

Analytical Data Package Prepared For

**Fluor Hanford Inc.**

Radiochemical Analysis By

**STL Richland***2800 G.W. Way, Richland Wa, 99352, (509)-375-3131.*

Assigned Laboratory Code: STLRL

Data Package Contains 61 Pages

Report No.: 27562

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W04380	F03-025	B193K1	J4K190450-1	GXGX91AE	9GXGX910	4327401
		B193K1	J4K190450-1	GXGX91AF	9GXGX910	4327402
		B193K1	J4K190450-1	GXGX91AG	9GXGX910	4327403
		B193K1	J4K190450-1	GXGX91AA	9GXGX910	4327405
		B193K1	J4K190450-1	GXGX91AH	9GXGX910	4327406
		B193K1	J4K190450-1	GXGX91AC	9GXGX910	4327409
		B193K1	J4K190450-1	GXGX91AD	9GXGX910	4327412

**RECEIVED**  
MAY 18 2005

EDMC

**RECEIVED**  
JAN - 6 2004



STL

STL Richland  
2800 George Washington Way  
Richland, WA 99354

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

## Certificate of Analysis

Fluor Hanford  
P.O. Box 1000, T6-03  
Richland, WA 99352

December 29, 2004

Attention: Steve Trent

---

SAF Number	:	F03-025
Date SDG Closed	:	November 19, 2004
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	W04380
Data Deliverable	:	45-Day / Summary

---

### AMENDED CASE NARRATIVE

#### I. Introduction

On November 19, 2004, 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 Fluor Hanford (FH) specific ID:

<u>FH ID#</u>	<u>STLR ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B193K1	GXGX9	SOIL	11/19/04

#### II. Sample Receipt

The sample was received in good condition and no anomalies were noted during check-in. [Note: the sample was received at STL ST. Louis on November 10, 2004 and returned to STL Richland on November 19, 2004.]

#### 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 analysis was:

**Alpha Spectroscopy**  
Thorium-232 by method RICHRC5084  
**Gas Proportional Counting**  
Total Strontium by method RICHRC5006

**Gamma Spectroscopy**

Gamma by method RICHRC5017

**Liquid Scintillation Counting**

Carbon-14 by method RICHRC5022

Nickel-63 by method RICHRC5069

Technetium-99 by method RICHRC5078

Tritium by method RICHRC5037

**IV. Quality Control**

The analytical results for each analysis performed under SDG W04380 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**

Thorium-232 by method RICHRC5084

The LCS, batch blank, sample and sample duplicate (B193K1) results are within contractual requirements.

**Gas Proportional Counting**

Total Strontium by method RICHRC5006

The achieved MDAs for samples B193K1 and B193K1 duplicate are greater than the CRDL due to sample matrix effects; reduced volumes analyzed based on elevated screen results. The detected activity significantly exceeds the achieved MDAs, therefore the results are accepted for reporting. Except as noted, the LCS, batch blank, sample and sample duplicate (B193K1) results are within contractual requirements.

**Gamma Spectroscopy**

Gamma by method RICHRC5017:

There was insufficient sample volume received to prepare a sample duplicate analysis. The precision determination was achieved by recounting the sample on a second detector. The achieved MDAs for samples B193K1 and B193K1 duplicate are greater than the CRDL due to sample matrix effects; reduced volumes analyzed based on elevated screen results. The detected activities for Co-60, Cs-137 and Eu-154 significantly exceed the achieved MDAs, therefore the results are accepted for reporting. The Eu-154 results for samples B193K1 and B193K1 duplicate may be false positive values; the key-line activity is greater than the achieved MDA, but the identification of the nuclide is rejected based on abundance criteria. Am-241 is detected in samples B193K1 and B193K1 duplicate. Except as noted, the LCS, batch blank, sample and sample duplicate (B193K1) results are within contractual requirements.

---

**Liquid Scintillation Counting**

Carbon-14 by method RICHRC5022

The LCS, batch blank, sample and sample duplicate (B193K1) results are within contractual requirements.

Nickel-63 by method RICHRC5069

The LCS, batch blank, sample and sample duplicate (B193K1) results are within contractual requirements.

Tritium by method RICHRC5037

The LCS, batch blank, sample and sample duplicate (B193K1) results are within contractual requirements.

Technetium-99 by method RICHRC5078

The achieved MDAs for the LCS, batch blank and samples B193K1, B193K1 matrix spike and B193K1 duplicate are greater than the CRDL due to sample matrix effects; reduced volumes analyzed based on elevated screen results. The QC were analyzed using a volume comparable to the sample dilutions. The results are accepted for reporting with the MDAs achieved. Except as noted, the LCS, batch blank, sample, sample duplicate (B193K1) and sample matrix spike (B193K1) 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:



for Beverly I. Giroir  
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) <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%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$ . 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%. $MDC = (4.65 * \text{Sqrt}((\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin}) + 2.71/\text{SCntMin}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$ . For LSC methods the batch blank is used as a measure of the background variability.
<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: 29-Dec-04

STL Richland STLRL

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

Report No. : 27562

SDG No: W04380

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
4327412 THISO_IE_PRECIP_AEA									
	B193K1								
	GXGX91AD	TH-232	3.56E-01 +- 7.06E-01	U	pCi/g	92%	4.82E-01	1.00E+00	
	B193K1 DUP								
	GXGX91AR	TH-232	1.66E-01 +- 4.04E-01	U	pCi/g	96%	4.49E-01	1.00E+00	72.9
4327403 GAMMA_GS									
	B193K1								
	GXGX91AG	CO-60	1.77E+00 +- 3.28E-01		pCi/g		8.46E-02	5.00E-02	
		CS-137	6.56E+03 +- 7.75E+02		pCi/g		8.66E-01	1.00E-01	
		EU-152	3.83E-01 +- 1.78E+00	U	pCi/g		2.94E+00	1.00E-01	
		EU-154	1.17E+00 +- 3.79E-01	U	pCi/g		4.79E-01	1.00E-01	
		EU-155	-3.46E-01 +- 1.24E+00	U	pCi/g		2.04E+00	1.00E-01	
	B193K1 DUP								
	GXGX91AM	CO-60	1.54E+00 +- 2.61E-01		pCi/g		8.06E-02	5.00E-02	
		CS-137	6.36E+03 +- 7.44E+02		pCi/g		7.99E-01	1.00E-01	
		EU-152	2.85E-01 +- 1.52E+00	U	pCi/g		2.50E+00	1.00E-01	
		EU-154	1.46E+00 +- 3.92E-01	U	pCi/g		4.42E-01	1.00E-01	
		EU-155	1.05E+00 +- 1.07E+00	U	pCi/g		1.76E+00	1.00E-01	
4327405 SRTOT_SEP_PRECIP_GPC									
	B193K1								
	GXGX91AA	STRONTIUM	4.49E+03 +- 6.34E+03	U	pCi/g	96%	1.56E+01		
	B193K1 DUP								
	GXGX91AN	STRONTIUM	4.38E+03 +- 6.18E+03	U	pCi/g	95%	1.58E+01		
4327401 TC99_ETVDSK_LSC									
	B193K1								
	GXGX91AE	TC-99	1.86E+01 +- 2.12E+01	U	pCi/g	100%	2.50E+01	1.50E+01	
	B193K1 DUP								
	GXGX91AK	TC-99	1.95E+01 +- 2.11E+01	U	pCi/g	100%	2.52E+01	1.50E+01	
4327402 906.0_H3_LSC									
	B193K1								
	GXGX91AF	H-3	2.79E+00 +- 7.62E+00	U	pCi/g	100%	1.66E+01	4.00E+02	
	B193K1 DUP								
	GXGX91AL	H-3	3.38E+00 +- 7.63E+00	U	pCi/g	100%	1.64E+01	4.00E+02	
4327406 C14_LSC									
	B193K1								
	GXGX91AH	C-14	-6.35E-01 +- 1.62E+00	U	pCi/g	100%	3.27E+00	5.00E+01	
	B193K1 DUP								
	GXGX91AP	C-14	1.04E-01 +- 1.65E+00	U	pCi/g	100%	3.26E+00	5.00E+01	
4327409 NI63LSC									
	B193K1								

STL Richland

RPD - Relative Percent Difference.

rptSTLRLchSaSummary2 V4.10 A97

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

Sample Results Summary

Date: 29-Dec-04

STL Richland STLRL

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

Report No. : 27562

SDG No: W04380

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
4327409	NI63LSC								
	B193K1								
	GXGX91AC	NI-63	1.40E+02 +/- 1.02E+02		pCi/g	86%	2.79E+01	3.00E+01	
	B193K1 DUP								
	GXGX91AQ	NI-63	1.31E+02 +/- 9.47E+01		pCi/g	88%	2.73E+01	3.00E+01	
	No. of Results:	22							

STL Richland RPD - Relative Percent Difference.

