9613479.0219

START

W1056-QES-535

0045358

③ 162

**Analytical Data Package Prepared For**

Westhinghouse Hanford

**Chemical Analysis By**

**Quanterra Environmental Services**

Sample Delivery Group Number: W01075

AUG 1996
RECEIVED
SDLA

| WHC IDENTIFICATION NUMBER | QUANTERRA ID NUMBER |
|---|---|
| Hg Reanalysis Data Package cu. | |
| B0HX42 | 11452-001 |
| B0HX43 | 11452-002 |

RECORD COPY

SEP 1996
RECEIVED
EDMC

COPY

Quanterra
Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

# CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

August 30, 1996

Attention: Karl Pool

| | | |
|---|---|---|
| Project number | : | 519.136 |
| Date Received by Lab | : | June 25, 1996 |
| Number of Samples | : | Two (2) |
| Sample Type | : | Liquid |
| SDG Number | : | W01075 |
| Data Deliverable | : | Summary |

## I. Introduction

On June 25, 1996, two (2) liquid samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. On July 16, 1996, additional Mercury analyses were requested on these samples. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client ID's:

| St Louis ID | WHC ID | Richland ID | Matrix | Date of Receipt |
|---|---|---|---|---|
| 11452-001 | B0HX42 | 60632401 | Liquid | 6/25/96 |
| 11452-002 | B0HX43 | 60632402 | Liquid | 6/25/96 |

The results of the original analyses can be found with SDG W01056. This report contains only the results for the Mercury reanalysis.

## II. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits.

Analyses requested: Mercury by EPA method 7470.

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III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Matrix Spike Duplicate and/or Sample Duplicate analyses were performed per the protocol for each analyte. pH analysis uses only Sample Duplicate for matrix QC.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike

V. Comments

Shipping and Receiving
The chain of custody arrived at the laboratory stating the sampling date as 4/17/96 making the samples out of holding time. Per ROD-96-0044, the samples true sampling date is 6/17/96 and the samples were not out of holding time. This ROD supercedes ROD-96-0035.

Mercury
There are no comments or nonconformances associated with this analysis.

Quanterra
Environmental Services



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I certify that this data package 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:

Wade H. Price
Project Manager
Quanterra Environmental Services, Inc.
e:\\sqtlmo01\price$\abbydave\hanford\hanw1075.nar

0003A

# SAMPLE DATA AND LABORATORY ADMINISTRATION

## RECORD OF DISPOSITION REV 1

ROD-96-0039
Record of Disposition No.

DATE: July 16, 1996

LABORATORY: Quanterra

PROJECT TITLE/SAF #: PUREX Vessels' Flush Solutions/96-016

NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS: B0HX42, B0HX43

DESCRIPTION OF EVENT: The customer has requested the Mercury for the above listed samples be rerun with a detection limit of less than 0.20 mg/Kg. The customer has requested the reruns be on a Priority turnaround.

DISPOSITION OF SAMPLES: Quanterra is to rerun the Mercury for the above listed samples within the three business day priority data turnaround requirement. Quanterra can run the samples with a detection limit of less than 0.20 mg/Kg.

APPROVAL SIGNATURES:

S.M.Steele — July 16, 1996
SDLA Project Coordinator (Print/Sign Name) — Date

C.N.Villalobos — 8-6-96
Technical Representative (Print/Sign Name) — Date

CCC03R

519.136 WC1056

# SAMPLE DATA AND LABORATORY ADMINISTRATION

## RECORD OF DISPOSITION REV 1

Rec'd 7-10-96

ROD-96-0035
Record of Disposition No.
Rev. 1

| | |
|---|---|
| DATE: July 9, 1996 | LABORATORY: Quanterra |
| PROJECT TITLE/SAF #: PUREX Vessels' Flush Solutions/96-016 | NCR NO.: N/A |

SAMPLE IDENTIFICATION NUMBERS: B0HX42, B0HX43

DESCRIPTION OF EVENT: The Chain of Custody for the above listed samples showed the samples were taken on 4/17/96. The samples arrived at Quanterra on 6/28/96. The difference in time from sampling to receipt at the lab exceeds the 14 day holding time for VOA by Method 8240, and the 28 day holding time for both Mercury by Method 7470 and TOC by Method 9060.

DISPOSITION OF SAMPLES: The 4/17/96 date on the Chain of Custody was incorect. The samples were actually collected on 6/17/96. The holding times for the samples were not missed. Quanterra is to analyze the samples as received and note the discrepancy in the narrative.

DRAFT

APPROVAL SIGNATURES:

S.M.Steele — July 9, 1996
SDLA Project Coordinator (Print/Sign Name) — Date

C.N.Villalobos
Technical Representative (Print/Sign Name) — Date

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Quanterra June 26, 1996 03:22 pm
Account: 10722 Project: 519.136 Quanterra-Richland QAS No. 861 Rev. 1
Master Sample Login: 11452

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: PM Review:

Sample Header Template:

| Sample No. / # | Client ID / Container Type | C-Matrix / Analysis | Date: Collected | Received | Due | Shipper | Rad Category | Rad Sample No. (Container Numbers:% Filled) |
|---|---|---|---|---|---|---|---|---|
| Comments / Data: | | | | | | | | |
| 11452-001 | BOHX42 | Liquid | 17-APR-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 1 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632401 | | | | | | | | |
| 1 | VI - Vial-40ml | PH/9040/Q4 | S COLD | 02-JUL-96 | 18-APR-96 | R16D | | (236686:99) |
| 1 | | TOC/9060/Q4 | S COLD | 02-JUL-96 | 15-MAY-96 | R16D | | (236687:98) |
| 2 | | VOA/8240/Q4 | S COLD | 02-JUL-96 | 01-MAY-96 | 109I | | (236684:100 236685:100) |
| 1 | AN - Amber Glass-1L | AS/7060/Q4 | S COLD | 02-JUL-96 | 14-OCT-96 | R16D | | (236688:100) |
| 1 | | HG/7470/Q4 | S COLD | 02-JUL-96 | 15-MAY-96 | R16D | | (236688:100) |
| 1 | | ICAP/6010/Q4 | S COLD | 02-JUL-96 | 14-OCT-96 | R16D | | (236688:100) |
| 1 | | PB/7421/Q4 | S COLD | 02-JUL-96 | 14-OCT-96 | R16D | | (236688:100) |
| 1 | | SE/7740/Q4 | S COLD | 02-JUL-96 | 14-OCT-96 | R16D | | (236688:100) |
| 1 | VI - Vial-20ml | HOLD//Q4 | S COLD | 11-&&&-** | 11-&&&-** | R16D | | (236695:80) |
| 11452-001DUP | BOHX42 | Liquid | 17-APR-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 1 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632401 | | | | | | | | |
| 1 | VI - Vial-40ml | PH/9040/Q4 | S COLD | 02-JUL-96 | 18-APR-96 | R16D | | (236686:99) |
| 1 | | TOC/9060/Q4 | S COLD | 02-JUL-96 | 15-MAY-96 | R16D | | (236687:98) |
| 11452-001MS | BOHX42 | Liquid | 17-APR-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 1 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632401 | | | | | | | | |
| 1 | VI - Vial-40ml | TOC/9060/Q4 | S COLD | 02-JUL-96 | 15-MAY-96 | R16D | | (236687:98) |
| 2 | | VOA/8240/Q4 | S COLD | 02-JUL-96 | 01-MAY-96 | 109I | | (236684:100 236685:100) |
| 1 | AN - Amber Glass-1L | AS/7060/Q4 | S COLD | 02-JUL-96 | 14-OCT-96 | R16D | | (236688:100) |
| 1 | | HG/7470/Q4 | S COLD | 02-JUL-96 | 15-MAY-96 | R16D | | (236688:100) |
| 1 | | ICAP/6010/Q4 | S COLD | 02-JUL-96 | 14-OCT-96 | R16D | | (236688:100) |
| 1 | | PB/7421/Q4 | S COLD | 02-JUL-96 | 14-OCT-96 | R16D | | (236688:100) |
| 1 | | SE/7740/Q4 | S COLD | 02-JUL-96 | 14-OCT-96 | R16D | | (236688:100) |
| 11452-001MSD | BOHX42 | Liquid | 17-APR-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 1 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632401 | | | | | | | | |
| 2 | VI - Vial-40ml | VOA/8240/Q4 | S COLD | 02-JUL-96 | 01-MAY-96 | 109I | | (236684:100 236685:100) |
| 1 | AN - Amber Glass-1L | AS/7060/Q4 | S COLD | 02-JUL-96 | 14-OCT-96 | R16D | | (236688:100) |
| 1 | | HG/7470/Q4 | S COLD | 02-JUL-96 | 15-MAY-96 | R16D | | (236688:100) |
| 1 | | ICAP/6010/Q4 | S COLD | 02-JUL-96 | 14-OCT-96 | R16D | | (236688:100) |
| 1 | | PB/7421/Q4 | S COLD | 02-JUL-96 | 14-OCT-96 | R16D | | (236688:100) |
| 1 | | SE/7740/Q4 | S COLD | 02-JUL-96 | 14-OCT-96 | R16D | | (236688:100) |
| 11452-002 | BOHX43 | Liquid | 17-APR-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 3 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632402 | | | | | | | | |

00004

3*=Sample has not been rad screened.

Quanterra June 26, 1996 03:22 pm
Account: 10722 Project: 519.136 Quanterra-Richland QAS No. 861 Rev. 1
Master Sample Login: 11452

Project Manager: W. Price

Draft: Final: Entered and Reviewed by:_____ PM Review:_____

Sample Header Template: _____

| Sample No. | Client ID | C-Matrix | Date: Collected | Received | Due | Shipper | Rad Category | Rad Sample No. |
|---|---|---|---|---|---|---|---|---|

| # | Container Type | Analysis | Class | Preservative | Anal. Due Date | Hold Date | Site | (Container Numbers:% Filled) |
|---|---|---|---|---|---|---|---|---|
| Comments Data: | | | | | | | | |
| 1 | VI - Vial-40ml | PH/9040/Q4 | S | COLD | 02-JUL-96 | 18-APR-96 | R16D | (236691:99) |
| 1 | | TOC/9060/Q4 | S | COLD | 02-JUL-96 | 15-MAY-96 | R16D | (236692:98) |
| 2 | | VOA/8240/Q4 | S | COLD | 02-JUL-96 | 01-MAY-96 | 1091 | (236689:100 236690:100) |
| 1 | AN - Amber Glass-1L | AS/7060/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R16D | (236693:100) |
| 1 | | HG/7470/Q4 | S | COLD | 02-JUL-96 | 15-MAY-96 | R16D | (236693:100) |
| 1 | | ICAP/6010/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R16D | (236693:100) |
| 1 | | PB/7421/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R16D | (236693:100) |
| 1 | | SE/7740/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R16D | (236693:100) |
| 1 | VI - Vial-20ml | HOLD//Q4 | S | COLD | 11-&&&-** | 11-&&&-** | R16D | (236694:80) |

00005

3*=Sample has not been rad screened.

Temp 2c Cux# 1492

# Chain of Custody Record

Go St Louis

Quanterra Environmental Services

QUA-4124-1

| | | | |
|---|---|---|---|
| Client: Westinghouse | Project Manager: Van Putney | Date: 6-25-96 | Chain Of Custody Number: 54400 |
| Address: | Telephone Number (Area Code)/Fax Number: | Lab Number: | Page 1 of 1 |
| City: / State: / Zip Code: | Site Contact: | Lab Contact: | |
| Project Name: SAF 96-016 | Carrier/Waybill Number: | | |
| Contract/Purchase Order/Quote No.: | | | |

Analysis (Attach list if more space is needed): SEE COC

Special Instructions/ Conditions of Receipt

| Sample I.D. No. and Description (Containers for each sample may be combined on one line) | Date | Time | Matrix: Aqueous | Sed. | Soil | | Containers & Preservatives: Unpres. | H2SO4 | HNO3 | HCl | NaOH | ZnAc/NaOH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60632401 BOHX42 | Chemical bottles only | | | | | | | | | | | |
| ↓ 02 ↓ X43 | | | | | | | | | | | | |

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

Sample Disposal: ☑ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☑ Other Due 7-10-96

QC Requirements (Specify): SDG W01056

| | Date | Time | | Date | Time |
|---|---|---|---|---|---|
| 1. Relinquished By: Hudelberg Quanterra | 6-25-96 | 16:00 | 1. Received By: Fred M Stiel | 6-26-96 | 09:00 |
| 2. Relinquished By: | | | 2. Received By: | | |
| 3. Relinquished By: | | | 3. Received By: | | |

Comments:

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

00006

| Westinghouse Hanford Company | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C # 100204 |
|---|---|---|
| | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector HULSE, KARL | Contact/Requestor VILLALOBOS, CARMEN | Tel. No. 373-4753 MSIN S6-19 FAX |
| SAF Number 96-016 | Sample Origin PUREX | Purchase Order/Charge Code |
| Project Title PUREX Vessels Flush Solutions | Logbook # WHC-N-205 | Ice Chest # Temp. |
| Shipped To (Lab) Quanterra | Method of Shipment Gov. Vehicle | Bill of Lading/Air Bill No. N/A |
| Protocol RCRA | Data Turnaround PRIORITY | Offsite Property No. N/A |

| Sample No. | Lab. ID | * | Date | Time | No/Type Container | Sample Analysis | Perservative |
|---|---|---|---|---|---|---|---|
| B0HX42 | | L | 4/17/96 | 1400 | (1) 20 P | ACTIVITY SCAN (Lab Specific) 80% | None |
| B0HX42 | | L | 4/17/96 | 1400 | (1) 1000 aG | ICP Metals, TAL (6010) plus, Lead 97421), Arsenic (7060), Selenium (7740), Mercury (7470) 75% | Cool to 4°C |
| B0HX42 | | L | 4/17/96 | 1400 | (1) 40 aGs | pH (9040) 100% | None |
| B0HX42 | | L | 4/17/96 | 1400 | (1) 40 aGs | TOC (9060) 60063240 1 100% | Cool to 4°C |
| B0HX42 | | L | 4/17/96 | 1400 | (1) 40 aGs | VOA (8240) 100% | Cool to 4°C |
| B0HX42 | | L | 4/17/96 | 1400 | (1) 40 aGs | VOA (8240) 100% | Cool to 4°C |
| B0HX43 | | L | 4/17/96 | 1400 | (1) 20 P | ACTIVITY SCAN (Lab Specific) 80% | None |
| B0HX43 | | L | 4/17/96 | 1400 | (1) 1000 aG | ICP Metals, TAL (6010) plus, Lead (7421), Arsenic (7060), Selenium (7740), Mercury (7470) 250 ml N/A 25% | Cool to 4°C |
| B0HX43 | | L | 4/17/96 | 1400 | (1) 40 aGs | pH (9040) 100% | None |
| B0HX43 | | L | 4/17/96 | 1400 | (1) 40 aGs | TOC (9060) 60063240 2 100% | Cool to 4°C |
| B0HX43 | | L | 4/17/96 | 1400 | (1) 40 aGs | VOA (8240) 100% | Cool to 4°C |
| B0HX43 | | L | 4/17/96 | 1400 | (1) 40 aGs | VOA (8240) 100% | Cool to 4°C |

Lab Tech 1 of 1 pg

20000 cm²

Not Copy

**POSSIBLE SAMPLE HAZARDS/REMARKS** MSDS Yes ☐ No ☒

List all known wastes. B0HX42 ICP Metals 1L Bottle contains only about 250 ml. This was all sample that could be obtained

**SPECIAL INSTRUCTIONS** Hold Time

Priority Turnaround Summary Data Deliv

**PRIORITY TURNAROUND**

SDG-W01056

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| KB Hulse | | KB Hulse | 6/25/96 0730 | K.J. Yang | | K.J. Yang | 6/25/96 0730 |
| K.J. Yang | K.J. Yang | WHC. | 6/25/96 1005 | Karen Attenburg | | Karen Attenburg | 6-25-96 1005 |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |

Matrix *

| | | | |
|---|---|---|---|
| S = Soil | | DS = Drum Solids | |
| SE = Sediment | | DL = Drum Liquids | |
| SO = Solid | | T = Tissue | |
| SL = Sludge | | WI = Wipe | |
| W = Water | | L = Liquid | |
| O = Oil | | V = Vegetation | |
| A = Air | | X = Other | |

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

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6001-500 (07/95)

00007

# Client Sample Screening Results

*25-Jun-96*

| CLIENT CODE ID | MATRIX | RECEIVED | DETECTOR | ACQ DATE | SAMPLE | MINUTES | CNTS A | NET CPM A | CNTS B | NET CPM B |
|---|---|---|---|---|---|---|---|---|---|---|
| WHC B0HX42 | | 6/25/1996 10:00:00 AM | QUAD21A | 6/25/1996 1:29:32 PM | B0HX42 | 30 | 5 | 0.10541667 | 147 | 3.9875 |
| | LIQUID | | Bkg: | 6/25/1996 4:05:51 AM | BKG | 800 | 49 | 0.06125 | 730 | 0.9125 |

Anl Date: 6/25/1996 Tot Sa, Alq: 1.00E+00 , 1.00E+01 Alp; (Dpm/ 1.75E-01 (uCi/ 7.88E-06 (pCi/ 7.88E+00 ± 2.0E+01 CAT I 3.2E+00 Lab
Ppt mg: 0 Units: L , ml Bet; Alq): 7.88E+00 Sa): 3.55E-04 Lig): 3.55E+02 ± 3.6E+01 1.4E-01 Alq Lig

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| WHC B0HX43 | | 6/25/1996 10:00:00 AM | QUAD21B | 6/25/1996 1:20:00 PM | B0HX43 | 20.01 | 16998 | 849.430262 | 1186811 | 59309.957 |
| | LIQUID | | Bkg: | 6/25/1996 4:05:51 AM | BKG | 800 | 36 | 0.045 | 750 | 0.9375 |

Anl Date: 6/25/1996 Tot Sa, Alq: 2.50E-01 , 1.00E+00 Alp; (Dpm/ 7.99E+02 (uCi/ 9.00E-02 (pCi/ 3.60E+05 ± 4.7E+03 CAT III 6.9E-05 Lab
Ppt mg: 8.6 Units: L , ml Bet; Alq): 1.16E+05 Sa): 1.31E+01 Lig): 5.22E+07 ± 4.8E+04 9.6E-07 Alq Lig

Reviewed 6/25/96

80030

Soil/Solid Samples

| Sample # BOHX43 | | | | | Total Grams per sample | 430 | | |
|---|---|---|---|---|---|---|---|---|
| isotope | $A_2$ in GBq | pCi/G | Bq/G | KBq/G | KBq/ sample | µCi/ sample | Ltd Qty Value in MBq | Unity for Ltd Qty |
| Total Alpha | .002 | 745 | 27.5650 | 0.0276 | 11.8530 | 0.3204 | 0.0020 | 0.6000 |
| Toatl Beta | 20 | 43100 | 1,594.7000 | 1.5947 | 685.7210 | 18.5330 | 20.0000 | 0.0034 |
| Cs-137 | 500 | 21300 | 788.1000 | 0.7881 | 338.8830 | 9.1590 | 500.0000 | 0.0001 |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| TOTAL | | 65,145.00 | 2,410.3650 | 2.4104 | 1,036.4570 | 28.0124 | | 0.6035 |

00009

SAMPLE INQUIRY by GROUP

Company Name: PUREX Programs Westinghouse Hanford Company Project Code: U3 Group #: 96

Sample #: S96P000086 Sample ID: BOHX42

| Parameter | Rep | Result | Unit | %Recov | Date | Analyst |
|---|---|---|---|---|---|---|
| Actinium-228 by GEA | 0 | < 1.224e-04 | uCi/mL | | 06/18/96 | eal |
| Ac-228 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Alpha in Liquid Samples | 0 | 4.21E-07 | uCi/mL | | 06/19/96 | dgg |
| Alpha Liq.- Rel. % Count Error | 0 | 1.21E+02 | % Ct. Error | | 06/19/96 | dgg |
| Americium-241 by GEA | 0 | < 1.622e-04 | uCi/mL | | 06/18/96 | eal |
| Am-241 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Americium-243 by GEA | 0 | < 4.138e-05 | uCi/mL | | 06/18/96 | eal |
| Am-243 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Beta in Liquid Samples | 0 | < 1.69E-06 | uCi/mL | | 06/19/96 | dgg |
| Beta Liq.- Rel. % Count Error | 0 | 5.00E+02 | % Ct. Error | | 06/19/96 | dgg |
| Bismuth-212 by GEA | 0 | < 3.275e-04 | uCi/mL | | 06/18/96 | eal |
| Bi-212 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Bismuth-214 by GEA | 0 | < 6.584e-05 | uCi/mL | | 06/18/96 | eal |
| Bi-214 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cadmium-109 by GEA | 0 | < 4.668e-04 | uCi/mL | | 06/18/96 | eal |
| Cd-109 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ce/Pr-144 by GEA | 0 | < 2.177e-04 | uCi/mL | | 06/18/96 | eal |
| Ce/Pr-144 GEA Rel % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-56 by GEA | 0 | < 2.360e-05 | uCi/mL | | 06/18/96 | eal |
| Co-56 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-57 by GEA | 0 | < 1.493e-05 | uCi/mL | | 06/18/96 | eal |
| Co-57 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-60 by GEA | 0 | < 2.394e-05 | uCi/mL | | 06/18/96 | eal |
| Co-60 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cesium-134 by GEA | 0 | < 2.191e-05 | uCi/mL | | 06/18/96 | eal |
| Cs-134 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cesium-137 by GEA | 0 | < 6.041e-05 | uCi/mL | | 06/18/96 | eal |
| Cs-137 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-152 by GEA | 0 | < 9.094e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-152 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-154 by GEA | 0 | < 7.154e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-154 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-155 by GEA | 0 | < 6.082e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-155 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Mercury-203 by GEA | 0 | < 1.921e-05 | uCi/mL | | 06/18/96 | eal |
| Hg-203 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Iodine-131 by GEA | 0 | < 2.436e-05 | uCi/mL | | 06/18/96 | eal |
| I-131 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Potassium-40 by GEA | 0 | < 9.284e-04 | uCi/mL | | 06/18/96 | eal |
| K-40 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sodium-22 by GEA | 0 | < 2.457e-05 | uCi/mL | | 06/18/96 | eal |
| Na-22 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sodium-24 by GEA | 0 | < 1.656e-05 | uCi/mL | | 06/18/96 | eal |
| Na-24 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Niobium-94 by GEA | 0 | < 2.041e-05 | uCi/mL | | 06/18/96 | eal |
| Nb-94 GEA Rel % Counting Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Neptunium-237 by GEA | 0 | < 1.476e-04 | uCi/mL | | 06/18/96 | eal |
| Np-237 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Neptunium-239 by GEA | 0 | < 5.683e-05 | uCi/mL | | 06/18/96 | eal |

SAMPLE INQUIRY by GROUP

Company Name: PUREX Programs Westinghouse Hanford Company Project Code: U3 Group #: 96

| Parameter | Rep | Result | Unit | %Recov | Date | Analyst |
|---|---|---|---|---|---|---|
| Sample #: S96P000086 Sample ID: BOHX42 [Continued] | | | | | | |
| Np-239 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Protactinium-233 by GEA | 0 | < 4.734e-05 | uCi/mL | | 06/18/96 | eal |
| Pa-233 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Protactinium-234m by GEA | 0 | < 3.441e-05 | uCi/mL | | 06/18/96 | eal |
| Pa-234m GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Lead-212 by GEA | 0 | < 4.486e-05 | uCi/mL | | 06/18/96 | eal |
| Pb-212 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Lead-214 by GEA | 0 | < 1.149e-04 | uCi/mL | | 06/18/96 | eal |
| Pb-214 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Plutonium-239 by GEA | 0 | < 1.919e-01 | uCi/mL | | 06/18/96 | eal |
| Pu-239 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Radium-224 by GEA | 0 | < 4.621e-04 | uCi/mL | | 06/18/96 | eal |
| Ra-224 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Radium-226 by GEA | 0 | < 4.274e-04 | uCi/mL | | 06/18/96 | eal |
| Ra-226 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ruthenium-103 by GEA | 0 | < 2.045e-05 | uCi/mL | | 06/18/96 | eal |
| Ru-103 GEA Rel % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ru/Rh-106 by GEA | 0 | < 4.328e-04 | uCi/mL | | 06/18/96 | eal |
| Ru/Rh-106 GEA Rel. % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Selenium-75 by GEA | 0 | < 3.023e-05 | uCi/mL | | 06/18/96 | eal |
| Se-75 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Tin-113 by GEA | 0 | < 3.434e-05 | uCi/mL | | 06/18/96 | eal |
| Sn-113 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Strontium-85 by GEA | 0 | < 2.613e-05 | uCi/mL | | 06/18/96 | eal |
| Sr-85 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-228 by GEA | 0 | < 1.576e-03 | uCi/mL | | 06/18/96 | eal |
| Th-228 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-229 by GEA | 0 | < 6.639e-05 | uCi/mL | | 06/18/96 | eal |
| Th-229 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-234 by GEA | 0 | < 8.867e-04 | uCi/mL | | 06/18/96 | eal |
| Th-234 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thallium-208 by GEA | 0 | < 2.802e-04 | uCi/mL | | 06/18/96 | eal |
| Tl-208 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Uranium/Thorium-233 by GEA | 0 | < 1.489e-02 | uCi/mL | | 06/18/96 | eal |
| U/Th-233 GEA Rel % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Uranium-235 by GEA | 0 | < 2.622e-05 | uCi/mL | | 06/18/96 | eal |
| U-235 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Yttrium-88 by GEA | 0 | < 2.565e-05 | uCi/mL | | 06/18/96 | eal |
| Y-88 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Zr/Nb-95 by GEA | 0 | < 3.938e-05 | uCi/mL | | 06/18/96 | eal |
| Zr/Nb-95 GEA Rel % Count. Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sample #: S96P000087 Sample ID: BOHX43 | | | | | | |
| Actinium-228 by GEA | 0 | < 1.002e-04 | uCi/mL | | 06/18/96 | eal |
| Ac-228 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Alpha in Liquid Samples | 0 | 7.45E-04 | uCi/mL $7.45 \times 10^{-2}$ | | 06/19/96 | dgg |
| Alpha Liq.- Rel. % Count Error | 0 | 2.74E+00 | % Ct. Error | | 06/19/96 | dgg |
| Americium-241 by GEA | 0 | < 4.394e-04 | uCi/mL | | 06/18/96 | eal |
| Am-241 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Americium-243 by GEA | 0 | < 1.025e-04 | uCi/mL | | 06/18/96 | eal |

