[ ] No action necessary; process as is.

Project Manager \_\_\_\_\_ Date \_\_\_\_\_



STL RICHLAND

12/3/2005 10:07:32 AM

Sample Preparation/Analysis

Balance Id:1120373922

6l PuAm PrpRC5013/RC5019, SepRC5080(5003)/RC5010(5039)  
 SX Americium-241 by Alpha Spec  
 5l CLIENT: HANFORD

Pipet #: \_\_\_\_\_

Report Due: 12/08/2005

Sep1 DT/Tm Tech:

Batch: 5326257  
 SEQ Batch, Test: None

pCi/g

Sep2 DT/Tm Tech:

Prep Tech: ,LEGLERM

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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Comments: *used 0.5 - L 20 - g/ml iron detector for QC - on 12/5/05*

All Clients for Batch: 127642, Bechtel Hanford, Inc. Bechtel Hanford, Inc. , HC , 27038

HQP6N1AA-SAMP Constituent List:											
Am-241	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35
HQP6N1AA-MBLK:											
Am-241	RDL:1	pCi/g	LCL:	UCL:	RPD:	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35
HQP6N1AC-MLCS:											
Am-241	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35
HQP6N1AD-BLK:											
Am-241	RDL:1	pCi/g	LCL:	UCL:	RPD:	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35
HQP6N1AE-LCS:											
Am-241	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	AM-243	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

HQP6N1AA-SAMP Calc Info:					
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Mot.: Y	ODRs: B
HQP6N1AA-MBLK:					
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Mot.: Y	ODRs: B
HQP6N1AC-MLCS:					
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Mot.: Y	ODRs: B
HQP6N1AD-BLK:					
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Mot.: Y	ODRs: B
HQP6N1AE-LCS:					
Uncert Level (#s):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Mot.: Y	ODRs: B

Approved By \_\_\_\_\_ Date: \_\_\_\_\_

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12/15/2005 12:03:34 PM

# ICOC Fraction Transfer/Status Report

ByDate: 12/15/2004, 12/20/2005, Batch: '5326257', User: \*ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting	Comments
	5326257				
AC		CalcC	LEGLERM	12/3/2005 10:25:39	
SC			wagarr	IsBatched 11/22/2005 9:42:46 AM	ICOC_RADCALC v4.8.16
SC			LEGLERM	Prep2C 12/3/2005 10:25:39 AM	RICH-RC-5019 REVISION 5
SC			DobeckiT	Sep1C 12/9/2005 3:55:41 PM	RICH-RC-5087 REVISION 0
SC			ManisD	Sep2C 12/14/2005 11:58:41 AM	RICH-RC-5003 REV 6
SC			BlackCL	InCnt1 12/14/2005 12:07:10 PM	RICH-RD-0008 REVISION 4
SC			BlackCL	CalcC 12/15/2005 7:11:19 AM	RICH-RD-0008 REVISION 4
AC			DobeckiT	12/9/2005 3:55:41 PM	
AC			ManisD	12/14/2005 11:58:41	
AC			BlackCL	12/14/2005 12:07:10	
AC			BlackCL	12/15/2005 7:11:19	

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

STL RICHLAND

12/3/2005 10:07:28 AM **Sample Preparation/Analysis** Balance Id:1120373922 , *AS200 #1*  
 127642, Bechtel Hanford, Inc. , Bechtel 6I PuAm PrpRC5013/RC5019, SepRC5080(5003)/RC5010(5039) Pipet #: \_\_\_\_\_  
 Hanford, Inc. SO Plutonium-238,239/40 by Alpha Spec  
**Report Due: 12/08/2005** *200024* 5I CLIENT: HANFORD Sep1 DT/Tm Tech: \_\_\_\_\_  
 Batch: 5326256 SOIL pCi/g PM, Quote: HC , 27038 **PRIORITY** Sep2 DT/Tm Tech: \_\_\_\_\_  
 SEQ Batch, Test: 5326257, 6ISX 5326257, 6ISX Prep Tech: ,LEGLERM