rptSTLRchSaSummary2 V4.10 A97

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

Date: 29-Dec-04

Report No. : 27562

SDG No.: W04380

Batch	Work Order	Parameter	Result +- Uncertainty ( 2s)	Qual	Units	Yield	Recovery	Bias	MDC MDA
<b>THISO_IE_PRECIP_AEA</b>									
4327412 BLANK QC									
	GXK6L1AA	TH-232	0.00E+00 +- 8.35E-01	U	pCi/g	60%			9.24E-01
4327412 LCS									
	GXK6L1AC	TH-230	4.45E+01 +- 6.25E+01	U	pCi/g	58%	93%	-0.1	1.02E+00
<b>GAMMA_GS</b>									
4327403 BLANK QC									
	GXK5W1AA	CO-60	1.76E-03 +- 1.86E-02	U	pCi/g				3.27E-02
		CS-137	-2.00E-03 +- 1.63E-02	U	pCi/g				2.73E-02
		EU-152	-1.31E-02 +- 3.90E-02	U	pCi/g				6.61E-02
		EU-154	-2.64E-02 +- 5.18E-02	U	pCi/g				8.68E-02
		EU-155	1.96E-02 +- 3.18E-02	U	pCi/g				5.59E-02
4327403 LCS									
	GXK5W1AC	CS-137	9.00E-01 +- 1.33E-01		pCi/g		103%	0.0	6.94E-02
		RA-226	1.63E+00 +- 2.88E-01		pCi/g		76%	-0.2	1.18E-01
<b>SRTOT_SEP_PRECIP_GPC</b>									
4327405 BLANK QC									
	GXK591AA	STRONTIUM	3.35E+00 +- 8.27E+00	U	pCi/g	94%			1.52E+01
4327405 LCS									
	GXK591AC	STRONTIUM	2.49E+02 +- 3.51E+02	U	pCi/g	95%	92%	-0.1	1.57E+01
<b>TC99_ETVDSK_LSC</b>									
4327401 MATRIX SPIKE									
	GXGX91AJ	TC-99	4.76E+03 +- 3.32E+03		pCi/g	100%	52%	-0.5	2.48E+01
4327401 BLANK QC									
	GXK5F1AA	TC-99	2.19E+01 +- 2.20E+01	U	pCi/g	100%			2.55E+01
4327401 LCS									
	GXK5F1AC	TC-99	8.14E+03 +- 5.66E+03		pCi/g	100%	90%	-0.1	2.51E+01
<b>906.0_H3_LSC</b>									
4327402 BLANK QC									
	GXK5M1AA	H-3	1.44E-01 +- 1.60E-01	U	pCi/g	100%			3.36E-01
4327402 LCS									
	GXK5M1AC	H-3	7.44E+00 +- 4.78E-01		pCi/g	100%	109%	0.1	3.40E-01
<b>C14_LSC</b>									
4327406 BLANK QC									
	GXK6G1AA	C-14	1.77E-02 +- 1.67E-01	U	pCi/g	100%			3.30E-01
4327406 LCS									
	GXK6G1AC	C-14	7.03E+00 +- 4.51E-01		pCi/g	100%	97%	0.0	3.30E-01
<b>NI63LSC</b>									
4327409 BLANK QC									
	GXK6J1AA	NI-63	1.58E+00 +- 4.00E+00	U	pCi/g	85%			5.63E+00
4327409 LCS									
	GXK6J1AC	NI-63	5.21E+02 +- 8.17E+01		pCi/g	83%	102%	0.0	5.81E+00
No. of Results: 20									

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLrChQcSummary V4.10 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

## FORM I

Date: 29-Dec-04

## SAMPLE RESULTS

Lab Name: STL Richland

SDG: W04380

Collection Date: 10/26/2004 9:41:00 AM

Lot-Sample No.: J4K190450-1

Report No.: 27562

Received Date: 11/19/2004 12:00:00 PM

Client Sample ID: B193K1

COC No.:

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
ch: 4327401	TC99_ETVDSK_LSC				Work Order: GXGX91AE		Report DB ID: 9GXGX910					
TC-99	<b>1.86E+01</b>	U	1.09E+01	2.12E+01	2.50E+01	pCi/g	100%	0.74	12/18/04 03:45 a		0.05	LSC6
							1.20E+01	1.50E+01			G	
								(1.8)				
ch: 4327402	906.0_H3_LSC				Work Order: GXGX91AF		Report DB ID: 9GXGX910					
H-3	<b>2.79E+00</b>	U	6.78E+00	7.62E+00	1.66E+01	pCi/g	100%	0.17	12/23/04 06:32 a		1.007	LSC3
							7.64E+00	4.00E+02			G	
ch: 4327403	GAMMA_GS				Work Order: GXGX91AG		Report DB ID: 9GXGX910					
CO-60	<b>1.77E+00</b>		3.28E-01	3.28E-01	8.46E-02	pCi/g		(20.9)	12/8/04 03:15 p		35.5	GER1\$
							5.00E-02	(10.8)			g	
CS-137	<b>6.56E+03</b>		7.75E+02	7.75E+02	8.66E-01	pCi/g		(7581.4)	12/8/04 03:15 p		35.5	GER1\$
							1.00E-01	(16.9)			g	
EU-152	<b>3.83E-01</b>	U	1.78E+00	1.78E+00	2.94E+00	pCi/g		0.13	12/8/04 03:15 p		35.5	GER1\$
							1.00E-01	0.43			g	
EU-154	<b>1.17E+00</b>	U	3.79E-01	3.79E-01	4.79E-01	pCi/g		(2.4)	12/8/04 03:15 p		35.5	GER1\$
							1.00E-01	(6.2)			g	
EU-155	<b>-3.46E-01</b>	U	1.24E+00	1.24E+00	2.04E+00	pCi/g		-0.17	12/8/04 03:15 p		35.5	GER1\$
							1.00E-01	-0.56			g	
ch: 4327405	SRTOT_SEP_PRECIP_GPC				Work Order: GXGX91AA		Report DB ID: 9GXGX910					
STRONTIUM	<b>4.49E+03</b>	U	8.69E+01	6.34E+03	1.56E+01	pCi/g	96%	(287.5)	12/15/04 05:53 p		0.05	GPC27I
							7.26E+00	(1.4)			G	
ch: 4327406	C14_LSC				Work Order: GXGX91AH		Report DB ID: 9GXGX910					

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

TLRchSample U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

0 A97

FORM I

Date: 29-Dec-04

SAMPLE RESULTS

Lab Name: STL Richland

SDG: W04380

Collection Date: 10/26/2004 9:41:00 AM

Lot-Sample No.: J4K190450-1

Report No.: 27562

Received Date: 11/19/2004 12:00:00 PM

Client Sample ID: B193K1

COC No.:

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
C-14	-6.35E-01	U	1.32E+00	1.62E+00	3.27E+00	pCi/g	100%	-0.19	12/23/04 10:04 a		0.505	LSC3
							1.57E+00	5.00E+01			G	
lch: 4327409	NI63LSC				Work Order: GXGX91AC			Report DB ID: 9GXGX910				
NI-63	1.40E+02		1.49E+01	1.02E+02	2.79E+01	pCi/g	86%	(5.)	12/17/04 07:48 a		0.05	LSC5
							1.35E+01	3.00E+01			G	
lch: 4327412	THISO_IE_PRECIP_AEA				Work Order: GXGX91AD			Report DB ID: 9GXGX910				
TH-232	3.56E-01	U	5.03E-01	7.06E-01	4.82E-01	pCi/g	92%	0.74	12/22/04 08:14 p		0.05	ALP17
							1.00E+00	(1.)			G	

No. of Results: 11      Comments:

Richland      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 TLRchSample      U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.  
 0 A97

FORM I

Date: 29-Dec-04

SAMPLE RESULTS

Lab Name: STL Richland

SDG: W04380

Collection Date: 10/26/2004 9:41:00 AM

Lot-Sample No.: J4K190450-1

Report No.: 27562

Received Date: 11/19/2004 12:00:00 PM

Client Sample ID: B193K1

COC No.:

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Count 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
-----------	--------	---------------	-----------------------	-----------------------	------------------------	-----------------	-------------------	--------------------------	------------------------	------------------	-----------------	---------------------

Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 TLRchSample U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.  
 0 A97

## FORM II

Date: 29-Dec-04

## DUPLICATE RESULTS

Lab Name: STL Richland  
 Lot-Sample No.: J4K190450-1  
 Client Sample ID: B193K1 DUP

SDG: W04380  
 Report No.: 27562  
 COC No.:

Collection Date: 10/26/2004 9:41:00 AM  
 Received Date: 11/19/2004 12:00:00 PM  
 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
ch: 4327401	TC99_ETVDSK_LSC				Work Order: GXGX91AK	Report DB ID: GXGX91KR			Orig Sa DB ID: 9GXGX910			
TC-99	1.95E+01	U	1.10E+01	2.11E+01	2.52E+01	pCi/g	100%	0.77	12/18/04 05:50 a		0.05	LSC6
	1.86E+01	U	RPD 4.4			1.50E+01		(1.8)			G	
ch: 4327402	906.0_H3_LSC				Work Order: GXGX91AL	Report DB ID: GXGX91LR			Orig Sa DB ID: 9GXGX910			
H-3	3.38E+00	U	6.79E+00	7.63E+00	1.64E+01	pCi/g	100%	0.21	12/23/04 07:14 a		1.005	LSC3
	2.79E+00	U	RPD 18.9			4.00E+02		0.88			G	
ch: 4327403	GAMMA_GS				Work Order: GXGX91AM	Report DB ID: GXGX91MR			Orig Sa DB ID: 9GXGX910			
CO-60	1.64E+00		2.61E-01	2.61E-01	8.06E-02	pCi/g		(20.3)	12/9/04 11:01 a		35.5	GER4\$1
	1.77E+00		RPD 7.9			5.00E-02		(12.6)			g	
CS-137	6.36E+03		7.44E+02	7.44E+02	7.99E-01	pCi/g		(7963.8)	12/9/04 11:01 a		35.5	GER4\$1
	6.56E+03		RPD 3.1			1.00E-01		(17.1)			g	
EU-152	2.85E-01	U	1.52E+00	1.52E+00	2.50E+00	pCi/g		0.11	12/9/04 11:01 a		35.5	GER4\$1
	3.83E-01	U	RPD 29.2			1.00E-01		0.38			g	
EU-154	1.46E+00	U	3.92E-01	3.92E-01	4.42E-01	pCi/g		(3.3)	12/9/04 11:01 a		35.5	GER4\$1
	1.17E+00	U	RPD 22.1			1.00E-01		(7.4)			g	
EU-155	1.05E+00	U	1.07E+00	1.07E+00	1.76E+00	pCi/g		0.6	12/9/04 11:01 a		35.5	GER4\$1
	-3.46E-01	U	RPD 395.0			1.00E-01		(2.)			g	
ch: 4327405	SRTOT_SEP_PRECIP_GPC				Work Order: GXGX91AN	Report DB ID: GXGX91NR			Orig Sa DB ID: 9GXGX910			
STRONTIUM	4.38E+03	U	8.64E+01	6.18E+03	1.58E+01	pCi/g	95%	(277.8)	12/15/04 05:53 p		0.05	GPC27C
	4.49E+03	U	RPD 2.5					(1.4)			G	

Richland RPD - Relative Percent Difference.