SAMPLE INQUIRY by GROUP

Company Name: PUREX Programs Westinghouse Hanford Company Project Code: U3 Group #: 96

| Parameter | Rep | Result | Unit | %Recov | Date | Analyst |
|---|---|---|---|---|---|---|
| Sample #: S96P000087 Sample ID: BOHX43 [Continued] | | | | | | |
| Am-243 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Beta in Liquid Samples | 0 | 6.44E-02 | uCi/mL | 4.31x10⁴ | 06/19/96 | dgg |
| Beta Liq.- Rel. % Count Error | 0 | 2.07E-01 | % Ct. Error | | 06/19/96 | dgg |
| Bismuth-212 by GEA | 0 | < 3.750e-04 | uCi/mL | | 06/18/96 | eal |
| Bi-212 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Bismuth-214 by GEA | 0 | < 1.136e-04 | uCi/mL | | 06/18/96 | eal |
| Bi-214 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cadmium-109 by GEA | 0 | < 1.228e-03 | uCi/mL | | 06/18/96 | eal |
| Cd-109 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ce/Pr-144 by GEA | 0 | < 6.107e-04 | uCi/mL | | 06/18/96 | eal |
| Ce/Pr-144 GEA Rel % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-56 by GEA | 0 | < 2.349e-05 | uCi/mL | | 06/18/96 | eal |
| Co-56 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-57 by GEA | 0 | < 4.042e-05 | uCi/mL | | 06/18/96 | eal |
| Co-57 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-60 by GEA | 0 | < 2.871e-05 | uCi/mL | | 06/18/96 | eal |
| Co-60 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cesium-134 by GEA | 0 | < 4.758e-05 | uCi/mL | | 06/18/96 | eal |
| Cs-134 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cesium-137 by GEA | 0 | 2.130e-02 | uCi/mL | 2.13x10⁴ | 06/18/96 | eal |
| Cs-137 GEA Rel. % Count Error | 0 | 1.50 | % Ct. Error | | 06/18/96 | eal |
| Europium-152 by GEA | 0 | < 8.134e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-152 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-154 by GEA | 0 | < 5.834e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-154 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-155 by GEA | 0 | < 1.677e-04 | uCi/mL | | 06/18/96 | eal |
| Eu-155 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Mercury-203 by GEA | 0 | < 6.201e-05 | uCi/mL | | 06/18/96 | eal |
| Hg-203 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Iodine-131 by GEA | 0 | < 7.454e-05 | uCi/mL | | 06/18/96 | eal |
| I-131 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Potassium-40 by GEA | 0 | < 8.997e-04 | uCi/mL | | 06/18/96 | eal |
| K-40 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sodium-22 by GEA | 0 | < 2.014e-05 | uCi/mL | | 06/18/96 | eal |
| Na-22 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sodium-24 by GEA | 0 | < 1.982e-05 | uCi/mL | | 06/18/96 | eal |
| Na-24 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Niobium-94 by GEA | 0 | < 2.271e-05 | uCi/mL | | 06/18/96 | eal |
| Nb-94 GEA Rel % Counting Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Neptunium-237 by GEA | 0 | < 3.743e-04 | uCi/mL | | 06/18/96 | eal |
| Np-237 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Neptunium-239 by GEA | 0 | < 1.577e-04 | uCi/mL | | 06/18/96 | eal |
| Np-239 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Protactinium-233 by GEA | 0 | < 1.389e-04 | uCi/mL | | 06/18/96 | eal |
| Pa-233 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Protactinium-234m by GEA | 0 | < 5.306e-05 | uCi/mL | | 06/18/96 | eal |
| Pa-234m GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Lead-212 by GEA | 0 | < 1.164e-04 | uCi/mL | | 06/18/96 | eal |
| Pb-212 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Lead-214 by GEA | 0 | < 3.021e-04 | uCi/mL | | 06/18/96 | eal |

SAMPLE INQUIRY by GROUP

Company Name: PUREX Programs Westinghouse Hanford Company Project Code: U3 Group #: 96

Sample #: S96P000087 Sample ID: BOHX43 [Continued]

| Parameter | Rep | Result | Unit | %Recov | Date | Analyst |
|---|---|---|---|---|---|---|
| Pb-214 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Plutonium-239 by GEA | 0 | < 5.575e-01 | uCi/mL | | 06/18/96 | eal |
| Pu-239 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Radium-224 by GEA | 0 | < 1.290e-03 | uCi/mL | | 06/18/96 | eal |
| Ra-224 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Radium-226 by GEA | 0 | < 1.278e-03 | uCi/mL | | 06/18/96 | eal |
| Ra-226 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ruthenium-103 by GEA | 0 | < 6.930e-05 | uCi/mL | | 06/18/96 | eal |
| Ru-103 GEA Rel % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ru/Rh-106 by GEA | 0 | < 9.131e-04 | uCi/mL | | 06/18/96 | eal |
| Ru/Rh-106 GEA Rel. % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Selenium-75 by GEA | 0 | < 8.328e-05 | uCi/mL | | 06/18/96 | eal |
| Se-75 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Tin-113 by GEA | 0 | < 1.033e-04 | uCi/mL | | 06/18/96 | eal |
| Sn-113 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Strontium-85 by GEA | 0 | < 6.957e-05 | uCi/mL | | 06/18/96 | eal |
| Sr-85 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-228 by GEA | 0 | < 3.910e-03 | uCi/mL | | 06/18/96 | eal |
| Th-228 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-229 by GEA | 0 | < 1.781e-04 | uCi/mL | | 06/18/96 | eal |
| Th-229 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-234 by GEA | 0 | < 2.527e-03 | uCi/mL | | 06/18/96 | eal |
| Th-234 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thallium-208 by GEA | 0 | < 8.152e-04 | uCi/mL | | 06/18/96 | eal |
| Tl-208 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Uranium/Thorium-233 by GEA | 0 | < 4.681e-02 | uCi/mL | | 06/18/96 | eal |
| U/Th-233 GEA Rel % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Uranium-235 by GEA | 0 | < 7.793e-05 | uCi/mL | | 06/18/96 | eal |
| U-235 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Yttrium-88 by GEA | 0 | < 1.484e-05 | uCi/mL | | 06/18/96 | eal |
| Y-88 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Zr/Nb-95 by GEA | 0 | < 5.770e-05 | uCi/mL | | 06/18/96 | eal |
| Zr/Nb-95 GEA Rel % Count. Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |

# RADIOACTIVE SHIPMENT RECORD

3. Page 1 of 1 **33454**

**1. SHIP TO**
Company: Quanterra
Address: 2800 George Washington Way
City, State, Zip: Richland, WA 99352
Attention: Tami Heidelberg
Phone: 509-375-3131

**2. SHIP FROM** U.S. DEPT. OF ENERGY C/O
Company: Westinghouse Hanford
Address: 6269 Bldg
City, State, Zip: 200 W
Contact: K.J. Young
Phone: 509-373-7002

**4. Ship** ☑ Prepaid ☐ Collect
Via: ☑ Motor-Rail ☐ Air Psgr ☐ Excl. Use ☐ Air Cargo ☐ UPS Surface ☐ Mail ☐ Site Carrier
SHIPMENT AUTHORIZATION NUMBER

**5. HM** Proper Shipping Name: Radioactive Material,

| | | | |
|---|---|---|---|
| | excepted package - empty packaging | 7 | UN2910 |
| | excepted package - instruments or articles | 7 | UN2910 |
| ✓ | excepted package - limited quantity of material | 7 | UN2910 |
| | excepted package - articles manufactured from natural or depleted uranium or natural thorium | 7 | UN2910 |
| | Special Form, n.o.s. | 7 | UN2974 |
| | Low Specific Activity, n.o.s. | 7 | UN2912 |
| | n.o.s. | 7 | UN2982 |
| | Fissile, n.o.s. | 7 | UN2918 |
| | (other) | | |

**6. Markings Applied**
Package Orientation ☑
Gross Weight ☐
Radioactive - LSA ☐
Type A ☐
Type B ☐

**7. For Normal Form**
Identify
Physical Form: ☑ Liquid ☐ Gas ☐ Solid
Chemical Form: ☐ Metal ☐ Oxide ☐ Elemental ☐ Nitrate
Other: ☑ Mixture

**8. Additional RAM Desc.**
Limited Quantity Radioactive Material ☑
Highway Route Controlled Quantity ☐

**9. Placards Applied** ☐ Yes ☑ No
If Rail Specify Placards
Route Plan ☐ Yes ☑ No

**11a. TYPE PACKAGE**
Strong Tight ☑
Type A ☐
Type B ☐
Type B(U) ☐
Type B(M) ☐

**11b. CONSTRUCTION**
☐ Box, FB
☐ Wood
☐ Steel
☐ Drum
☐ Cask
Other: Poly Box

**11c. FISSILE CLASS**
Non-Fissile ☑
Fissile Exempt ☐
Fissile I ☐
Fissile II ☐
Fissile III ☐
Gms Fissile

**11d. Labels Applied**
Empty ☐
Radioactive White I ☐
Radioactive Yellow II ☐
Radioactive Yellow III ☐
Subsidiary Hazard N/A ☑

**10. EMERGENCY RESPONSE**
Telephone: (509) 373-3800
Emergency Response Guide(s): #61

*Warning – Fissile Class III Shipment. Do Not Load More Than N/A Packages Per Vehicle. In Loading and Stoarge Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels.*

**12.**

| No. Pkgs. | Model Package | COC/Spec | Serial No. | Seal No. | T.I. | Isotopes | Curies/Pkg | Gr. Wt. |
|---|---|---|---|---|---|---|---|---|
| 1 | 4HZY | NA | 03-95, 040019 | Tape | N/A | Cs-137 | 1036 KBq | 45 LBS |
| | (SAF-# 96-016 sample # BOHX42, BOHX43) | | | | | | | |
| | COC-# 100204 | | | | | | | |
| (Shipper may describe package in detail on one of the unused lines above) | | | | TOTALS | N/A | | 1036 KBq | 45 LBS |

**13.** This is to certify that the above named materials are properly classified, described packaged, marked and labeled, and are in proper condition for transportation, acording to the applicable federal, state local and international regulations for the transportation of hazardous materials.
Certifier's Signature: On behalf of DOE-RL: Ben Young | Date: 6-25-96 | Organization: Sampling & Mobile Lab | Complete Cost Code (Inc. End Function): KP50F / 8H100

**14.** Surface Dose Rate of Package: ☒ <0.5 or _____ mrem/hr (N+β γ)
Dose Rate at 1 Meter from Surface of Package: ☒ <0.5 or _____ mrem/hr (N+β γ)
Smears of Outer Container: ☒ <22 dpm β γ/cm² ☒ <2.2 dpm α/cm² ☒ <Tbl. 2-2 HSRCM Limits
TRUCK LOAD OR EXCLUSIVE USE: Surface ☒ <200 mrem/hr (N+β γ); @ 6 feet ☒ <10 mrem/hr (N+β γ); @ Cab or sleeper ☒ <2 mrem/hr (N+β γ)
Additional Data and Instructions (inc. Readings on Internal Packaging)
Signature - Radiation Monitoring: [signature] 6C705 | Bldg. 6269 | Survey No. WS250 1080 | Date 6/25/96

**15.** AIR TRANSPORT CERTIFICATION
CARGO AIRCRAFT: ☐ Cargo Aircraft Only Labels Applied
PASSENGER AIRCRAFT: ☐ 1. Ltd Qty ☐ 2. <3 T.I. ☐ 3. Research/Medical Diagnosis ☐ 4. Human Medical Research
Pkg. Dimensions: NA
Shipment has been inspected and verified to be in compliance with DOT regulations
Authorized Signature: [signature] | Printed Name: M.A. SAMS | Date 6-25-96

**16.** PICKUP OF SHIPMENT
Date of Shipment: 6-25-96 | Agent: Ben Young | Driver Signature: Ben Young | Vehicle Number: 4625

**17.** RECEIPT OF SHIPMENT
Shipment No.: RMW-0067 | Date Shipped: 6-25-96 | Received in Good Order Unless Otherwise Noted | Vehicle Number
Surveyed By | Date Received | Signature | Printed Name

00014

Karen Stettenberg - Quanterra 6-25-96

54-6000-088 (12/94)

"THIS PACKAGE CONFORMS TO THE CONDITIONS AND LIMITATIONS SPECIFIED IN 49 CFR 173.421 FOR RADIOACTIVE MATERIAL"

Figure 1

# SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-25-96 1100 Client Name WHC

Project/Client # 96-016 Batch or Case # _____

Cooler ID (if noted on outside of cooler) SM - 03-95040019

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

Printed Name/Signature _____ Date/Time _____

Quanterra
Environmental Services

RW & WP
6-26-96
13:15
SI: 2m

Login No.: 11452

# Condition Upon Receipt Variance Report
## St. Louis Laboratory

Client: Jones Beach
Project No: 519.136
Shipper/No: FedEx 109 2644 761

Date: 6-26-96 Time: 09:00
Initiated by: Fred Mitchell
RFA/COC Numbers: 54400

**Condition/Variance (Check all that apply):**

1. ☐ Sample received broken/leaking.
2. ☐ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C
     Record temperature: _____
   - ☐ pH _____
   - ☐ other: _____
3. ☐ Sample received in improper container.
4. ☐ Sample received without proper paperwork. Explain: _____
5. ☐ Paperwork received without sample.
6. ☐ No sample ID on sample container.
7. ☑ Custody tape disturbed/broken/missing.
8. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
9. ☐ All coolers on airbill not received with shipment.
10. ☐ Other (explain below): _____

☐ No variances were noted during sample receipt. Cooler Temperature Upon Receipt: 2°C

Notes: Activity Scans has seals Broken

**Corrective Action:**

☐ Client's Name: _____ Informed verbally on: _____ By: _____
☐ Client's Name: _____ Informed in writing on: _____ By: _____
☑ Sample(s) processed "as is".
☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: (or designate) Fred Mitchell Date: 6-26-96
Project Management Review: Jerry Wirt Date: 6-26-96

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

SL-ADMIN-0004, Revised 11/24/95

# METALS

RECORD COPY

Quanterra Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Mercury
Method: EPA 7470
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 0.10 | UG/L | U | 0.20 | 1 |
| BOHX42 | 11452-001MS | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 106 | %REC | | | 1 |
| BOHX42 | 11452-001MSD | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 107 | %REC | | | 1 |
| BOHX43 | 11452-002 | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 4.1 | UG/L | | 0.20 | 1 |
| NA | QCLCS106918-1 | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 110 | %REC | | | 1 |
| NA | QCBLK106918-1 | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 0.10 | UG/L | U | 0.20 | 1 |

RECORD COPY

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0HX42

Lab Name: QUANTERRA MO Contract: 519.136

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01075

Matrix (soil/water): WATER Lab Sample ID: 11452-001

Level (low/med): LOW Date Received: 06/25/96

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7439-97-6 | Mercury | 0.10 | U | | CV |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

RECORD COPY

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0HX43

Lab Name: QUANTERRA MO Contract: 519.136

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01075

Matrix (soil/water): WATER Lab Sample ID: 11452-002

Level (low/med): LOW Date Received: 06/25/96

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7439-97-6 | Mercury | 4.1 | | | CV |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

3
BLANKS

Lab Name: QUANTERRA_MO_____ Contract: 519.136___

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W01075_____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.1 | U | 0.1 | U | 0.1 | U | | | 0.100 | U | CV |

FORM III - IN

SW-846

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B0HX42S

Lab Name: QUANTERRA_MO_____ Contract: 519.136___

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W01075_____

Matrix (soil/water): WATER_ Level (low/med): LOW___

% Solids for Sample: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Mercury__ | 80-120_ | 1.0600_ | | 0.1000 | U | 1.00 | 106.0 | | CV |

Comments:

FORM V (Part 1) - IN SW-846

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B0HX42SD

Lab Name: QUANTERRA_MO Contract: 519.136

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01075

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 80-120 | 1.0700 | | 0.1000 | U | 1.00 | 107.0 | | CV |

Comments:

FORM V (Part 1) - IN SW-846

U.S. EPA - CLP

6A
MATRIX SPIKE DUPLICATES

EPA SAMPLE NO.

B0HX42S

Lab Name: QUANTERRA MO Contract: 519.136

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01075

Matrix (soil/water): WATER Level (low/med): LOW

% Solids: 0.0

Percent recoveries:

| Analyte | Control Limit | Matrix Spike (S) | | Matrix Spike Duplicate (SD) | | RPD | Q | M |
|---|---|---|---|---|---|---|---|---|
| Hg | 20% | 106.00 | | 107.00 | | 0.9 | | CV |

FORM VI - IN
U.S. EPA - CLP

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: QUANTERRA_MO Contract: 519.136

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01075

Solid LCS Source:

Aqueous LCS Source: SOL+/CHEMPUR

| Analyte | Aqueous (ug/L) True | Found | %R | Solid (mg/kg) True | Found | C | Limits | | %R |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 5.0 | 5.52 | 110.4 | | | | | | |

FORM VII - IN

SW-846

W1056-QZS-535
(2)

August 9, 1996

Karl Pool
Buyer's Technical Representative
Westinghouse Hanford
P.O. Box 1970
2355 Stevens Drive
Richland, WA 99352

AUG 1996
RECEIVED
SDLA

**Reference: Contract MPV-SVV-239000.**

Dear Mr. Pool:

Accompanying this letter are the Data Package Deliverable for chemical analysis on the following WHC samples:

| SDG NUMBER | SAF NUMBER |
|---|---|
| W01056 | 96-016 |

If you have any questions regarding this data package or require any additional information please contact me at 375-3131.

Sincerely,

Jodie Carnes
Document Control Officer

Receipt of this letter and the packages are acknowledged by:

Sandra K Wells 8-9-96 3:50
Name Date Time

XC: Vicki Parr
Wade Price
Van Pettey File

**Analytical Data Package Prepared For**

**Westinghouse Hanford**

**Chemical Analysis By**

*St. Louis Laboratory*
Quanterra Enviromental Services

Sample Delivery Group Number: W01056

AUG 1996
RECEIVED
SDLA

| WHC IDENTIFICATION NUMBER | QUANTERRA ID NUMBER |
|---|---|
| B0HX42 | 11452-001 |
| B0HX43 | 11452-002 |

RECORD COPY

Quanterra Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

# CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

July 12, 1996

Attention: Karl Pool

| | | |
|---|---|---|
| Project number | : | 519.136 |
| Date Received by Lab | : | June 25, 1996 |
| Number of Samples | : | Two (2) |
| Sample Type | : | Liquid |
| SDG Number | : | W01056 |
| Data Deliverable | : | Summary |

## I. Introduction

On June 25, 1996, two (2) liquid samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client ID's:

| St Louis ID | WHC ID | Richland ID | Matrix | Date of Receipt |
|---|---|---|---|---|
| 11452-001 | B0HX42 | 60632401 | Liquid | 6/25/96 |
| 11452-002 | B0HX43 | 60632402 | Liquid | 6/25/96 |

## II. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits.

Analyses requested: pH by EPA method 9040. TOC by EPA method 9060. VOA by EPA method 8240. TAL ICP Metals by EPA method 6010. Arsenic by EPA method 7060. Lead by EPA method 7421. Selenium by EPA method 7740. Mercury by EPA method 7470.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Matrix Spike Duplicate and/or Sample Duplicate analyses were performed per the protocol for each analyte. pH analysis uses only Sample Duplicate for matrix QC.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike

V. Comments

Shipping and Receiving
The chain of custody arrived at the laboratory stating the sampling date as 4/17/96 making the samples out of holding time. Per ROD-96-0044, the samples true sampling date is 6/17/96 and the samples were not out of holding time. This ROD supercedes ROD-96-0035.

General Reporting
The results are reported in mg/L for the TOC analysis and mg/kg or ug/kg for all other analyses due to sample matrix. The Density of both samples was determined to be 1.00 g/ml. This value can be used to convert each result to the desired units.

Volatiles
There are no comments or nonconformances associated with this analysis.

CCCC ?

Quanterra
Environmental Services



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Metals
The matrix spike recovery in sample 11452-001 was outside the 80-120% limit for lead (137.5%) with an Relative Percent Difference for the Matrix Spike/Matrix Spike Difference of 39.4%. The associated data for lead was flagged with an "N".

Percent solids was not determined for the samples in SDG W01056. Due to software configuration, the CLP forms list solid sample result units as " dry weight" and % solids as " 100 ". The results on the forms are actually mg/Kg as is and are not corrected for percent solids. The figure of 100 was used as percent solids for calculation purposes only and does not represent measured solids content of the samples.

Wet Chemistry
The Relative Percent Difference could not be calculated for the TOC analysis due to the sample concentrations being below the detection limit.

I certify that this data package 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:

Wade H. Price
Project Manager
Quanterra Environmental Services, Inc.
e:\\sqlmo01\price$\abbydave\hanford\hanw1056.nar

W01056

LOG #: 2790

# LABORATORY NONCONFORMANCE MEMO (NCM)

*Quanterra Incorporated*

Project ID/Client: 519.136

NCM Initiated by/Date: WHP 6/28/96 Project Manager: Will Price

Sample Numbers/QC batch or lot numbers: 11452-001, 11452-002

Tests: Hg, TOC, VOA-8260

Revised WHP 8/15/96 See corrective action Notes

**Analytical Area (check appropriate area):**

- ☐ Sample control
- ☐ Organic preparation
- ☐ Inorganic preparation
- ☐ GC
- ☐ HPLC
- ☒ GC/MS
- ☒ Wet chemistry
- ☒ Metals
- ☐ Reporting
- ☐ Data review
- ☐ Radiochemistry
- ☐ _____

**Nonconformance (check appropriate area):** *To be completed by analyst*

***Holding Time Violations (exceeded by 42, 42, 56 days)***

*Category I: Laboratory Independent*

- ☒ 1. Holding time expired in transit
- ☐ 2. Sample rec'd > 48 hrs after sampling, or ½ holding time has expired
- ☐ 3. Test added by client after expiration

*Category II: Laboratory Dependent*

- ☐ 4. Instrument failure
- ☐ 5. Analyst error
- ☐ 6. Log-in error
- ☐ 7. Miscommunication
- ☐ 8. Other (explanation required)_____

*Category III: Analysis Reruns (QA/QC)*

- ☐ 9. Surrogates
- ☐ 10. Internal standards
- ☐ 11. Spike recoveries
- ☐ 12. Blank contamination

*Category IV: Analysis Reruns (Confirmation)*

- ☐ 13. Second column
- ☐ 14. Contamination check
- ☐ 15. Confirmation of matrix effects
- ☐ 16. Other (explanation required)_____

*Category V: Analysis Reruns (Dilution)*

- ☐ 17. Over calibration
- ☐ 18. Under calibration
- ☐ 19. Other (explanation required)_____

***Quality Assurance/Quality Control***

- ☐ 20. QC data reported outside of controls
- ☐ 21. Incorrect procedure used
- ☐ 22. SOP intentionally modified with QA and tech approval
- ☐ 23. Invalid instrument calibration
- ☐ 24. Received insufficient sample for proper analysis

***Incorrect or Incomplete Client Deliverable***

- ☐ 25. Hardcopy deliverable error
- ☐ 26. Electronic deliverable error

***Reported Detection Limits Elevated Due to:***

- ☐ 27. Sample matrix: Does not include high analyte content
- ☐ 28. Insufficient sample volume
- ☐ 29. Other (explanation required)

***Miscellaneous***

- ☐ 30. Instrument/equipment Tag-out
- ☐ 31. Other (explanation required)

**Notification (check appropriate area):** ☒ Required ☐ Not Required *To be completed by project manager*

Client notified by (name and date): WHP 6/28/96

- ☒ In writing JRP
- ☐ By telephone
- ☐ By facsimile
- ☐ Other (explain)

Client's name and response: _____

- ☐ Process "as is"
- ☐ Re-sample
- ☐ On hold until _____
- ☐ Other (explain)

Project manager (signature and date): _____



00015

QUANTERRA LABORATORY NONCONFORMANCE MEMO

LOG #: 2770

**Corrective Action:** *To be completed and reviewed by all associates involved*

***Problem Description/Root Cause*** Author's initials and date: WKP 6/28/96

Samples received with expired holding times

***Corrective Actions (Short Term)*** Author's initials and date:

~~none~~ WKP 8/15/96

Per client document ROD-96-044; the sampling date was incorrectly noted on the client COC. No holding times were missed. This NCM is VOID.

***Corrective Actions to Prevent Reoccurrence (Long Term)***

none

Corrective Action approved by (Supervisor/Group Leader) and date:

***Additional Comments:***

Corrective Action to be completed by (if other than Supervisor/Group Leader):

Date Corrective Action is to be completed:

**Quality Assurance Review** *To be completed by a QA associate*

☑ Anomaly ☐ Deficiency ☐ Notified Ops/Sys Manager (Initials)

☐ Further action required:

Further action assigned to:

QA signature: Date: 6-28-96

**Corrective Action Verification:** *To be completed by a QA associate*

☑ Verification not required or requested

☐ Verified / CA completed on: by

☐ Cannot verify (specify reason)

Verified by: Date:

**Nonconformance Memo Closure:**

QA signature: Date: 7-2-96

*The Office of Quality Assurance maintains a copy of this NCM indicating its final status.*



00006

# SAMPLE DATA AND LABORATORY ADMINISTRATION

## RECORD OF DISPOSITION REV 1

ROD-96-0044
Record of Disposition No.

| | |
|---|---|
| DATE: August 7, 1996 | LABORATORY: Quanterra |
| PROJECT TITLE/SAF #: 96-016 | NCR NO.: N/A |

SAMPLE IDENTIFICATION NUMBERS: B0HX42 and B0HX43

**DESCRIPTION OF EVENT:**

The chain of custody (COC) that was sent with the samples incorrectly listed the sampling date as 4/17/96. The sample collection date, as verified by the field samplers log book data entries, was 6/17/96. The incorrect listing on the COC of the sampling date has resulted in the laboratory noting that sample holding times had been missed and the result data sheet showing a sampling date of 4/17/96.

