START 9713508.2433

W0014-ITC-025 435

0045985

INTERNATIONAL TECHNOLOGY CORPORATION

MAY 1994 RECEIVED SDLA

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

RECORD COPY

Dear Mr. Lerch:

Thank you for purchasing analytical testing services from IT Corporation. It is our intention to supply our clients with data packages which not only meet the industry's highest standards for quality, but are also easy to use. Features which we point out are:

1. A Data Summary Packet which allows you to review your data without searching through the complete data package.

   Your Data Summary Packet contains the following items:

   - Case Narrative: listing of sample identifications, analyses performed, explanation of any problem associated with samples, corrective action taken.
   - Quality control sample identifications and analyses performed.
   - Data summary.

2. A data package which meets the specific requirements you requested and is easy to use as well. The package is organized in accordance with the Table of Contents which you will find at the beginning of each section. Sections are separated by color-coded tabs, making it easy to find individual analytical parameters which may be of particular interest to you. The data package is custody-sealed at the laboratory - your assurance that parts of the package are not missing.

We are constantly searching for ways to improve our service to you. This current product has many of the features which you have told us are important to you. Your suggestions regarding additional improvements will be appreciated.

Please contact me with any questions or suggestions.

Sincerely,

Wade H. Price
Project Manager

DEC 1996 RECEIVED EDMC

Regional Office
13715 N. Rider Trail • Earth City, Missouri 63045-1205 • 314-298-8566 • FAX: 314-298-8757

IT Corporation is a wholly owned subsidiary of International Technology Corporation

0001

NONCONFORMANCE REPORT

14. NCR NUMBER 95-003

PAGE 1 OF 1

1. ITEM DESCRIPTION: Analytical Sample Results

2. ITEM LOCATION: n/a

3. PROJECT/OU/TSD/ERA: 200-UP-2

4. DRAWING/PART NO.: n/a

5. SERIAL/LOT NUMBER: see attached SDR 95-0008 Section 2

6. ASME CODE ITEM: [ ] Yes [X] No

7. REQ/PO NUMBER: n/a

8. NOTIFICATION OF POTENTIAL OCCURRENCE: [ ] Yes [X] No

9. SUPPLIER/ADDRESS: ERC

10. INSPECTION RECORD NUMBER:

12. REPORTED BY: Jeff Lech DATE: 3/3/95

13. VALIDATED BY: Claude Stacey DATE: 3/3/95

11. NONCONFORMING CONDITION

see attached SDR 95-0008, Section 3

15. DISPOSITION [X] REWORK [ ] REPAIR [ ] REJECT [ ] USE AS IS

see attached SDR 95-0008, Section 4

ENGR. APPROVAL SIGNATURE: Mark A. Wannett DATE 3/13/95 QA CONCURRENCE SIGNATURE: Claude Stacey DATE 3/3/95

16. REJECTED MATERIAL DISPOSITION n/a [ ] RETURN TO SUPPLIER [ ] SEND TO SCRAP

17. INSPECTION RESULTS

attached table that has been added to HEIS for these samples

18. VERIFIERS/INSPECTORS SIGNATURE: Claude Stacey DATE 9/15/95

DRI-QA-002, 9/94

9713508.2431

9713508.2435

Sample Disposition Record

Control #: 95-0008
Revision #: 0
Date Initiated: 3/1/95

Section 1 - BACKGROUND

SAF #: 93-263
OU: 200-UP-2
Project ID: 200-UP-2
Task ID: Limited Field Investigation
Sampling Event: Vitrified Clay Pipeline (B0BFM8), Borehole #299-W23-231 (B09WK0)
Laboratory: Quanterra
Project Coordinator: Jeff Lerch
Task Manager: Mark Wasemiller

Section 2 - SAMPLE INFORMATION

Number of Samples: 2
ID Numbers: B09WK0, B0BFM8
Matrix: Soil
Collection Date: 3/22/94 (B09WK0), 3/24/94 (B0BFM8)

Section 3 - ISSUE

Class: NCR
NCR Number: 95-003
Type: Inconsistent Laboratory Documentation
Description: Traceability between radiochemical process knowledge, screening, and sample results across the Quanterra preparation date was lost; sample fractions for radiochemical analyses appear to have been switched during the preparation process for samples B09WK0 and B0BFM8. Within the limitations of the techniques used, all information is consistent and self-supporting prior to beginning of sample preparation (5/4/94). All information available after that date is also consistent and self-supporting. Comparisons across that date are inconsistent and not self-supporting.