TLRchDupV4.1 MDC|MDA,Le - Detection, Decision Level based on Instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

17 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.



FORM II  
BLANK RESULTS

Date: 29-Dec-04

Lab Name: STL Richland  
Matrix: SOIL

SDG: W04380  
Report No. : 27562

Parameter	Result	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
tch: 4327406	C14_LSC											
C-14	1.77E-02	U	1.37E-01	1.67E-01	3.30E-01	pCi/g	100%	0.05	12/23/04 08:39 a		5.0	LSC3
					1.58E-01	5.00E+01		0.21			G	
tch: 4327412	THISO_IE_PRECIP_AEA											
TH-232	0.00E+00	U	0.00E+00	8.35E-01	9.24E-01	pCi/g	60%	0.	12/22/04 08:14 p		0.05	ALP173
						1.00E+00		0.			G	
tch: 4327409	NI63LSC											
NI-63	1.58E+00	U	2.37E+00	4.00E+00	5.63E+00	pCi/g	85%	0.28	12/17/04 07:48 a		0.25	LSC5
					2.73E+00	3.00E+01		0.79			G	
tch: 4327401	TC99_ETVDSK_LSC											
TC-99	2.19E+01	U	1.11E+01	2.20E+01	2.55E+01	pCi/g	100%	0.86	12/18/04 06:52 a		0.05	LSC6
					1.22E+01	2.00E+01		(2.)			G	
tch: 4327402	906.0_H3_LSC											
H-3	1.44E-01	U	1.43E-01	1.60E-01	3.36E-01	pCi/g	100%	0.43	12/23/04 05:07 a		10.0	LSC3
					1.55E-01	4.00E+02		(1.8)			G	
ch: 4327403	GAMMA_GS											
CO-60	1.76E-03	U	1.86E-02	1.88E-02	3.27E-02	pCi/g		0.05	12/8/04 03:16 p		52.0	GER4\$1
						5.00E-02		0.19			g	
CS-137	-2.00E-03	U	1.63E-02	1.63E-02	2.73E-02	pCi/g		-0.07	12/8/04 03:16 p		52.0	GER4\$1
						1.00E-01		-0.25			g	
EU-152	-1.31E-02	U	3.90E-02	3.90E-02	6.61E-02	pCi/g		-0.2	12/8/04 03:16 p		52.0	GER4\$1
						1.00E-01		-0.67			g	

Richland MDC|MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
TLRchBlank U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.  
0 A97

FORM II  
BLANK RESULTS

Date: 29-Dec-04

Lab Name: STL Richland  
Matrix: SOIL

SDG: W04380  
Report No.: 27562

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-154	-2.64E-02	U	5.18E-02	5.18E-02	8.68E-02	pCi/g		-0.3	12/8/04 03:16 p		52.0	GER4\$1
						1.00E-01		-(1.)			g	
EU-155	1.96E-02	U	3.18E-02	3.18E-02	5.59E-02	pCi/g		0.35	12/8/04 03:16 p		52.0	GER4\$1
						1.00E-01		(1.2)			g	
tch: 4327405	SRTOT_SEP_PRECIP_GPC			Work Order: GXK591AA		Report DB ID: GXK591AB						
STRONTIUM	3.35E+00	U	6.79E+00	8.27E+00	1.52E+01	pCi/g	94%	0.22	12/15/04 05:53 p		0.05	GPC27D
					7.05E+00			0.81			G	

lo. of Results: 11      Comments:

Richland      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
TLRchBlank      U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.  
0 A97

FORM II  
LCS RESULTS

Date: 29-Dec-04

Lab Name: STL Richland

SDG: W04380

Matrix: SOIL

Report No. : 27562

Parameter	Result	Count Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
ch: 4327406	C14_LSC												
C-14	7.03E+00		2.98E-01	4.51E-01	3.30E-01	pCi/g	100%	7.25E+00	2.34E-01	97%	12/23/04 09:22 a	5.0	LSC3
							Rec Limits:	70	130	0.0		G	
ch: 4327412	THISO_IE_PRECIP_AEA												
TH-230	4.45E+01	U	8.19E+00	6.25E+01	1.02E+00	pCi/g	58%	4.77E+01	1.43E+00	93%	12/22/04 08:14 p	0.05	ALP174
							Rec Limits:	70	130	-0.1		G	
ch: 4327409	NI63LSC												
NI-63	5.21E+02		8.70E+00	8.17E+01	5.81E+00	pCi/g	83%	5.09E+02	1.70E+01	102%	12/17/04 07:48 a	0.25	LSC5
							Rec Limits:	70	130	0.0		G	
ch: 4327401	TC99_ETVDSK_LSC												
TC-99	8.14E+03		7.89E+01	5.66E+03	2.51E+01	pCi/g	100%	9.06E+03	1.15E+02	90%	12/18/04 07:54 a	0.05	LSC6
							Rec Limits:	70	130	-0.1		G	
ch: 4327402	906.0_H3_LSC												
H-3	7.44E+00		4.08E-01	4.78E-01	3.40E-01	pCi/g	100%	6.85E+00	2.35E-01	109%	12/23/04 05:50 a	10.0	LSC3
							Rec Limits:	70	130	0.1		G	
ch: 4327403	GAMMA_GS												
CS-137	9.00E-01		1.33E-01	1.33E-01	6.94E-02	pCi/g		8.78E-01	6.95E-02	103%	12/8/04 03:16 p	26.61	GER7\$1
							Rec Limits:	70	130	0.0		g	
RA-226	1.63E+00		2.88E-01	2.88E-01	1.18E-01	pCi/g		2.14E+00	3.61E-01	76%	12/8/04 03:16 p	26.61	GER7\$1
							Rec Limits:	70	130	-0.2		g	
ch: 4327405	SRTOT_SEP_PRECIP_GPC												
STRONTIUM	2.49E+02	U	2.18E+01	3.51E+02	1.57E+01	pCi/g	95%	2.70E+02	3.21E+00	92%	12/15/04 05:53 p	0.05	GPC26C
							Rec Limits:	20	105	-0.1		G	

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

FLRchLcs U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

A97

FORM II  
LCS RESULTS

Date: 29-Dec-04

Lab Name: STL Richland

SDG: W04380

Matrix: SOIL

Report No. : 27562

Parameter	Result Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Vo. of Results: 8	Comments:											

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

TLRichLcs  
0 A97

FORM II

Date: 29-Dec-04

MATRIX SPIKE RESULTS

Lab Name: STL Richland

SDG: W04380

Lot-Sample No.: J4K190450-1

Report No. : 27562

Matrix: SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error ( 2 s)	Total Uncert( 2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Primary Detector
tch: 4327401	TC99_ETVDSK_LSC												
				Work Order: GXGX91AJ		Report DB ID: GXGX91JW				Orig Sa DB ID: 9GXGX910			
TC-99	4.76E+03		6.04E+01	3.32E+03	2.48E+01	pCi/g	100%	52.29%	9.10E+03	.16E+00	12/18/04 04:47 a	0.05	LSC6
	1.86E+01	<b>RPD</b>	2.9									G	

No. of Results: 1      Comments:

Richland      RER      - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.  
 TLRchMs      Bias      - (Result/Expected)-1 as defined by ANSI N13.30.  
 0 A97

Lot No., Due Date: J4K190450; 01/05/2005  
 Client, Site: 108302; FLUOR- SOILS Hanford Site  
 QC Batch No., Method Test: 4327412; RTHISO Thiso by ALP  
 SDG, Matrix: W04380; 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: NCM 10-04585.	