**DISPOSITION OF SAMPLES:**

This ROD is to serve as documentation from WHC that the sampling date of 4/17/96, as listed on the COC, is incorrect and that the correct sampling date is 6/17/96. The WHC customer has asked that the result data report, the original and priority re-run, be corrected to show the sampling date of 6/17/96. The case narrative is to be re-written to report the data results using the correct sampling date (6/17/96).

| Post-it™ Fax Note 7671 | Date 8/9 | # of pages ▶ 1 |
|---|---|---|
| To D. Swenson | From K.N. Pool | |
| Co./Dept. Quanterra | Co. WHC | |
| Phone # | Phone # 372-2557 | |
| Fax # 375-5590 | Fax # | |

**APPROVAL SIGNATURES:**

Sharon Steele K.N. Pool for S.S. 8/7/96
SDLA Project Coordinator (Print/Sign Name) Date

C. N. Villalobos
Technical Representative (Print/Sign Name) Date

Quanterra August 15, 1996 09:22 am
Account: 10722 Project: 519.136 Quanterra-Richland QAS No. 861 Rev. 1
Master Sample Login: 11452

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: S. Fournier PM Review: Abby Wolder

Sample Header Template:

| Sample No. / Comments | Client ID | C-Matrix | Date: Collected | Received | Due | Shipper | Rad Category | Rad Sample No. |
|---|---|---|---|---|---|---|---|---|
| 11452-001 | BOHX42 | Liquid | 17-JUN-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 1 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632401 | | | | | | | | |
| 11452-001DUP | BOHX42 | Liquid | 17-JUN-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 1 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632401 | | | | | | | | |
| 11452-001MS | BOHX42 | Liquid | 17-JUN-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 1 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632401 | | | | | | | | |
| 11452-001MSD | BOHX42 | Liquid | 17-JUN-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 1 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632401 | | | | | | | | |
| 11452-001MSDRD1 | BOHX42 | Liquid | 17-JUN-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 1 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632401 | | | | | | | | |

| # | Container Type | Analysis | Class | Preservative | Anal. Due Date | Hold Date | Site | (Container Numbers:% Filled) |
|---|---|---|---|---|---|---|---|---|
| 1 | VI - Vial-40ml | PH/9040/Q4 | S | COLD | 02-JUL-96 | 18-APR-96 | R160 | (236686:99) |
| 1 | | TOC/9060/Q4 | S | COLD | 02-JUL-96 | 15-MAY-96 | R160 | (236687:98) |
| 2 | | VOA/8240/Q4 | S | COLD | 02-JUL-96 | 01-MAY-96 | 1091 | (236684:100 236685:100) |
| 1 | AM - Amber Glass-1L | AS/7060/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R160 | (236688:100) |
| 1 | | HG/7470/Q4 | S | COLD | 02-JUL-96 | 15-MAY-96 | R160 | (236688:100) |
| 1 | | ICAP/6010/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R160 | (236688:100) |
| 1 | | PB/7421/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R160 | (236688:100) |
| 1 | | SE/7740/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R160 | (236688:100) |
| 1 | VI - Vial-20ml | HOLD//Q4 | S | COLD | 11-***-** | 11-***-** | R160 | (236695:80) |
| 1 | VI - Vial-40ml | PH/9040/Q4 | S | COLD | 02-JUL-96 | 18-APR-96 | R160 | (236686:99) |
| 1 | | TOC/9060/Q4 | S | COLD | 02-JUL-96 | 15-MAY-96 | R160 | (236687:98) |
| 1 | VI - Vial-40ml | TOC/9060/Q4 | S | COLD | 02-JUL-96 | 15-MAY-96 | R160 | (236687:98) |
| 2 | | VOA/8240/Q4 | S | COLD | 02-JUL-96 | 01-MAY-96 | 1091 | (236684:100 236685:100) |
| 1 | AM - Amber Glass-1L | AS/7060/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R160 | (236688:100) |
| 1 | | HG/7470/Q4 | S | COLD | 02-JUL-96 | 15-MAY-96 | R160 | (236688:100) |
| 1 | | ICAP/6010/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R160 | (236688:100) |
| 1 | | PB/7421/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R160 | (236688:100) |
| 1 | | SE/7740/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R160 | (236688:100) |
| 2 | VI - Vial-40ml | VOA/8240/Q4 | S | COLD | 02-JUL-96 | 01-MAY-96 | 1091 | (236684:100 236685:100) |
| 1 | AM - Amber Glass-1L | AS/7060/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R160 | (236688:100) |
| 1 | | HG/7470/Q4 | S | COLD | 02-JUL-96 | 15-MAY-96 | R160 | (236688:100) |
| 1 | | ICAP/6010/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R160 | (236688:100) |
| 1 | | PB/7421/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R160 | (236688:100) |
| 1 | | SE/7740/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R160 | (236688:100) |

3*=Sample has not been rad screened.

Quanterra August 15, 1996 09:22 am
Account: 10722 Project: 519.136 Quanterra-Richland QAS No. 861 Rev. 1
Master Sample Login: 11452

Project Manager: W. Price

Draft: Final: Entered and Reviewed by:_____ PM Review:_____

Sample Header Template: _____

| Sample No. / Comments / Data: | Client ID | C-Matrix | Date: Collected | Received | Due | Shipper | Rad Category | Rad Sample No. |
|---|---|---|---|---|---|---|---|---|
| 11452-001MSRD1 | BOHX42 | Liquid | 17-JUN-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 1 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632401 | | | | | | | | |
| 11452-001RD1 | BOHX42 | Liquid | 17-JUN-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 1 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632401 | | | | | | | | |
| 11452-002 | BOHX43 | Liquid | 17-JUN-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 3 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632402 | | | | | | | | |

| # | Container Type | Analysis | Class | Preservative | Anal. Due Date | Hold Date | Site | (Container Numbers:% Filled) |
|---|---|---|---|---|---|---|---|---|
| 1 | VI - Vial-40ml | PH/9040/Q4 | S | COLD | 02-JUL-96 | 18-APR-96 | R16D | (236691:99) |
| 1 | | TOC/9060/Q4 | S | COLD | 02-JUL-96 | 15-MAY-96 | R16D | (236692:98) |
| 2 | | VOA/8240/Q4 | S | COLD | 02-JUL-96 | 01-MAY-96 | 109I | (236689:100 236690:100) |
| 1 | AN - Amber Glass-1L | AS/7060/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R16D | (236693:100) |
| 1 | | HG/7470/Q4 | S | COLD | 02-JUL-96 | 15-MAY-96 | R16D | (236693:100) |
| 1 | | ICAP/6010/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R16D | (236693:100) |
| 1 | | PB/7421/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R16D | (236693:100) |
| 1 | | SE/7740/Q4 | S | COLD | 02-JUL-96 | 14-OCT-96 | R16D | (236693:100) |
| 1 | VI - Vial-20ml | MOLD//Q4 | S | COLD | 11-&&&-** | 11-&&&-** | R16D | (236694:80) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 11452-002RD1 | BOHX43 | Liquid | 17-JUN-96 14:00 | 25-JUN-96 10:00 | 09-JUL-96 | FED-EX | 3 | Screening not Required |
| REPORT ON A PER WEIGHT BASIS./NOTE: RICHLAND ID 60632402 | | | | | | | | |

3*=Sample has not been rad screened.

Temp 2°c Cux# 7492

[redacted]

# Chain of Custody Record

Jo St Louis

**Quanterra** Environmental Services

QUA-4124 1

| | | | |
|---|---|---|---|
| Client: Westinghouse | Project Manager: Van Putney | Date: 6-25-96 | Chain Of Custody Number: 54400 |
| Address: | Telephone Number (Area Code)/Fax Number: | Lab Number: | Page 1 of 1 |
| City: / State: / Zip Code: | Site Contact: | Lab Contact: | |
| Project Name: SAF 96-016 | Carrier/Waybill Number: | | |
| Contract/Purchase Order/Quote No.: | | | |

Analysis (Attach list if more space is needed): SEE COC

Special Instructions/ Conditions of Receipt

| Sample I.D. No. and Description (Containers for each sample may be combined on one line) | Date | Time | Matrix: Aqueous | Sed. | Soil | | Containers & Preservatives: Unpres. | H2SO4 | HNO3 | HCl | NaOH | ZnAc/ NaOH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60632401 BOHX42 | Chemical bottles only | | | | | | | | | | | |
| ↓ 02 ↓ X43 | | | | | | | | | | | | |

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

Sample Disposal: ☑ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☑ Other Due 7-10-96

QC Requirements (Specify): SDG W01056

| | | | | | |
|---|---|---|---|---|---|
| 1. Relinquished By: Hudelberg Quanterra | Date: 6-25-96 | Time: 16:00 | 1. Received By: 2nd m [illegible] | Date: 6-26-96 | Time: 09:00 |
| 2. Relinquished By: | Date: | Time: | 2. Received By: | Date: | Time: |
| 3. Relinquished By: | Date: | Time: | 3. Received By: | Date: | Time: |

Comments:

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

| Westinghouse Hanford Company | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C # 100204 Page 1 of 1 |
|---|---|---|

| | | |
|---|---|---|
| Collector HULSE, KARL | Contact/Requestor VILLALOBOS, CARMEN | Tel. No. 373-4753 MSIN S6-19 FAX |
| SAF Number 96-016 | Sample Origin PUREX | Purchase Order/Charge Code |
| Project Title PUREX Vessels Flush Solutions | Logbook # WHC-N-205 | Ice Chest # Temp. |
| Shipped To (Lab) Quanterra | Method of Shipment Gov. Vehicle | Bill of Lading/Air Bill No. N/A |
| Protocol RCRA | Data Turnaround PRIORITY | Offsite Property No. N/A |

| Sample No. | Lab. ID | * | Date | Time | No/Type Container | Sample Analysis | Perservative |
|---|---|---|---|---|---|---|---|
| B0HX42 | | L | 4/17/96 | 1400 | (1) 20 P | ACTIVITY SCAN (Lab Specific) 80% | None |
| B0HX42 | | L | 4/17/96 | 1400 | (1) 1000 aG | ICP Metals, TAL (6010) plus, Lead 97421), Arsenic (7060), Selenium (7740), Mercury (7470) 75% | Cool to 4°C |
| B0HX42 | | L | 4/17/96 | 1400 | (1) 40 aGs | pH (9040) 100% | None |
| B0HX42 | | L | 4/17/96 | 1400 | (1) 40 aGs | TOC (9060) 6006 32401 100% | Cool to 4°C |
| B0HX42 | | L | 4/17/96 | 1400 | (1) 40 aGs | VOA (8240) 100% | Cool to 4°C |
| B0HX42 | | L | 4/17/96 | 1400 | (1) 40 aGs | VOA (8240) 100% | Cool to 4°C |
| B0HX43 | | L | 4/17/96 | 1400 | (1) 20 P | ACTIVITY SCAN (Lab Specific) 80% | None |
| B0HX43 | | L | 4/17/96 | 1400 | (1) 1000 aG | ICP Metals, TAL (6010) plus, Lead (7421), Arsenic (7060), Selenium (7740), Mercury (7470) 250 ml 25% | Cool to 4°C |
| B0HX43 | | L | 4/17/96 | 1400 | (1) 40 aGs | pH (9040) 100% | None |
| B0HX43 | | L | 4/17/96 | 1400 | (1) 40 aGs | TOC (9060) 6006 32402 100% | Cool to 4°C |
| B0HX43 | | L | 4/17/96 | 1400 | (1) 40 aGs | VOA (8240) 100% | Cool to 4°C |
| B0HX43 | | L | 4/17/96 | 1400 | (1) 40 aGs | VOA (8240) 100% | Cool to 4°C |

further inquiry

20,000 CPM

POSSIBLE SAMPLE HAZARDS/REMARKS MSDS Yes ☐ No ☒

List all known wastes. B0HX42 ICP Metals 1L Bottle contains only about 250 ml. This was all sample that could be obtained

SPECIAL INSTRUCTIONS Hold Time

Priority Turnaround Summary Data Deliv

**PRIORITY TURNAROUND**

SDG-W01056

| Relinquished By Print | Sign | Date/Time | Received By Print | Sign | Date/Time |
|---|---|---|---|---|---|
| KB Hulse | KB Hulse | 6/25/96 0730 | K.J. Yang | Yang | 6/25/96 0730 |
| Relinquished By | | Date/Time | Received By | | Date/Time |
| Yang | K.J. Yang WHC | 6/25/96 1005 | Karen Hettenberg | Karen Hettenberg | 6-25-96 1005 |
| Relinquished By | | Date/Time | Received By | | Date/Time |
| Relinquished By | | Date/Time | Received By | | Date/Time |

Matrix *

| | | | |
|---|---|---|---|
| S = Soil | | DS = Drum Solids | |
| SE = Sediment | | DL = Drum Liquids | |
| SO = Solid | | T = Tissue | |
| SL = Sludge | | WI = Wipe | |
| W = Water | | L = Liquid | |
| O = Oil | | V = Vegetation | |
| A = Air | | X = Other | |

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

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6001-600 (07/96)

C0011

# Client Sample Screening Results

*25-Jun-96*

| CLIENT CODE ID | MATRIX | RECEIVED | DETECTOR | ACQ DATE | SAMPLE | MINUTES | CNTS A | NET CPM A | CNTS B | NET CPM B |
|---|---|---|---|---|---|---|---|---|---|---|
| WHC B0HX42 | | 6/25/1996 10:00:00 AM | QUAD21A | 6/25/1996 1:29:32 PM | B0HX42 | 30 | 5 | 0.10541667 | 147 | 3.9875 |
| | LIQUID | | Bkg: | 6/25/1996 4:05:51 AM | BKG | 800 | 49 | 0.06125 | 730 | 0.9125 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anl Date: 6/25/1996 | Tot Sa, Alq: 1.00E+00 | , 1.00E+01 | Alp; | (Dpm/ 1.75E-01 | (uCi/ 7.88E-06 | (pCi/ 7.88E+00 | ± 2.0E+01 | CAT I | 3.2E+00 | Lab Alq |
| Ppt mg: 0 | Units: L | , ml | Bet; | Alq): 7.88E+00 | Sa): 3.55E-04 | Lig): 3.55E+02 | ± 3.6E+01 | | 1.4E-01 | Lig |

| CLIENT CODE ID | MATRIX | RECEIVED | DETECTOR | ACQ DATE | SAMPLE | MINUTES | CNTS A | NET CPM A | CNTS B | NET CPM B |
|---|---|---|---|---|---|---|---|---|---|---|
| WHC B0HX43 | | 6/25/1996 10:00:00 AM | QUAD21B | 6/25/1996 1:20:00 PM | B0HX43 | 20.01 | 16998 | 849.430262 | 1186811 | 59309.957 |
| | LIQUID | | Bkg: | 6/25/1996 4:05:51 AM | BKG | 800 | 36 | 0.045 | 750 | 0.9375 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anl Date: 6/25/1996 | Tot Sa, Alq: 2.50E-01 | , 1.00E+00 | Alp; | (Dpm/ 7.99E+02 | (uCi/ 9.00E-02 | (pCi/ 3.60E+05 | ± 4.7E+03 | CAT III | 6.9E-05 | Lab Alq |
| Ppt mg: 8.6 | Units: L | , ml | Bet; | Alq): 1.16E+05 | Sa): 1.31E+01 | Lig): 5.22E+07 | ± 4.8E+04 | | 9.6E-07 | Lig |

Reviewed 6/25/96

Soil/Solid Samples

| Sample # BOHX43 | | | | | Total Grams per sample | 430 | | |
|---|---|---|---|---|---|---|---|---|
| isotope | $A_2$ in GBq | pCi/G | Bq/G | KBq/G | KBq/ sample | µCi/ sample | Ltd Qty Value in MBq | Unity for Ltd Qty |
| Total Alpha | .002 | 745 | 27.5650 | 0.0276 | 11.8530 | 0.3204 | 0.0020 | 0.6000 |
| Toatl Beta | 20 | 43100 | 1,594.7000 | 1.5947 | 685.7210 | 18.5330 | 20.0000 | 0.0034 |
| Cs-137 | 500 | 21300 | 788.1000 | 0.7881 | 338.8830 | 9.1590 | 500.0000 | 0.0001 |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ?? |
| TOTAL | | 65,145.00 | 2,410.3650 | 2.4104 | 1,036.4570 | 28.0124 | | 0.6035 |

SAMPLE INQUIRY by GROUP

Company Name: PUREX Programs Westinghouse Hanford Company Project Code: U3 Group #: 96

Sample #: S96P000086 Sample ID: BOHX42

| Parameter | Rep | Result | Unit | %Recov | Date | Analyst |
|---|---|---|---|---|---|---|
| Actinium-228 by GEA | 0 | < 1.224e-04 | uCi/mL | | 06/18/96 | eal |
| Ac-228 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Alpha in Liquid Samples | 0 | 4.21E-07 | uCi/mL | | 06/19/96 | dgg |
| Alpha Liq.- Rel. % Count Error | 0 | 1.21E+02 | % Ct. Error | | 06/19/96 | dgg |
| Americium-241 by GEA | 0 | < 1.622e-04 | uCi/mL | | 06/18/96 | eal |
| Am-241 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Americium-243 by GEA | 0 | < 4.138e-05 | uCi/mL | | 06/18/96 | eal |
| Am-243 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Beta in Liquid Samples | 0 | < 1.69E-06 | uCi/mL | | 06/19/96 | dgg |
| Beta Liq.- Rel. % Count Error | 0 | 5.00E+02 | % Ct. Error | | 06/19/96 | dgg |
| Bismuth-212 by GEA | 0 | < 3.275e-04 | uCi/mL | | 06/18/96 | eal |
| Bi-212 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Bismuth-214 by GEA | 0 | < 6.584e-05 | uCi/mL | | 06/18/96 | eal |
| Bi-214 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cadmium-109 by GEA | 0 | < 4.668e-04 | uCi/mL | | 06/18/96 | eal |
| Cd-109 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ce/Pr-144 by GEA | 0 | < 2.177e-04 | uCi/mL | | 06/18/96 | eal |
| Ce/Pr-144 GEA Rel % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-56 by GEA | 0 | < 2.360e-05 | uCi/mL | | 06/18/96 | eal |
| Co-56 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-57 by GEA | 0 | < 1.493e-05 | uCi/mL | | 06/18/96 | eal |
| Co-57 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-60 by GEA | 0 | < 2.394e-05 | uCi/mL | | 06/18/96 | eal |
| Co-60 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cesium-134 by GEA | 0 | < 2.191e-05 | uCi/mL | | 06/18/96 | eal |
| Cs-134 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cesium-137 by GEA | 0 | < 6.041e-05 | uCi/mL | | 06/18/96 | eal |
| Cs-137 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-152 by GEA | 0 | < 9.094e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-152 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-154 by GEA | 0 | < 7.154e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-154 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-155 by GEA | 0 | < 6.082e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-155 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Mercury-203 by GEA | 0 | < 1.921e-05 | uCi/mL | | 06/18/96 | eal |
| Hg-203 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Iodine-131 by GEA | 0 | < 2.436e-05 | uCi/mL | | 06/18/96 | eal |
| I-131 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Potassium-40 by GEA | 0 | < 9.284e-04 | uCi/mL | | 06/18/96 | eal |
| K-40 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sodium-22 by GEA | 0 | < 2.457e-05 | uCi/mL | | 06/18/96 | eal |
| Na-22 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sodium-24 by GEA | 0 | < 1.656e-05 | uCi/mL | | 06/18/96 | eal |
| Na-24 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Niobium-94 by GEA | 0 | < 2.041e-05 | uCi/mL | | 06/18/96 | eal |
| Nb-94 GEA Rel % Counting Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Neptunium-237 by GEA | 0 | < 1.476e-04 | uCi/mL | | 06/18/96 | eal |
| Np-237 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Neptunium-239 by GEA | 0 | < 5.683e-05 | uCi/mL | | 06/18/96 | eal |

SAMPLE INQUIRY by GROUP

Company Name: PUREX Programs Westinghouse Hanford Company Project Code: U3 Group #: 96

| Parameter | Rep | Result | Unit | %Recov | Date | Analyst |
|---|---|---|---|---|---|---|
| Sample #: S96P000086 Sample ID: BOHX42 [Continued] | | | | | | |
| Np-239 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Protactinium-233 by GEA | 0 | < 4.734e-05 | uCi/mL | | 06/18/96 | eal |
| Pa-233 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Protactinium-234m by GEA | 0 | < 3.441e-05 | uCi/mL | | 06/18/96 | eal |
| Pa-234m GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Lead-212 by GEA | 0 | < 4.486e-05 | uCi/mL | | 06/18/96 | eal |
| Pb-212 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Lead-214 by GEA | 0 | < 1.149e-04 | uCi/mL | | 06/18/96 | eal |
| Pb-214 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Plutonium-239 by GEA | 0 | < 1.919e-01 | uCi/mL | | 06/18/96 | eal |
| Pu-239 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Radium-224 by GEA | 0 | < 4.621e-04 | uCi/mL | | 06/18/96 | eal |
| Ra-224 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Radium-226 by GEA | 0 | < 4.274e-04 | uCi/mL | | 06/18/96 | eal |
| Ra-226 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ruthenium-103 by GEA | 0 | < 2.045e-05 | uCi/mL | | 06/18/96 | eal |
| Ru-103 GEA Rel % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ru/Rh-106 by GEA | 0 | < 4.328e-04 | uCi/mL | | 06/18/96 | eal |
| Ru/Rh-106 GEA Rel. % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Selenium-75 by GEA | 0 | < 3.023e-05 | uCi/mL | | 06/18/96 | eal |
| Se-75 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Tin-113 by GEA | 0 | < 3.434e-05 | uCi/mL | | 06/18/96 | eal |
| Sn-113 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Strontium-85 by GEA | 0 | < 2.613e-05 | uCi/mL | | 06/18/96 | eal |
| Sr-85 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-228 by GEA | 0 | < 1.576e-03 | uCi/mL | | 06/18/96 | eal |
| Th-228 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-229 by GEA | 0 | < 6.639e-05 | uCi/mL | | 06/18/96 | eal |
| Th-229 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-234 by GEA | 0 | < 8.867e-04 | uCi/mL | | 06/18/96 | eal |
| Th-234 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thallium-208 by GEA | 0 | < 2.802e-04 | uCi/mL | | 06/18/96 | eal |
| Tl-208 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Uranium/Thorium-233 by GEA | 0 | < 1.489e-02 | uCi/mL | | 06/18/96 | eal |
| U/Th-233 GEA Rel % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Uranium-235 by GEA | 0 | < 2.622e-05 | uCi/mL | | 06/18/96 | eal |
| U-235 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Yttrium-88 by GEA | 0 | < 2.565e-05 | uCi/mL | | 06/18/96 | eal |
| Y-88 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Zr/Nb-95 by GEA | 0 | < 3.938e-05 | uCi/mL | | 06/18/96 | eal |
| Zr/Nb-95 GEA Rel % Count. Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sample #: S96P000087 Sample ID: BOHX43 | | | | | | |
| Actinium-228 by GEA | 0 | < 1.002e-04 | uCi/mL | | 06/18/96 | eal |
| Ac-228 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Alpha in Liquid Samples | 0 | 7.45E-04 | uCi/mL $7.45 \times 10^{-2}$ | | 06/19/96 | dgg |
| Alpha Liq.- Rel. % Count Error | 0 | 2.74E+00 | % Ct. Error | | 06/19/96 | dgg |
| Americium-241 by GEA | 0 | < 4.394e-04 | uCi/mL | | 06/18/96 | eal |
| Am-241 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Americium-243 by GEA | 0 | < 1.025e-04 | uCi/mL | | 06/18/96 | eal |

SAMPLE INQUIRY by GROUP

Company Name: PUREX Programs Westinghouse Hanford Company Project Code: U3 Group #: 96

Sample #: S96P000087 Sample ID: BOHX43 [Continued]

| Parameter | Rep | Result | Unit | %Recov | Date | Analyst |
|---|---|---|---|---|---|---|
| Am-243 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Beta in Liquid Samples | 0 | 6.44E-02 | uCi/mL 4.32x10⁴ | | 06/19/96 | dgg |
| Beta Liq.- Rel. % Count Error | 0 | 2.07E-01 | % Ct. Error | | 06/19/96 | dgg |
| Bismuth-212 by GEA | 0 | < 3.750e-04 | uCi/mL | | 06/18/96 | eal |
| Bi-212 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Bismuth-214 by GEA | 0 | < 1.136e-04 | uCi/mL | | 06/18/96 | eal |
| Bi-214 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cadmium-109 by GEA | 0 | < 1.228e-03 | uCi/mL | | 06/18/96 | eal |
| Cd-109 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ce/Pr-144 by GEA | 0 | < 6.107e-04 | uCi/mL | | 06/18/96 | eal |
| Ce/Pr-144 GEA Rel % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-56 by GEA | 0 | < 2.349e-05 | uCi/mL | | 06/18/96 | eal |
| Co-56 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-57 by GEA | 0 | < 4.042e-05 | uCi/mL | | 06/18/96 | eal |
| Co-57 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-60 by GEA | 0 | < 2.871e-05 | uCi/mL | | 06/18/96 | eal |
| Co-60 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cesium-134 by GEA | 0 | < 4.758e-05 | uCi/mL | | 06/18/96 | eal |
| Cs-134 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cesium-137 by GEA | 0 | 2.130e-02 | uCi/mL 2.13x10⁴ | | 06/18/96 | eal |
| Cs-137 GEA Rel. % Count Error | 0 | 1.50 | % Ct. Error | | 06/18/96 | eal |
| Europium-152 by GEA | 0 | < 8.134e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-152 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-154 by GEA | 0 | < 5.834e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-154 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-155 by GEA | 0 | < 1.677e-04 | uCi/mL | | 06/18/96 | eal |
| Eu-155 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Mercury-203 by GEA | 0 | < 6.201e-05 | uCi/mL | | 06/18/96 | eal |
| Hg-203 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Iodine-131 by GEA | 0 | < 7.454e-05 | uCi/mL | | 06/18/96 | eal |
| I-131 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Potassium-40 by GEA | 0 | < 8.997e-04 | uCi/mL | | 06/18/96 | eal |
| K-40 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sodium-22 by GEA | 0 | < 2.014e-05 | uCi/mL | | 06/18/96 | eal |
| Na-22 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sodium-24 by GEA | 0 | < 1.982e-05 | uCi/mL | | 06/18/96 | eal |
| Na-24 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Niobium-94 by GEA | 0 | < 2.271e-05 | uCi/mL | | 06/18/96 | eal |
| Nb-94 GEA Rel % Counting Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Neptunium-237 by GEA | 0 | < 3.743e-04 | uCi/mL | | 06/18/96 | eal |
| Np-237 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Neptunium-239 by GEA | 0 | < 1.577e-04 | uCi/mL | | 06/18/96 | eal |
| Np-239 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Protactinium-233 by GEA | 0 | < 1.389e-04 | uCi/mL | | 06/18/96 | eal |
| Pa-233 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Protactinium-234m by GEA | 0 | < 5.306e-05 | uCi/mL | | 06/18/96 | eal |
| Pa-234m GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Lead-212 by GEA | 0 | < 1.164e-04 | uCi/mL | | 06/18/96 | eal |
| Pb-212 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Lead-214 by GEA | 0 | < 3.021e-04 | uCi/mL | | 06/18/96 | eal |