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 HQK0A-1-AD J5K180374-1-SAMP <i>[REDACTED]</i> 11/10/2005 10:25	0.0529g,in		PATB4109 11/30/05,pd	<i>300</i>				
AmtRec: 20ML,120MLAG #Containers: 2 Scr: Alpha: 1.26E+03pCi/g Beta: 4.18E+02pCi/g								
2 HQK0A-1-AJ-X J5K180374-1-DUP <i>[REDACTED]</i> 11/10/2005 10:25	0.051g,in		PATB4110 11/30/05,pd					
AmtRec: 20ML,120MLAG #Containers: 2 Scr: Alpha: 1.26E+03pCi/g Beta: 4.18E+02pCi/g								
3 HQP6K-1-AA-BX J5K220000-256-MBLK <i>[REDACTED]</i> 11/10/2005 10:25	1.06g,in		PATB4111 11/30/05,pd					
AmtRec: #Containers: 1 Scr: Alpha: Beta:								
4 HQP6K-1-AC-CM J5K220000-256-MLCS <i>[REDACTED]</i> 11/10/2005 10:25	1.05g,in		PAS10148 11/30/05,pd					
AmtRec: #Containers: 1 Scr: Alpha: Beta:								
5 HQP6K-1-AD-B J5K220000-256-BLK <i>[REDACTED]</i> 11/10/2005 10:25	1.06g,in		PATB4111 11/30/05,pd					
AmtRec: #Containers: 1 Scr: Alpha: Beta:								
6 HQP6K-1-AE-C J5K220000-256-LCS <i>[REDACTED]</i> 11/10/2005 10:25	1.05g,in		PAS10148 11/30/05,pd					
AmtRec: #Containers: 1 Scr: Alpha: Beta:								

33  
38  
39  
40  
41  
42

STL RICHLAND

12/3/2005 10:07:30 AM

Sample Preparation/Analysis

Balance Id:1120373922

6l PuAm PrpRC5013/RC5019, SepRC5080(5003)/RC5010(5039)  
 SO Plutonium-238,239/40 by Alpha Spec  
 5l CLIENT: HANFORD

Pipet #: \_\_\_\_\_

Report Due: 12/08/2005

Sep1 DT/Tm Tech: \_\_\_\_\_

Batch: 5326256  
 SEQ Batch, Test: None

pCi/g

Sep2 DT/Tm Tech: \_\_\_\_\_

Prep Tech: ,LEGLERM

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:
-----------------------------------	----------------	--------------------------	---------------------	----------------	-------------	------------------------------	-----------------------	-----------

Comments: 1565 0.5 ml 20 ug/mL 1202 12/3/05

All Clients for Batch: 127642, Bechtel Hanford, Inc. Bechtel Hanford, Inc. , HC , 27038

HQP6K1AA-MBLK:											
PU-238	RDL:1	pCi/g	LCL:	UCL:	RPD:	PU-239	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35
Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35						
PU-238	RDL:1	pCi/g	LCL:	UCL:	RPD:	PU-239	RDL:1	pCi/g	LCL:	UCL:	RPD:
Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35						
HQP6K1AC-MLCS:											
PU-239	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35
HQP6K1AD-BLK:											
PU-238	RDL:1	pCi/g	LCL:	UCL:	RPD:	PU-239	RDL:1	pCi/g	LCL:	UCL:	RPD:
Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35						
HQP6K1AE-LCS:											
PU-239	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

HQP6K1AA-MBLK:						
Uncert Level (#):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B	
HQP6K1AC-MLCS:						
Uncert Level (#):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B	
HQP6K1AD-BLK:						
Uncert Level (#):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B	
HQP6K1AE-LCS:						
Uncert Level (#):	2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B	

Approved By \_\_\_\_\_ Date: \_\_\_\_\_

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12/15/2005 1:30:11 PM

# ICOC Fraction Transfer/Status Report

ByDate: 12/15/2004, 12/20/2005, Batch: '5326256', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
5326256				
AC	CalcC	LEGLERM	12/3/2005 10:25:26	
SC		wagarr	IsBatched 11/22/2005 9:42:46 AM	ICOC_RADCALC v4.8.16
SC		LEGLERM	Prep2C 12/3/2005 10:25:26 AM	RICH-RC-5019 REVISION 5
SC		DobeckIT	Sep1C 12/9/2005 3:55:47 PM	RICH-RC-5087 REVISION 0
SC		ManisD	Sep2C 12/14/2005 11:58:11 AM	RICH-RC-5039 REV 4
SC		BlackCL	InCnt1 12/14/2005 12:07:06 PM	RICH-RD-0008 REVISION 4
SC		BlackCL	CalcC 12/15/2005 7:11:34 AM	RICH-RD-0008 REVISION 4
AC		DobeckIT	12/9/2005 3:55:47 PM	
AC		ManisD	12/14/2005 11:58:11	
AC		BlackCL	12/14/2005 12:07:06	
AC		BlackCL	12/15/2005 7:11:34	

AC: Accepting Entry; SC: Status Change

STL Richland  
Richland Wa.