First Level Review [Signature]

Date 12-28-04



# STL

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 4327412

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: Jacilee Waddell Date: 12/29/04

Lot No., Due Date: J4K190450; 01/05/2005  
 Client, Site: 108302; FLUOR- SOILS Hanford Site  
 QC Batch No., Method Test: 4327405; RSRTOT SrTot by GPC  
 SDG, Matrix: <sup>4380</sup>W04450; SOIL  
 12/21/04

- 1.0 COC**
- 1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?  Yes  No  N/A
- 2.0 QC Batch**
- 2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?  Yes  No  N/A
- 2.2 Are the QC appropriate for the analysis included in the batch?  Yes  No  N/A
- 2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?  Yes  No  N/A
- 2.4 Does the Worksheets include a Tracer Vial label for each sample?  Yes  No  N/A
- 3.0 QC & Samples**
- 3.1 Is the blank results, yield, and MDA within contract limits?  Yes  No  N/A
- 3.2 Is the LCS result, yield, and MDA within contract limits?  Yes  No  N/A
- 3.3 Are the MS/MSD results, yields, and MDA within contract limits?  Yes  No  N/A
- 3.4 Are the duplicate result, yields, and MDAs within contract limits?  Yes  No  N/A
- 3.5 Are the sample yields and MDAs within contract limits?  Yes  No  N/A
- 4.0 Raw Data**
- 4.1 Were results calculated in the correct units?  Yes  No  N/A
- 4.2 Were analysis volumes entered correctly?  Yes  No  N/A
- 4.3 Were Yields entered correctly?  Yes  No  N/A
- 4.4 Were spectra reviewed/meet contractual requirements?  Yes  No  N/A
- 4.5 Were raw counts reviewed for anomalies?  Yes  No  N/A
- 5.0 Other**
- 5.1 Are all nonconformances included and noted?  Yes  No  N/A
- 5.2 Are all required forms filled out?  Yes  No  N/A
- 5.3 Was the correct methodology used?  Yes  No  N/A
- 5.4 Was transcription checked?  Yes  No  N/A
- 5.5 Were all calculations checked at a minimum frequency?  Yes  No  N/A
- 5.6 Are worksheet entries complete and correct?  Yes  No  N/A
- 6.0 Comments on any No response:  
NCM 10-04554.

First Level Review 

Date 12-21-04

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 4327405

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?	<i>20/12/04</i>	✓	
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: See NCM - note (N).

---



---



---

Second Level Review: *Julie Waddell* Date: *12/29/04*

# Clouseau Nonconformance Memo

**SEVERN  
TRENT  
SERVICES**

NCM #: <b>10-04554</b> NCM Initiated By: Dale O'Connell Date Opened: 12/21/2004 Date Closed:	Classification: <b>Anomaly</b> Status: <b>GLREVIEW</b> Production Area: Environmental - Prep Tests: SrTot by GPC Lot #'s (Sample #'s): J4K190450 (1), J4K220000 (405), QC Batches: 4327405
Nonconformance: QC Result Out of Limits Subcategory: MDA exceeds RDL	

### Problem Description / Root Cause

Name	Date	Description
Dale O'Connell	12/21/2004	MDA Exceeds RDL. Cause is matrix effect: aliquot reduced due to high radiation screen results, which inform guidelines to prevent cross-contamination and ensure safety. QC generated at mass to reflect that of resuced aliquot samples. J4K190450-001 J4K190450-001-X Blank LCS
Dale O'Connell	12/21/2004	Samples were digested, aliquoted, then carrier was added.

### Corrective Action

Name	Date	Corrective Action
Dale O'Connell	12/21/2004	J4K190450-001: Sample activity greater than MDA. J4K190450-001-X: Sample activity greater than MDA. LCS: Sample activity greater than MDA. Carrier recoveries of samples and QC within acceptance limits. Precision criteria within acceptance limits. LCS radiochemical recovery within acceptance limits. Report results.
Dale O'Connell	12/21/2004	

### Client Notification Summary

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

### Quality Assurance Verification

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

### Approval History

Date Approved	Approved By	Position

Lot No., Due Date: J4K190450; 01/05/2005  
Client, Site: 108302; FLUOR- SOILS Hanford Site  
QC Batch No., Method Test: 4327403; RGAMMA Gamma by GER  
SDG, Matrix: <sup>4380</sup>W04450; SOIL  
*2012/29/04*

	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?	<input checked="" type="checkbox"/>		
<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?	<input checked="" type="checkbox"/>		
2.2 Are the QC appropriate for the analysis included in the batch?	<input checked="" type="checkbox"/>		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	<input checked="" type="checkbox"/>		
2.4 Does the Worksheets include a Tracer Vial label for each sample?	<input checked="" type="checkbox"/>		
<b>3.0 QC &amp; Samples</b>			
3.1 Is the blank results, yield, and MDA within contract limits?	<input checked="" type="checkbox"/>		
3.2 Is the LCS result, yield, and MDA within contract limits?	<input checked="" type="checkbox"/>		
3.3 Are the MS/MSD results, yields, and MDA within contract limits?	<input checked="" type="checkbox"/>		
3.4 Are the duplicate result, yields, and MDAs within contract limits?	<input checked="" type="checkbox"/>		
3.5 Are the sample yields and MDAs within contract limits?	<input checked="" type="checkbox"/>		
<b>4.0 Raw Data</b>			
4.1 Were results calculated in the correct units?	<input checked="" type="checkbox"/>		
4.2 Were analysis volumes entered correctly?	<input checked="" type="checkbox"/>		
4.3 Were Yields entered correctly?	<input checked="" type="checkbox"/>		
4.4 Were spectra reviewed/meet contractual requirements?	<input checked="" type="checkbox"/>		
4.5 Were raw counts reviewed for anomalies?	<input checked="" type="checkbox"/>		
<b>5.0 Other</b>			
5.1 Are all nonconformances included and noted?	<input checked="" type="checkbox"/>		
5.2 Are all required forms filled out?	<input checked="" type="checkbox"/>		
5.3 Was the correct methodology used?	<input checked="" type="checkbox"/>		
5.4 Was transcription checked?	<input checked="" type="checkbox"/>		
5.5 Were all calculations checked at a minimum frequency?	<input checked="" type="checkbox"/>		
5.6 Are worksheet entries complete and correct?	<input checked="" type="checkbox"/>		
6.0 Comments on any No response: NCM 10-04519.			

First Level Review *[Signature]*

Date *12-18-04*



# STL

## Data Review Checklist RADIOCHEMISTRY Second Level Review

QC Batch Number: 4527403

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: See NCM - note CN.

---



---



---



---

Second Level Review: Julie Waddell Date: 12/29/04

# Clouseau Nonconformance Memo

**SEVERN  
TRENT  
SERVICES**

NCM #: <b>10-04519</b>	Classification: <b>Anomaly</b>
NCM Initiated By: Dale O'Connell	Status: <b>GLREVIEW</b>
Date Opened: 12/18/2004	Production Area: Environmental - Prep
Date Closed:	Tests: Gamma by GER
	Lot #'s (Sample #'s): J4K190450 (1), J4K220000 (403),
	QC Batches: 4327403
Nonconformance: QC Result Out of Limits	
Subcategory: MDA exceeds RDL	

### Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Dale O'Connell	12/18/2004	<p>1. MDA Exceeds RDL. Cause is matrix effect: aliquot reduced due to high radiation screen results, which inform guidelines to prevent cross-contamination and ensure safety. J4K190405-001: Co-60, Cs-137, Eu-152,-154,-155 J4K190405-001-X: Co-60, Cs-137, Eu-152,-154,-155</p> <p>2. Insufficient sample to generate a duplicate.</p> <p>3. Am-241 detected in sample and duplicate.</p> <p>4. Possible False Positive: Although key-line activity &gt; MDA, identification of radionuclide rejected by abundance criteria. J4K190405-001: Eu-154 J4K190405-001-X: Eu-154</p>

### Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Dale O'Connell	12/18/2004	<p>1. J4K190405-001: Co-60, Cs-137, Eu-154: keyline activity &gt; MDA. J4K190405-001-X: Co-60, Cs-137, Eu-154: keyline activity &gt; MDA. MDA achieved on the blank for all radionuclides of interest.</p> <p>2. Precision determination achieved by recounting sample on a different detector. Report results.</p>

### 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.

Lot No., Due Date: J4K190450; 01/05/2005  
 Client, Site: 108302; FLUOR- SOILS Hanford Site  
 QC Batch No., Method Test: 4327406; RC14 C-14 by LSC  
 SDG, Matrix: W04380; SOIL

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

First Level Review *[Signature]*

Date 12-28-04

STL Richland



# STL

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 4327406

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: James Waddell Date: 12/29/04

Lot No., Due Date: J4K190450; 01/05/2005  
Client, Site: 108302; FLUOR- SOILS Hanford Site  
QC Batch No., Method Test: 4327409; RNI63 Ni-63 by LSC  
SDG, Matrix: <sup>4380</sup>W04450; SOIL  
*By 12-22-04*

1.0 COC

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

2.0 QC Batch

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

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

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

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

3.0 QC & Samples

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

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

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

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

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

4.0 Raw Data

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

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

4.3 Were Yields entered correctly? Yes No N/A

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

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

5.0 Other

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

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

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

5.4 Was transcription checked? Yes No N/A

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

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

6.0 Comments on any No response:

First Level Review *[Signature]*

Date *12-18-04*



# STL

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 4327409

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: *Beverly*

Date: 12-20-04

Lot No., Due Date: J4K190450; 01/05/2005  
 Client, Site: 108302; FLUOR- SOILS Hanford Site  
 QC Batch No., Method Test: 4327402; RTRITIUM H-3 by LSC  
 SDG, Matrix: W04380; 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 [Signature]

Date 12-28-04

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

QC Batch Number: 4327402

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: Jacqui Waddell Date: 12/29/04

Lot No., Due Date: J4K190450; 01/05/2005  
Client, Site: 108352; FLUOR- SOILS Hanford Site  
QC Batch No., Method Test: 4327401; RTC99 Tc-99 by LSC  
SDG, Matrix: W04350  
W04450; SOIL