Review of the laboratory sample preparation procedure and documentation made during preparation show no evidence that a sample switch occurred. However, the existing procedure had steps where the entire sample material was placed in a tray identified using only a very simple scheme (e.g. tray D2). Use of this very simple, non-derivative "interim" number allows for a greater chance for error to occur unnoticed. Use of this system has been eliminated at Quanterra. All interim containers used during sample preparation now use the full laboratory ID number.

If a sample "switch" occurred, only the radionuclide analyses were potentially affected. The sample fractions for "chemical" analysis, contained in sealed different bottles, were sent to another laboratory before any preparation activities. Traceability of the chemical results has not been compromised. See attached description and chronology.

Claude Stacey — 3/13/95

NCR Validation (Print/Sign) — Date

Section 4 - DISPOSITION 9713508.2436

Type: Rework

Description: The issue described in Section 3 was identified during the Data Quality Assessment (DQA) process (see attached chronology). Quanterra has been contacted and has since implemented to a new system during the radiochemical sample preparation process that reduces the chance for errors in sample identification. All radiochemical results are to be qualified as estimated in HEIS. Quanterra radiochemical results for the listed samples will not be used in a standalone manner to support any decisions. Process history, results from field screening measurements, 222-S total activity results, and results from laboratory screening prior to sample preparation will be used to support data objectives for the two sample points. Results from other samples collected in the intervals around B0BFM8 and B09WK0 will be used to provide additional support.

HEIS is directed to qualify all radiochemical results for samples B0BFM8 and B09WK0 as estimated. In addition, the samples are to be tagged with a comment that identifies the following (or equivalent):

> Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).

Jeff Lerch — 3/10/95
Project Coordinator (Print/Sign) — Date

Mark Wasemiller — 3/13/95
Task Manager (Print/Sign) — Date

Claude Stacey — 3/13/95
QA (Print/Sign) — Date

Section 5 - INSPECTION (Issue Class: Nonconformance Only)

Inspection Number:

Inspection Results:

Claude Stacey — 9/15/95
Inspector (Print/Sign) — Date

Date	B09WK1	B09WK0	B0BFM8
3/22/94	Sample from borehole #299-W23-231, 135-137 ft, @ 12:26. Field screening - < detect for alpha, beta, gamma. Sample field duplicate of B09WK0. Borehole Logging shows no activity above background at this depth.	Sample from borehole #299-W23-231, 135-137 ft, @ 12:26. Field screening - < detect for alpha, beta, gamma. Sample field duplicate of B09WK1. Borehole Logging shows no activity above background at this depth.	
3/23/94	222-S activity screen - <50 pC/g	222-S activity screen - <50 pC/g	
3/24/94			Field activity at sample hole prior - 30K cpm. in soil cuttings. Sample taken from 9-11 ft, @ 13:00. Field readings (8) on split spoon sleeves (4) - 2-7K cpm.
3/25/94	Received at Quanterra[1] Richland @ 10:00. Screening results: 5.1 pCi/g alpha, 24 pCi/g beta. Alpha & beta results within counting error bounds. Sample defined as Category I.	Received at Quanterra Richland @ 10:00. Screening results: 16 pCi/g alpha, .16 pCi/g beta. Alpha & beta results within counting error bounds. Sample defined as Category II. All other samples from this sampling (6) meet Category I.	
3/28/94	All samples from this event except B09WK0 analyzed in Sample Delivery Group 0013. Chemical analysis performed at the Quanterra Knoxville laboratory. Radionuclide preparation and analysis performed at Richland in a different batch than that containing B09WK0 and B0BFM8.		222-S activity screen - 13900 pCi/g Cs-137 (GEA) 2600 pCi/g Total Activity
3/29/94			Received Quanterra Richland @ 11:30. Screening results: 160 pCi/g alpha, 9800 pCi/g beta. Sample defines as Category III. Placed in same Sample Delivery Group as B0BFM8 (0014).
4/6/94		"Chemical" analysis fraction shipped to St. Louis.	"Chemical" analysis fraction shipped to St. Louis.
4/7/94		Chemical fractions received at St. Louis.	Chemical fractions received at St. Louis.
4/27/94		Radionuclide analysis sample fraction sent to initial preparation laboratory.	Radionuclide analysis sample fraction sent to initial preparation laboratory.
5/4/94		Radionuclide analysis fraction sample initial preparation. Six sub-samples total prepared from each sample. Residual material returned to original bottle. Entire Sample Delivery Group prepared (6) on same day.	Radionuclide analysis fraction sample initial preparation. Six sub-samples total prepared from each sample. Residual material returned to original bottle. Entire Sample Delivery Group prepared (6) on same day.
5/5-20/94		Fraction analysis for radionuclides.	Fraction analysis for radionuclides.
5-12-94		Chemical fraction analysis report completed.	Chemical fraction analysis report completed.
5-13-94		Chemical fraction analysis report received.	Chemical fraction analysis report received.
5-27-94		Radionuclide fraction analysis report completed.	Radionuclide fraction analysis report completed.