STL RICHLAND

11/26/2005 10:21:12 AM

Sample Preparation/Analysis

Balance Id:1120421763

127642, Bechtel Hanford, Inc.  
Hanford, Inc.

, Bechtel

AX Gamma PrpRC5013/5017  
TA Gamma by HPGE  
SI CLIENT: HANFORD

Pipet #: \_\_\_\_\_

Report Due: 12/08/2005

Sep1 DT/Tm Tech: \_\_\_\_\_

Batch: 5326261 SOIL  
SEQ Batch, Test: None

pCi/g

PM, Quote: HC , 27038

Sep2 DT/Tm Tech: \_\_\_\_\_

Prep Tech: ,WhitneyT

Work Order, Lot, Sample Date/Time	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 HQK0A-1-AH J5K180374-1-SAMP [REDACTED]	46.20g,in									
11/10/2005 10:25		AmtRec: 20ML,120MLAG	#Containers: 2							
2 HQK0A-1-AN-X J5K180374-1-DUP [REDACTED]	51.50g,in									
11/10/2005 10:25		AmtRec: 20ML,120MLAG	#Containers: 2							
3 HQP64-1-AA-B J5K220000-261-BLK [REDACTED]	52.00g,in									
11/10/2005 10:25		AmtRec:	#Containers: 1							
4 HQP64-1-AC-C J5K220000-261-LCS [REDACTED]	26.61g,in									
11/10/2005 10:25		AmtRec:	#Containers: 1							

S-25 1000

G10 0358 11/26/05  
G11 0359 11/26/05  
G8 0547 11/26/05  
G13 0400 11/26/05

Comments: The blank is a OSBK. Sufficient sample volume was not provided to meet the desired S-MAT geo. JW 11-26-05

All Clients for Batch:  
127642, Bechtel Hanford, Inc. Bechtel Hanford, Inc. , HC , 27038

HQK0A1AH-SAMP Constituent List:											
Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:70	UCL:130	RPD:35
Cs-137DA	RDL:1.00E-01	pCi/g	LCL:70	UCL:130	RPD:35	Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:

HQP641AA-BLK:											
Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Cs-137DA	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:

STL RICHLAND

11/26/2005 10:21:13 AM

Sample Preparation/Analysis

Balance Id:1120421763

AX Gamma PrpRC5013/5017  
 TA Gamma by HPGE  
 5I CLIENT: HANFORD

Pipet #: \_\_\_\_\_

Report Due: 12/08/2005

Sep1 DT/Tm Tech:

Batch: 5326261  
 SEQ Batch, Test: None

pCi/g

Sep2 DT/Tm Tech:

Prep Tech: ,WhitneyT

Work Order, Lot, Sample Date/Time	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:	
Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
HQP641AC-LCS:											
Cs-137	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	Cs-137DA	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35
K-40	RDL:--	pCi/g	LCL:70	UCL:130	RPD:35	Ra-226	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35
RA-228	RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35	RA-228DA	RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35
U-238	RDL:	pCi/g	LCL:70	UCL:130	RPD:35						
HQP641AA-SAMP Calc Info:											
Uncert Level (#s): 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B											
HQP641AA-BLK:											
Uncert Level (#s): 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B											
HQP641AC-LCS:											
Uncert Level (#s): 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B											

Approved By \_\_\_\_\_ Date: \_\_\_\_\_

12/21/2005 10:29:57 AM

# ICOC Fraction Transfer/Status Report

ByDate: 12/21/2004, 12/26/2005, Batch: '5326261', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
5326261				
AC	Rev1C	StringerR	11/26/2005 11:09:52	
SC		wagarr	IsBatched 11/22/2005 9:42:46 AM	ICOC_RADCALC v4.8.16
SC		StringerR	InCnt1 11/26/2005 11:09:52 AM	RICH-RD-0007 REVISION 5
SC		StringerR	CalcC 11/27/2005 10:59:48 AM	RICH-RD-0007 REVISION 5
SC		WhelandS	Rev1C 11/29/2005 2:04:32 PM	RICH-RC-0002 REVISION 7
AC		StringerR	11/27/2005 10:59:48	

AC: Accepting Entry; SC: Status Change

STL Richland  
Richland Wa.