- 1.0 COC *By 12-22-04*
- 1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?  Yes  No  N/A
- 2.0 QC Batch
- 2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?  Yes  No  N/A
- 2.2 Are the QC appropriate for the analysis included in the batch?  Yes  No  N/A
- 2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?  Yes  No  N/A
- 2.4 Does the Worksheets include a Tracer Vial label for each sample?  Yes  No  N/A
- 3.0 QC & Samples
- 3.1 Is the blank results, yield, and MDA within contract limits?  Yes  No  N/A
- 3.2 Is the LCS result, yield, and MDA within contract limits?  Yes  No  N/A
- 3.3 Are the MS/MSD results, yields, and MDA within contract limits?  Yes  No  N/A
- 3.4 Are the duplicate result, yields, and MDAs within contract limits?  Yes  No  N/A
- 3.5 Are the sample yields and MDAs within contract limits?  Yes  No  N/A
- 4.0 Raw Data
- 4.1 Were results calculated in the correct units?  Yes  No  N/A
- 4.2 Were analysis volumes entered correctly?  Yes  No  N/A
- 4.3 Were Yields entered correctly?  Yes  No  N/A
- 4.4 Were spectra reviewed/meet contractual requirements?  Yes  No  N/A
- 4.5 Were raw counts reviewed for anomalies?  Yes  No  N/A
- 5.0 Other
- 5.1 Are all nonconformances included and noted?  Yes  No  N/A
- 5.2 Are all required forms filled out?  Yes  No  N/A
- 5.3 Was the correct methodology used?  Yes  No  N/A
- 5.4 Was transcription checked?  Yes  No  N/A
- 5.5 Were all calculations checked at a minimum frequency?  Yes  No  N/A
- 5.6 Are worksheet entries complete and correct?  Yes  No  N/A
- 6.0 Comments on any No response:  
NCM 10-04530.

First Level Review *[Signature]*

Date *12-20-04*

STL Richland



# STL

## Data Review Checklist RADIOCHEMISTRY Second Level Review

QC Batch Number: 4327401

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: See NCM

Second Level Review: Beverly Date: 12-20-04

# Clouseau Nonconformance Memo



NCM #: <b>10-04530</b> NCM Initiated By: Dale O'Connell Date Opened: 12/20/2004 Date Closed:	Classification: <b>Anomaly</b> Status: <b>GLREVIEW</b> Production Area: Environmental - Nona Tests: Tc-99 by LSC Lot #'s (Sample #'s): J4K190450 (1), J4K220000 (401), QC Batches: 4327401
Nonconformance: QC Result Out of Limits Subcategory: MDA exceeds RDL	

### Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Dale O'Connell	12/20/2004	MDA Exceeds RDL. MDA Exceeds RDL. Cause is matrix effect: aliquot reduced due to high radiation screen results, which inform guidelines to prevent cross-contamination and ensure safety. Blank and LCS were generated at a geometry to reflect mass of samples. J4K190450-001 J4K190450-001-S J4K190450-001-X Blank LCS

### Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Dale O'Connell	12/20/2004	J4K190450-001-S: Sample activity greater than MDA. LCS: Sample activity greater than MDA.  Matrix Spike radiochemical recovery within limits. Precision criteria within acceptance limits. LCS radiochemical recovery within acceptance limits. Report results with MDAs achieved.

### 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>

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-025-125	PAGE 1 OF 1
COLLECTOR Pope/Pfister/Hughes/Wiberg <i>Q-50639</i>		COMPANY CONTACT TRENT, STEVE		TELEPHONE NO. 373-5689		PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 216-T-28; 22.5ft-25ft		PROJECT DESIGNATION 200-LW-1/LW-2 Characterization - Soil				SAF NO. F03-025	
ICE CHEST NO. <i>GRP-04-003</i>		FIELD LOGBOOK NO. HNF-N-356 1		COA 119143E510		METHOD OF SHIPMENT Federal Express	
SHIPPED TO Seyern Trent Incorporated, Richland, WA <i>27 11/09/04</i>		OFFSITE PROPERTY NO. <i>See Shipment # DJ020</i>				BILL OF LADING/AIR BILL NO. <i>See Shipment # DJ020</i>	
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS N/A		PRESERVATION Cool 4C None		600g, 250g, 2x120g, 6g 100g, 120g, 95g, 2x120g, 6g		
	<i>J4K190450</i>		TYPE OF CONTAINER aG aG				
	<i>SDG# 4380</i>		NO. OF CONTAINER(S) 1 1				
	<i>W04450</i>		VOLUME <i>125ml - 9-10-04</i> 120 mL 60ml				
SPECIAL HANDLING AND/OR STORAGE <i>Radioactive TRU to: B91C7</i>		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS		SEE ITEM (2) IN SPECIAL INSTRUCTIONS	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B193K1	SOIL	<i>10-26-04</i>	<i>0941</i>	X	X		<i>GXXG9</i>
CHAIN OF POSSESSION				SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>JSPope/ASG</i>		DATE/TIME <i>10-26-04 1230</i>		RECEIVED BYT/STORED IN <i>site fiduc</i>		DATE/TIME <i>10-26-04 1230</i>	
RELINQUISHED BY/REMOVED FROM <i>Site fiduc</i>		DATE/TIME <i>11/04/04 950</i>		RECEIVED BYT/STORED IN <i>Greg Thomas Greg Thomas</i>		DATE/TIME <i>11/04/04 950</i>	
RELINQUISHED BY/REMOVED FROM <i>Greg Thomas Greg Thomas</i>		DATE/TIME <i>11/04/04 1135</i>		RECEIVED BYT/STORED IN <i>Mo-026 Frig #3</i>		DATE/TIME <i>11/04/04 1135</i>	
RELINQUISHED BY/REMOVED FROM <i>Mo-026 Frig #3</i>		DATE/TIME <i>11/09/04 0820</i>		RECEIVED BYT/STORED IN <i>Greg Thomas Greg Thomas</i>		DATE/TIME <i>11/09/04 0820</i>	
RELINQUISHED BY/REMOVED FROM <i>Greg Thomas Greg Thomas</i>		DATE/TIME <i>11/09/04 0835</i>		RECEIVED BYT/STORED IN <i>Fed Ex</i>		DATE/TIME <i>11/10/04 0900</i>	
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BYT/STORED IN		DATE/TIME	
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BYT/STORED IN		DATE/TIME	
LABORATORY SECTION	RECEIVED BY <i>J-R-S</i>	DATE/TIME <i>11/10/04 0900</i>		TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME		DATE/TIME	

Chain of Custody Record

FL-4124 (0901)

Client: **ST. LOUIS** Project Manager: **Marti Ward** Date: \_\_\_\_\_ Chain of Custody Number: **177991**

Address: \_\_\_\_\_ Telephone Number (Area Code)/Fax Number: \_\_\_\_\_ Lab Number: \_\_\_\_\_ Page \_\_\_\_\_ of \_\_\_\_\_

Sample I.D. No. and Description <small>(Containers for each sample may be combined on one line)</small>	Date	Time	Matrix				Containers & Preservatives						Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt	
			Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH			
<b>F4K 100.333-051</b>															<b>120g</b>

Possible Hazard Identification:  Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown  Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required:  24 Hours  48 Hours  7 Days  14 Days  21 Days  Other \_\_\_\_\_ QC Requirements (Specify)

Relinquished By: <b>Bill Clark</b>	Date: <b>11-18-04</b>	Time: <b>1700</b>	1. Received By: <b>[Signature]</b>	Date: <b>11/19/04</b>	Time: <b>12:00</b>
Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments: \_\_\_\_\_



# STL

### Sample Check-in List

Date/Time Received: 11/19/04 @ 19:00  
 Client: St. L SDG #: W04130 NA  SAF #: NA  
 Work Order Number: U4N190450 Chain of Custody # N/A  
 Shipping Container ID: N/A Air Bill # N/A

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: 1
7. Sample holding times exceeded? NA  Yes  No
8. Samples have:  
 tape  hazard labels  
 custody seals  appropriate samples labels
9. Samples are:  
 in good condition  leaking  
 broken  have air bubbles  
 (Only for samples requiring head space)
10. Sample pH taken? NA  pH < 2  pH > 2  pH > 9
11. Sample Location, Sample Collector Listed? \* Yes  No   
 \*For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes  No
13. Description of anomalies (include sample numbers): \_\_\_\_\_

Sample Custodian: [Signature] Date: 11/19/04

Client Sample ID	Analysis Requested	Condition	Comments/Action

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

No action necessary; process as is.

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

## Giroir, Bev

---

**From:** Giroir, Bev  
**Sent:** Wednesday, December 22, 2004 2:00 PM  
**To:** 'Trent, Stephen J'  
**Subject:** RE: W04380 and W04450

Mystery solved. The sample was sent completely to ST Louis where it was assigned W04380. The rad analysis was sent to Richland from St Louis and assigned a new SDG. (W04450). The sample (B193K1) has now been completely entered under W04380.

