

Quanterra Incorporated
2800 George Washington Way
Richland, Washington 99352

509 375-3131 Telephone
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CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
345 Hills
Richland, WA 99352

October 13, 1995

Attention: Joan Kessner



SAF Number	:	B95-097
Date SDG Closed	:	September 29, 1995
Number of Samples	:	Two (2)
Sample Type	:	Water
SDG Number	:	W0744
Data Deliverable	:	Summary

I. Introduction

On September 29, 1995, two water samples were received by the Quanterra Environmental Services Richland Laboratory (QTESRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

<u>QTESRL ID</u>	<u>BHI ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
50946401	B0GKK2	Water	9/29/95
50946402	B0GKK3	Water	9/29/95

II. 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: **Gas Proportional Counting**
Strontium-90 by method ITAS-RD-3204

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III. Quality Control

The analytical results for each analysis performed under SDG W0744 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

IV. Comments

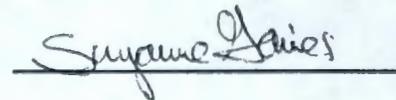
Gas Proportional Counting

Strontium-90 by method ITAS-RD-3204

The LCS, batch blank, sample and sample duplicate (B0GKK2) 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:



Suzanne Gaines
Project Manager

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND **SDG:** W0744
LAB SAMPLE ID: 50946401 **MATRIX:** WATER
CLIENT ID: B0GKK2 **DATE RECEIVED:** 9/29/95 12:40:00 PM

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	1.14E-01	2.8E-01	2.8E-01	7.65E-01	pCi/L	97.00%	RD3204

Number of Results:

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND **SDG:** W0744
LAB SAMPLE ID: 50946402 **MATRIX:** WATER
CLIENT ID: B0GKK3 **DATE RECEIVED:** 9/29/95 12:40:00 PM

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHÓD NUMBER
STRONTIUM	1.78E-01	2.9E-01	3.0E-01	7.88E-01	pCi/L	100.00%	RD3204

Number of Results:

10-14-95



Environmental Services

ITAS Data Review Checklist
RADIOCHEMISTRY

BHI - Water

Work Order No(s): 509464				
Lab Sample Numbers or SDG: Wd 744				
Method/Test/Parameter: Total Sr				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level review (✓)
A. Calibration			—	✓
1. Is the calibration documentation included where applicable?				✓
B. Sample Analysis	—			✓
1. Are the sample Yields within acceptance criteria?	—			✓
2. Were all sample holding times met?	—			✓
C. QC Samples	—			✓
1. Is the Blank Yield within acceptance criteria?	—			✓
2. Is the Minimum Detectable Activity for the Blank result \leq the Contract Detection Limit?	—			✓
3. Is the Blank result \leq the Contract Detection Limit?	—			✓
4. Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			—	✓
5. Is the LCS result within acceptance criteria?	—			✓
6. Is the LCS yield within acceptance criteria?	—			✓
7. Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	—			✓
8. MS/MSD results and yield meet acceptance criteria?			—	✓
9. Duplicate sample results and yield meet acceptance criteria?	—			✓
D. Other			—	✓
1. Are all nonconformances included and noted?			—	✓
2. Are all required forms filled out?	—			✓
3. Correct methodology used?	—			✓
4. Transcription checked?	XM			✓
5. Were all calculations checked at a minimum frequency?	—			✓
6. Units checked?	—			✓

Comments on any "No" response:

Analyst: Pat Thompson

Date: 10-10-95

Second Level Review: Suzanne

Date: 10/13/95

Form No: LS-038, 3/94, Rev 2

9613447.0274

**CHAIN OF
CUSTODY FORMS**

0010

Bechtel Hanford, Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Data Turnaround
 Priority
 Normal

Collector <i>K. Trapp</i>	Company Contact Jane Borghese	Telephone 509-373-4790
Project Designation 100-NR-2 Pump and Treat Acceptance Test, Injection Water	Sampling Location N Springs ERA Pump and Treat	SAF No. B95-097
Ice Chest No. <i>EL-20</i>	Field Logbook No. <i>EFL-1154</i>	Method of Shipment Hand Delivery - Government Vehicle
Shipped To Quanterra	Offsite Property No. <i>NA</i>	Bill of Lading/Air Bill No. <i>NA</i>

Possible Sample Hazards/Remarks None Known	Preservation	HNO3	None																
	Type of Container	P	P																
	No. of Container(s)	3	1																
	Special Handling and/or Storage None	Volume	1 Liter	20 ml.															