5-28-94	Radionuclide fraction analysis report received. Primary constituents 15 pCi/g K-40 6.8 pCi/g Total Beta 23 pCi/g Total Alpha	Radionuclide fraction analysis report received. Primary constituents 9900 pCi/g Cs-137 9480 pCi/g Total Beta 110 pCi/g Uranium 81 pCi/g Total Alpha	Radionuclide fraction analysis report received. Primary constituents 14 pCi/g K-40 27 pCi/g Total Beta 21 pCi/g Total Alpha
1-5-95		Residual material re-screened for activity. 520 pCi/g alpha 10000 pCi/g beta.	Residual material re-screened for activity. 24 pCi/g alpha 130 pCi/g beta. Alpha results within counting error bounds.
1-18-95	Residual material re-screened for activity. 17 pCi/g alpha 40 pCi/g beta. Alpha results within counting error bounds.	Residual material re-screened for activity, fresh sample. 330 pCi/g alpha 14000 pCi/g beta.	Residual material re-screened for activity, fresh sample. -3.1 pCi/g alpha 5.6 pCi/g beta. Alpha & beta results within counting error bounds.

[1]At the time the laboratories were International Technology.

9713508.2438

As requested by NCR 95-003 :

The table below reports the qualifier and comment that is currently associated to the radiological data in the Hanford Environmental Information System for sample numbers B0BFM8 and B09WK0.

SAMPLE	Constit.	CURRENT HEIS QUAL.	CURRENT HEIS RESULT COMMENT
B0BFM8	CS-137	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	SR-90	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	CO-60	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	RA-224	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	K-40	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	U-234	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	NA-22	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	RU-106	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).

B0BFM8	CS-134	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	CM-244	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	PU-238	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	RA-226	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	NP-237	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	TC-99	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	AC-228	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	EU-155	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	AM-241	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	EU-152	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	BI-214	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).

B0BFM8	TL-208	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	I-129	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	TH-234	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	PB-214	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	PB-212	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	U-235	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	RA-228	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	CM-242	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	EU-154	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	SE-79	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	URANIUM	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).

B0BFM8	ALPHA	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	BETA	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	PU39-40	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	TH-232	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	U-238	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B0BFM8	U-238	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	CS-137	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	SR-90	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	CO-60	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	K-40	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	U-234	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).

B09WK0	NA-22	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	RU-106	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	CS-134	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	CM-24 4	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	PU-238	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	NP-237	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	TC-99	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	EU-155	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	AM-24 1	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	EU-152	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	I-129	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).