SAMPLE INQUIRY by GROUP

Company Name: PUREX Programs Westinghouse Hanford Company Project Code: U3 Group #: 96

Sample #: S96P000087 Sample ID: BOHX43 [Continued]

| Parameter | Rep | Result | Unit | %Recov | Date | Analyst |
|---|---|---|---|---|---|---|
| Pb-214 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Plutonium-239 by GEA | 0 | < 5.575e-01 | uCi/mL | | 06/18/96 | eal |
| Pu-239 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Radium-224 by GEA | 0 | < 1.290e-03 | uCi/mL | | 06/18/96 | eal |
| Ra-224 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Radium-226 by GEA | 0 | < 1.278e-03 | uCi/mL | | 06/18/96 | eal |
| Ra-226 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ruthenium-103 by GEA | 0 | < 6.930e-05 | uCi/mL | | 06/18/96 | eal |
| Ru-103 GEA Rel % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ru/Rh-106 by GEA | 0 | < 9.131e-04 | uCi/mL | | 06/18/96 | eal |
| Ru/Rh-106 GEA Rel. % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Selenium-75 by GEA | 0 | < 8.328e-05 | uCi/mL | | 06/18/96 | eal |
| Se-75 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Tin-113 by GEA | 0 | < 1.033e-04 | uCi/mL | | 06/18/96 | eal |
| Sn-113 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Strontium-85 by GEA | 0 | < 6.957e-05 | uCi/mL | | 06/18/96 | eal |
| Sr-85 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-228 by GEA | 0 | < 3.910e-03 | uCi/mL | | 06/18/96 | eal |
| Th-228 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-229 by GEA | 0 | < 1.781e-04 | uCi/mL | | 06/18/96 | eal |
| Th-229 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-234 by GEA | 0 | < 2.527e-03 | uCi/mL | | 06/18/96 | eal |
| Th-234 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thallium-208 by GEA | 0 | < 8.152e-04 | uCi/mL | | 06/18/96 | eal |
| Tl-208 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Uranium/Thorium-233 by GEA | 0 | < 4.681e-02 | uCi/mL | | 06/18/96 | eal |
| U/Th-233 GEA Rel % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Uranium-235 by GEA | 0 | < 7.793e-05 | uCi/mL | | 06/18/96 | eal |
| U-235 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Yttrium-88 by GEA | 0 | < 1.484e-05 | uCi/mL | | 06/18/96 | eal |
| Y-88 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Zr/Nb-95 by GEA | 0 | < 5.770e-05 | uCi/mL | | 06/18/96 | eal |
| Zr/Nb-95 GEA Rel % Count. Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |

# RADIOACTIVE SHIPMENT RECORD

3. Page 1 of 1 | 33454

**1. SHIP TO**
Company: Quanterra
Address: 2800 George Washington Way
City, State, Zip: Richland, WA 99352
Attention: Tami Heidelberg
Phone: 509-375-3131

**2. SHIP FROM** U.S. DEPT. OF ENERGY C/O
Company: Westinghouse Hanford
Address: 6269 Bldg
City, State, Zip: 200 W
Contact: K.J. Young
Phone: 509-373-7002

**4. Ship** ☑ Prepaid ☐ Collect
Via: ☑ Motor-Rail ☐ Air Pssr ☐ Excl. Use ☐ Air Cargo ☐ UPS Surface ☐ Mail ☐ Site Carrier
SHIPMENT AUTHORIZATION NUMBER

**5. HM** Proper Shipping Name: Radioactive Material,

| | | | |
|---|---|---|---|
| | excepted package - empty packaging | 7 | UN2910 |
| | excepted package - instruments or articles | 7 | UN2910 |
| ✓ | excepted package - limited quantity of material | 7 | UN2910 |
| | excepted package - articles manufactured from natural or depleted uranium or natural thorium | 7 | UN2910 |
| | Special Form, n.o.s. | 7 | UN2974 |
| | Low Specific Activity, n.o.s. | 7 | UN2912 |
| | n.o.s. | 7 | UN2982 |
| | Fissile, n.o.s. | 7 | UN2918 |
| | (other) | | |

**6. Markings Applied**
Package Orientation ☑
Gross Weight ☐
Radioactive - LSA ☐
Type A ☐
Type B ☐

**7. For Normal Form**
Identify
Physical Form: ☑ Liquid ☐ Gas ☐ Solid
Chemical Form: ☐ Metal ☐ Oxide ☐ Elemental ☐ Nitrate
Other: ☑ Mixture

**8. Additional RAM Desc.**
Limited Quantity Radioactive Material ☑
Highway Route Controlled Quantity ☐

**9. Placards Applied** ☐ Yes ☑ No
If Rail Specify Placards
Route Plan ☐ Yes ☑ No

**11a. TYPE PACKAGE**
Strong Tight ☑
Type A ☐
Type B ☐
Type B(U) ☐
Type B(M) ☐

**11b. CONSTRUCTION**
☐ Box, FB
☐ Wood
☐ Steel
☐ Drum
☐ Cask
Other: Poly Box

**11c. FISSILE CLASS**
Non-Fissile ☑
Fissile Exempt ☐
Fissile I ☐
Fissile II ☐
Fissile III ☐
Gms Fissile

**11d. Labels Applied**
Empty ☐
Radioactive White I ☐
Radioactive Yellow II ☐
Radioactive Yellow III ☐
Subsidiary Hazard: N/A ☑

**10. EMERGENCY RESPONSE**
Telephone: (509) 373-3800
Emergency Response Guide(s): #61

*Warning – Fissile Class III Shipment. Do Not Load More Than NA Packages Per Vehicle. In Loading and Storage Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels.*

**12.**

| No. Pkgs. | Model Package | COC/Spec | Serial No. | Seal No. | T.I. | Isotopes | Curies/Pkg | Gr. Wt. |
|---|---|---|---|---|---|---|---|---|
| 1 | 4HZY | NA | 03-95, 04-019 | Tape | N/A | Cs-137 | 1036 KBq | 45 LBS |
| | (SAF-# 96-016 Sample # BOHX42, BOHX43) | | | | | | | |
| | COC-# 100204 | | | | | | | |
| (Shipper may describe package in detail on one of the unused lines above) | | | | TOTALS | N/A | | 1036KBq | 45LBS |

**13.** This is to certify that the above named materials are properly classified, described packaged, marked and labeled, and are in proper condition for transportation, acording to the applicable federal, state local and international regulations for the transportation of hazardous materials.
Certifier's Signature: On behalf of DOE-RL: Ken Young | Date: 6-25-96 | Organization: Sampling & Mobile Labs | Complete Cost Code (Inc. End Function): KP50F / 8H100

**14.** Surface Dose Rate of Package: ☒ <0.5 or ____ mrem/hr (N+β γ)
Dose Rate at 1 Meter from Surface of Package: ☒ <0.5 or ____ mrem/hr (N+β γ)
Smears of Outer Container: ☒ <22 dpm β γ/cm² ☒ <2.2 dpm α/cm² ☒ <Tbl. 2-2 HSRCM Limits
TRUCK LOAD OR EXCLUSIVE USE: Surface ☒ <200 mrem/hr (N+β γ); @ 6 feet ☒ <10 mrem/hr (N+β γ); @ Cab or sleeper ☒ <2 mrem/hr (N+β γ)
Additional Data and Instructions (inc. Readings on Internal Packaging)
Signature - Radiation Monitoring: [signature] 60705 | Bldg. 6269 | Survey No. WS250 1080 | Date 6/25/96

**15.** AIR TRANSPORT CERTIFICATION
CARGO AIRCRAFT: ☐ Cargo Aircraft Only Labels Applied
PASSENGER AIRCRAFT: ☐ 1. Ltd Qty ☐ 2. <3 T.I. ☐ 3. Research/Medical Diagnosis ☐ 4. Human Medical Research
Pkg. Dimensions: NA
Shipment has been inspected and verified to be in compliance with DOT regulations
Authorized Signature: [signature] | Printed Name: M.A. SAMS | Date: 6-25-96

**16.** PICKUP OF SHIPMENT
Date of Shipment: 6-25-96 | Agent: Ken Young | Driver Signature: Ken Young | Vehicle Number: 4625

**17.** RECEIPT OF SHIPMENT
Shipment No.: RMW-0067 | Date Shipped: 6-25-96 | Received in Good Order Unless Otherwise Noted | Vehicle Number
Surveyed By | Date Received | Signature | Printed Name

Karen Stottenberg - Quanterra 6-25-96

54-6000-088 (12/94)

0001E

"THIS PACKAGE CONFORMS TO THE CONDITIONS AND LIMITATIONS SPECIFIED IN 49 CFR 173.421 FOR RADIOACTIVE MATERIAL"

00019

Figure 1

# SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-25-96 1100 Client Name WHC

Project/Client # 96-016 Batch or Case # _____

Cooler ID (if noted on outside of cooler) SM-03-95040019

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

Printed Name/Signature _____ Date/Time _____



0002C

**Quanterra** Environmental Services

COP: RW+WI
DATE: 6-26-96
TIME: 13:15
BY: 2m

**Login No.:** 11452

## Condition Upon Receipt Variance Report
## St. Louis Laboratory

Client: Times Beach
Project No: 519.136
Shipper/No: FedEx 109 2644 761

Date: 6-26-96 Time: 09:00
Initiated by: Fred M Mitchell
RFA/COC Numbers: 54400

**Condition/Variance (Check all that apply):**

1. ☐ Sample received broken/leaking.
2. ☐ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C
     Record temperature: _____
   - ☐ pH _____
   - ☐ other: _____
3. ☐ Sample received in improper container.
4. ☐ Sample received without proper paperwork. Explain: _____
5. ☐ Paperwork received without sample.
6. ☐ No sample ID on sample container.
7. ☑ Custody tape disturbed/broken/missing.
8. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
9. ☐ All coolers on airbill not received with shipment.
10. ☐ Other (explain below): _____

☐ No variances were noted during sample receipt. Cooler Temperature Upon Receipt: 2°C

Notes: Activity Scans has seals Broken

**Corrective Action:**

☐ Client's Name: _____ Informed verbally on: _____ By: _____
☐ Client's Name: _____ Informed in writing on: _____ By: _____
☑ Sample(s) processed "as is".
☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: (or designate) Fred M Mitchell Date: 6-26-96
Project Management Review: Tony Wolf Date: 6-26-96

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

SL-ADMIN-0004, Revised 11/24/95

00021

# VOLATILE ORGANICS

Quanterra Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Volatiles
Method: EPA 8240
Matrix: LIQUID

Client ID: BOHX42

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Quanterra ID : 11452-001

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Bromomethane | 74-83-9 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Vinyl Chloride | 75-01-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Chloroethane | 75-00-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Methylene Chloride | 75-09-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Acetone | 67-64-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| Carbon Disulfide | 75-15-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1-Dichloroethene | 75-35-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1-Dichloroethane | 75-34-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloroethene (total) | 540-59-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Chloroform | 67-66-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloroethane | 107-06-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 2-Butanone (MEK) | 78-93-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| 1,1,1-Trichloroethane | 71-55-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Carbon Tetrachloride | 56-23-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Bromodichloromethane | 75-27-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloropropane | 78-87-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| cis-1,3-Dichloropropene | 10061-01-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Trichloroethene | 79-01-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Dibromochloromethane | 124-48-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1,2-Trichloroethane | 79-00-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Benzene | 71-43-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| trans-1,3-Dichloropropene | 10061-02-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Bromoform | 75-25-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 4-Methyl-2-Pentanone (MIBK) | 108-10-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| 2-Hexanone | 591-78-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| Tetrachloroethene | 127-18-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Toluene | 108-88-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Chlorobenzene | 108-90-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| EthylBenzene | 100-41-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Styrene | 100-42-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Xylene (total) | 1330-20-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Toluene-d8 (SURR) | 2037-26-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 103 | %REC | | | 1 |
| Bromofluorobenzene (SURR) | 460-00-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 101 | %REC | | | 1 |
| 1,2-Dichloroethane-d4 (SURR) | 17070-07-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 114 | %REC | | | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Volatiles
Method: EPA 8240
Matrix: LIQUID

Client ID: BOHX42

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Quanterra ID : 11452-001MS

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 75-35-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 157 | %REC | | | 1 |
| Trichloroethene | 79-01-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 106 | %REC | | | 1 |
| Benzene | 71-43-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 112 | %REC | | | 1 |
| Toluene | 108-88-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 102 | %REC | | | 1 |
| Chlorobenzene | 108-90-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 98 | %REC | | | 1 |
| Toluene-d8 (SURR) | 2037-26-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 104 | %REC | | | 1 |
| Bromofluorobenzene (SURR) | 460-00-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 98 | %REC | | | 1 |
| 1,2-Dichloroethane-d4 (SURR) | 17070-07-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 113 | %REC | | | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Volatiles
Method: EPA 8240
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Client ID: BOHX42

Quanterra ID : 11452-001MSD

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 75-35-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 155 | %REC | | | 1 |
| Trichloroethene | 79-01-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 104 | %REC | | | 1 |
| Benzene | 71-43-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 112 | %REC | | | 1 |
| Toluene | 108-88-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 105 | %REC | | | 1 |
| Chlorobenzene | 108-90-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 98 | %REC | | | 1 |
| Toluene-d8 (SURR) | 2037-26-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 105 | %REC | | | 1 |
| Bromofluorobenzene (SURR) | 460-00-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 100 | %REC | | | 1 |
| 1,2-Dichloroethane-d4 (SURR) | 17070-07-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 114 | %REC | | | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Volatiles
Method: EPA 8240
Matrix: LIQUID

Client ID: B0HX43

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Quanterra ID : 11452-002

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Bromomethane | 74-83-9 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Vinyl Chloride | 75-01-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Chloroethane | 75-00-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Methylene Chloride | 75-09-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Acetone | 67-64-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 49 | UG/KG | | 20 | 1 |
| Carbon Disulfide | 75-15-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1-Dichloroethene | 75-35-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1-Dichloroethane | 75-34-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloroethene (total) | 540-59-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Chloroform | 67-66-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloroethane | 107-06-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 2-Butanone (MEK) | 78-93-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| 1,1,1-Trichloroethane | 71-55-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Carbon Tetrachloride | 56-23-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Bromodichloromethane | 75-27-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloropropane | 78-87-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| cis-1,3-Dichloropropene | 10061-01-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Trichloroethene | 79-01-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Dibromochloromethane | 124-48-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1,2-Trichloroethane | 79-00-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Benzene | 71-43-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| trans-1,3-Dichloropropene | 10061-02-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Bromoform | 75-25-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 4-Methyl-2-Pentanone (MIBK) | 108-10-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| 2-Hexanone | 591-78-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| Tetrachloroethene | 127-18-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Toluene | 108-88-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Chlorobenzene | 108-90-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| EthylBenzene | 100-41-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Styrene | 100-42-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Xylene (total) | 1330-20-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Unknown | TIC-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 25 | UG/KG | J | | 1 |
| Toluene-d8 (SURR) | 2037-26-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 102 | %REC | | | 1 |
| Bromofluorobenzene (SURR) | 460-00-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 100 | %REC | | | 1 |
| 1,2-Dichloroethane-d4 (SURR) | 17070-07-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 111 | %REC | | | 1 |

Quanterra Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Volatiles
Method: EPA 8240
Matrix: LIQUID

Client ID: NA

Sample Date : NA
Receipt Date : NA
Report Date : 08/15/96

Quanterra ID : QCBLK105677-1

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Bromomethane | 74-83-9 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Vinyl Chloride | 75-01-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Chloroethane | 75-00-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Methylene Chloride | 75-09-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Acetone | 67-64-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| Carbon Disulfide | 75-15-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1-Dichloroethene | 75-35-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1-Dichloroethane | 75-34-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloroethene (total) | 540-59-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Chloroform | 67-66-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloroethane | 107-06-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 2-Butanone (MEK) | 78-93-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| 1,1,1-Trichloroethane | 71-55-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Carbon Tetrachloride | 56-23-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Bromodichloromethane | 75-27-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloropropane | 78-87-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| cis-1,3-Dichloropropene | 10061-01-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Trichloroethene | 79-01-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Dibromochloromethane | 124-48-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1,2-Trichloroethane | 79-00-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Benzene | 71-43-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| trans-1,3-Dichloropropene | 10061-02-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Bromoform | 75-25-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 4-Methyl-2-Pentanone (MIBK) | 108-10-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| 2-Hexanone | 591-78-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| Tetrachloroethene | 127-18-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Toluene | 108-88-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Chlorobenzene | 108-90-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| EthylBenzene | 100-41-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Styrene | 100-42-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Xylene (total) | 1330-20-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Toluene-d8 (SURR) | 2037-26-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 102 | %REC | | | 1 |
| Bromofluorobenzene (SURR) | 460-00-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 99 | %REC | | | 1 |
| 1,2-Dichloroethane-d4 (SURR) | 17070-07-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 106 | %REC | | | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Volatiles
Method: EPA 8240
Matrix: LIQUID

Client ID: NA

Sample Date : NA
Receipt Date : NA
Report Date : 08/15/96

Quanterra ID : QCLCS105677-1

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 75-35-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 147 | %REC | | | 1 |
| Trichloroethene | 79-01-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 103 | %REC | | | 1 |
| Benzene | 71-43-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 110 | %REC | | | 1 |
| Toluene | 108-88-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 102 | %REC | | | 1 |
| Chlorobenzene | 108-90-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 96 | %REC | | | 1 |
| Toluene-d8 (SURR) | 2037-26-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 104 | %REC | | | 1 |
| Bromofluorobenzene (SURR) | 460-00-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 100 | %REC | | | 1 |
| 1,2-Dichloroethane-d4 (SURR) | 17070-07-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 114 | %REC | | | 1 |

RECORD COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0HX42

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

Matrix: (soil/water) WATER Lab Sample ID: 11452-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: F5969

Level: (low/med) LOW Date Received: 06/25/96

% Moisture: not dec. Date Analyzed: 07/01/96

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/Kg | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | U |
| 67-64-1 | Acetone | 20 | U |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 20 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 20 | U |
| 591-78-6 | 2-Hexanone | 20 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

RECORD COPY

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0HX42

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

Matrix: (soil/water) WATER Lab Sample ID: 11452-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: F5969

Level: (low/med) LOW Date Received: 06/25/96

% Moisture: not dec. Date Analyzed: 07/01/96

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|

RECORD COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0HX43

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

Matrix: (soil/water) WATER Lab Sample ID: 11452-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: F5972

Level: (low/med) LOW Date Received: 06/25/96

% Moisture: not dec. Date Analyzed: 07/01/96

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/Kg | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | U |
| 67-64-1 | Acetone | 49 | |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 20 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 20 | U |
| 591-78-6 | 2-Hexanone | 20 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

1E RECORD COPY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0HX43

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

Matrix: (soil/water) WATER Lab Sample ID: 11452-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: F5972

Level: (low/med) LOW Date Received: 06/25/96

% Moisture: not dec. Date Analyzed: 07/01/96

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 23.31 | 25 | J |

2A

# WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

| | EPA SAMPLE NO. | SMC1 (TOL) # | SMC2 (BFB) # | SMC3 (DCE) # | OTHER | TOT OUT |
|---|---|---|---|---|---|---|
| 01 | B0HX42 | 103 | 101 | 114 | 0 | 0 |
| 02 | B0HX43 | 102 | 100 | 111 | 0 | 0 |
| 03 | VSPK01 | 104 | 100 | 114 | 0 | 0 |
| 04 | B0HX42MS | 104 | 98 | 113 | 0 | 0 |
| 05 | B0HX42MSD | 105 | 100 | 114 | 0 | 0 |
| 06 | VBLK01 | 102 | 99 | 106 | 0 | 0 |

| | | QC LIMITS |
|---|---|---|
| SMC1 (TOL) | = Toluene-d8 | ( 80-120) |
| SMC2 (BFB) | = Bromofluorobenzene | ( 80-120) |
| SMC3 (DCE) | = 1,2-Dichloroethane-d4 | ( 76-120) |

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

3A

# WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

Matrix Spike - EPA Sample No.: B0HX42

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONCENTRATION (ug/Kg) | MS CONCENTRATION (ug/Kg) | MS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 50.00 | 0 | 78.56 | 157 | 1-234 |
| Trichloroethene | 50.00 | 0 | 53.06 | 106 | 71-157 |
| Benzene | 50.00 | 0 | 55.87 | 112 | 37-151 |
| Toluene | 50.00 | 0 | 50.82 | 102 | 47-150 |
| Chlorobenzene | 50.00 | 0 | 49.14 | 98 | 37-160 |

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONCENTRATION (ug/Kg) | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 50.00 | 77.61 | 155 | 1 | 14 | 1-234 |
| Trichloroethene | 50.00 | 51.73 | 104 | 2 | 14 | 71-157 |
| Benzene | 50.00 | 56.06 | 112 | 0 | 11 | 37-151 |
| Toluene | 50.00 | 52.32 | 105 | 3 | 13 | 47-150 |
| Chlorobenzene | 50.00 | 49.22 | 98 | 0 | 13 | 37-160 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0HX42MS

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

Matrix: (soil/water) WATER Lab Sample ID: 11452-001MS

Sample wt/vol: 5.00 (g/mL) G Lab File ID: F5970

Level: (low/med) LOW Date Received: 06/25/96

% Moisture: not dec. Date Analyzed: 07/01/96

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/Kg | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 65 | |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | U |
| 67-64-1 | Acetone | 20 | U |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 79 | |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 58 | |
| 107-06-2 | 1,2-Dichloroethane | 56 | |
| 78-93-3 | 2-Butanone | 44 | |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 59 | |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 53 | |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 56 | |
| 10061-02-6 | trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 20 | U |
| 591-78-6 | 2-Hexanone | 20 | U |
| 127-18-4 | Tetrachloroethene | 50 | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 51 | |
| 108-90-7 | Chlorobenzene | 49 | |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0HX42MSD

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

Matrix: (soil/water) WATER Lab Sample ID: 11452-001MSD

Sample wt/vol: 5.00 (g/mL) G Lab File ID: F5971

Level: (low/med) LOW Date Received: 06/25/96

% Moisture: not dec. Date Analyzed: 07/01/96

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/Kg | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 65 | |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | U |
| 67-64-1 | Acetone | 20 | U |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 78 | |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 58 | |
| 107-06-2 | 1,2-Dichloroethane | 56 | |
| 78-93-3 | 2-Butanone | 58 | |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 60 | |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 52 | |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 56 | |
| 10061-02-6 | trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 20 | U |
| 591-78-6 | 2-Hexanone | 20 | U |
| 127-18-4 | Tetrachloroethene | 53 | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 52 | |
| 108-90-7 | Chlorobenzene | 49 | |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK01

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

Lab File ID: F5953 Lab Sample ID: QCBLK105677

Date Analyzed: 07/01/96 Time Analyzed: 0650

GC Column: RTX-502.2 ID: 0.530(mm) Heated Purge: (Y/N) N

Instrument ID: MSF

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | TIME ANALYZED |
|---|---|---|---|---|
| 01 | B0HX42 | 11452-001 | F5969 | 1504 |
| 02 | B0HX43 | 11452-002 | F5972 | 1634 |
| 03 | VSPK01 | QCSPK105677 | F5968 | 1434 |
| 04 | B0HX42MS | 11452-001MS | F5970 | 1534 |
| 05 | B0HX42MSD | 11452-001MSD | F5971 | 1604 |

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK01

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

Matrix: (soil/water) WATER Lab Sample ID: QCBLK105677

Sample wt/vol: 5.00 (g/mL) G Lab File ID: F5953

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 07/01/96

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/Kg | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | U |
| 67-64-1 | Acetone | 20 | U |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 20 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 20 | U |
| 591-78-6 | 2-Hexanone | 20 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK01

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

Matrix: (soil/water) WATER Lab Sample ID: QCBLK105677

Sample wt/vol: 5.00 (g/mL) G Lab File ID: F5953

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 07/01/96

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|

9A-LCS
VOA WATER LCS RECOVERY

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

EPA Sample No.: VSPK01 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | LCS CONCENTRATION (ug/Kg) | LCS % REC # | QC LIMITS REC. |
|---|---|---|---|---|
| 1,1-Dichloroethene | 50 | 74 | 147 | 1-234 |
| Trichloroethene | 50 | 52 | 103 | 71-157 |
| Benzene | 50 | 55 | 110 | 37-151 |
| Toluene | 50 | 51 | 102 | 47-150 |
| Chlorobenzene | 50 | 48 | 96 | 37-160 |

\# Column to be used to flag recovery values with an asterisk.
* Values outside of QC limits.
D Detected.
NG: Not Given. Determined by QC Charting Procedures.