STL RICHLAND

12/3/2005 10:21:09 AM

Sample Preparation/Analysis

PRIORITY

Balance Id:1120373922

ADUO

127642, Bechtel Hanford, Inc., Bechtel Hanford, Inc.

CH Sr-Total PrpRC5013, SepRC5006 TH Total Strontium by GPC 5I CLIENT: HANFORD

Pipet #: NA

Report Due: 12/08/2005

500024

Sep1 DT/Tm Tech: 12-7-05 5:18 PM

Batch: 5326262

SOIL

pCi/g

PM, Quote: HC, 27038

Sep2 DT/Tm Tech: NA

SEQ Batch, Test: None All Tests: 5326256 6ISO, 5326257 6ISX, 5326258 AFS4, 5326259 ATS6, 5326261 AXTA, 5326262 CHTH, 5326265 88OV,

Prep Tech: ,LEGLERM

Work Order, Lot, Sample Date/Time	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 HQK0A-1-AA J5K180374-1-SAMP 11/10/2005 10:25	1.086g,in		SRTA14958 09/27/05,pd							
<p style="text-align: center;">[REDACTED]</p> <p style="text-align: center;">AmtRec: 20ML,120MLAG #Containers: 2</p> <p style="text-align: center;">Scr: Alpha: 1.26E+03pCi/g Beta: 4.18E+02pCi/g</p>										
2 HQK0A-1-AP-X J5K180374-1-DUP 11/10/2005 10:25	1.039g,in		SRTA14959 09/27/05,pd							
<p style="text-align: center;">[REDACTED]</p> <p style="text-align: center;">AmtRec: 20ML,120MLAG #Containers: 2</p> <p style="text-align: center;">Scr: Alpha: 1.26E+03pCi/g Beta: 4.18E+02pCi/g</p>										
3 HQP67-1-AA-B J5K220000-262-BLK 11/10/2005 10:25	6.00g,in		SRTA14960 09/27/05,pd							
<p style="text-align: center;">[REDACTED]</p> <p style="text-align: center;">AmtRec: #Containers: 1</p> <p style="text-align: center;">Scr: Alpha: Beta:</p>										
4 HQP67-1-AC-C J5K220000-262-LCS 11/10/2005 10:25	6.00g,in		STSB1066 10/07/05,pd							
<p style="text-align: center;">[REDACTED]</p> <p style="text-align: center;">AmtRec: #Containers: 1</p> <p style="text-align: center;">Scr: Alpha: Beta:</p>										

Comments:

All Clients for Batch:

127642, Bechtel Hanford, Inc. Bechtel Hanford, Inc. , HC , 27038

HQK0A1AA-SAMP Constituent List:

Sr-90 RDL:1 pCi/g LCL:70 UCL:130 RPD:35

HQP671AA-BLK:

Sr-90 RDL:1 pCi/g LCL: UCL: RPD:

HQP671AC-LCS:

Sr-90 RDL:1 pCi/g LCL:70 UCL:130 RPD:35

HQK0A1AA-SAMP Calc Info:

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 1  
Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