B09WK0	TH-234	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	U-235	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	CM-242	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	EU-154	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	SE-79	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	URANIUM	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	ALPHA	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	BETA	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	PU39-40	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	U-238	UJ	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).
B09WK0	U-238	J	Inconsistent documentation. Reported values for B0BFM8 likely belong to sample B09WK0. Reported values for B09WK0 likely belong to sample B0BFM8 (ref. SDR 95-0008).

9713508.2445

HANFORD ANALYTICAL SERVICES MANAGEMENT

RECORD OF DISPOSITION

ROD-94-0066
Record of Disposition No.

DATE: March 28, 1994	LABORATORY: IT
PROJECT TITLE/NO.: 200-UP-2/SAF 94-065	NCR NO.: n/a

SAMPLE IDENTIFICATION NUMBERS: All samples to be analyzed for Kerosene and/or Titanium.

DESCRIPTION OF EVENT:

Clarification is being provided to the laboratory for samples being analyzed for Kerosene and Titanium (Ti).

DISPOSITION OF SAMPLES:

IT will analyze for Kerosene by performing a modification to method 8015 (TPH) in which the peak search is started earlier to pick up the kerosene. As an additional element to the metals TAL, Ti will be analyzed for using ICP methodology.

APPROVAL SIGNATURES:

J. A. Lerch — 3/28/94
CAS Project Coordinator (Print/Sign Name) — Date

M. A. Wasemiller — 3/28/94
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

9713508.2446

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

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

May 12, 1994

Attention: J. A. Lerch

Project number	:	519.04
Date Received by Lab	:	March 25 & 30, 1994 and April 1 & 6, 1994
Number of Samples	:	Seven (7)
Sample Type	:	Soil
SDG Number	:	W0014

I. Introduction

On March 25 and 30 and April 1 and 6, 1994, a total of seven (7) soil samples were received by ITAS-Richland and transferred to ITAS-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
4769-001	BO9WK0	40349101	Soil	03/25/94
4796-001	BOBFM8	40354501	Soil	03/30/94
4796-002	BOBFM9	40354502	Soil	03/30/94
4817-001	BOBKP4	40401801	Soil	04/01/94
4846-001	BOBKQ0	40409001	Soil	04/06/94
4846-002	BOBKM9	40409002	Soil	04/06/94
4846-003	BOBKN6	40409003	Soil	04/06/94

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: VOA, BNA and Metals including Cyanide by CLP/90 protocol. Chloride, Sulfate and Fluoride by EPA method 300.0. Nitrate by EPA method 353.1. Total Petroleum Hydrocarbons (Kerosene) by method 8015.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike/Matrix Spike Duplicate or Duplicate analyses were performed for all analyses based on protocol.

IV. Comments

The samples received by ITAS-St. Louis on 04/07/94 arrived in a cooler whose internal temperature was 1°C. The laboratory proceeded with the analyses per the client's request.

Samples QCBLK34692, BO9WK0 (4769-001MS, -001MSD), BOBFM8 (4796-001) and BOBKPP4 (4817-001) for BNA were analyzed after a continuing calibration which failed criteria for N-Nitroso-di-n-propylamine in that the %D for this compound was 48.3%, above the 40% maximum. See NCM SL-94-0228. It is noteworthy that this compound gave acceptable recoveries in the MS and MSD at 68% and 68%, similar to the other compounds, indicating that there was no affect on the results. This compound was not detected in the unspiked samples.

For Fluoride sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

For Cyanide sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

The Matrix Spike and Duplicate analyses for Total Organic Carbon were inadvertently overlooked when the samples were originally analyzed. Upon review of the data package this nonconformance was noted and the analyses were performed at this time. However, the analyses were performed out of holding time. Results for the sample were performed within holding time. All results are reported, but charges for the matrix spike and duplicate do not appear on the invoice. See nonconformance memo SL-94-0241.

Kerosene results are noted as High Boiling Hydrocarbons on the TPH forms. They are quantitated against a Fuel Oil #2 (diesel) standard curve which is proved to have the same response factors as that of Kerosene (Fuel Oil #1) within minimal error. The response factor correlation is demonstrated by the running of a single, mid-level calibration standard at the beginning of the analytical batch. This calibration verification data is contained in the data package. This procedure is outlined in ITAS-St. Louis SOP SL4055.