Note: Additional compounds may be spiked whose recoveries are neither calculated nor controlled upon.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VSPK01

Lab Name: QUANTERRA MO Contract: 519-136

Lab Code: ITMO Case No.: V45201 SAS No.: SDG No.: W01056

Matrix: (soil/water) WATER Lab Sample ID: QCSPK105677

Sample wt/vol: 5.00 (g/mL) G Lab File ID: F5968

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 07/01/96

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/Kg | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 39 | |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | U |
| 67-64-1 | Acetone | 20 | U |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 74 | |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 57 | |
| 107-06-2 | 1,2-Dichloroethane | 56 | |
| 78-93-3 | 2-Butanone | 50 | |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 59 | |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 52 | |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 55 | |
| 10061-02-6 | trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 20 | U |
| 591-78-6 | 2-Hexanone | 20 | U |
| 127-18-4 | Tetrachloroethene | 51 | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 51 | |
| 108-90-7 | Chlorobenzene | 48 | |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

# METALS

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: ICAP Metals
Method: EPA 6010
Matrix: LIQUID

Client ID: BOHX42

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Quanterra ID : 11452-001

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 5.3 | MG/KG | U | 20.0 | 1 |
| Antimony | 7440-36-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 3.5 | MG/KG | U | 6.0 | 1 |
| Barium | 7440-39-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.21 | MG/KG | B | 20.0 | 1 |
| Beryllium | 7440-41-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.05 | MG/KG | U | 0.50 | 1 |
| Cadmium | 7440-43-9 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.24 | MG/KG | U | 0.50 | 1 |
| Calcium | 7440-70-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 185 | MG/KG | B | 500 | 1 |
| Chromium | 7440-47-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.41 | MG/KG | U | 1.0 | 1 |
| Cobalt | 7440-48-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.48 | MG/KG | U | 5.0 | 1 |
| Copper | 7440-50-8 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.56 | MG/KG | U | 2.5 | 1 |
| Iron | 7439-89-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 2.6 | MG/KG | B | 10.0 | 1 |
| Magnesium | 7439-95-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 20.9 | MG/KG | B | 500 | 1 |
| Manganese | 7439-96-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.12 | MG/KG | U | 1.5 | 1 |
| Nickel | 7440-02-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.91 | MG/KG | U | 4.0 | 1 |
| Potassium | 7440-09-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 182 | MG/KG | U | 500 | 1 |
| Silver | 7440-22-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.59 | MG/KG | U | 1.0 | 1 |
| Sodium | 7440-23-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 13.4 | MG/KG | B | 500 | 1 |
| Vanadium | 7440-62-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.57 | MG/KG | U | 5.0 | 1 |
| Zinc | 7440-66-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.65 | MG/KG | U | 2.0 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: ICAP Metals
Method: EPA 6010
Matrix: LIQUID

Client ID: BOHX42

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Quanterra ID : 11452-001MS

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 99 | %REC | | | 1 |
| Antimony | 7440-36-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |
| Barium | 7440-39-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Beryllium | 7440-41-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 103 | %REC | | | 1 |
| Cadmium | 7440-43-9 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |
| Chromium | 7440-47-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Cobalt | 7440-48-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Copper | 7440-50-8 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |
| Iron | 7439-89-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 100 | %REC | | | 1 |
| Manganese | 7439-96-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 97 | %REC | | | 1 |
| Nickel | 7440-02-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 100 | %REC | | | 1 |
| Silver | 7440-22-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 93 | %REC | | | 1 |
| Vanadium | 7440-62-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 96 | %REC | | | 1 |
| Zinc | 7440-66-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: ICAP Metals
Method: EPA 6010
Matrix: LIQUID

Client ID: B0HX42

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Quanterra ID : 11452-001MSD

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 99 | %REC | | | 1 |
| Antimony | 7440-36-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 103 | %REC | | | 1 |
| Barium | 7440-39-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 97 | %REC | | | 1 |
| Beryllium | 7440-41-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 101 | %REC | | | 1 |
| Cadmium | 7440-43-9 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 100 | %REC | | | 1 |
| Chromium | 7440-47-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Cobalt | 7440-48-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Copper | 7440-50-8 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |
| Iron | 7439-89-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 99 | %REC | | | 1 |
| Manganese | 7439-96-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 97 | %REC | | | 1 |
| Nickel | 7440-02-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |
| Silver | 7440-22-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 94 | %REC | | | 1 |
| Vanadium | 7440-62-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 96 | %REC | | | 1 |
| Zinc | 7440-66-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: ICAP Metals
Method: EPA 6010
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Client ID: B0HX43

Quanterra ID : 11452-002

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 5.3 | MG/KG | U | 20.0 | 1 |
| Antimony | 7440-36-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 3.5 | MG/KG | U | 6.0 | 1 |
| Barium | 7440-39-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.44 | MG/KG | B | 20.0 | 1 |
| Beryllium | 7440-41-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.05 | MG/KG | U | 0.50 | 1 |
| Cadmium | 7440-43-9 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.24 | MG/KG | U | 0.50 | 1 |
| Calcium | 7440-70-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 602 | MG/KG | | 500 | 1 |
| Chromium | 7440-47-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.70 | MG/KG | B | 1.0 | 1 |
| Cobalt | 7440-48-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.48 | MG/KG | U | 5.0 | 1 |
| Copper | 7440-50-8 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 2.5 | MG/KG | | 2.5 | 1 |
| Iron | 7439-89-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 20.7 | MG/KG | | 10.0 | 1 |
| Magnesium | 7439-95-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 42.2 | MG/KG | B | 500 | 1 |
| Manganese | 7439-96-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.68 | MG/KG | B | 1.5 | 1 |
| Nickel | 7440-02-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 1.1 | MG/KG | B | 4.0 | 1 |
| Potassium | 7440-09-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 182 | MG/KG | U | 500 | 1 |
| Silver | 7440-22-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.59 | MG/KG | U | 1.0 | 1 |
| Sodium | 7440-23-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 2490 | MG/KG | | 500 | 1 |
| Vanadium | 7440-62-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.57 | MG/KG | U | 5.0 | 1 |
| Zinc | 7440-66-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 1.9 | MG/KG | B | 2.0 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: ICAP Metals
Method: EPA 6010
Matrix: LIQUID

Client ID: NA

Sample Date : NA
Receipt Date : NA
Report Date : 08/15/96

Quanterra ID : QCBLK105316-1

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 5.3 | MG/KG | U | 20.0 | 1 |
| Antimony | 7440-36-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 3.5 | MG/KG | U | 6.0 | 1 |
| Barium | 7440-39-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | -0.13 | MG/KG | B | 20.0 | 1 |
| Beryllium | 7440-41-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.05 | MG/KG | U | 0.50 | 1 |
| Cadmium | 7440-43-9 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.24 | MG/KG | U | 0.50 | 1 |
| Calcium | 7440-70-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 2.1 | MG/KG | U | 500 | 1 |
| Chromium | 7440-47-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.41 | MG/KG | U | 1.0 | 1 |
| Cobalt | 7440-48-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.48 | MG/KG | U | 5.0 | 1 |
| Copper | 7440-50-8 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.56 | MG/KG | U | 2.5 | 1 |
| Iron | 7439-89-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 2.4 | MG/KG | B | 10.0 | 1 |
| Magnesium | 7439-95-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | -14.8 | MG/KG | B | 500 | 1 |
| Manganese | 7439-96-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.12 | MG/KG | U | 1.5 | 1 |
| Nickel | 7440-02-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.91 | MG/KG | U | 4.0 | 1 |
| Potassium | 7440-09-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 182 | MG/KG | U | 500 | 1 |
| Silver | 7440-22-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.59 | MG/KG | U | 1.0 | 1 |
| Sodium | 7440-23-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | -11.4 | MG/KG | B | 500 | 1 |
| Vanadium | 7440-62-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | -0.87 | MG/KG | B | 5.0 | 1 |
| Zinc | 7440-66-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.65 | MG/KG | U | 2.0 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: ICAP Metals
Method: EPA 6010
Matrix: LIQUID

Client ID: NA

Sample Date : NA
Receipt Date : NA
Report Date : 08/15/96

Quanterra ID : QCLCS105316-1

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 76 | %REC | | | 1 |
| Antimony | 7440-36-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 128 | %REC | | | 1 |
| Barium | 7440-39-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 93 | %REC | | | 1 |
| Beryllium | 7440-41-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 96 | %REC | | | 1 |
| Cadmium | 7440-43-9 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Calcium | 7440-70-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 103 | %REC | | | 1 |
| Chromium | 7440-47-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 95 | %REC | | | 1 |
| Cobalt | 7440-48-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Copper | 7440-50-8 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 96 | %REC | | | 1 |
| Iron | 7439-89-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 92 | %REC | | | 1 |
| Magnesium | 7439-95-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 93 | %REC | | | 1 |
| Manganese | 7439-96-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 95 | %REC | | | 1 |
| Nickel | 7440-02-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 97 | %REC | | | 1 |
| Potassium | 7440-09-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 94 | %REC | | | 1 |
| Silver | 7440-22-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 106 | %REC | | | 1 |
| Sodium | 7440-23-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 97 | %REC | | | 1 |
| Vanadium | 7440-62-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 91 | %REC | | | 1 |
| Zinc | 7440-66-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Arsenic
Method: EPA 7060
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | Arsenic | 7440-38-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 0.11 | MG/KG | U | 1.0 | 1 |
| BOHX42 | 11452-001MS | Arsenic | 7440-38-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 92 | %REC | | | 1 |
| BOHX42 | 11452-001MSD | Arsenic | 7440-38-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 97 | %REC | | | 1 |
| BOHX43 | 11452-002 | Arsenic | 7440-38-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 0.11 | MG/KG | U | 1.0 | 1 |
| NA | QCLCS105321-1 | Arsenic | 7440-38-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 105 | %REC | | | 20 |
| NA | QCBLK105321-1 | Arsenic | 7440-38-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 0.11 | MG/KG | U | 1.0 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Lead
Method: EPA 7421
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B0HX42 | 11452-001 | Lead | 7439-92-1 | QCBLK105321-1 | 06/27/96 | 06/27/96 | 0.16 | MG/KG | BN | 0.30 | 1 |
| B0HX42 | 11452-001MS | Lead | 7439-92-1 | QCBLK105321-1 | 06/27/96 | 06/27/96 | 138 | %REC | N | | 1 |
| B0HX42 | 11452-001MSD | Lead | 7439-92-1 | QCBLK105321-1 | 06/27/96 | 06/27/96 | 92 | %REC | | | 1 |
| B0HX43 | 11452-002 | Lead | 7439-92-1 | QCBLK105321-1 | 06/27/96 | 06/27/96 | 2.9 | MG/KG | N | 0.30 | 1 |
| NA | QCLCS105321-1 | Lead | 7439-92-1 | QCBLK105321-1 | 06/27/96 | 06/27/96 | 103 | %REC | | | 10 |
| NA | QCBLK105321-1 | Lead | 7439-92-1 | QCBLK105321-1 | 06/27/96 | 06/27/96 | 0.12 | MG/KG | U | 0.30 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Selenium
Method: EPA 7000 Series
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | Selenium | 7782-49-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 0.13 | MG/KG | U | 0.50 | 1 |
| BOHX42 | 11452-001MS | Selenium | 7782-49-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 109 | %REC | | | 1 |
| BOHX42 | 11452-001MSD | Selenium | 7782-49-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 100 | %REC | | | 1 |
| BOHX43 | 11452-002 | Selenium | 7782-49-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 0.13 | MG/KG | U | 0.50 | 1 |
| NA | QCLCS105321-1 | Selenium | 7782-49-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 95 | %REC | | | 20 |
| NA | QCBLK105321-1 | Selenium | 7782-49-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 0.13 | MG/KG | U | 0.50 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Mercury
Method: EPA 7470
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B0HX42 | 11452-001 | Mercury | 7439-97-6 | QCBLK105509-1 | 06/28/96 | 06/28/96 | 0.05 | MG/KG | U | 0.20 | 1 |
| B0HX42 | 11452-001MS | Mercury | 7439-97-6 | QCBLK105509-1 | 06/28/96 | 06/28/96 | 93 | %REC | | | 1 |
| B0HX42 | 11452-001MSD | Mercury | 7439-97-6 | QCBLK105509-1 | 06/28/96 | 06/28/96 | 96 | %REC | | | 1 |
| B0HX43 | 11452-002 | Mercury | 7439-97-6 | QCBLK105509-1 | 06/28/96 | 06/28/96 | 0.05 | MG/KG | U | 0.20 | 1 |
| NA | QCLCS105509-1 | Mercury | 7439-97-6 | QCBLK105509-1 | 06/28/96 | 06/28/96 | 100 | %REC | | | 1 |
| NA | QCBLK105509-1 | Mercury | 7439-97-6 | QCBLK105509-1 | 06/28/96 | 06/28/96 | 0.05 | MG/KG | U | 0.20 | 1 |

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0HX42

Lab Name: QUANTERRA_MO Contract: 519.136

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01056

Matrix (soil/water): SOIL Lab Sample ID: 11452-001

Level (low/med): LOW Date Received: 06/25/96

% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5.3 | U | | P |
| 7440-36-0 | Antimony | 3.5 | U | | P |
| 7440-38-2 | Arsenic | 0.11 | U | | F |
| 7440-39-3 | Barium | 0.21 | B | | P |
| 7440-41-7 | Beryllium | 0.05 | U | | P |
| 7440-43-9 | Cadmium | 0.24 | U | | P |
| 7440-70-2 | Calcium | 185 | B | | P |
| 7440-47-3 | Chromium | 0.41 | U | | P |
| 7440-48-4 | Cobalt | 0.48 | U | | P |
| 7440-50-8 | Copper | 0.56 | U | | P |
| 7439-89-6 | Iron | 2.6 | B | | P |
| 7439-92-1 | Lead | 0.16 | B | N | F |
| 7439-95-4 | Magnesium | 20.9 | B | | P |
| 7439-96-5 | Manganese | 0.12 | U | | P |
| 7439-97-6 | Mercury | 0.05 | U | | CV |
| 7440-02-0 | Nickel | 0.91 | U | | P |
| 7440-09-7 | Potassium | 182 | U | | P |
| 7782-49-2 | Selenium | 0.13 | U | | F |
| 7440-22-4 | Silver | 0.59 | U | | P |
| 7440-23-5 | Sodium | 13.4 | B | | P |
| 7440-62-2 | Vanadium | 0.57 | U | | P |
| 7440-66-6 | Zinc | 0.65 | U | | P |

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0HX43

Lab Name: QUANTERRA MO Contract: 519.136
Lab Code: ITMO Case No.: SAS No.: SDG No.: W01056
Matrix (soil/water): SOIL Lab Sample ID: 11452-002
Level (low/med): LOW Date Received: 06/25/96
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5.3 | U | | P |
| 7440-36-0 | Antimony | 3.5 | U | | P |
| 7440-38-2 | Arsenic | 0.11 | U | | F |
| 7440-39-3 | Barium | 0.44 | B | | P |
| 7440-41-7 | Beryllium | 0.05 | U | | P |
| 7440-43-9 | Cadmium | 0.24 | U | | P |
| 7440-70-2 | Calcium | 602 | | | P |
| 7440-47-3 | Chromium | 0.70 | B | | P |
| 7440-48-4 | Cobalt | 0.48 | U | | P |
| 7440-50-8 | Copper | 2.5 | | | P |
| 7439-89-6 | Iron | 20.7 | | | P |
| 7439-92-1 | Lead | 2.9 | | N | F |
| 7439-95-4 | Magnesium | 42.2 | B | | P |
| 7439-96-5 | Manganese | 0.68 | B | | P |
| 7439-97-6 | Mercury | 0.05 | U | | CV |
| 7440-02-0 | Nickel | 1.1 | B | | P |
| 7440-09-7 | Potassium | 182 | U | | P |
| 7782-49-2 | Selenium | 0.13 | U | | F |
| 7440-22-4 | Silver | 0.59 | U | | P |
| 7440-23-5 | Sodium | 2490 | | | P |
| 7440-62-2 | Vanadium | 0.57 | U | | P |
| 7440-66-6 | Zinc | 1.9 | B | | P |

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

3
BLANKS

Lab Name: QUANTERRA_MO_____ Contract: 519.136___

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W01056_____

Preparation Blank Matrix (soil/water): SOIL_

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 53.2 | U | 53.2 | U | 53.2 | U | | | 5.320 | U | P |
| Antimony | 34.6 | U | 34.6 | U | 34.6 | U | | | 3.460 | U | P |
| Arsenic | 1.1 | U | 1.1 | U | 1.1 | U | 1.1 | U | 0.110 | U | F |
| Barium | 1.2 | B | 1.2 | B | 1.2 | B | | | -0.127 | B | P |
| Beryllium | 1.0 | B | 1.0 | B | 1.1 | B | | | 0.050 | U | P |
| Cadmium | 2.4 | U | 2.4 | U | 2.4 | U | | | 0.240 | U | P |
| Calcium | 21.3 | U | 21.3 | U | 21.3 | U | | | 2.130 | U | P |
| Chromium | 4.1 | U | 5.4 | B | 4.1 | U | | | 0.410 | U | P |
| Cobalt | 4.8 | U | 4.8 | U | 4.8 | U | | | 0.480 | U | P |
| Copper | 11.2 | B | 5.9 | B | 8.3 | B | | | 0.560 | U | P |
| Iron | 10.5 | B | 13.1 | B | 21.8 | B | | | 2.435 | B | P |
| Lead | 1.2 | U | 1.2 | U | 1.2 | U | 1.2 | U | 0.120 | U | F |
| Magnesium | 65.1 | U | 65.1 | U | 65.1 | U | | | -14.844 | B | P |
| Manganese | 1.4 | B | 1.2 | U | 1.2 | B | | | 0.120 | U | P |
| Mercury | 0.1 | B | 0.2 | B | 0.1 | U | | | 0.050 | U | CV |
| Nickel | 11.1 | B | 9.1 | U | 9.1 | U | | | 0.910 | U | P |
| Potassium | 1824.0 | U | 1824.0 | U | 1824.0 | U | | | 182.400 | U | P |
| Selenium | 1.3 | U | 1.3 | U | 1.3 | U | 1.3 | U | 0.130 | U | F |
| Silver | 5.9 | U | 5.9 | U | 5.9 | U | | | 0.590 | U | P |
| Sodium | 81.7 | U | 81.7 | U | 81.7 | U | | | -11.451 | B | P |
| Vanadium | 5.7 | U | 5.7 | U | 5.7 | U | | | -0.866 | B | P |
| Zinc | 6.5 | U | 6.5 | U | 6.5 | U | | | 0.650 | U | P |

FORM III - IN

SW-846

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B0HX42S

Lab Name: QUANTERRA_MO Contract: 519.136

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01056

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 80-120 | 197.2330 | | 5.3200 | U | 200.00 | 98.6 | | P |
| Antimony | 80-120 | 51.0250 | | 3.4600 | U | 50.00 | 102.0 | | P |
| Arsenic | 80-120 | 3.6870 | | 0.1100 | U | 4.00 | 92.2 | | F |
| Barium | 80-120 | 196.5840 | | 0.2100 | B | 200.00 | 98.2 | | P |
| Beryllium | 80-120 | 5.1340 | | 0.0500 | U | 5.00 | 102.7 | | P |
| Cadmium | 80-120 | 5.0870 | | 0.2400 | U | 5.00 | 101.7 | | P |
| Calcium | | | | | | | | | NR |
| Chromium | 80-120 | 19.5560 | | 0.4100 | U | 20.00 | 97.8 | | P |
| Cobalt | 80-120 | 49.1490 | | 0.4800 | U | 50.00 | 98.3 | | P |
| Copper | 80-120 | 25.3750 | | 0.5600 | U | 25.00 | 101.5 | | P |
| Iron | 80-120 | 102.4200 | | 2.5990 | B | 100.00 | 99.8 | | P |
| Lead | 80-120 | 2.9120 | | 0.1620 | B | 2.00 | 137.5 | N | F |
| Magnesium | | | | | | | | | NR |
| Manganese | 80-120 | 48.6610 | | 0.1200 | U | 50.00 | 97.3 | | P |
| Mercury | 80-120 | 0.4635 | | 0.0500 | U | 0.50 | 92.7 | | CV |
| Nickel | 80-120 | 50.2500 | | 0.9100 | U | 50.00 | 100.5 | | P |
| Potassium | | | | | | | | | NR |
| Selenium | 80-120 | 1.0930 | | 0.1300 | U | 1.00 | 109.3 | | F |
| Silver | 80-120 | 4.6320 | | 0.5900 | U | 5.00 | 92.6 | | P |
| Sodium | | | | | | | | | NR |
| Vanadium | 80-120 | 48.1920 | | 0.5700 | U | 50.00 | 96.4 | | P |
| Zinc | 80-120 | 51.1990 | | 0.6500 | U | 50.00 | 102.4 | | P |

Comments:

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B0HX42SD

Lab Name: QUANTERRA_MO Contract: 519.136

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01056

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 80-120 | 198.1830 | | 5.3200 | U | 200.00 | 99.1 | | P |
| Antimony | 80-120 | 51.5600 | | 3.4600 | U | 50.00 | 103.1 | | P |
| Arsenic | 80-120 | 3.8740 | | 0.1100 | U | 4.00 | 96.8 | | F |
| Barium | 80-120 | 194.9420 | | 0.2100 | B | 200.00 | 97.4 | | P |
| Beryllium | 80-120 | 5.0700 | | 0.0500 | U | 5.00 | 101.4 | | P |
| Cadmium | 80-120 | 5.0170 | | 0.2400 | U | 5.00 | 100.3 | | P |
| Calcium | | | | | | | | | NR |
| Chromium | 80-120 | 19.5360 | | 0.4100 | U | 20.00 | 97.7 | | P |
| Cobalt | 80-120 | 49.0790 | | 0.4800 | U | 50.00 | 98.2 | | P |
| Copper | 80-120 | 25.5420 | | 0.5600 | U | 25.00 | 102.2 | | P |
| Iron | 80-120 | 101.9770 | | 2.5990 | B | 100.00 | 99.4 | | P |
| Lead | 80-120 | 2.0050 | | 0.1620 | B | 2.00 | 92.2 | | F |
| Magnesium | | | | | | | | | NR |
| Manganese | 80-120 | 48.3080 | | 0.1200 | U | 50.00 | 96.6 | | P |
| Mercury | 80-120 | 0.4820 | | 0.0500 | U | 0.50 | 96.4 | | CV |
| Nickel | 80-120 | 50.9660 | | 0.9100 | U | 50.00 | 101.9 | | P |
| Potassium | | | | | | | | | NR |
| Selenium | 80-120 | 1.0030 | | 0.1300 | U | 1.00 | 100.3 | | F |
| Silver | 80-120 | 4.7070 | | 0.5900 | U | 5.00 | 94.1 | | P |
| Sodium | | | | | | | | | NR |
| Vanadium | 80-120 | 47.9370 | | 0.5700 | U | 50.00 | 95.9 | | P |
| Zinc | 80-120 | 50.9850 | | 0.6500 | U | 50.00 | 102.0 | | P |

Comments:

U.S. EPA - CLP

6A
MATRIX SPIKE DUPLICATES

EPA SAMPLE NO.

B0HX42SD

Lab Name: QUANTERRA MO Contract: 519.136

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01056

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids: 100.0

Percent recoveries:

| Analyte | Control Limit | Matrix Spike (S) | | Matrix Spike Duplicate (SD) | | RPD | Q | M |
|---|---|---|---|---|---|---|---|---|
| Al | 20% | 99.10 | | 98.60 | | 0.5 | | P |
| Sb | 20% | 103.10 | | 102.00 | | 1.1 | | P |
| As | 20% | 96.80 | | 92.20 | | 4.9 | | F |
| Ba | 20% | 97.40 | | 98.20 | | 0.8 | | P |
| Be | 20% | 101.40 | | 102.70 | | 1.3 | | P |
| Cd | 20% | 100.30 | | 101.70 | | 1.4 | | P |
| Ca | 20% | | | | | | | NR |
| Cr | 20% | 97.70 | | 97.80 | | 0.1 | | P |
| Co | 20% | 98.20 | | 98.30 | | 0.1 | | P |
| Cu | 20% | 102.20 | | 101.50 | | 0.7 | | P |
| Fe | 20% | 99.40 | | 99.80 | | 0.4 | | P |
| Pb | 20% | 92.20 | | 137.50 | | 39.4 | | F |
| Mg | 20% | | | | | | | NR |
| Mn | 20% | 96.60 | | 97.30 | | 0.7 | | P |
| Hg | 20% | 96.40 | | 92.70 | | 3.9 | | CV |
| Ni | 20% | 101.90 | | 100.50 | | 1.4 | | P |
| K | 20% | | | | | | | NR |
| Se | 20% | 100.30 | | 109.30 | | 8.6 | | F |
| Ag | 20% | 94.10 | | 92.60 | | 1.6 | | P |
| Na | 20% | | | | | | | NR |
| V | 20% | 95.90 | | 96.40 | | 0.5 | | P |
| Zn | 20% | 102.00 | | 102.40 | | 0.4 | | P |

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: QUANTERRA_MO Contract: 519.136

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W01056

Solid LCS Source: ERA

Aqueous LCS Source: _____

| Analyte | Aqueous (ug/L) True | Found | %R | Solid (mg/kg) True | Found | C | Limits | | %R |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | 4590.0 | 3464.7 | | 2280.0 | 7590.0 | 75.5 |
| Antimony | | | | 39.8 | 51.0 | | 8.4 | 119.0 | 128.1 |
| Arsenic | | | | | | | | | |
| Barium | | | | 106.0 | 98.4 | | 74.3 | 139.0 | 92.8 |
| Beryllium | | | | 51.0 | 49.0 | | 11.7 | 90.3 | 96.1 |
| Cadmium | | | | 45.4 | 44.4 | | 11.9 | 79.0 | 97.8 |
| Calcium | | | | 1290.0 | 1331.0 | | 875.0 | 1750.0 | 103.2 |
| Chromium | | | | 71.0 | 67.4 | | 38.0 | 100.0 | 94.9 |
| Cobalt | | | | 49.6 | 48.4 | | 29.8 | 70.5 | 97.6 |
| Copper | | | | 112.0 | 108.0 | | 63.9 | 162.0 | 96.4 |
| Iron | | | | 9160.0 | 8437.7 | | 5560.0 | 13000.0 | 92.1 |
| Lead | | | | | | | | | |
| Magnesium | | | | 1160.0 | 1082.7 | | 691.0 | 1670.0 | 93.3 |
| Manganese | | | | 154.0 | 146.2 | | 107.0 | 208.0 | 94.9 |
| Mercury | | | | | | | | | |
| Nickel | | | | 39.4 | 38.2 | | 21.5 | 57.5 | 97.0 |
| Potassium | | | | 1420.0 | 1340.8 | | 880.0 | 1870.0 | 94.4 |
| Selenium | | | | | | | | | |
| Silver | | | | 116.0 | 123.3 | | 58.2 | 170.0 | 106.3 |
| Sodium | | | | 1196.0 | 1155.7 | | 956.8 | 1435.2 | 96.6 |
| Vanadium | | | | 65.9 | 60.1 | | 32.0 | 88.9 | 91.2 |
| Zinc | | | | 134.0 | 131.0 | | 72.2 | 199.0 | 97.8 |

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7

LABORATORY CONTROL SAMPLE

Lab Name: QUANTERRA_MO Contract: 519.136

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W01056

Solid LCS Source: ERA

Aqueous LCS Source: _____

| Analyte | Aqueous (ug/L) True | Found | %R | Solid (mg/kg) True | Found | C | Limits | | %R |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | |
| Antimony | | | | | | | | | |
| Arsenic | | | | | | | | | |
| Barium | | | | | | | | | |
| Beryllium | | | | | | | | | |
| Cadmium | | | | | | | | | |
| Calcium | | | | | | | | | |
| Chromium | | | | | | | | | |
| Cobalt | | | | | | | | | |
| Copper | | | | | | | | | |
| Iron | | | | | | | | | |
| Lead | | | | | | | | | |
| Magnesium | | | | | | | | | |
| Manganese | | | | | | | | | |
| Mercury | | | | 1.5 | 1.5 | | 0.4 | 2.4 | 100.0 |
| Nickel | | | | | | | | | |
| Potassium | | | | | | | | | |
| Selenium | | | | | | | | | |
| Silver | | | | | | | | | |
| Sodium | | | | | | | | | |
| Vanadium | | | | | | | | | |
| Zinc | | | | | | | | | |

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7

LABORATORY CONTROL SAMPLE

Lab Name: QUANTERRA_MO Contract: 519.136

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01056

Solid LCS Source: ERA

Aqueous LCS Source:

| Analyte | Aqueous (ug/L) True | Found | %R | Solid (mg/kg) True | Found | C | Limits | | %R |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | |
| Antimony | | | | | | | | | |
| Arsenic | | | | 75.4 | 79.5 | | 37.1 | 112.0 | 105.4 |
| Barium | | | | | | | | | |
| Beryllium | | | | | | | | | |
| Cadmium | | | | | | | | | |
| Calcium | | | | | | | | | |
| Chromium | | | | | | | | | |
| Cobalt | | | | | | | | | |
| Copper | | | | | | | | | |
| Iron | | | | | | | | | |
| Lead | | | | 53.5 | 55.3 | | 28.1 | 75.9 | 103.4 |
| Magnesium | | | | | | | | | |
| Manganese | | | | | | | | | |
| Mercury | | | | | | | | | |
| Nickel | | | | | | | | | |
| Potassium | | | | | | | | | |
| Selenium | | | | 72.3 | 68.8 | | 37.8 | 108.0 | 95.2 |
| Silver | | | | | | | | | |
| Sodium | | | | | | | | | |
| Vanadium | | | | | | | | | |
| Zinc | | | | | | | | | |

FORM VII - IN

SW-846

# WET CHEMISTRY

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: pH
Method: EPA 9040
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | pH | PH | QCBLK105343-1 | 06/27/96 | 06/27/96 | 6.48 | PH | | 0.10 | 1 |
| BOHX42 | 11452-001DUP | pH | PH | QCBLK105343-1 | 06/27/96 | 06/27/96 | 6.53 | PH | | 0.10 | 1 |
| BOHX43 | 11452-002 | pH | PH | QCBLK105343-1 | 06/27/96 | 06/27/96 | 11.30 | PH | | 0.10 | 1 |
| NA | QCBLK105343-1 | pH | PH | QCBLK105343-1 | 06/27/96 | 06/27/96 | 5.50 | PH | | 0.10 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Total Organic Carbon
Method: EPA 9060
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | Total Organic C | TOC | QCBLK105350-1 | 06/27/96 | 06/27/96 | 1.00 | MG/L | U | 1.00 | 1 |
| BOHX42 | 11452-001DUP | Total Organic C | TOC | QCBLK105350-1 | 06/27/96 | 06/27/96 | 1.00 | MG/L | U | 1.00 | 1 |
| BOHX42 | 11452-001MS | Total Organic C | TOC | QCBLK105350-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| BOHX43 | 11452-002 | Total Organic C | TOC | QCBLK105350-1 | 06/27/96 | 06/27/96 | 48.9 | MG/L | | 1.00 | 1 |
| NA | QCBLK105350-1 | Total Organic C | TOC | QCBLK105350-1 | 06/27/96 | 06/27/96 | 1.00 | MG/L | U | 1.00 | 1 |
| NA | QCLCS105350-1 | Total Organic C | TOC | QCBLK105350-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |

# SAMPLE DATA AND LABORATORY ADMINISTRATION

## RECORD OF DISPOSITION REV 1

ROD-96-0039
Record of Disposition No.

| | |
|---|---|
| DATE: July 16, 1996 | LABORATORY: Quanterra |
| PROJECT TITLE/SAF #: PUREX Vessels' Flush Solutions/96-016 | NCR NO.: N/A |

SAMPLE IDENTIFICATION NUMBERS: B0HX42, B0HX43

DESCRIPTION OF EVENT: The customer has requested the Mercury for the above listed samples be rerun with a detection limit of less than 0.20 mg/Kg. The customer has requested the reruns be on a Priority turnaround.