ISV - Insufficient Volume for Analysis

WO Cnt: 4  
Prep\_SamplePrep v4.8.14



12/9/2005 10:15:51 AM

# ICOC Fraction Transfer/Status Report

ByDate: 12/9/2004, 12/14/2005, Batch: '5326262', User: \*ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting	Comments
	5326262				
AC		CalcC	LEGLERM	12/3/2005 10:25:17	
SC			wagarr	IsBatched 11/22/2005 9:42:46 AM	ICOC_RADCALC v4.8.16
SC			LEGLERM	Prep2C 12/3/2005 10:25:17 AM	RICH-RC-5013 REVISION 5
SC			HansenM	InPrep2 12/5/2005 1:10:53 PM	RICH-RC-5013 REVISION 5
SC			HansenM	Prep2C 12/5/2005 1:11:10 PM	RICH-RC-5013 REVISION 5
SC			FABREM	InSep1 12/6/2005 8:33:13 AM	RICH-RC-5006 REVISION 6
SC			FABREM	Sep1C 12/7/2005 8:08:43 PM	RICH-RC-5006 REVISION 6
SC			StringerR	InCnt1 12/7/2005 8:18:59 PM	RICH-RD-0003 REVISION 4
SC			BlackCL	CalcC 12/8/2005 7:48:10 AM	RICH-RD-0003 REVISION 4
AC			HansenM	12/5/2005 1:10:53 PM	
AC			HansenM	12/5/2005 1:11:10 PM	
AC			FABREM	12/6/2005 8:33:13	
AC			FABREM	12/7/2005 8:08:43 PM	
AC			StringerR	12/7/2005 8:18:59 PM	
AC			BlackCL	12/8/2005 7:48:10	

AC: Accepting Entry, SC: Status Change

STL Richland  
Richland Wa.



STL RICHLAND

12/12/2005 4:05:34 PM

Sample Preparation/Analysis

Balance Id:

AF Ni-63 PrpRC5013/5019, SepRC5069  
 S4 Nickel by ICP and Nickel-63 by Liquid Scint  
 5I CLIENT: HANFORD

Pipet #:

Report Due: 12/08/2005

Sep1 DT/Tm Tech:

Batch: 5326258  
 SEQ Batch, Test: None

pCi/g

Sep2 DT/Tm Tech:

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:
HQP6P1AA-BLK: Ni-63	RDL:30	pCi/g	LCL:	UCL:	RPD:					
HQP6P1AC-LCS: Ni-63	RDL:30	pCi/g	LCL:70	UCL:130	RPD:35					
HQP6P1AD-IBLK: Ni-63	RDL:30	pCi/g	LCL:	UCL:	RPD:					
HQR0A1AC-SAMP Calc Info:										
Uncert Level (#s): 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					
HQP6P1AA-BLK: Uncert Level (#s): 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					
HQP6P1AC-LCS: Uncert Level (#s): 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					
HQP6P1AD-IBLK: Uncert Level (#s): 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					

Approved By \_\_\_\_\_

Date: \_\_\_\_\_

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12/19/2005 2:43:48 PM

# ICOC Fraction Transfer/Status Report

ByDate: 12/19/2004, 12/24/2005, Batch: '5326258', User: \*ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting	Comments
<b>5326258</b>					
AC		<b>CalcC</b>	<b>WAGNERJ</b>	12/15/2005 1:51:51	
SC			wagarr	IsBatched 11/22/2005 9:42:46 AM	ICOC_RADCALC v4.8.16
SC			WAGNERJ	Prep2C 12/15/2005 1:51:51 PM	RICH-RC-5013 REVISION 5
SC			WAGNERJ	InSep1 12/15/2005 1:52:42 PM	RICH-RC-5069 REVISION 5
SC			WAGNERJ	Sep1C 12/15/2005 3:23:42 PM	RICH-RC-5069 REVISION 5
SC			DAWKINSO	InCnt1 12/15/2005 3:41:52 PM	RICH-RD-0001 REVISION 3
SC			BlackCL	CalcC 12/19/2005 11:33:16 AM	RICH-RD-0001 REVISION 3
AC			<b>WAGNERJ</b>	12/15/2005 1:52:42	
AC			<b>WAGNERJ</b>	12/15/2005 3:23:42	
AC			<b>DAWKINSO</b>	12/15/2005 3:41:52	
AC			<b>BlackCL</b>	12/19/2005 11:33:16	

AC: Accepting Entry; SC: Status Change

STL Richland  
Richland Wa.

STL RICHLAND

11/22/2005 9:43:12 AM

Sample Preparation/Analysis

Balance Id: 12430

127642, Bechtel Hanford, Inc., Bechtel Hanford, Inc.