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
z:\annelars\hanw0014.nar

9713508.2449

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BFM8

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4796-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: E8472

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: not dec. 10 Date Analyzed: 04/06/94

GC Column: DB-624 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	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	3	BJ
67-64-1	Acetone	17	
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	3	J
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

9713508.2450

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0BFM8

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4796-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: E8472

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: not dec. 10 Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	19.35	53	J
2.	UNKNOWN	22.15	63	J
3.	UNKNOWN	24.86	17	J

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BFM9

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4796-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: E8473

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: not dec. Date Analyzed: 04/06/94

GC Column: DB-624 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	2	BJ
67-64-1	Acetone	11	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

9713508.2452

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0BFM9

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4796-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: E8473

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: not dec. Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	19.35	47	J
2.	UNKNOWN	21.12	7	J
3.	UNKNOWN	22.14	120	J
4.	UNKNOWN	22.34	9	J
5.	UNKNOWN	24.85	6	J

9713508.2453

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B8148

Level: (low/med) LOW Date Received: 03/25/94

% Moisture: not dec. 17 Date Analyzed: 03/29/94

GC Column: DB-624 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	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	12	U
67-64-1	Acetone	12	U
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B8148

Level: (low/med) LOW Date Received: 03/25/94

% Moisture: not dec. 17 Date Analyzed: 03/29/94

GC Column: DB-624 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	22.65	9	J

9713508.2455

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BFM8

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4796-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8435

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	370	U
111-44-4	bis(2-Chloroethyl)Ether	370	U
95-57-8	2-Chlorophenol	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-Di-n-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2,4-Dimethylphenol	370	U
111-91-1	bis(2-Chloroethoxy)Methane	370	U
120-83-2	2,4-Dichlorophenol	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
59-50-7	4-Chloro-3-Methylphenol	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2,4,6-Trichlorophenol	370	U
95-95-4	2,4,5-Trichlorophenol	890	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	890	U
131-11-3	Dimethyl Phthalate	370	U
208-96-8	Acenaphthylene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
99-09-2	3-Nitroaniline	890	U
83-32-9	Acenaphthene	370	U

9713508.2456

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BFM8

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4796-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8435

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	890	U
100-02-7	4-Nitrophenol	890	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	890	U
534-52-1	4,6-Dinitro-2-Methylphenol	890	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	890	U
85-01-8	Phenanthrene	370	U
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-n-Butylphthalate	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)Anthracene	370	U
218-01-9	Chrysene	370	U
117-81-7	bis(2-Ethylhexyl)Phthalate	47	BJ
117-84-0	Di-n-Octyl Phthalate	370	U
205-99-2	Benzo(b)Fluoranthene	370	U
207-08-9	Benzo(k)Fluoranthene	370	U
50-32-8	Benzo(a)Pyrene	370	U
193-39-5	Indeno(1,2,3-cd)Pyrene	370	U
53-70-3	Dibenz(a,h)Anthracene	370	U
191-24-2	Benzo(g,h,i)Perylene	370	U

(1) - Cannot be separated from Diphenylamine

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0BFM8

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4796-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8435

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.7

Number TICs found: 6

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.15	310	J
2.	UNKNOWN	16.80	900	J
3.	UNKNOWN	19.76	230	J
4.	UNKNOWN	22.42	160	J
5.	UNKNOWN	24.51	82	J
6.	UNKNOWN	28.59	140	J

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BKM9

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-002

Sample wt/vol: 30.20 (g/mL) G Lab File ID: D5610

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethyl Phthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	330	U

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B0BKM9

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-002

Sample wt/vol: 30.20 (g/mL) G Lab File ID: D5610

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	78	BJ
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	35	BJ
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

9713508.2460

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0BKM9

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-002

Sample wt/vol: 30.20 (g/mL) G Lab File ID: D5610

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.79	300	J
2.	UNKNOWN	9.44	860	J
3.	UNKNOWN	12.07	220	J
4. 112958	Eicosane	27.06	150	JN
5.	UNKNOWN	28.56	350	J
6.	UNKNOWN	28.94	110	J
7.	UNKNOWN	29.27	98	J
8.	UNKNOWN	29.64	70	J
9.	UNKNOWN	30.06	280	J
10.	UNKNOWN	31.99	78	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BKN6