SAMPLE ANALYSIS
SDA
50946401 *W0744*
 Sr-90 Activity Scan

Sample No.	Matrix*	Date Sampled	Time Sampled	Sr-90	Activity Scan														
<i>BOGKK 2</i>	<i>w</i>	<i>9/27/95</i>	<i>1000</i>	<i>X</i>	<i>X</i>														

0613447-0275

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS <i>NA124</i>	Matrix* S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other		
	Relinquished By <i>K. Trapp</i>	Date/Time <i>9/29/95 0920</i>			Received By <i>K. White</i>	Date/Time <i>9/29/95</i>
	Relinquished By <i>K. White</i>	Date/Time <i>9-29-95 1240</i>			Received By <i>[Signature]</i>	Date/Time <i>9/29/95 1240</i>
	Relinquished By	Date/Time			Received By	Date/Time

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

Bechtel Hanford, Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Data Turnaround
X Priority
 Normal

Collector STEVE GUREK	Company Contact Jane Borghese	Telephone 509-373-4790
Project Designation 100-NR-2 Pump and Treat Acceptance Test, Injection Water	Sampling Location N Springs ERA Pump and Treat	SAF No. B95-097
Ice Chest No. ER-20	Field Logbook No. EFL-1154	Method of Shipment Hand Delivery - Government Vehicle
Shipped To Quanterra	Offsite Property No.	Bill of Lading/Air Bill No.

Possible Sample Hazards/Remarks	Preservation	HNO3	None																
None Known	Type of Container	P	P																
	No. of Container(s)	3	1																
Special Handling and/or Storage None	Volume	1 Liter	20 ml.																

SAMPLE ANALYSIS

50946402 **SDA**
W0744

Sample No.	Matrix*	Date Sampled	Time Sampled	Sr-90	Activity Scan														
B06KK3	w	09/28/95	1000	X	X														

0612017-0276

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix*
Relinquished By Steve Gurek Date/Time 9/28/95 1250	Received By K. Umrigar / K. Trapp Date/Time 9/29/95 1250		S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By K. Trapp / K. Trapp Date/Time 9/29/95 0920	Received By Bill White / B. White Date/Time 9/29/95		
Relinquished By Bill White Date/Time 9-29-95 1240	Received By Bill White Date/Time 9/29/95 1240		
Relinquished By _____ Date/Time _____	Received By _____ Date/Time _____		

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

9615447.0277

SAMPLE STATUS REPORT FOR N 5925. RAD SCREEN BOGKK3 TIME: 9/29/95 7:41
 DISPATCHED: 9/12/95 14:48 SAMPLE HAS NOT BEEN SLURPED
 RECEIVED: 9/28/95 13:41

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	XR5807

END OF REPORT

SAMPLE STATUS REPORT FOR N 5924. RAD SCREEN BOGKK2 TIME: 9/27/95 13:18
DISPATCHED: 9/12/95 14:43 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 9/27/95 13:16

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	XR5807

END OF REPORT

Figure 1

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 9/29/95 Client Name BHI
 Project/Client # B95-097 Batch or Case # _____
 Cooler ID (if noted on outside of cooler) ER-20

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes No
3. Custody Seals dated and signed? Yes No
4. Chain of Custody record is taped on inside of cooler lid? Yes No
5. Vermiculite/packing material is: Wet Dry _____
6. Each sample is in a plastic bag? Yes No _____
7. Number of sample containers in cooler: 13
8. Samples have: tape _____ hazard labels
 custody seals _____ appropriate sample labels
9. Samples are: in good condition _____ leaking
 broken _____ have air bubbles
 other _____
10. Coolant Present? Yes No Sample Temperature _____
11. The following paperwork should be accounted for (N/A if not applicable):
 Chain of Custody #(s) N/A
 Request for Analysis #(s) 1
 Airbill # _____ Carrier _____
12. Have any anomalies been identified above? Yes No
13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature Tom Gilmore Date/Time 9/29/95 1240