DISPOSITION OF SAMPLES: Quanterra is to rerun the Mercury for the above listed samples within the three business day priority data turnaround requirement. Quanterra can run the samples with a detection limit of less than 0.20 mg/Kg.

APPROVAL SIGNATURES:

S.M.Steele — July 16, 1996
SDLA Project Coordinator (Print/Sign Name) — Date

C.N.Villalobos — 8-6-96
Technical Representative (Print/Sign Name) — Date

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Mercury
Method: EPA 7470
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 0.10 | UG/L | U | 0.20 | 1 |
| BOHX42 | 11452-001MS | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 106 | %REC | | | 1 |
| BOHX42 | 11452-001MSD | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 107 | %REC | | | 1 |
| BOHX43 | 11452-002 | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 4.1 | UG/L | | 0.20 | 1 |
| NA | QCLCS106918-1 | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 110 | %REC | | | 1 |
| NA | QCBLK106918-1 | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 0.10 | UG/L | U | 0.20 | 1 |

# SAMPLE DATA AND LABORATORY ADMINISTRATION

## RECORD OF DISPOSITION REV 1

R00-96-0035
Record of Disposition No.
Rev. 1

| | |
|---|---|
| DATE: July 9, 1996 | LABORATORY: Quanterra |
| PROJECT TITLE/SAF #: PUREX Vessels' Flush Solutions/96-016 | NCR NO.: N/A |

SAMPLE IDENTIFICATION NUMBERS: B0HX42, B0HX43

DESCRIPTION OF EVENT: The Chain of Custody for the above listed samples showed the samples were taken on 4/17/96. The samples arrived at Quanterra on 6/28/96. The difference in time from sampling to receipt at the lab exceeds the 14 day holding time for VOA by Method 8240, and the 28 day holding time for both Mercury by Method 7470 and TOC by Method 9060.

DISPOSITION OF SAMPLES: The 4/17/96 date on the Chain of Custody was incorect. The samples were actually collected on 6/17/96. The holding times for the samples were not missed. Quanterra is to analyze the samples as received and note the discrepancy in the narrative.

APPROVAL SIGNATURES:

S.M.Steele — July 9, 1996
SDLA Project Coordinator (Print/Sign Name) — Date

C.N.Villalobos — 7/11/96
Technical Representative (Print/Sign Name) — Date

# SAMPLE DATA AND LABORATORY ADMINISTRATION

## RECORD OF DISPOSITION REV 1

ROD-96-0044
Record of Disposition No.

| | |
|---|---|
| DATE: August 7, 1996 | LABORATORY: Quanterra |
| PROJECT TITLE/SAF #: 96-016 | NCR NO.: N/A |

SAMPLE IDENTIFICATION NUMBERS: B0HX42 and B0HX43

**DESCRIPTION OF EVENT:**

The chain of custody (COC) that was sent with the samples incorrectly listed the sampling date as 4/17/96. The sample collection date, as verified by the field samplers log book data entries, was 6/17/96. The incorrect listing on the COC of the sampling date has resulted in the laboratory noting that sample holding times had been missed and the result data sheet showing a sampling date of 4/17/96.

**DISPOSITION OF SAMPLES:**

This ROD is to serve as documentation from WHC that the sampling date of 4/17/96, as listed on the COC, is incorrect and that the correct sampling date is 6/17/96. The WHC customer has asked that the result data report, the original and priority re-run, be corrected to show the sampling date of 6/17/96. The case narrative is to be re-written to report the data results using the correct sampling date (6/17/96).

**APPROVAL SIGNATURES:**

Sharon Steele [signature] for S.S. 8/7/96
SDLA Project Coordinator (Print/Sign Name) Date

C. N. Villalobos [signature] 8/15/96
Technical Representative (Print/Sign Name) Date

Author: Karl B Hulse at ~WHC121
Date: 7/30/96 12:38 PM
Priority: Normal
TO: Carmen N Villalobos at ~WHC139
Subject: Re: PUREX Tank U3 RCRA Concerns

---------- Message Contents ----------

Karl,

Could you please respond to the appropriate below through cc:mail? I know you already spoke to me about it, but I would like to have it documented.

Thanks,
Carmen

---------- Forward Header ----------

Subject: PUREX Tank U3 RCRA Concerns
Author: Carmen N Villalobos at ~WHC139
Date: 7/16/96 8:25 AM

Sharon,
I have reviewed the data package for samples BOHX42 & BOHX43 and have some concerns. Could you please address these concerns?

Karl H,
Could you please assist in addressing concerns #2 & 3?

1. Certificate of Analysis:
Section V, Shipping and Receiving, states that the samples arrived out of holding time and the samples were analyzed and reported as received. As you know the chain of custody (COC) incorrectly indicated the sample collection date as April 17 instead of June 17, thus this is the reason for the "out of holding time".
- Could you please have Quanterra rewrite the narrative to note that the holding times were indeed met?

Section V, Wet Chemistry, states that "the samples arrived unpreserved as determined by a pH taken prior to analysis". As you know, these samples require no preservation except to be maintained at 4 degrees celsius.
- Unless Quanterra has a different reason for stating this, could you please have them remove this section. It could lead one to believe that the samples were not handled accordingly.

2. Quanterra's Condition Upon Receipt Variance Report St. Louis Laboratory notes that the activity scans (custody tape) had seals broken.
- Could you please investigate the reason for this?
Karl Hulse could you please provide some assistance.
Carmen: I talked with Karen the sample receiver at Quanterra Richland. She told me that it is standard practice for the activity scan to be opened and checked at Quanterra in Richland. The activity scan is sent along with the sample to St.Louis to keep the sample all together if there are no other rad analysis. The activity scan bottle is not resealed with tamper tape by Quanterra Richland.

3. As you know the chain of custody states the sampling date for samples BOHX42 and BOHX43 as being 4/17/96 instead of 6/17/96.
- An ROD was prepared addressing this anomoly.
Karl H., could you please ensure that the COC, log books, etc. specify the correct sample date?
Karl H., the received date reads 6/25/96 7:30, shouldn't it read 6/17/96 since it is the day actually received by you?
Carmen: The samples were taken by me on 6/17/96 and remained in my custody (locked in a refrigerator) until I delivered them to Quanterra. I relinquished custody on 6/25/96 at Quanterra at which time they were received by the sample custodian for Quanterra.
4. The Master Sample Login 11452 printout states 4/17/96 sample date.
- Could you ensure this is corrected?

5. Quanterra's Laboratory Nonconformance Memo page 2 notes the expired holding times and that no corrective actions were taken.
- Could you please ensure that Quanterra rewrite this memo to state the original concern and to note the corrective action as noted in the second ROD? Since in reality the holding times were not exceeded, could you please have them rewrite page 1 so it doesn't reflect a nonconformance.

6. Mercury was analyzed with a detection limit of 0.20 mg/kg.
- Could you please request a priority rerun of mercury with a detection limit of less than 0.20 mg/kg?

I realize that this is quite a list. However, these are concerns that Ecology has noted in the past. If you have any questions, please call me at 373-4753.

Thanks for your help!!!
Carmen

9613479.0319

W1056-QES-535
①

# CORRESPONDENCE DISTRIBUTION COVERSHEET

| Author | Addressee | Correspondence No. |
|---|---|---|
| C. N. Villalobos, 373-4753 | J. E. Mecca, RL | 9653803 |

Subject: TRANSMITTAL OF PLUTONIUM URANIUM EXTRACTION PLANT TANK U3 FLUSH ANALYTICAL RESULTS

## INTERNAL DISTRIBUTION

| Approval | Date | Name | Location | w/att |
|---|---|---|---|---|
| | | Correspondence Control | A3-01 | X |
| | | R. W. Bailey | S6-15 | |
| | | R. J. Bliss | B3-04 | |
| | | D. G. Hamrick | S6-15 | X |
| | | D. G. Harlow | S6-19 | |
| | | J. P. Hayfield | S6-18 | |
| | 18 SEP 96 | G. J. LeBaron | S6-19 | X |
| | | S. R. Moreno | B3-06 | |
| | 9/18/96 | W. A. Peiffer | S6-19 | |
| | | M. J. Stephenson | H6-20 | |
| | | C. N. Villalobos | S6-19 | X |
| | | DGH:CNV File/LB | | |

A-6001-538 (01/95) WEF008

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

September 18, 1996 9653803

J. E. Mecca, Director
Transition Programs Division
U.S. Department of Energy
Richland Operations Office
Richland, Washington 99352

Dear Mr. Mecca:

TRANSMITTAL OF PLUTONIUM URANIUM EXTRACTION PLANT TANK U3 FLUSH ANALYTICAL RESULTS

Reference: Letter, D. G. Hamrick, WHC, to J. E. Mecca, RL, "Transmittal of Plutonium Uranium Extraction Plant U Cell Vessels and F11 System Vessels, Part II (Tank F-18) Loop Flush Analytical Results," dated April 25, 1996.

Attachment 1 are laboratory analytical results conducted on the final flush for the Plutonium Uranium Extraction (PUREX) Plant Tank U3. These results are transmitted in accordance with U.S. Department of Energy, Richland Operations Office/Westinghouse Hanford Company agreement with State of Washington Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA).

A copy of the Predetermination Report, designating the final flush solution based on the analytical results, is also included in Attachment 1. The final flush for this tank was designated as non-dangerous waste.

This is the last of the analytical results from vessel flushes as defined in the reference and in WHC-SD-EN-TI-283, Revision 0, "Data Quality Objectives for PUREX Deactivation Flushing."

Attachment 2 is a letter for your transmittal of these results to Ecology and the EPA.

If you have any questions, please contact Mr. G. J. LeBaron (373-1792) of my staff.

Very truly yours,

D. G. Hamrick, Director
PUREX Transition Project
Transition Projects Division

sah

Attachments 2

DOE-HQ - J. E. Newson (w/o attachments)

RL - w/o attachments
G. M. Bell
B. F. Burton, Jr.
J. B. George
B. E. Hill
L. D. Romine
P. J. Valcich
S. J. Veitenheimer
A. H. Wirkkala

9653803

ATTACHMENT 1

TRANSMITTAL OF PLUTONIUM URANIUM EXTRACTION PLANT
TANK U3 FLUSH ANALYTICAL RESULTS

# PUREX TANK U3 RCRA ANALYTICAL DATA
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RCRA ANALYTICAL DATA SUMMARY
PUREX Tank U3
SAMPLE LOCATION: TANK U3
SAMPLE ID# B0HX43

| Analyte | Dangerous Waste Designation Threshold (mg/L) | RCRA Sample Results (mg/L) |
|---|---|---|
| Cadmium | 1.0 | 0.24 (U) |
| Chromium | 5.0 | 0.70 (B) |
| Lead | 5.0 | 2.9 (N) |
| Barium | 100.0 | 0.44 (B) |
| Silver | 5.0 | 0.59 (U) |
| Arsenic | 5.0 | 0.11 (U) |
| Selenium | 1.0 | 0.13 (U) |
| Mercury | 0.2 | 0.05 (U) |
| pH | pH<2 or pH>12.5 | 11.30 |
| Total Organic Carbon (TOC) | 100,000 (10wt% based upon designation limits for tri-butyl phosphate) | 48.9 |
| Benzene | 0.5 | undetect (U) |
| Carbon Tetrachloride | 0.5 | undetect (U) |
| Chlorobenzene | 100 | undetect (U) |
| Chloroform | 6.0 | undetect (U) |
| 1,2-Dichloroethane | 0.5 | undetect (U) |
| 1,1 Dichloroethylene | 0.7 | undetect (U) |
| 2-Butanone | 200 | undetect (U) |
| Tetrachloroethylene | 0.7 | undetect (U) |
| Trichloroethylene | 0.5 | undetect (U) |
| Vinyl Chloride | 0.2 | undetect (U) |

Definitions:
U = compound not detected
B = compound was found in the blank
N = interference present in matrix

# PROCESS SCREENING DATA

Mon, Jun 17, 1996 10:44 AM



SAMPLE INQUIRY

Company Name: PUREX Programs Westinghouse Hanford ComProject Code: U3

Group #: 96

Sample ID: P3706

Sample #: S96P000081

| Parameter | Rep | Result | Unit | Date | Analyst |
|---|---|---|---|---|---|
| Alpha in Liquid Samples | 0 | 4.33E-04 | uCi/mL | 06/13/96 | akl |
| Alpha Liq.- Rel. % Count Error | 0 | 5.34E+00 | % Ct. Error | 06/13/96 | akl |
| Beta in Liquid Samples | 0 | 5.24E-02 | uCi/mL | 06/13/96 | akl |
| Beta Liq.- Rel. % Count Error | 0 | 3.64E-01 | % Ct. Error | 06/13/96 | akl |
| Caustic Ratio | 0 | 2.42e-2 | lbs NaOH/gal | 06/13/96 | dgg |
| Cadmium-ICP-Acid Dil. | 0 | 3.87e-02 | ug/mL | 06/13/96 | bjg |
| Ce/Pr-144 by GEA | 0 | < 6.882e-04 | uCi/mL | 06/12/96 | krm |
| Ce/Pr-144 GEA Rel % Count Err | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Cobalt-60 by GEA | 0 | < 4.469e-05 | uCi/mL | 06/12/96 | krm |
| Co-60 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Color of Sample | 0 | yellow | | 06/12/96 | smf |
| Chromium-ICP-Acid Dil. | 0 | 5.00e-01 | ug/mL | 06/13/96 | bjg |
| Cesium-134 by GEA | 0 | < 5.402e 05 | uCi/mL | 06/12/96 | krm |
| Cs-134 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Cesium-137 by GEA | 0 | 1.320e-02 | uCi/mL | 06/12/96 | krm |
| Cs-137 GEA Rel. % Count Error | 0 | 2.02 | % Ct. Error | 06/12/96 | krm |
| Dose Rate in mrad/hour | 0 | 2.5 | mrad/hour | 06/12/96 | smf |
| DSC Exotherm using Mettler | 0 | 0 | Joules/g | 06/12/96 | adp |
| Europium-154 by GEA | 0 | < 1.669e-04 | uCi/mL | 06/12/96 | krm |
| Eu-154 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Europium-155 by GEA | 0 | < 1.517e-04 | uCi/mL | 06/12/96 | krm |
| Eu-155 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Niobium-94 by GEA | 0 | < 5.084e-05 | uCi/mL | 06/12/96 | krm |
| Nb-94 GEA Rel % Counting Error | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Nitrate by IC-Dionex 100 | 0 | 2.76e+3 | ug/mL | 06/13/96 | dgg |
| Organic Vol Present/sampleprep | 0 | none | mL | 06/12/96 | smf |
| Lead-ICP-Acid Dil. | 0 | 1.64e+00 | ug/mL | 06/13/96 | bjg |
| pH Direct | 0 | 2.34 | pH | 06/12/96 | dgg |
| Pu-239/240 by TRU-SPEC Resin | 0 | 6.77E-05 | uCi/mL | 06/13/96 | akl |
| Pu239 Relative % Count Error | 0 | 2.40E+00 | % Ct. Error | 06/13/96 | akl |
| Pu-236 Tracer % Recovery | 0 | 1.01E+02 | % Recovery | 06/13/96 | akl |
| Radium-226 by GEA | 0 | < 1.391e-03 | uCi/mL | 06/12/96 | krm |
| Ra-226 GEA Rel. % Counting Err | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Received Sample Yet? | 0 | RECEIVED | | 06/12/96 | lc |
| Ru/Rh-106 by GEA | 0 | < 1.059e-03 | uCi/mL | 06/12/96 | krm |
| Ru/Rh-106 GEA Rel. % Count Err | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Amt of Sam/Present sample prep | 0 | 30 | mL | 06/12/96 | smf |
| Specific Gravity | 0 | .994 | Sp.G. | 06/12/96 | adp |
| Tot. Organic Carbon by Coul. | 0 | < 5.50E+01 | ug/mL | 06/13/96 | dgg |
| Uranium by Phosphorescence | 0 | 1.35E+02 | ug/mL | 06/12/96 | dgg |
| U-Phosphorescence Inst. Error | 0 | 3.09E+00 | % Inst Error | 06/12/96 | dgg |
| Volume % Solids | 0 | none | % | 06/12/96 | smf |

SAMPLE INQUIRY

Company Name: PUREX Programs Westinghouse Hanford ComProject Code: U3 Group #: 96

Sample ID: P3707 Sample #: S96P000082

| Parameter | Rep | Result | Unit | Date | Analyst |
|---|---|---|---|---|---|
| Alpha in Liquid Samples | 0 | 5.56E-04 | uCi/mL | 06/13/96 | akl |
| Alpha Liq.- Rel. % Count Error | 0 | 4.73E+00 | % Ct. Error | 06/13/96 | akl |
| Beta in Liquid Samples | 0 | 6.85E-02 | uCi/mL | 06/13/96 | akl |
| Beta Liq.- Rel. % Count Error | 0 | 3.20E-01 | % Ct. Error | 06/13/96 | akl |
| Caustic Ratio | 0 | 2.52e-2 | lbs NaOH/gal | 06/13/96 | dgg |
| Cadmium-ICP-Acid Dil. | 0 | 4.74e-02 | ug/mL | 06/13/96 | bjg |
| Ce/Pr-144 by GEA | 0 | < 7.245e-04 | uCi/mL | 06/12/96 | krm |
| Ce/Pr-144 GEA Rel % Count Err | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Cobalt-60 by GEA | 0 | < 4.637e-05 | uCi/mL | 06/12/96 | krm |
| Co-60 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Color of Sample | 0 | yellow | | 06/12/96 | smf |
| Chromium-ICP-Acid Dil. | 0 | 5.83e-01 | ug/mL | 06/13/96 | bjg |
| Cesium-134 by GEA | 0 | < 5.786e-05 | uCi/mL | 06/12/96 | krm |
| Cs-134 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Cesium-137 by GEA | 0 | 1.960e-02 | uCi/mL | 06/12/96 | krm |
| Cs-137 GEA Rel. % Count Error | 0 | 1.64 | % Ct. Error | 06/12/96 | krm |
| Dose Rate in mrad/hour | 0 | 9 | mrad/hour | 06/12/96 | smf |
| DSC Exotherm using Mettler | 0 | 0 | Joules/g | 06/12/96 | adp |
| Europium-154 by GEA | 0 | < 1.430e-04 | uCi/mL | 06/12/96 | krm |
| Eu-154 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Europium-155 by GEA | 0 | < 1.610e-04 | uCi/mL | 06/12/96 | krm |
| Eu-155 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Niobium-94 by GEA | 0 | < 4.776e-05 | uCi/mL | 06/12/96 | krm |
| Nb-94 GEA Rel % Counting Error | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Nitrate by IC-Dionex 100 | 0 | 3.59e+3 | ug/mL | 06/13/96 | dgg |
| Organic Vol Present/sampleprep | 0 | none | mL | 06/12/96 | smf |
| Lead-ICP-Acid Dil. | 0 | 2.23e+00 | ug/mL | 06/13/96 | bjg |
| pH Direct | 0 | 2.06 | pH | 06/12/96 | dgg |
| Pu-239/240 by TRU-SPEC Resin | 0 | 8.85E-05 | uCi/mL | 06/13/96 | akl |
| Pu239 Relative % Count Error | 0 | 2.39E+00 | % Ct. Error | 06/13/96 | akl |
| Pu-236 Tracer % Recovery | 0 | 9.98E+01 | % Recovery | 06/13/96 | akl |
| Radium-226 by GEA | 0 | < 1.526e-03 | uCi/mL | 06/12/96 | krm |
| Ra-226 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Received Sample Yet? | 0 | RECEIVED | | 06/12/96 | lc |
| Ru/Rh-106 by GEA | 0 | < 1.140e-03 | uCi/mL | 06/12/96 | krm |
| Ru/Rh-106 GEA Rel. % Count Err | 0 | n/a | % Ct. Error | 06/12/96 | krm |
| Amt of Sam/Present sample prep | 0 | 30 | mL | 06/12/96 | smf |
| Specific Gravity | 0 | .985 | Sp.G. | 06/12/96 | adp |
| Tot. Organic Carbon by Coul. | 0 | 2.31E+02 | ug/mL | 06/13/96 | dgg |
| Uranium by Phosphorescence | 0 | 1.64E+02 | ug/mL | 06/12/96 | dgg |
| U-Phosphorescence Inst. Error | 0 | 3.10E+00 | % Inst Error | 06/12/96 | dgg |
| Volume % Solids | 0 | none | % | 06/12/96 | smf |

on, Jun 17, 1996 8:43 AM 

SAMPLE INQUIRY

ompany Name: PUREX Programs Westinghouse Hanford ComProject Code: U3 Group #: 96

ample ID: 3708 Sample #: S96P000083

| arameter | Rep | Result | Unit | Date | Analyst |
|---|---|---|---|---|---|
| trite by IC - Dionex 100 | 0 | 1.19e03 | ug/mL | 06/15/96 | jlf |
| - by Pot. Titration | 0 | 1.43e2 | ug/mL | 06/15/96 | rdm |
| Direct | 0 | 11.55 | pH | 06/15/96 | rdm |

SAMPLE INQUIRY

ompany Name: PUREX Programs - Westinghouse Hanford ComProject Code: U3 Group #: 96

ample ID: 3709 Sample #: S96P000084

| arameter | Rep | Result | Unit | Date | Analyst |
|---|---|---|---|---|---|
| itrite by IC - Dionex 100 | 0 | 1.20e03 | ug/mL | 06/15/96 | jlf |
| H- by Pot. Titration | 0 | < 125 | ug/mL | 06/15/96 | rdm |
| H Direct | 0 | 11.53 | pH | 06/15/96 | rdm |

# CHAIN OF CUSTODY

# SAMPLE DATA AND LABORATORY ADMINISTRATION

## RECORD OF DISPOSITION REV 1

ROD-96-0035
Record of Disposition No.
Rev. 1

| | |
|---|---|
| DATE: July 9, 1996 | LABORATORY: Quanterra |
| PROJECT TITLE/SAF #: PUREX Vessels' Flush Solutions/96-016 | NCR NO.: N/A |

SAMPLE IDENTIFICATION NUMBERS: B0HX42, B0HX43

DESCRIPTION OF EVENT: The Chain of Custody for the above listed samples showed the samples were taken on 4/17/96. The samples arrived at Quanterra on 6/28/96. The difference in time from sampling to receipt at the lab exceeds the 14 day holding time for VOA by Method 8240, and the 28 day holding time for both Mercury by Method 7470 and TOC by Method 9060.

DISPOSITION OF SAMPLES: The 4/17/96 date on the Chain of Custody was incorect. The samples were actually collected on 6/17/96. The holding times for the samples were not missed. Quanterra is to analyze the samples as received and note the discrepancy in the narrative.