**STL Richland will be closed December 24, 25 and 31, 2004. Enjoy the Holiday!**

**Beverly I Giroir**  
Business Development Manager  
STL Richland  
509-375-3131 x 163  
bgiroir@stl-inc.com  
0600-1430 Pacific Time  
Leaders in Environmental Testing

As of July 1, 2004, STL Richland has a new Zip Code: 99354

---

**From:** Giroir, Bev  
**Sent:** Wednesday, December 22, 2004 1:08 PM  
**To:** 'Trent, Stephen J'  
**Subject:** W04380 and W04450

Steve,

Marti Ward is out until 1/5 and I haven't heard from the supporting PM yet. Can I get back with you on Monday? Bev

**STL Richland will be closed December 24, 25 and 31, 2004. Enjoy the Holiday!**

**Beverly I Giroir**  
Business Development Manager  
STL Richland  
509-375-3131 x 163  
bgiroir@stl-inc.com  
0600-1430 Pacific Time  
Leaders in Environmental Testing

As of July 1, 2004, STL Richland has a new Zip Code: 99354

STL RICHLAND

13/004 3:31:15 PM

Sample Preparation/Analysis

Balance Id:1120373922

190450-1-SAMP  
26/2004 09:41

Flour  
PR TMSO PrpRC5013/RC5019, SepRC5084(5003)  
S1 Thorium-228,230,232 by Alpha Spec  
SI CLIENT: HANFORD

Pipet #:

Report Due: 01/05/2005

Sep1 DT/Tm Tech:

Batch: 4327412 SOIL  
Batch, Test: None

pCi/g

PM, Quote: BG2, 50639

Sep2 DT/Tm Tech:

Prep Tech: HansenM

(9)

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:
XGX9-1-AD 190450-1-SAMP 26/2004 09:41		0.05g,in	THTC7591 12/09/04,pd 10/25/04,r					
		AmtRec: 120G	#Containers: 1			Scr Rst: Alpha: 3.58E+04 pCi/g	Beta: 1.10E+04 pCi/g	
XGX9-1-AR-X 190450-1-DUP 26/2004 09:41		0.05g,in	THTC7590 12/09/04,pd 10/25/04,r					
		AmtRec: 120G	#Containers: 1			Scr Rst: Alpha: 3.58E+04 pCi/g	Beta: 1.10E+04 pCi/g	
XK6L-1-AA-B 220000-412-BLK 26/2004 09:41		0.05g,in	THTC7589 12/09/04,pd 10/25/04,r					
		AmtRec:	#Containers: 1			Scr Rst: Alpha:	Beta:	
XK6L-1-AC-C 220000-412-LCS 26/2004 09:41		0.05g,in	THSI0761 12/09/04,pd 04/29/04,r					
		AmtRec:	#Containers: 1			Scr Rst: Alpha:	Beta:	

Comments: Samples were traced after aliquot with 12/13/04

Clients for Batch:

108302, FLUOR HANFORD IC

Flour Hanford Inc

BG2, 50639

91AD-SAMP Constituent List:

Lot	RDL	pCi/g	LCL	UCL	RPD	Th-230	RDL	pCi/g	LCL	UCL	RPD
1-228	RDL:1	pCi/g	LCL:	UCL:	RPD:	Th-230	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35
1-232	RDL:1	pCi/g	LCL:	UCL:	RPD:	Th-234	RDL:	pCi/g	LCL:20	UCL:105	RPD:35
11AA-BLK:											
1-228	RDL:1	pCi/g	LCL:	UCL:	RPD:	Th-230	RDL:1	pCi/g	LCL:	UCL:	RPD:
1-232	RDL:1	pCi/g	LCL:	UCL:	RPD:	Th-234	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

/13/2004 3:31:30 PM

Sample Preparation/Analysis

Balance Id:1120373922

OR T/In Prp RC5013/RC5010, Sep RC5084(5003)

Pipet #:

S1 Thorium-228,230,232 by Alpha Spec

port Due: 01/05/2005

SI CLIENT: HANFORD

Sep1 DT/Tm Tech:

atch: 4327412

pCi/g

Sep2 DT/Tm Tech:

Q Batch, Test: None

Prep Tech: ,HansenM

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:			
6LIAC-LCS: h-230	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35	Th-234	RDL:	pCi/g	LCL:20	UCL:105	RPD:35

X91AD-SAMP Calc Info:

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

6L1AA-BLK:

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

6LIAC-LCS:

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

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

12/28/2004 4:16:54 PM

# ICOC Fraction Transfer/Status Report

ByDate: 12/29/2003, 1/2/2005, Batch: '4327412', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
4327412				
AC	CalcC	GarciaT	12/3/2004 1:48:46 PM	jwDone
SC		heidelbergt	IsBatched 11/22/2004 12:49:53 PM	ICOC_RADCALC v4.8.07
SC		GarciaT	InPrep 12/3/2004 1:48:46 PM	RICH-RC-5013 REVISION 4
SC		HansenM	Prep1C 12/8/2004 2:58:12 PM	RICH-RC-5013 REVISION 4
SC		HansenM	InPrep2 12/13/2004 2:16:55 PM	RICH-RC-5013 REVISION 5
SC		HansenM	Prep2C 12/13/2004 5:05:10 PM	RICH-RC-5016 REVISION 5
SC		FinchA	InSep1 12/14/2004 3:40:20 PM	RICH-RC-5084 REVISION 1
SC		FinchA	Sep1C 12/20/2004 8:21:42 AM	RICH-RC-5084 REVISION 1
SC		DobeckiT	Sep2C 12/22/2004 12:01:44 PM	RICH-RC-5003 REVISION 5
SC		BlackCL	InCnt1 12/22/2004 12:20:24 PM	RICH-RD-0008 REVISION 3
SC		BlackCL	CalcC 12/27/2004 7:54:39 AM	RICH-RD-0008 REVISION 3
AC		GarciaT	12/8/2004 2:58:12 PM	jwDone
AC		HansenM	12/13/2004 2:16:55	
AC		HansenM	12/13/2004 5:05:10	
AC		FinchA	12/14/2004 3:40:20	
AC		FinchA	12/20/2004 8:21:42	
AC		DobeckiT	12/22/2004 12:01:44	
AC		BlackCL	12/22/2004 12:20:24	
AC		BlackCL	12/27/2004 7:54:39	

AC: Accepting Entry; SC: Status Change

STL Richland

Grp Rec Cnt:9

8302, FLUOR HANFORD IC  
inford Inc  
port Due: 01/05/2005

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

Balance Id:1120373922,01

Pipet #: NA

Sep1 DT/Tm Tech: 12-15-04 10:13 AM

Batch: 4327405 SOIL  
Q Batch, Test: None

pCi/g

PM, Quote: BG2, 50639

Sep2 DT/Tm Tech: N/A

Prep Tech: HansenM

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:
iXGX9-1-AA 190450-1-SAMP 26/2004 09:41		0.05g,in	SRTA13417 10/20/04,pd 08/26/04,r			50	27B	1818	12/13/04	
		AmtRec: 120G	#Containers: 1			95.7		Scr Rst:	Alpha: 3.58E+04 pCi/g	Beta: 1.10E+04 pCi/g
iXGX9-1-AN-X 190450-1-DUP 26/2004 09:41		0.05g,in	SRTA13418 10/20/04,pd 08/26/04,r				27C			
		AmtRec: 120G	#Containers: 1			94.7		Scr Rst:	Alpha: 3.58E+04 pCi/g	Beta: 1.10E+04 pCi/g
iXK59-1-AA-B 220000-405-BLK 26/2004 09:41		0.05g,in	SRTA13419 10/20/04,pd 08/26/04,r				27D			
		AmtRec:	#Containers: 1			94.0		Scr Rst:	Alpha:	Beta:
iXK59-1-AC-C 220000-405-LCS 26/2004 09:41		0.05g,in	STSC1463 07/14/04,pd 08/10/04,r				26C			
		AmtRec:	#Containers: 1			95.5		Scr Rst:	Alpha:	Beta:

Comments: Samples were traced after aliquot on 12/13/04

Clients for Batch:  
108302, FLUOR HANFORD IC

Flour Hanford Inc , BG2, 50639

91AA-SAMP Constituent List:

:-90	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35
91AA-BLK:					
:-90	RDL:1	pCi/g	LCL:	UCL:	RPD:
91AC-LCS:					
:-90	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35

91AA-SAMP Calc Info:

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

Balance No. 112037822

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

port Due: 01/05/2005

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

tch: 4327405

pCi/g

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

Q Batch, Test: None

Prep Tech: ,HansenM

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 591AA-BLK:		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					
Uncert Level (#s): 2 591AC-LCS:		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					
Uncert Level (#s): 2		Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B					

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

12/21/2004 4:09:48 PM

# ICOC Fraction Transfer/Status Report

ByDate: 12/22/2003, 12/26/2004, Batch: '4327405', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
4327405				
AC	CalcC	GarciaT	12/3/2004 1:48:24 PM	jwDone
SC		heidelbergt	IsBatched 11/22/2004 12:49:53 PM	ICOC_RADCALC v4.8.07
SC		GarciaT	InPrep 12/3/2004 1:48:24 PM	RICH-RC-5013 REVISION 4
SC		GarciaT	Prep1C 12/8/2004 2:58:22 PM	RICH-RC-5013 REVISION 4
SC		HansenM	InPrep2 12/13/2004 2:16:38 PM	RICH-RC-5013 REVISION 5
SC		HansenM	Prep2C 12/13/2004 5:05:03 PM	RICH-RC-5016 REVISION 5
SC		FABREM	InSep1 12/14/2004 8:47:02 AM	RICH-RC-5006 REVISION 5
SC		FABREM	Sep1C 12/15/2004 3:38:22 PM	RICH-RC-5006 REVISION 5
SC		DAWKINSO	CalcC 12/15/2004 7:46:20 PM	RICH-RD-0003 REVISION 4
AC		GarciaT	12/8/2004 2:58:22 PM	jwDone
AC		HansenM	12/13/2004 2:16:38	
AC		HansenM	12/13/2004 5:05:03	
AC		FABREM	12/14/2004 8:47:02	
AC		FABREM	12/15/2004 3:38:22	
AC		DAWKINSO	12/15/2004 7:46:20	dAWKINSO