509464-Kad

8th W0744

(R3) 9/29/95

Client Sample Screening Results

29-Sep-95

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B			
WHC	B0GFN6		9/29/95 12:40:00 PM	QUAD23A	9/29/95 2:21:47 PM	B0GFN6	30	18	0.544	184	5.1713333			
		LIQUID		Bkg:	9/29/95 2:05:35 AM	BKG	500	28	0.056	481	0.962			
Anl Date:	9/29/95	Tot Sa, Alq:	1.00E+00	1.00E+01	Alp; (Dpm/	1.47E+00	(uCV/	6.63E-05	(pCV/	6.63E+01	± 2.4E+01	CAT	3.8E-01	Lab
Ppt mg:	1.5 ✓	Units:	L	ml	Bet; Alq):	9.47E+00	Sa):	4.27E-04	Ljg):	4.27E+02	± 3.8E+01	I ✓	1.2E-01	Alq
														Ljg
WHC	B0GKK2		9/29/95 12:40:00 PM	QUAD23B	9/29/95 2:21:47 PM	B0GKK2	30	27	0.856	97	2.2753333			
		LIQUID		Bkg:	9/29/95 2:05:35 AM	BKG	500	22	0.044	479	0.958			
Anl Date:	9/29/95	Tot Sa, Alq:	1.00E+00	1.00E+01	Alp; (Dpm/	2.55E+00	(uCV/	1.15E-04	(pCV/	1.15E+02	± 2.8E+01	CAT	2.2E-01	Lab
Ppt mg:	1.1 ✓	Units:	L	ml	Bet; Alq):	3.78E+00	Sa):	1.70E-04	Ljg):	1.70E+02	± 2.7E+01	I ✓	2.9E-01	Alq
														Ljg
WHC	B0GKK3		9/29/95 12:40:00 PM	QUAD23C	9/29/95 2:21:47 PM	B0GKK3	30	22	0.68733333	97	2.1893333			
		LIQUID		Bkg:	9/29/95 2:05:35 AM	BKG	500	23	0.046	522	1.044			
Anl Date:	9/29/95	Tot Sa, Alq:	1.00E+00	1.00E+01	Alp; (Dpm/	1.94E+00	(uCV/	8.75E-05	(pCV/	8.75E+01	± 2.6E+01	CAT	2.9E-01	Lab
Ppt mg:	1.2 ✓	Units:	L	ml	Bet; Alq):	3.83E+00	Sa):	1.72E-04	Ljg):	1.72E+02	± 2.8E+01	I ✓	2.9E-01	Alq
														Ljg
WHC	B0GKL7		9/29/95 12:40:00 PM	QUAD23D	9/29/95 2:21:47 PM	B0GKL7	30	453	15.06	699	22.358			
		LIQUID		Bkg:	9/29/95 2:05:35 AM	BKG	500	20	0.04	471	0.942			
Anl Date:	9/29/95	Tot Sa, Alq:	1.00E+00	1.00E+01	Alp; (Dpm/	4.90E+01	(uCV/	2.21E-03	(pCV/	2.21E+03	± 9.3E+01	CAT	1.1E-02	Lab
Ppt mg:	7.8 ✓	Units:	L	ml	Bet; Alq):	3.41E+01	Sa):	1.54E-03	Ljg):	1.54E+03	± 6.8E+01	I ✓	3.3E-02	Alq
														Ljg

9613447.0280

0016

29-Sep-95

Due 9.5
10-14-95

9613447.0281 *** TOTAL-SR ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

29-Sep-1995
Page 1

CUSTOMER: BHI SAF SAMPLE DELIVERY GROUP W0744
MATRIX : WATER B95-097 BATCH NUMBER 09-464

ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
*) M094641B		BHI		
*) M094641S		BHI	EQL 1343	30.348 ± 0.44178 DPM -
3) 50946401 G0946401		BHI	BOGKK2	
4) 50946402		BHI	BDG-KK3	

ACTIONS (Initial & Date)

- 1) INITIATED JH 10/2/95
- 2) PREP LAB RECEIVED RTM 10/3/95
- 3) SAMPLE REMAINDER STORED N/A
- 4) SEPARATION LAB RECEIVED RTM 10/3/95
- 5) COUNTING/MEASUREMENT LAB RD 10/5/95
- 6) DATA REVIEWED AND ANALYTICAL PREP STORED JR 10-10-95

Priority