APPROVAL SIGNATURES:

S.M.Steele — July 9, 1996
SDLA Project Coordinator (Print/Sign Name) — Date

C.N.Villalobos — 7/11/96
Technical Representative (Print/Sign Name) — Date

| SAMPLE DATA AND LABORATORY ADMINISTRATION<br>RECORD OF DISPOSITION REV 1 | ROD-96-0044<br>Record of Disposition No. |
|---|---|

| | |
|---|---|
| DATE: August 7, 1996 | LABORATORY: Quanterra |
| PROJECT TITLE/SAF #: 96-016 | NCR NO.: N/A |

SAMPLE IDENTIFICATION NUMBERS: BOHX42 and B0HX43

DESCRIPTION OF EVENT:

The chain of custody (COC) that was sent with the samples incorrectly listed the sampling date as 4/17/96. The sample collection date, as verified by the field samplers log book data entries, was 6/17/96. The incorrect listing on the COC of the sampling date has resulted in the laboratory noting that sample holding times had been missed and the result data sheet showing a sampling date of 4/17/96.

DISPOSITION OF SAMPLES:

This ROD is to serve as documentation from WHC that the sampling date of 4/17/96, as listed on the COC, is incorrect and that the correct sampling date is 6/17/96. The WHC customer has asked that the result data report, the original and priority re-run, be corrected to show the sampling date of 6/17/96. The case narrative is to be re-written to report the data results using the correct sampling date (6/17/96).

APPROVAL SIGNATURES:

Sharon Steele [signature] for S.S. 8/7/96
SDLA Project Coordinator (Print/Sign Name) Date

C. N. Villalobos [signature] 8/15/96
Technical Representative (Print/Sign Name) Date

| Westinghouse Hanford Company | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C # 100204 |
|---|---|---|
| | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector HULSE, KARL | Contact/Requestor VILLALOBOS, CARMEN | Tel. No. 373-4753 MSIN S6-19 FAX |
| SAF Number 96-016 | Sample Origin PUREX | Purchase Order/Charge Code |
| Project Title PUREX Vessels Flush Solutions | Logbook # WHC-N-205 | Ice Chest # Temp. |
| Shipped To (Lab) Quanterra | Method of Shipment Gov. Vehicle | Bill of Lading/Air Bill No. N/A |
| Protocol RCRA | Data Turnaround PRIORITY | Offsite Property No. N/A |

| Sample No. | Lab. ID | * | Date | Time | No/Type Container | Sample Analysis | Preservative |
|---|---|---|---|---|---|---|---|
| B01IX42 | | L | 4/17/96 | 1400 | (1) 20 P | ACTIVITY SCAN (Lab Specific) 80% | None |
| B01IX42 | | L | 4/17/96 | 1400 | (1) 1000 aG | ICP Metals, TAL (6010) plus, Lead 97421), Arsenic (7060), Selenium (7740), Mercury (7470) 75% | Cool to 4°C |
| B01IX42 | | L | 4/17/96 | 1400 | (1) 40 aGs | pH (9040) 100% | None |
| B01IX42 | | L | 4/17/96 | 1400 | (1) 40 aGs | TOC (9060) L0063240.1 100% | Cool to 4°C |
| B01IX42 | | L | 4/17/96 | 1400 | (1) 40 aGs | VOA (8240) 100% | Cool to 4°C |
| B01IX42 | | L | 4/17/96 | 1400 | (1) 40 aGs | VOA (8240) 100% | Cool to 4°C |
| B01IX43 | | L | 4/17/96 | 1400 | (1) 20 P | ACTIVITY SCAN (Lab Specific) 80% | None |
| B01IX43 | | L | 4/17/96 | 1400 | (1) 1000 aG | ICP Metals, TAL (6010) plus, Lead (7421), Arsenic (7060), Selenium (7740), Mercury (7470) 250ml 25% | Cool to 4°C |
| B01IX43 | | L | 4/17/96 | 1400 | (1) 40 aGs | pH (9040) 100% | None |
| B01IX43 | | L | 4/17/96 | 1400 | (1) 40 aGs | TOC (9060) L0063240.2 100% | Cool to 4°C |
| B01IX43 | | L | 4/17/96 | 1400 | (1) 40 aGs | VOA (8240) 100% | Cool to 4°C |
| B01IX43 | | L | 4/17/96 | 1400 | (1) 40 aGs | VOA (8240) 100% | Cool to 4°C |

Further Inquiry

29,000 cpm

**POSSIBLE SAMPLE HAZARDS/REMARKS** MSDS Yes ☐ No ☒

List all known wastes. B01IX42 ICP Metals 1L Bottle contains only about 250 ml. This was all sample that could be obtained

**SPECIAL INSTRUCTIONS** Hold Time

Priority Turnaround Summary Data Deliv

SDG-W01056

**PRIORITY TURNAROUND**

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| KB Hulse | | KB Hulse | 6/25/96 0730 | K.J. Yang | | Yang | 6/25/96 0730 |
| Yang | K.J. Yang | WHC | 6/25/96 1005 | Karen Stettenberg | | Karen Stettenberg | 6-25-96 1005 |
| | | | | | | | |

Matrix *

| | | | |
|---|---|---|---|
| S = Soil | | DS = Drum Solids | |
| SE = Sediment | | DL = Drum Liquids | |
| SO = Solid | | T = Tissue | |
| SL = Sludge | | WI = Wipe | |
| W = Water | | L = Liquid | |
| O = Oil | | V = Vegetation | |
| A = Air | | X = Other | |

| Relinquished By | Date/Time | Received By | Date/Time |
|---|---|---|---|
| | | | |

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

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-8001-600 (07/96)

10

Temp 2°c Cux# 7492

Go St Louis

# Chain of Custody Record

Quanterra Environmental Services

QUA-4124-1

| | | | |
|---|---|---|---|
| Client: Westinghouse | Project Manager: Van Putney | Date: 6-25-96 | Chain Of Custody Number: 54400 |
| Address | Telephone Number (Area Code)/Fax Number | Lab Number | Page 1 of 1 |
| City / State / Zip Code | Site Contact | Lab Contact | |
| Project Name: SAF 96-016 | Carrier/Waybill Number | | |
| Contract/Purchase Order/Quote No. | | | |

Analysis (Attach list if more space is needed): SEE COC

Special Instructions/ Conditions of Receipt

| Sample I.D. No. and Description (Containers for each sample may be combined on one line) | Date | Time | Aqueous | Sed. | Soil | | Unpres. | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | ZnAc/NaOH | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60632401 BOHX42 | Chemical bottles only | | | | | | | | | | | | |
| ↓ 02 ↓ X43 | | | | | | | | | | | | | |

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

Sample Disposal: ☑ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☑ Other Due 7-10-96

QC Requirements (Specify): SDG W01056

| | | | | | |
|---|---|---|---|---|---|
| 1. Relinquished By: Hudelberg Quanterra | Date: 6-25-96 | Time: 16:00 | 1. Received By: 2nd m titled | Date: 6-26-96 | Time: 09:00 |
| 2. Relinquished By | Date | Time | 2. Received By | Date | Time |
| 3. Relinquished By | Date | Time | 3. Received By | Date | Time |

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

# RAD SCREENING DATA

SAMPLE INQUIRY by GROUP

Company Name: PUREX Programs Westinghouse Hanford Company Project Code: U3 Group #: 96

Sample #: S96P000086 Sample ID: BOHX42

| Parameter | Rep | Result | Unit | %Recov | Date | Analyst |
|---|---|---|---|---|---|---|
| Actinium-228 by GEA | 0 | < 1.224e-04 | uCi/mL | | 06/18/96 | eal |
| Ac-228 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Alpha in Liquid Samples | 0 | 4.21E-07 | uCi/mL | | 06/19/96 | dgg |
| Alpha Liq.- Rel. % Count Error | 0 | 1.21E+02 | % Ct. Error | | 06/19/96 | dgg |
| Americium-241 by GEA | 0 | < 1.622e-04 | uCi/mL | | 06/18/96 | eal |
| Am-241 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Americium-243 by GEA | 0 | < 4.138e-05 | uCi/mL | | 06/18/96 | eal |
| Am-243 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Beta in Liquid Samples | 0 | < 1.69E-06 | uCi/mL | | 06/19/96 | dgg |
| Beta Liq.- Rel. % Count Error | 0 | 5.00E+02 | % Ct. Error | | 06/19/96 | dgg |
| Bismuth-212 by GEA | 0 | < 3.275e-04 | uCi/mL | | 06/18/96 | eal |
| Bi-212 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Bismuth-214 by GEA | 0 | < 6.584e-05 | uCi/mL | | 06/18/96 | eal |
| Bi-214 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cadmium-109 by GEA | 0 | < 4.668e-04 | uCi/mL | | 06/18/96 | eal |
| Cd-109 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ce/Pr-144 by GEA | 0 | < 2.177e-04 | uCi/mL | | 06/18/96 | eal |
| Ce/Pr-144 GEA Rel % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-56 by GEA | 0 | < 2.360e-05 | uCi/mL | | 06/18/96 | eal |
| Co-56 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-57 by GEA | 0 | < 1.493e-05 | uCi/mL | | 06/18/96 | eal |
| Co-57 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-60 by GEA | 0 | < 2.394e-05 | uCi/mL | | 06/18/96 | eal |
| Co-60 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cesium-134 by GEA | 0 | < 2.191e-05 | uCi/mL | | 06/18/96 | eal |
| Cs-134 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cesium-137 by GEA | 0 | < 6.041e-05 | uCi/mL | | 06/18/96 | eal |
| Cs-137 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-152 by GEA | 0 | < 9.094e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-152 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-154 by GEA | 0 | < 7.154e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-154 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-155 by GEA | 0 | < 6.082e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-155 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Mercury-203 by GEA | 0 | < 1.921e-05 | uCi/mL | | 06/18/96 | eal |
| Hg-203 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Iodine-131 by GEA | 0 | < 2.436e-05 | uCi/mL | | 06/18/96 | eal |
| I-131 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Potassium-40 by GEA | 0 | < 9.284e-04 | uCi/mL | | 06/18/96 | eal |
| K-40 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sodium-22 by GEA | 0 | < 2.457e-05 | uCi/mL | | 06/18/96 | eal |
| Na-22 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sodium-24 by GEA | 0 | < 1.656e-05 | uCi/mL | | 06/18/96 | eal |
| Na-24 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Niobium-94 by GEA | 0 | < 2.041e-05 | uCi/mL | | 06/18/96 | eal |
| Nb-94 GEA Rel % Counting Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Neptunium-237 by GEA | 0 | < 1.476e-04 | uCi/mL | | 06/18/96 | eal |
| Np-237 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Neptunium-239 by GEA | 0 | < 5.683e-05 | uCi/mL | | 06/18/96 | eal |

SAMPLE INQUIRY by GROUP

Company Name: PUREX Programs Westinghouse Hanford Company Project Code: U3 Group #: 96

| Parameter | Rep | Result | Unit | %Recov | Date | Analyst |
|---|---|---|---|---|---|---|
| Sample #: S96P000086 Sample ID: BOHX42 [Continued] | | | | | | |
| Np-239 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Protactinium-233 by GEA | 0 | < 4.734e-05 | uCi/mL | | 06/18/96 | eal |
| Pa-233 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Protactinium-234m by GEA | 0 | < 3.441e-05 | uCi/mL | | 06/18/96 | eal |
| Pa-234m GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Lead-212 by GEA | 0 | < 4.486e-05 | uCi/mL | | 06/18/96 | eal |
| Pb-212 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Lead-214 by GEA | 0 | < 1.149e-04 | uCi/mL | | 06/18/96 | eal |
| Pb-214 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Plutonium-239 by GEA | 0 | < 1.919e-01 | uCi/mL | | 06/18/96 | eal |
| Pu-239 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Radium-224 by GEA | 0 | < 4.621e-04 | uCi/mL | | 06/18/96 | eal |
| Ra-224 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Radium-226 by GEA | 0 | < 4.274e-04 | uCi/mL | | 06/18/96 | eal |
| Ra-226 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ruthenium-103 by GEA | 0 | < 2.045e-05 | uCi/mL | | 06/18/96 | eal |
| Ru-103 GEA Rel % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ru/Rh-106 by GEA | 0 | < 4.328e-04 | uCi/mL | | 06/18/96 | eal |
| Ru/Rh-106 GEA Rel. % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Selenium-75 by GEA | 0 | < 3.023e-05 | uCi/mL | | 06/18/96 | eal |
| Se-75 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Tin-113 by GEA | 0 | < 3.434e-05 | uCi/mL | | 06/18/96 | eal |
| Sn-113 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Strontium-85 by GEA | 0 | < 2.613e-05 | uCi/mL | | 06/18/96 | eal |
| Sr-85 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-228 by GEA | 0 | < 1.576e-03 | uCi/mL | | 06/18/96 | eal |
| Th-228 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-229 by GEA | 0 | < 6.639e-05 | uCi/mL | | 06/18/96 | eal |
| Th-229 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-234 by GEA | 0 | < 8.867e-04 | uCi/mL | | 06/18/96 | eal |
| Th-234 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thallium-208 by GEA | 0 | < 2.802e-04 | uCi/mL | | 06/18/96 | eal |
| Tl-208 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Uranium/Thorium-233 by GEA | 0 | < 1.489e-02 | uCi/mL | | 06/18/96 | eal |
| U/Th-233 GEA Rel % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Uranium-235 by GEA | 0 | < 2.622e-05 | uCi/mL | | 06/18/96 | eal |
| U-235 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Yttrium-88 by GEA | 0 | < 2.565e-05 | uCi/mL | | 06/18/96 | eal |
| Y-88 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Zr/Nb-95 by GEA | 0 | < 3.938e-05 | uCi/mL | | 06/18/96 | eal |
| Zr/Nb-95 GEA Rel % Count. Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sample #: S96P000087 Sample ID: BOHX43 | | | | | | |
| Actinium-228 by GEA | 0 | < 1.002e-04 | uCi/mL | | 06/18/96 | eal |
| Ac-228 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Alpha in Liquid Samples | 0 | 7.45E-04 | uCi/mL $7.45 \times 10^{-2}$ | | 06/19/96 | dgg |
| Alpha Liq.- Rel. % Count Error | 0 | 2.74E+00 | % Ct. Error | | 06/19/96 | dgg |
| Americium-241 by GEA | 0 | < 4.394e-04 | uCi/mL | | 06/18/96 | eal |
| Am-241 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Americium-243 by GEA | 0 | < 1.025e-04 | uCi/mL | | 06/18/96 | eal |

SAMPLE INQUIRY by GROUP

Company Name: PUREX Programs Westinghouse Hanford Company Project Code: U3 Group #: 96

Sample #: S96P000087 Sample ID: BOHX43 [Continued]

| Parameter | Rep | Result | Unit | %Recov | Date | Analyst |
|---|---|---|---|---|---|---|
| Am-243 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Beta in Liquid Samples | 0 | 6.44E-02 | uCi/mL | 4.32x10⁴ | 06/19/96 | dgg |
| Beta Liq.- Rel. % Count Error | 0 | 2.07E-01 | % Ct. Error | | 06/19/96 | dgg |
| Bismuth-212 by GEA | 0 | < 3.750e-04 | uCi/mL | | 06/18/96 | eal |
| Bi-212 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Bismuth-214 by GEA | 0 | < 1.136e-04 | uCi/mL | | 06/18/96 | eal |
| Bi-214 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cadmium-109 by GEA | 0 | < 1.228e-03 | uCi/mL | | 06/18/96 | eal |
| Cd-109 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ce/Pr-144 by GEA | 0 | < 6.107e-04 | uCi/mL | | 06/18/96 | eal |
| Ce/Pr-144 GEA Rel % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-56 by GEA | 0 | < 2.349e-05 | uCi/mL | | 06/18/96 | eal |
| Co-56 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-57 by GEA | 0 | < 4.042e-05 | uCi/mL | | 06/18/96 | eal |
| Co-57 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cobalt-60 by GEA | 0 | < 2.871e-05 | uCi/mL | | 06/18/96 | eal |
| Co-60 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cesium-134 by GEA | 0 | < 4.758e-05 | uCi/mL | | 06/18/96 | eal |
| Cs-134 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Cesium-137 by GEA | 0 | 2.130e-02 | uCi/mL | 2.13x10⁴ | 06/18/96 | eal |
| Cs-137 GEA Rel. % Count Error | 0 | 1.50 | % Ct. Error | | 06/18/96 | eal |
| Europium-152 by GEA | 0 | < 8.134e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-152 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-154 by GEA | 0 | < 5.834e-05 | uCi/mL | | 06/18/96 | eal |
| Eu-154 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Europium-155 by GEA | 0 | < 1.677e-04 | uCi/mL | | 06/18/96 | eal |
| Eu-155 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Mercury-203 by GEA | 0 | < 6.201e-05 | uCi/mL | | 06/18/96 | eal |
| Hg-203 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Iodine-131 by GEA | 0 | < 7.454e-05 | uCi/mL | | 06/18/96 | eal |
| I-131 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Potassium-40 by GEA | 0 | < 8.997e-04 | uCi/mL | | 06/18/96 | eal |
| K-40 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sodium-22 by GEA | 0 | < 2.014e-05 | uCi/mL | | 06/18/96 | eal |
| Na-22 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Sodium-24 by GEA | 0 | < 1.982e-05 | uCi/mL | | 06/18/96 | eal |
| Na-24 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Niobium-94 by GEA | 0 | < 2.271e-05 | uCi/mL | | 06/18/96 | eal |
| Nb-94 GEA Rel % Counting Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Neptunium-237 by GEA | 0 | < 3.743e-04 | uCi/mL | | 06/18/96 | eal |
| Np-237 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Neptunium-239 by GEA | 0 | < 1.577e-04 | uCi/mL | | 06/18/96 | eal |
| Np-239 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Protactinium-233 by GEA | 0 | < 1.389e-04 | uCi/mL | | 06/18/96 | eal |
| Pa-233 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Protactinium-234m by GEA | 0 | < 5.306e-05 | uCi/mL | | 06/18/96 | eal |
| Pa-234m GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Lead-212 by GEA | 0 | < 1.164e-04 | uCi/mL | | 06/18/96 | eal |
| Pb-212 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Lead-214 by GEA | 0 | < 3.021e-04 | uCi/mL | | 06/18/96 | eal |

SAMPLE INQUIRY by GROUP

Company Name: PUREX Programs Westinghouse Hanford Company Project Code: U3 Group #: 96

| Parameter | Rep | Result | Unit | %Recov | Date | Analyst |
|---|---|---|---|---|---|---|
| Sample #: S96P000087 Sample ID: BOHX43 [Continued] | | | | | | |
| Pb-214 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Plutonium-239 by GEA | 0 | < 5.575e-01 | uCi/mL | | 06/18/96 | eal |
| Pu-239 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Radium-224 by GEA | 0 | < 1.290e-03 | uCi/mL | | 06/18/96 | eal |
| Ra-224 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Radium-226 by GEA | 0 | < 1.278e-03 | uCi/mL | | 06/18/96 | eal |
| Ra-226 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ruthenium-103 by GEA | 0 | < 6.930e-05 | uCi/mL | | 06/18/96 | eal |
| Ru-103 GEA Rel % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Ru/Rh-106 by GEA | 0 | < 9.131e-04 | uCi/mL | | 06/18/96 | eal |
| Ru/Rh-106 GEA Rel. % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Selenium-75 by GEA | 0 | < 8.328e-05 | uCi/mL | | 06/18/96 | eal |
| Se-75 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Tin-113 by GEA | 0 | < 1.033e-04 | uCi/mL | | 06/18/96 | eal |
| Sn-113 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Strontium-85 by GEA | 0 | < 6.957e-05 | uCi/mL | | 06/18/96 | eal |
| Sr-85 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-228 by GEA | 0 | < 3.910e-03 | uCi/mL | | 06/18/96 | eal |
| Th-228 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-229 by GEA | 0 | < 1.781e-04 | uCi/mL | | 06/18/96 | eal |
| Th-229 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thorium-234 by GEA | 0 | < 2.527e-03 | uCi/mL | | 06/18/96 | eal |
| Th-234 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Thallium-208 by GEA | 0 | < 8.152e-04 | uCi/mL | | 06/18/96 | eal |
| Tl-208 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Uranium/Thorium-233 by GEA | 0 | < 4.681e-02 | uCi/mL | | 06/18/96 | eal |
| U/Th-233 GEA Rel % Count Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Uranium-235 by GEA | 0 | < 7.793e-05 | uCi/mL | | 06/18/96 | eal |
| U-235 GEA Rel % Counting Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Yttrium-88 by GEA | 0 | < 1.484e-05 | uCi/mL | | 06/18/96 | eal |
| Y-88 GEA Rel. % Count Error | 0 | n/a | % Ct. Error | | 06/18/96 | eal |
| Zr/Nb-95 by GEA | 0 | < 5.770e-05 | uCi/mL | | 06/18/96 | eal |
| Zr/Nb-95 GEA Rel % Count. Err | 0 | n/a | % Ct. Error | | 06/18/96 | eal |

Quanterra Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

# CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

July 12, 1996

Attention: Karl Pool

| | | |
|---|---|---|
| Project number | : | 519.136 |
| Date Received by Lab | : | June 25, 1996 |
| Number of Samples | : | Two (2) |
| Sample Type | : | Liquid |
| SDG Number | : | W01056 |
| Data Deliverable | : | Summary |

## I. Introduction

On June 25, 1996, two (2) liquid samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client ID's:

| St Louis ID | WHC ID | Richland ID | Matrix | Date of Receipt |
|---|---|---|---|---|
| 11452-001 | B0HX42 | 60632401 | Liquid | 6/25/96 |
| 11452-002 | B0HX43 | 60632402 | Liquid | 6/25/96 |

## II. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits.

Analyses requested: pH by EPA method 9040. TOC by EPA method 9060. VOA by EPA method 8240. TAL ICP Metals by EPA method 6010. Arsenic by EPA method 7060. Lead by EPA method 7421. Selenium by EPA method 7740. Mercury by EPA method 7470.

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III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Matrix Spike Duplicate and/or Sample Duplicate analyses were performed per the protocol for each analyte. pH analysis uses only Sample Duplicate for matrix QC.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike

V. Comments

Shipping and Receiving
The chain of custody arrived at the laboratory stating the sampling date as 4/17/96 making the samples out of holding time. Per ROD-96-0044, the samples true sampling date is 6/17/96 and the samples were not out of holding time. This ROD supercedes ROD-96-0035.

General Reporting
The results are reported in mg/L for the TOC analysis and mg/kg or ug/kg for all other analyses due to sample matrix. The Density of both samples was determined to be 1.00 g/ml. This value can be used to convert each result to the desired units.

Volatiles
There are no comments or nonconformances associated with this analysis.

Westinghouse Hanford Company
July 12, 1996
Project Number: 519.136
SDG: W01056
Page 3

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Metals
The matrix spike recovery in sample 11452-001 was outside the 80-120% limit for lead (137.5%) with an Relative Percent Difference for the Matrix Spike/Matrix Spike Difference of 39.4%. The associated data for lead was flagged with an "N".

Percent solids was not determined for the samples in SDG W01056. Due to software configuration, the CLP forms list solid sample result units as " dry weight" and % solids as " 100 ". The results on the forms are actually mg/Kg as is and are not corrected for percent solids. The figure of 100 was used as percent solids for calculation purposes only and does not represent measured solids content of the samples.

Wet Chemistry
The Relative Percent Difference could not be calculated for the TOC analysis due to the sample concentrations being below the detection limit.