AC: Accepting Entry; SC: Status Change

STL Richland

Grp Rec Cnt: 7

22/2004 12:49:27 PM

Sample Preparation/Analysis

Balance Id:

AX Gamma PrpRC5013/5017

Pipet #:

TA Gamma by HPGE

5I CLIENT: HANFORD

Port Due: 01/05/2005

Sep1 DT/Tm Tech:

ch: 4327403

pCi/g

Sep2 DT/Tm Tech:

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:	
-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
W1AC-LCS:											
-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
40	RDL:--	pCi/g	LCL:70	UCL:130	RPD:35	Ra-226	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35
-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
238	RDL:	pCi/g	LCL:70	UCL:130	RPD:35						

91AG-SAMP Calc Info:

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

W1AA-BLK:

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

W1AC-LCS:

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

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

12/18/2004 11:20:54 AM

# ICOC Fraction Transfer/Status Report

ByDate: 12/19/2003, 12/23/2004, Batch: '4327403', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
4327403				
AC	CalcC	GarciaT	12/3/2004 1:47:46 PM	jwDone
SC		heidelbergt	IsBatched 11/22/2004 12:49:24 PM	ICOC_RADCALC v4.8.07
SC		GarciaT	InPrep 12/3/2004 1:47:46 PM	RICH-RC-5013 REVISION 4
SC		GarciaT	InPrep 12/3/2004 1:47:57 PM	RICH-RC-5017 REVISION 3
SC		GarciaT	Prep1C 12/8/2004 2:57:03 PM	RICH-RC-5017 REVISION 3
SC		BlackCL	InCntl 12/8/2004 3:16:30 PM	RICH-RD-0007 REVISION 5
SC		BlackCL	CalcC 12/10/2004 10:40:11 AM	RICH-RD-0007 REVISION 5
AC		GarciaT	12/3/2004 1:47:57 PM	jwDone
AC		GarciaT	12/8/2004 2:57:03 PM	jwDone
AC		BlackCL	12/8/2004 3:16:30 PM	
AC		BlackCL	12/10/2004 10:40:11	

AC: Accepting Entry, SC: Status Change

STL Richland

Grp Rec Cnt: 5

STL RICHLAND

22/2004 12:50:24 PM

### Sample Preparation/Analysis

Balance Id: 029

302, FLUOR HANFORD IC  
ford Inc

, Flour

5S C-14 Prp/SepRC5022  
S3 Carbon-14 by Liquid Scint  
5I CLIENT: HANFORD

Pipet #:

ort Due: 01/05/2005

Sep1 DT/Tm Tech: 12-21-04

ch: 4327406 SOIL

pCi/g

PM, Quote: BG2, 50639

Sep2 DT/Tm Tech:

Batch, Test: None

Prep Tech:

Vork 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>GX9-1-AH</b>									
90450-1-SAMP									
[REDACTED]									
6/2004	09:41		AmtRec: 120G	#Containers: 1			Scr Rst:	Alpha:	Beta:
<b>GX9-1-AP-X</b>									
90450-1-DUP									
[REDACTED]									
6/2004	09:41		AmtRec: 120G	#Containers: 1			Scr Rst:	Alpha:	Beta:
<b>K6G-1-AA-B</b>									
20000-406-BLK									
[REDACTED]									
6/2004	09:41		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:
<b>K6G-1-AC-C</b>									
20000-406-LCS									
[REDACTED]									
5/2004	09:41		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:
<b>K6G-1-AD-BN</b>									
20000-406-IBLK									
[REDACTED]									
3/2004	09:41		AmtRec:	#Containers: 1			Scr Rst:	Alpha:	Beta:

Comments:

Clients for Batch:

108302, FLUOR HANFORD IC

Flour Hanford Inc

BG2, 50639

LAH-SAMP Constituent List:

.4 RDL:50 pCi/g LCL:70 UCL:130 RPD:35

50

22/2004 12:50:24 PM

Sample Preparation/Analysis

Balance Id: 029

5S C-14 Prp/SepRC5022  
 S3 Carbon-14 by Liquid Scint  
 5I CLIENT: HANFORD

Pipet #:

Port Due: 01/05/2005

Sep1 DT/Tm Tech: 12-21-04

ch: 4327406

pCi/g

Sep2 DT/Tm Tech:

Batch, Test: None

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:
G1AA-BLK:								
14	RDL:50	pCi/g	LCL:	UCL:	RPD:			
G1AC-LCS:								
14	RDL:50	pCi/g	LCL:70	UCL:130	RPD:35			
G1AD-IBLK:								
14	RDL:50	pCi/g	LCL:	UCL:	RPD:			
91AH-SAMP Calc Info:								
Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B				
G1AA-BLK:								
Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B				
G1AC-LCS:								
Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B				
G1AD-IBLK:								
Uncert Level (#s): 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B				

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

12/28/2004 8:35:28 AM

# ICOC Fraction Transfer/Status Report

ByDate: 12/29/2003, 1/2/2005, Batch: '4327406', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
4327406				
AC	CalcC	GarciaT	12/3/2004 1:46:09 PM	jwDone
SC		heidelbergt	IsBatched 11/22/2004 12:49:53 PM	ICOC_RADCALC v4.8.07
SC		GarciaT	InPrep 12/3/2004 1:46:09 PM	RICH-RC-5013 REVISION 4
SC		GarciaT	Prep1C 12/3/2004 1:51:43 PM	RICH-RC-5013 REVISION 4
SC		McDowellD	Sep1C 12/21/2004 11:23:25 AM	RICH-RC-5022 REVISION 3
SC		McDowellD	Sep1C 12/22/2004 3:29:52 PM	RICH-RC-5022 REVISION 3
SC		BlackCL	CalcC 12/26/2004 8:28:44 AM	RICH-RD-0001 REVISION 3
AC		GarciaT	12/3/2004 1:51:43 PM	aliquoted for dmDone
AC		McDowellD	12/21/2004 11:23:25	
AC		McDowellD	12/22/2004 3:29:52	
AC		BlackCL	12/26/2004 8:28:44	

AC: Accepting Entry; SC: Status Change

STL Richland

Grp Rec Cnt: 5

STL RICHLAND

7/15/2004 10:59:17 AM

### Sample Preparation/Analysis

Balance Id:1120373922

8302, FLUOR HANFORD IC  
nford Inc

, Flour

AF NI-63 PrpRC5013/5019, SepRC5069  
S4 Nickel by ICP and Nickel-63 by Liquid Scint  
SI CLIENT: HANFORD

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

port Due: 01/05/2005

Sep1 DT/Tm Tech:

tech: 4327409 SOIL

pCi/g

PM, Quote: BG2, 50639

Sep2 DT/Tm Tech:

Q Batch, Test: None All Tests: 4327401 ANS5, 4327402 ATS6, 4327403 AXTA, 4327405 CHTH, 4327406 5SS3, 4327409 AFS4, 4327412 IS1,

Prep Tech: HansenM

ork 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:
IXGX9-1-AC :190450-1-SAMP [REDACTED]			0.05g,in	0.05g	NITA2082 09/20/04,pd 12/02/02,r	100				
26/2004 09:41 IXGX9-1-AQ-X :190450-1-DUP [REDACTED]			0.05g,in	0.05g	NITA2083 09/20/04,pd 12/02/02,r					Scr Rst: Alpha: 3.58E+04 pCi/g Beta: 1.10E+04 pCi/g
26/2004 09:41 IXK6J-1-AA-B 220000-409-BLK [REDACTED]			0.25g,in	0.25g	NITA2084 09/20/04,pd 12/02/02,r					Scr Rst: Alpha: 3.58E+04 pCi/g Beta: 1.10E+04 pCi/g
26/2004 09:41 IXK6J-1-AC-C 220000-409-LCS [REDACTED]			0.25g,in	0.25g	NISA0623 06/17/04,pd 12/02/02,r					Scr Rst: Alpha: Beta:
26/2004 09:41 IXK6J-1-AD-BN 220000-409-IBLK [REDACTED]			AmtRec:							Scr Rst: Alpha: Beta:
26/2004 09:41 [REDACTED]			AmtRec:							Scr Rst: Alpha: Beta:

Comments: samples were traced after aliquot mtd 12/13/04

Clients for Batch:

108302, FLUOR HANFORD IC

Flour Hanford Inc

, BG2, 50639

91AC-SAMP Constituent List:

i-63 RDL:30 pCi/g LCL:70 UCL:130 RPD:35

53

/15/2004 10:59:19 AM

**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 #: \_\_\_\_\_

port Due: 01/05/2005

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

atch: 4327409

pCi/g

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

Q Batch, Test: None

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

ork 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:
-----------------------------	-----------------	----------------------	--------------------------	-----------------------------	---------------------	----------------	-------------	------------------------------	-----------------------	-----------

6J1AA-BLK:

1-63 RDL:30 pCi/g LCL: UCL: RPD:

6J1AC-LCS:

1-63 RDL:30 pCi/g LCL:70 UCL:130 RPD:35

6J1AD-IBLK:

1-63 RDL:30 pCi/g LCL: UCL: RPD:

X91AC-SAMP Calc Info:

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

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

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

12/18/2004 10:23:01 AM

# ICOC Fraction Transfer/Status Report

ByDate: 12/19/2003, 12/23/2004, Batch: '4327409', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
4327409				
AC	CalcC	GarciaT	12/3/2004 1:48:36 PM	jwDone
SC		heidelbergt	IsBatched 11/22/2004 12:49:53 PM	ICOC_RADCALC v4.8.07
SC		GarciaT	InPrep 12/3/2004 1:48:36 PM	RICH-RC-5013 REVISION 4
SC		GarciaT	Prep1C 12/8/2004 2:58:17 PM	RICH-RC-5013 REVISION 4
SC		HansenM	InPrep2 12/13/2004 2:16:48 PM	RICH-RC-5013 REVISION 5
SC		HansenM	Prep2C 12/16/2004 5:10:08 PM	RICH-RC-5013 REVISION 5
SC		WAGNERJ	InSep1 12/16/2004 5:10:22 PM	RICH-RC-5069 REVISION 5
SC		WAGNERJ	Sep1C 12/16/2004 5:10:35 PM	RICH-RC-5069 REVISION 5
SC		DAWKINSO	InCnt1 12/16/2004 5:52:12 PM	RICH-RD-0001 REVISION 3
SC		BlackCL	CalcC 12/17/2004 1:04:23 PM	RICH-RD-0001 REVISION 3
AC		GarciaT	12/8/2004 2:58:17 PM	jwDone
AC		HansenM	12/13/2004 2:16:48	
AC		HansenM	12/16/2004 5:10:08	
AC		WAGNERJ	12/16/2004 5:10:22	
AC		WAGNERJ	12/16/2004 5:10:35	
AC		DAWKINSO	12/16/2004 5:52:12	dAWKINSO
AC		BlackCL	12/17/2004 1:04:23	

AC: Accepting Entry, SC: Status Change

STL Richland

Grp Rec Cnt: 8

22/2004 12:49:27 PM

Sample Preparation/Analysis

Balance Id: 029

10302, FLUOR HANFORD IC  
ford Inc

, Flour AT H-3 Prp/SepRC5037  
S6 Tritium by Liquid Scint  
51 CLIENT: HANFORD

Pipet #:

ort Due: 01/05/2005

Sep1 DT/Tm Tech: 12-21-04

ch: 4327402 SOIL

pCi/g

PM, Quote: BG2, 50639

Sep2 DT/Tm Tech:

Batch, Test: None

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:
XGX9-1-AF 190450-1-SAMP [REDACTED]								
6/2004 09:41		AmtRec: 120G	#Containers: 1				Scr Rst: Alpha: Beta:	
XGX9-1-AL-X 190450-1-DLIP [REDACTED]								
6/2004 09:41		AmtRec: 120G	#Containers: 1				Scr Rst: Alpha: Beta:	
(K5M-1-AA-B 20000-402-BLK [REDACTED]								
6/2004 09:41		AmtRec:	#Containers: 1				Scr Rst: Alpha: Beta:	
(K5M-1-AC-C 20000-402-LCS [REDACTED]								
6/2004 09:41		AmtRec:	#Containers: 1				Scr Rst: Alpha: Beta:	
(K5M-1-AD-BN 20000-402-IBLK [REDACTED]								
6/2004 09:41		AmtRec:	#Containers: 1				Scr Rst: Alpha: Beta:	

Comments:

Clients for Batch:

108302, FLUOR HANFORD IC

Flour Hanford Inc

, BG2, 50639

91AF-SAMP Constituent List:

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

Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 1

ISV - Insufficient Volume for Analysis

WO Cnt: 5

Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktalled Added

ICOC v4.8.0

STL RICHLAND

22/2004 12:49:27 PM

Sample Preparation/Analysis

Balance Id: 029

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

Pipet #:

Port Due: 01/05/2005

Sep1 DT/Tm Tech: 12-21-04/low

ch: 4327402

pCi/g

Sep2 DT/Tm Tech:

Batch, Test: None

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>M1AA-BLK:</b>								
3	RDL:400	pCi/g	LCL:	UCL:	RPD:			
<b>M1AC-LCS:</b>								
3	RDL:400	pCi/g	LCL:70	UCL:130	RPD:35			
<b>M1AD-IBLK:</b>								
3	RDL:400	pCi/g	LCL:	UCL:	RPD:			
<b>91AF-SAMP Calc Info:</b>								
Uncert Level (#s): 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B								
<b>M1AA-BLK:</b>								
Uncert Level (#s): 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B								
<b>M1AC-LCS:</b>								
Uncert Level (#s): 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B								
<b>M1AD-IBLK:</b>								
Uncert Level (#s): 2    Decay to SaDt: Y    Blk Subt.: N    Sci.Not.: Y    ODRs: B								

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

57

12/28/2004 4:11:56 PM

# ICOC Fraction Transfer/Status Report

ByDate: 12/29/2003, 1/2/2005, Batch: '4327402', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
4327402				
AC	CalcC	GarciaT	12/3/2004 1:45:06 PM	jw
SC		heidelberg	IsBatched 11/22/2004 12:49:24 PM	ICOC_RADCALC v4.8.07
SC		GarciaT	InPrep 12/3/2004 1:45:06 PM	RICH-RC-5013 REVISION 4
SC		GarciaT	Prep1C 12/3/2004 1:52:28 PM	RICH-RC-5013 REVISION 4
SC		McDowellD	Sep1C 12/21/2004 11:23:41 AM	RICH-RC-5037 REVISION 3
SC		DAWKINSO	InCnt1 12/22/2004 3:49:29 PM	RICH-RD-0001 REVISION 3
SC		BlackCL	CalcC 12/26/2004 8:28:21 AM	RICH-RD-0001 REVISION 3
AC		GarciaT	12/3/2004 1:52:28 PM	aliquoted for dmDone
AC		McDowellD	12/21/2004 11:23:41	
AC		DAWKINSO	12/22/2004 3:49:29	dAWKINSO
AC		BlackCL	12/26/2004 8:28:21	

AC: Accepting Entry; SC: Status Change

STL Richland

Grp Rec Cnt: 5

STL RICHLAND

8302, FLUOR HANFORD IC  
inford Inc

, Flour

AN Tc-99 Prp/SepRC5013/5078  
S5 Technetium-99 by Liquid Scint  
SI CLIENT: HANFORD

Balance Id: 1120070012

Pipet #:

port Due: 01/05/2005

Sep1 DT/Tm Tech:

atch: 4327401 SOIL

pCi/g

PM, Quote: BG2, 50639

Sep2 DT/Tm Tech:

Q Batch, Test: None

Prep Tech: HansenM

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:
iXGX9-1-AE 190450-1-SAMP [REDACTED]		0.05g, in						
26/2004 09:41 [REDACTED]		AmtRec: 120G	#Containers: 1			Scr Rst: Alpha: 3.58E+04 pCi/g	Beta: 1.10E+04 pCi/g	
iXGX9-1-AJ-S 190450-1-MS [REDACTED]		0.05g, in						
26/2004 09:41 [REDACTED]		AmtRec: 120G	#Containers: 1			Scr Rst: Alpha: 3.58E+04 pCi/g	Beta: 1.10E+04 pCi/g	
iXGX9-1-AK-X 190450-1-DUP [REDACTED]		0.05g, in						
26/2004 09:41 [REDACTED]		AmtRec: 120G	#Containers: 1			Scr Rst: Alpha: 3.58E+04 pCi/g	Beta: 1.10E+04 pCi/g	
iXK5F-1-AA-B 220000-401-BLK [REDACTED]		0.05g, in						
26/2004 09:41 [REDACTED]		AmtRec:	#Containers: 1			Scr Rst: Alpha:	Beta:	
iXK5F-1-AC-C 220000-401-LCS [REDACTED]		0.05g, in						
26/2004 09:41 [REDACTED]		AmtRec:	#Containers: 1			Scr Rst: Alpha:	Beta:	
iXK5F-1-AD-BN 220000-401-IBLK [REDACTED]								
26/2004 09:41 [REDACTED]		AmtRec:	#Containers: 1			Scr Rst: Alpha:	Beta:	

59



12/20/2004 12:59:16 PM

# ICOC Fraction Transfer/Status Report

ByDate: 12/21/2003, 12/25/2004, Batch: '4327401', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
4327401				
AC	CalcC	GarciaT	12/3/2004 1:48:56 PM	jwDone
SC		heidelbergt	IsBatched 11/22/2004 12:49:24 PM	ICOC_RADCALC v4.8.07
SC		GarciaT	InPrep 12/3/2004 1:48:56 PM	RICH-RC-5013 REVISION 4
SC		GarciaT	Prep1C 12/8/2004 2:58:04 PM	RICH-RC-5013 REVISION 4
SC		HansenM	InPrep2 12/13/2004 2:17:01 PM	RICH-RC-5013 REVISION 5
SC		HansenM	Prep2C 12/13/2004 3:36:42 PM	RICH-RC-5016 REVISION 5
SC		FinchA	InSep1 12/15/2004 8:14:18 AM	RICH-RC-5078 REVISION 2
SC		FinchA	Sep1C 12/17/2004 1:59:13 PM	RICH-RC-5078 REVISION 2
SC		DAWKINSO	InCnt1 12/17/2004 2:41:29 PM	RICH-RD-0001 REVISION 3
SC		BlackCL	CalcC 12/18/2004 10:37:48 AM	RICH-RD-0001 REVISION 3
AC		GarciaT	12/8/2004 2:58:04 PM	jwDone
AC		HansenM	12/13/2004 2:17:01	
AC		HansenM	12/13/2004 3:36:42	
AC		FinchA	12/15/2004 8:14:18	
AC		FinchA	12/17/2004 1:59:13	
AC		DAWKINSO	12/17/2004 2:41:29	DawkinsO
AC		BlackCL	12/18/2004 10:37:48	

AC: Accepting Entry; SC: Status Change

STL Richland

Grp Rec Cnt: 8