AT H-3 Prp/SepRC5037  
S6 Tritium by Liquid Scint  
SI CLIENT: HANFORD

**PRIORITY**

Pipet #: \_\_\_\_\_

Report Due: 12/08/2005

Sep1 DT/Tm Tech: 12-5-05 DM

Batch: 5326259 SOIL pCi/g  
SEQ Batch, Test: None

PM, Quote: HC , 27038

Sep2 DT/Tm Tech: \_\_\_\_\_

Prep Tech: \_\_\_\_\_

[REDACTED]

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 HQK0A-1-AG J5K180374-1-SAMP [REDACTED] 11/10/2005 10:25								
		AmtRec: 20ML, 120MLAG						#Containers: 2 Scr: Alpha: Beta:
2 HQK0A-1-AM-X J5K180374-1-DUP [REDACTED] 11/10/2005 10:25								
		AmtRec: 20ML, 120MLAG						#Containers: 2 Scr: Alpha: Beta:
3 HQP6V-1-AA-B J5K220000-259-BLK [REDACTED] 11/10/2005 10:25								
		AmtRec:						#Containers: 1 Scr: Alpha: Beta:
4 HQP6V-1-AC-C J5K220000-259-LCS [REDACTED] 11/10/2005 10:25								
		AmtRec:						#Containers: 1 Scr: Alpha: Beta:
5 HQP6V-1-AD-BN J5K220000-259-IBLK [REDACTED] 11/10/2005 10:25								
		AmtRec:						#Containers: 1 Scr: Alpha: Beta:

Comments:

All Clients for Batch:

127642, Bechtel Hanford, Inc. Bechtel Hanford, Inc. , HC , 27038

HQK0A1AG-SAMP Constituent List:

H-3 RDL:400 pCi/g LCL:70 UCL:130 RPD:35

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 1  
Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

ISV - Insufficient Volume for Analysis

WO Cnt: 5

ICOC v4.8.16

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STL RICHLAND

11/22/2005 9:43:14 AM

Sample Preparation/Analysis

Balance Id: 12430

AT H-3 Prp/SepRC5037  
S6 Tritium by Liquid Scint  
SI CLIENT: HANFORD

**PRIORITY**

Pipet #: \_\_\_\_\_

Report Due: 12/08/2005

Sep1 DT/Tm Tech: 12-5-05 *DM*

Batch: 5326259 pCi/g  
SEQ Batch, Test: None

Sep2 DT/Tm Tech: \_\_\_\_\_

Prep Tech: \_\_\_\_\_



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:
<b>HQP6V1AA-BLK:</b> H-3 RDL:400 pCi/g LCL: UCL: RPD:								
<b>HQP6V1AC-LCS:</b> H-3 RDL:400 pCi/g LCL:70 UCL:130 RPD:35								
<b>HQP6V1AD-IBLK:</b> H-3 RDL:400 pCi/g LCL: UCL: RPD:								
<b>HQK0A1AG-SAMP Calc Info:</b> Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B								
<b>HQP6V1AA-BLK:</b> Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B								
<b>HQP6V1AC-LCS:</b> Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B								
<b>HQP6V1AD-IBLK:</b> Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B								

Approved By \_\_\_\_\_ Date: \_\_\_\_\_

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12/9/2005 4:14:38 PM

# ICOC Fraction Transfer/Status Report

ByDate: 12/9/2004, 12/14/2005, Batch: '5326259', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
5326259				
AC	CalcC	McDowellID	12/5/2005 9:43:41	
SC		wagarr	IsBatched 11/22/2005 9:42:46 AM	ICOC_RADCALC v4.8.16
SC		McDowellID	InSep1 12/5/2005 9:43:41 AM	RICH-RC-5007 REVISION 6
SC		McDowellID	Sep1C 12/5/2005 1:31:20 PM	RICH-RC-5007 REVISION 6
SC		BlackCL	InCnt1 12/5/2005 1:47:12 PM	RICH-RD-0001 REVISION 3
SC		BlackCL	CalcC 12/6/2005 8:50:20 AM	RICH-RD-0001 REVISION 3
AC		McDowellID	12/5/2005 1:31:20 PM	
AC		BlackCL	12/5/2005 1:47:12 PM	
AC		BlackCL	12/6/2005 8:50:20	

AC: Accepting Entry, SC: Status Change

STL Richland  
Richland Wa.