I certify that this data package 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:

Wade H. Price
Project Manager
Quanterra Environmental Services, Inc.
e:\\sqlmc01\price5\abbydave\hanford\hanw1056.nar

# DATA ANALYSIS

# METALS

Quanterra Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: ICAP Metals
Method: EPA 6010
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Client ID: BOHX42

Quanterra ID : 11452-001

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 5.3 | MG/KG | U | 20.0 | 1 |
| Antimony | 7440-36-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 3.5 | MG/KG | U | 6.0 | 1 |
| Barium | 7440-39-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.21 | MG/KG | B | 20.0 | 1 |
| Beryllium | 7440-41-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.05 | MG/KG | U | 0.50 | 1 |
| Cadmium | 7440-43-9 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.24 | MG/KG | U | 0.50 | 1 |
| Calcium | 7440-70-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 185 | MG/KG | B | 500 | 1 |
| Chromium | 7440-47-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.41 | MG/KG | U | 1.0 | 1 |
| Cobalt | 7440-48-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.48 | MG/KG | U | 5.0 | 1 |
| Copper | 7440-50-8 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.56 | MG/KG | U | 2.5 | 1 |
| Iron | 7439-89-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 2.6 | MG/KG | B | 10.0 | 1 |
| Magnesium | 7439-95-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 20.9 | MG/KG | B | 500 | 1 |
| Manganese | 7439-96-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.12 | MG/KG | U | 1.5 | 1 |
| Nickel | 7440-02-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.91 | MG/KG | U | 4.0 | 1 |
| Potassium | 7440-09-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 182 | MG/KG | U | 500 | 1 |
| Silver | 7440-22-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.59 | MG/KG | U | 1.0 | 1 |
| Sodium | 7440-23-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 13.4 | MG/KG | B | 500 | 1 |
| Vanadium | 7440-62-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.57 | MG/KG | U | 5.0 | 1 |
| Zinc | 7440-66-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.65 | MG/KG | U | 2.0 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: ICAP Metals
Method: EPA 6010
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Client ID: B0HX42

Quanterra ID : 11452-001MS

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 99 | %REC | | | 1 |
| Antimony | 7440-36-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |
| Barium | 7440-39-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Beryllium | 7440-41-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 103 | %REC | | | 1 |
| Cadmium | 7440-43-9 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |
| Chromium | 7440-47-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Cobalt | 7440-48-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Copper | 7440-50-8 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |
| Iron | 7439-89-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 100 | %REC | | | 1 |
| Manganese | 7439-96-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 97 | %REC | | | 1 |
| Nickel | 7440-02-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 100 | %REC | | | 1 |
| Silver | 7440-22-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 93 | %REC | | | 1 |
| Vanadium | 7440-62-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 96 | %REC | | | 1 |
| Zinc | 7440-66-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: ICAP Metals
Method: EPA 6010
Matrix: LIQUID

Client ID: B0HX42

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Quanterra ID : 11452-001MSD

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 99 | %REC | | | 1 |
| Antimony | 7440-36-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 103 | %REC | | | 1 |
| Barium | 7440-39-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 97 | %REC | | | 1 |
| Beryllium | 7440-41-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 101 | %REC | | | 1 |
| Cadmium | 7440-43-9 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 100 | %REC | | | 1 |
| Chromium | 7440-47-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Cobalt | 7440-48-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Copper | 7440-50-8 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |
| Iron | 7439-89-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 99 | %REC | | | 1 |
| Manganese | 7439-96-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 97 | %REC | | | 1 |
| Nickel | 7440-02-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |
| Silver | 7440-22-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 94 | %REC | | | 1 |
| Vanadium | 7440-62-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 96 | %REC | | | 1 |
| Zinc | 7440-66-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 102 | %REC | | | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: ICAP Metals
Method: EPA 6010
Matrix: LIQUID

Client ID: BOHX43

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Quanterra ID : 11452-002

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 5.3 | MG/KG | U | 20.0 | 1 |
| Antimony | 7440-36-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 3.5 | MG/KG | U | 6.0 | 1 |
| Barium | 7440-39-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.44 | MG/KG | B | 20.0 | 1 |
| Beryllium | 7440-41-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.05 | MG/KG | U | 0.50 | 1 |
| Cadmium | 7440-43-9 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.24 | MG/KG | U | 0.50 | 1 |
| Calcium | 7440-70-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 602 | MG/KG | | 500 | 1 |
| Chromium | 7440-47-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.70 | MG/KG | B | 1.0 | 1 |
| Cobalt | 7440-48-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.48 | MG/KG | U | 5.0 | 1 |
| Copper | 7440-50-8 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 2.5 | MG/KG | | 2.5 | 1 |
| Iron | 7439-89-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 20.7 | MG/KG | | 10.0 | 1 |
| Magnesium | 7439-95-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 42.2 | MG/KG | B | 500 | 1 |
| Manganese | 7439-96-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.68 | MG/KG | B | 1.5 | 1 |
| Nickel | 7440-02-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 1.1 | MG/KG | B | 4.0 | 1 |
| Potassium | 7440-09-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 182 | MG/KG | U | 500 | 1 |
| Silver | 7440-22-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.59 | MG/KG | U | 1.0 | 1 |
| Sodium | 7440-23-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 2490 | MG/KG | | 500 | 1 |
| Vanadium | 7440-62-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.57 | MG/KG | U | 5.0 | 1 |
| Zinc | 7440-66-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 1.9 | MG/KG | B | 2.0 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: ICAP Metals
Method: EPA 6010
Matrix: LIQUID

Client ID: NA

Sample Date : NA
Receipt Date : NA
Report Date : 08/15/96

Quanterra ID : QCBLK105316-1

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 5.3 | MG/KG | U | 20.0 | 1 |
| Antimony | 7440-36-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 3.5 | MG/KG | U | 6.0 | 1 |
| Barium | 7440-39-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | -0.13 | MG/KG | B | 20.0 | 1 |
| Beryllium | 7440-41-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.05 | MG/KG | U | 0.50 | 1 |
| Cadmium | 7440-43-9 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.24 | MG/KG | U | 0.50 | 1 |
| Calcium | 7440-70-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 2.1 | MG/KG | U | 500 | 1 |
| Chromium | 7440-47-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.41 | MG/KG | U | 1.0 | 1 |
| Cobalt | 7440-48-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.48 | MG/KG | U | 5.0 | 1 |
| Copper | 7440-50-8 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.56 | MG/KG | U | 2.5 | 1 |
| Iron | 7439-89-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 2.4 | MG/KG | B | 10.0 | 1 |
| Magnesium | 7439-95-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | -14.8 | MG/KG | B | 500 | 1 |
| Manganese | 7439-96-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.12 | MG/KG | U | 1.5 | 1 |
| Nickel | 7440-02-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.91 | MG/KG | U | 4.0 | 1 |
| Potassium | 7440-09-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 182 | MG/KG | U | 500 | 1 |
| Silver | 7440-22-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.59 | MG/KG | U | 1.0 | 1 |
| Sodium | 7440-23-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | -11.4 | MG/KG | B | 500 | 1 |
| Vanadium | 7440-62-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | -0.87 | MG/KG | B | 5.0 | 1 |
| Zinc | 7440-66-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 0.65 | MG/KG | U | 2.0 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: ICAP Metals
Method: EPA 6010
Matrix: LIQUID

Client ID: NA

Sample Date : NA
Receipt Date : NA
Report Date : 08/15/96

Quanterra ID : QCLCS105316-1

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 76 | %REC | | | 1 |
| Antimony | 7440-36-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 128 | %REC | | | 1 |
| Barium | 7440-39-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 93 | %REC | | | 1 |
| Beryllium | 7440-41-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 96 | %REC | | | 1 |
| Cadmium | 7440-43-9 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Calcium | 7440-70-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 103 | %REC | | | 1 |
| Chromium | 7440-47-3 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 95 | %REC | | | 1 |
| Cobalt | 7440-48-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| Copper | 7440-50-8 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 96 | %REC | | | 1 |
| Iron | 7439-89-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 92 | %REC | | | 1 |
| Magnesium | 7439-95-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 93 | %REC | | | 1 |
| Manganese | 7439-96-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 95 | %REC | | | 1 |
| Nickel | 7440-02-0 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 97 | %REC | | | 1 |
| Potassium | 7440-09-7 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 94 | %REC | | | 1 |
| Silver | 7440-22-4 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 106 | %REC | | | 1 |
| Sodium | 7440-23-5 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 97 | %REC | | | 1 |
| Vanadium | 7440-62-2 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 91 | %REC | | | 1 |
| Zinc | 7440-66-6 | QCBLK105316-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Arsenic
Method: EPA 7060
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | Arsenic | 7440-38-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 0.11 | MG/KG | U | 1.0 | 1 |
| BOHX42 | 11452-001MS | Arsenic | 7440-38-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 92 | %REC | | | 1 |
| BOHX42 | 11452-001MSD | Arsenic | 7440-38-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 97 | %REC | | | 1 |
| BOHX43 | 11452-002 | Arsenic | 7440-38-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 0.11 | MG/KG | U | 1.0 | 1 |
| NA | QCLCS105321-1 | Arsenic | 7440-38-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 105 | %REC | | | 20 |
| NA | QCBLK105321-1 | Arsenic | 7440-38-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 0.11 | MG/KG | U | 1.0 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Lead
Method: EPA 7421
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | Lead | 7439-92-1 | QCBLK105321-1 | 06/27/96 | 06/27/96 | 0.16 | MG/KG | BN | 0.30 | 1 |
| BOHX42 | 11452-001MS | Lead | 7439-92-1 | QCBLK105321-1 | 06/27/96 | 06/27/96 | 138 | %REC | N | | 1 |
| BOHX42 | 11452-001MSD | Lead | 7439-92-1 | QCBLK105321-1 | 06/27/96 | 06/27/96 | 92 | %REC | | | 1 |
| BOHX43 | 11452-002 | Lead | 7439-92-1 | QCBLK105321-1 | 06/27/96 | 06/27/96 | 2.9 | MG/KG | N | 0.30 | 1 |
| NA | QCLCS105321-1 | Lead | 7439-92-1 | QCBLK105321-1 | 06/27/96 | 06/27/96 | 103 | %REC | | | 10 |
| NA | QCBLK105321-1 | Lead | 7439-92-1 | QCBLK105321-1 | 06/27/96 | 06/27/96 | 0.12 | MG/KG | U | 0.30 | 1 |

Quanterra Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Selenium
Method: EPA 7000 Series
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | Selenium | 7782-49-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 0.13 | MG/KG | U | 0.50 | 1 |
| BOHX42 | 11452-001MS | Selenium | 7782-49-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 109 | %REC | | | 1 |
| BOHX42 | 11452-001MSD | Selenium | 7782-49-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 100 | %REC | | | 1 |
| BOHX43 | 11452-002 | Selenium | 7782-49-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 0.13 | MG/KG | U | 0.50 | 1 |
| NA | QCLCS105321-1 | Selenium | 7782-49-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 95 | %REC | | | 20 |
| NA | QCBLK105321-1 | Selenium | 7782-49-2 | QCBLK105321-1 | 06/27/96 | 06/28/96 | 0.13 | MG/KG | U | 0.50 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Mercury
Method: EPA 7470
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | Mercury | 7439-97-6 | QCBLK105509-1 | 06/28/96 | 06/28/96 | 0.05 | MG/KG | U | 0.20 | 1 |
| BOHX42 | 11452-001MS | Mercury | 7439-97-6 | QCBLK105509-1 | 06/28/96 | 06/28/96 | 93 | %REC | | | 1 |
| BOHX42 | 11452-001MSD | Mercury | 7439-97-6 | QCBLK105509-1 | 06/28/96 | 06/28/96 | 96 | %REC | | | 1 |
| BOHX43 | 11452-002 | Mercury | 7439-97-6 | QCBLK105509-1 | 06/28/96 | 06/28/96 | 0.05 | MG/KG | U | 0.20 | 1 |
| NA | QCLCS105509-1 | Mercury | 7439-97-6 | QCBLK105509-1 | 06/28/96 | 06/28/96 | 100 | %REC | | | 1 |
| NA | QCBLK105509-1 | Mercury | 7439-97-6 | QCBLK105509-1 | 06/28/96 | 06/28/96 | 0.05 | MG/KG | U | 0.20 | 1 |

# WET CHEMISTRY

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: pH
Method: EPA 9040
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | pH | PH | QCBLK105343-1 | 06/27/96 | 06/27/96 | 6.48 | PH | | 0.10 | 1 |
| BOHX42 | 11452-001DUP | pH | PH | QCBLK105343-1 | 06/27/96 | 06/27/96 | 6.53 | PH | | 0.10 | 1 |
| BOHX43 | 11452-002 | pH | PH | QCBLK105343-1 | 06/27/96 | 06/27/96 | 11.30 | PH | | 0.10 | 1 |
| NA | QCBLK105343-1 | pH | PH | QCBLK105343-1 | 06/27/96 | 06/27/96 | 5.50 | PH | | 0.10 | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Total Organic Carbon
Method: EPA 9060
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | Total Organic C | TOC | QCBLK105350-1 | 06/27/96 | 06/27/96 | 1.00 | MG/L | U | 1.00 | 1 |
| BOHX42 | 11452-001DUP | Total Organic C | TOC | QCBLK105350-1 | 06/27/96 | 06/27/96 | 1.00 | MG/L | U | 1.00 | 1 |
| BOHX42 | 11452-001MS | Total Organic C | TOC | QCBLK105350-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |
| BOHX43 | 11452-002 | Total Organic C | TOC | QCBLK105350-1 | 06/27/96 | 06/27/96 | 48.9 | MG/L | | 1.00 | 1 |
| NA | QCBLK105350-1 | Total Organic C | TOC | QCBLK105350-1 | 06/27/96 | 06/27/96 | 1.00 | MG/L | U | 1.00 | 1 |
| NA | QCLCS105350-1 | Total Organic C | TOC | QCBLK105350-1 | 06/27/96 | 06/27/96 | 98 | %REC | | | 1 |

# VOLATILE ORGANICS

Quanterra Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Volatiles
Method: EPA 8240
Matrix: LIQUID

Client ID: BOHX42

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Quanterra ID : 11452-001

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Bromomethane | 74-83-9 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Vinyl Chloride | 75-01-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Chloroethane | 75-00-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Methylene Chloride | 75-09-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Acetone | 67-64-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| Carbon Disulfide | 75-15-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1-Dichloroethene | 75-35-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1-Dichloroethane | 75-34-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloroethene (total) | 540-59-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Chloroform | 67-66-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloroethane | 107-06-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 2-Butanone (MEK) | 78-93-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| 1,1,1-Trichloroethane | 71-55-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Carbon Tetrachloride | 56-23-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Bromodichloromethane | 75-27-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloropropane | 78-87-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| cis-1,3-Dichloropropene | 10061-01-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Trichloroethene | 79-01-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Dibromochloromethane | 124-48-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1,2-Trichloroethane | 79-00-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Benzene | 71-43-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| trans-1,3-Dichloropropene | 10061-02-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Bromoform | 75-25-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 4-Methyl-2-Pentanone (MIBK) | 108-10-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| 2-Hexanone | 591-78-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| Tetrachloroethene | 127-18-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Toluene | 108-88-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Chlorobenzene | 108-90-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| EthylBenzene | 100-41-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Styrene | 100-42-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Xylene (total) | 1330-20-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Toluene-d8 (SURR) | 2037-26-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 103 | %REC | | | 1 |
| Bromofluorobenzene (SURR) | 460-00-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 101 | %REC | | | 1 |
| 1,2-Dichloroethane-d4 (SURR) | 17070-07-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 114 | %REC | | | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Volatiles
Method: EPA 8240
Matrix: LIQUID

Client ID: BOHX42

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Quanterra ID : 11452-001MS

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 75-35-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 157 | %REC | | | 1 |
| Trichloroethene | 79-01-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 106 | %REC | | | 1 |
| Benzene | 71-43-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 112 | %REC | | | 1 |
| Toluene | 108-88-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 102 | %REC | | | 1 |
| Chlorobenzene | 108-90-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 98 | %REC | | | 1 |
| Toluene-d8 (SURR) | 2037-26-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 104 | %REC | | | 1 |
| Bromofluorobenzene (SURR) | 460-00-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 98 | %REC | | | 1 |
| 1,2-Dichloroethane-d4 (SURR) | 17070-07-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 113 | %REC | | | 1 |

Quanterra Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Volatiles
Method: EPA 8240
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Client ID: BOHX42

Quanterra ID : 11452-001MSD

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 75-35-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 155 | %REC | | | 1 |
| Trichloroethene | 79-01-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 104 | %REC | | | 1 |
| Benzene | 71-43-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 112 | %REC | | | 1 |
| Toluene | 108-88-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 105 | %REC | | | 1 |
| Chlorobenzene | 108-90-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 98 | %REC | | | 1 |
| Toluene-d8 (SURR) | 2037-26-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 105 | %REC | | | 1 |
| Bromofluorobenzene (SURR) | 460-00-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 100 | %REC | | | 1 |
| 1,2-Dichloroethane-d4 (SURR) | 17070-07-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 114 | %REC | | | 1 |

Quanterra Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Volatiles
Method: EPA 8240
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

Client ID: B0HX43

Quanterra ID : 11452-002

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Bromomethane | 74-83-9 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Vinyl Chloride | 75-01-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Chloroethane | 75-00-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Methylene Chloride | 75-09-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Acetone | 67-64-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 49 | UG/KG | | 20 | 1 |
| Carbon Disulfide | 75-15-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1-Dichloroethene | 75-35-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1-Dichloroethane | 75-34-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloroethene (total) | 540-59-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Chloroform | 67-66-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloroethane | 107-06-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 2-Butanone (MEK) | 78-93-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| 1,1,1-Trichloroethane | 71-55-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Carbon Tetrachloride | 56-23-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Bromodichloromethane | 75-27-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloropropane | 78-87-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| cis-1,3-Dichloropropene | 10061-01-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Trichloroethene | 79-01-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Dibromochloromethane | 124-48-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1,2-Trichloroethane | 79-00-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Benzene | 71-43-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| trans-1,3-Dichloropropene | 10061-02-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Bromoform | 75-25-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 4-Methyl-2-Pentanone (MIBK) | 108-10-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| 2-Hexanone | 591-78-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| Tetrachloroethene | 127-18-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Toluene | 108-88-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Chlorobenzene | 108-90-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| EthylBenzene | 100-41-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Styrene | 100-42-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Xylene (total) | 1330-20-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Unknown | TIC-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 25 | UG/KG | J | | 1 |
| Toluene-d8 (SURR) | 2037-26-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 102 | %REC | | | 1 |
| Bromofluorobenzene (SURR) | 460-00-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 100 | %REC | | | 1 |
| 1,2-Dichloroethane-d4 (SURR) | 17070-07-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 111 | %REC | | | 1 |

Quanterra Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Volatiles
Method: EPA 8240
Matrix: LIQUID

Sample Date : NA
Receipt Date : NA
Report Date : 08/15/96

Client ID: NA

Quanterra ID : QCBLK105677-1

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Bromomethane | 74-83-9 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Vinyl Chloride | 75-01-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Chloroethane | 75-00-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 10 | UG/KG | U | 10 | 1 |
| Methylene Chloride | 75-09-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Acetone | 67-64-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| Carbon Disulfide | 75-15-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1-Dichloroethene | 75-35-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1-Dichloroethane | 75-34-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloroethene (total) | 540-59-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Chloroform | 67-66-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloroethane | 107-06-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 2-Butanone (MEK) | 78-93-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| 1,1,1-Trichloroethane | 71-55-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Carbon Tetrachloride | 56-23-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Bromodichloromethane | 75-27-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,2-Dichloropropane | 78-87-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| cis-1,3-Dichloropropene | 10061-01-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Trichloroethene | 79-01-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Dibromochloromethane | 124-48-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1,2-Trichloroethane | 79-00-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Benzene | 71-43-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| trans-1,3-Dichloropropene | 10061-02-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Bromoform | 75-25-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 4-Methyl-2-Pentanone (MIBK) | 108-10-1 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| 2-Hexanone | 591-78-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 20 | UG/KG | U | 20 | 1 |
| Tetrachloroethene | 127-18-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Toluene | 108-88-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Chlorobenzene | 108-90-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| EthylBenzene | 100-41-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Styrene | 100-42-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Xylene (total) | 1330-20-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 5 | UG/KG | U | 5 | 1 |
| Toluene-d8 (SURR) | 2037-26-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 102 | %REC | | | 1 |
| Bromofluorobenzene (SURR) | 460-00-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 99 | %REC | | | 1 |
| 1,2-Dichloroethane-d4 (SURR) | 17070-07-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 106 | %REC | | | 1 |

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Volatiles
Method: EPA 8240
Matrix: LIQUID

Client ID: NA

Sample Date : NA
Receipt Date : NA
Report Date : 08/15/96

Quanterra ID : QCLCS105677-1

| Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 75-35-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 147 | %REC | | | 1 |
| Trichloroethene | 79-01-6 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 103 | %REC | | | 1 |
| Benzene | 71-43-2 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 110 | %REC | | | 1 |
| Toluene | 108-88-3 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 102 | %REC | | | 1 |
| Chlorobenzene | 108-90-7 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 96 | %REC | | | 1 |
| Toluene-d8 (SURR) | 2037-26-5 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 104 | %REC | | | 1 |
| Bromofluorobenzene (SURR) | 460-00-4 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 100 | %REC | | | 1 |
| 1,2-Dichloroethane-d4 (SURR) | 17070-07-0 | QCBLK105677-1 | 07/01/96 | 07/01/96 | 114 | %REC | | | 1 |

# SAMPLE DATA AND LABORATORY ADMINISTRATION

## RECORD OF DISPOSITION REV 1

ROD-96-0039
Record of Disposition No.

DATE: July 16, 1996

LABORATORY: Quanterra

PROJECT TITLE/SAF #: PUREX Vessels' Flush Solutions/96-016

NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS: B0HX42, B0HX43

DESCRIPTION OF EVENT: The customer has requested the Mercury for the above listed samples be rerun with a detection limit of less than 0.20 mg/Kg. The customer has requested the reruns be on a Priority turnaround.

DISPOSITION OF SAMPLES: Quanterra is to rerun the Mercury for the above listed samples within the three business day priority data turnaround requirement. Quanterra can run the samples with a detection limit of less than 0.20 mg/Kg.

APPROVAL SIGNATURES:

S.M.Steele — July 16, 1996
SDLA Project Coordinator (Print/Sign Name) — Date

C.N.Villalobos — 8-6-96
Technical Representative (Print/Sign Name) — Date

Quanterra
Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

# CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

August 30, 1996

Attention: Karl Pool

| | | |
|---|---|---|
| Project number | : | 519.136 |
| Date Received by Lab | : | June 25, 1996 |
| Number of Samples | : | Two (2) |
| Sample Type | : | Liquid |
| SDG Number | : | W01075 |
| Data Deliverable | : | Summary |

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## I. Introduction

On June 25, 1996, two (2) liquid samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. On July 16, 1996, additional Mercury analyses were requested on these samples. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client ID's:

| St Louis ID | WHC ID | Richland ID | Matrix | Date of Receipt |
|---|---|---|---|---|
| 11452-001 | B0HX42 | 60632401 | Liquid | 6/25/96 |
| 11452-002 | B0HX43 | 60632402 | Liquid | 6/25/96 |

The results of the original analyses can be found with SDG W01056. This report contains only the results for the Mercury reanalysis.

## II. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits.

Analyses requested: Mercury by EPA method 7470.

Quanterra Environmental Services

Westinghouse Hanford Company
August 30, 1996
Project Number: 519.136
SDG: W01075
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III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Matrix Spike Duplicate and/or Sample Duplicate analyses were performed per the protocol for each analyte. pH analysis uses only Sample Duplicate for matrix QC.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike

V. Comments

Shipping and Receiving
The chain of custody arrived at the laboratory stating the sampling date as 4/17/96 making the samples out of holding time. Per ROD-96-0044, the samples true sampling date is 6/17/96 and the samples were not out of holding time. This ROD supercedes ROD-96-0035.

Mercury
There are no comments or nonconformances associated with this analysis.

Quanterra Environmental Services

Westinghouse Hanford Company
August 30, 1996
Project Number: 519.136
SDG: W01075
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I certify that this data package 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:

Wade H. Price
Project Manager
Quanterra Environmental Services, Inc.
e:\\sqdmo01\price$\abbydave\hanford\hanw1075.nar

Quanterra
Environmental Services

Quanterra-Richland
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Project: 519.136

Category: Mercury
Method: EPA 7470
Matrix: LIQUID

Sample Date : 06/17/96
Receipt Date : 06/25/96
Report Date : 08/15/96

| Client ID | Quanterra ID | Analyte | CAS Number | Blank Sample Name | Prep. Date | Analyses Date | Result | Unit | Qual. | Detection Limit | Dil. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BOHX42 | 11452-001 | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 0.10 | UG/L | U | 0.20 | 1 |
| BOHX42 | 11452-001MS | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 106 | %REC | | | 1 |
| BOHX42 | 11452-001MSD | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 107 | %REC | | | 1 |
| BOHX43 | 11452-002 | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 4.1 | UG/L | | 0.20 | 1 |
| NA | QCLCS106918-1 | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 110 | %REC | | | 1 |
| NA | QCBLK106918-1 | Mercury | 7439-97-6 | QCBLK106918-1 | 07/17/96 | 07/17/96 | 0.10 | UG/L | U | 0.20 | 1 |

WESTINGHOUSE HANFORD COMPANY
GENERATOR & WASTE ACCEPTANCE SERVICES

# PREDETERMINATION REPORT



REQUEST #: 28230 DATE: August 27, 1996

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SUBJECT | PRODUCT PREDETERMINATION | | | | | | |
| TO | Carmen Villalobos | COMPANY | WHC | | | | |
| PHONE | 373-4753 | ADDRESS | 200 East | | | | |
| FACILITY | PUREX | | MSIN | S6-19 | | | |
| ANALYST | Clay V. Hawkes | | MSIN | T3-05 | PHONE | 372-0508 | |
| REVIEWER | K.W. Chang 8/27/96 | | | | | | |
| cc | | | | | | | |

This waste predetermination is based on the MSDS information for products/materials listed in the predetermination request and was performed according to current state and Federal law (WAC 173-303 and 40 CFR 261). For questions or comments, please contact the Generator & Waste Acceptance Services analyst above and reference the request #. Thank you for your interest in waste predetermination.

| | | | REGULATED ? | | | | |
|---|---|---|---|---|---|---|---|
| Item # | MSDS # | Product/Material | Unused Product | Used Product | Empty Container | Rags with 10% Product | Possible Waste Codes |
| 1 | Lab Analysis | PUREX Tank U3 Final Flush Solution | N | N | N | N | NONE |

Comments: Based on Lab analysis and attached process knowledge from the above waste generator, the "PUREX U3 Final Flush Solution" does not designate as a Washington dangerous or extremely hazardous waste.



DISCLAIMER

This predetermination is believed accurate based on the information provided. Predeterminations are performed to assist generators in selecting less hazardous products. Since solid waste regulations are subject to constant revision, waste status may change without notice. *Waste designations must be performed on all wastes* by Generator & Waste Acceptance Services to assure proper disposal in the event products are spilled or contained within a waste matrix.

Clay,

The following should better address concerns for the presence of acetone in RCRA Sample BOHX43 collected from the PUREX Tank U3 final flush solution. Acetone, detected at 0.05 ppm for sample BOHX43, is not designated as unused discarded chemical material products or spent solvents.

No unused or spent solvent acetone was discharged into this tank. The use of acetone in the PUREX laboratory and other places in the plant was eliminated in 1989. However, it is most likely that some residual amount remained from that time. It is also possible that acetone is present as a degradation product from the organics used in the process, and acetone, as a degradation product, would not constitute a spent solvent.

In addition, per EPA's and Ecology's concurrence, any acetone in waste solutions, resulting from the past practice of returning analyzed sample solutions to the PUREX process, will not carry listed waste codes.

If you have any questions or need additional information, please contact me at 373-4753.

Thank you,
Carmen Villalobos

9653803

ATTACHMENT 2

LETTER FOR TRANSMITTAL TO ECOLOGY AND EPA

Mr. Michael A. Wilson
Program Manager
State of Washington
Department of Ecology
1315 W. 4th Avenue
Kennewick, Washington 99336

Dear Mr. Wilson:

TRANSMITTAL OF PLUTONIUM URANIUM EXTRACTION PLANT TANK U3 FLUSH ANALYTICAL RESULTS

Enclosed are laboratory analytical results conducted on the final flush for the Plutonium Uranium Extraction (PUREX) Plant Tank U3. These results are transmitted in accordance with U.S. Department of Energy, Richland Operations Office/Westinghouse Hanford Company agreement with State of Washington Department of Ecology and the U. S. Environmental Protection Agency.

This is the last of the analytical results from vessel flushes as defined in Westinghouse Hanford Company Supporting Document WHC-SD-EN-TI-283, Revision 0, "Data Quality Objectives for PUREX Deactivation Flushing."

A copy of the Predetermination Report, designating the final flush solutions based on the analytical results, is also included in the enclosure. The final flush for this tank was designated as non-dangerous waste.

If you have any questions, please contact L. D. Romine (376-4747) of my staff.

Sincerely,

J. E. Mecca, Director
Transition Programs Division

Enclosure:
Predetermination Report

cc: J. K. Bartz, Ecology
D. L. Duncan, EPA
D. G. Hamrick, WHC, w/o encl.
M. N. Jaraysi, Ecology
R. Jim, YIN, w/o encl.
G. J. LeBaron, WHC, w/o encl.
D. Powaukee, NPT, w/o encl.
J. Wilkinson, CTUIR, w/o encl.