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-003

Sample wt/vol: 30.10 (g/mL) G Lab File ID: D5611

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 3 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	820	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	820	U
131-11-3	Dimethyl Phthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	820	U
83-32-9	Acenaphthene	340	U

9713508.2462

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BKN6

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-003

Sample wt/vol: 30.10 (g/mL) G Lab File ID: D5611

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 3 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	820	U
100-02-7	4-Nitrophenol	820	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	820	U
534-52-1	4,6-Dinitro-2-Methylphenol	820	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	820	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	80	BJ
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

9713508.2463

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0BKN6

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-003

Sample wt/vol: 30.10 (g/mL) G Lab File ID: D5611

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 3 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.79	170	J
2.	UNKNOWN	9.43	550	J
3.	UNKNOWN	12.06	200	J
4.	UNKNOWN	27.06	160	J
5.	UNKNOWN	28.56	400	J
6.	UNKNOWN	28.92	82	J
7.	UNKNOWN	29.27	93	J
8.	UNKNOWN	29.74	93	J
9.	UNKNOWN	30.06	320	J
10.	UNKNOWN	32.32	100	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BKP4

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4817-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8436

Level: (low/med) LOW Date Received: 04/01/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethyl Phthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	330	U

9713508.2465
1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BKP4

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4817-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8436

Level: (low/med) LOW Date Received: 04/01/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

EPA SAMPLE NO.

B0BKP4

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4817-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8436

Level: (low/med) LOW Date Received: 04/01/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.15	140	J
2.	UNKNOWN	9.46	530	J
3.	UNKNOWN	12.10	110	J
4.	UNKNOWN	19.76	380	J
5.	Unknown Phthalate	20.38	120	J
6.	UNKNOWN	20.89	72	J
7.	UNKNOWN	22.41	91	J

9713508.2467

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BKQ0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: D5609

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethyl Phthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	340	U

9713508.2468

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BKQ0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: D5609

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	100	BJ
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	42	BJ
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

9713508.2469

1F

EPA SAMPLE NO.

B0BKQ0

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: D5609

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

Number TICs found: 12

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.79	140	J
2.	UNKNOWN	7.44	190	J
3.	UNKNOWN	9.43	520	J
4.	UNKNOWN	12.06	130	J
5.	UNKNOWN	27.06	150	J
6.	UNKNOWN	28.57	380	J
7.	UNKNOWN	29.29	100	J
8.	UNKNOWN	29.52	85	J
9.	UNKNOWN	29.64	130	J
10.	UNKNOWN	29.76	160	J
11.	UNKNOWN	30.06	330	J
12.	UNKNOWN	32.01	92	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8432

Level: (low/med) LOW Date Received: 03/25/94

% Moisture: 17 decanted: (Y/N) N Date Extracted: 03/30/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-Di-n-Propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	bis(2-Chloroethoxy)Methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	960	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	960	U
131-11-3	Dimethyl Phthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U
99-09-2	3-Nitroaniline	960	U
83-32-9	Acenaphthene	400	U

9713508.2471

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8432

Level: (low/med) LOW Date Received: 03/25/94

% Moisture: 17 decanted: (Y/N) N Date Extracted: 03/30/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	960	U
100-02-7	4-Nitrophenol	960	U
132-64-9	Dibenzofuran	400	U
121-14-2	2,4-Dinitrotoluene	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	960	U
534-52-1	4,6-Dinitro-2-Methylphenol	960	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	960	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-Butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	80	J
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	400	U
56-55-3	Benzo(a)Anthracene	400	U
218-01-9	Chrysene	400	U
117-81-7	bis(2-Ethylhexyl)Phthalate	110	J
117-84-0	Di-n-Octyl Phthalate	400	U
205-99-2	Benzo(b)Fluoranthene	400	U
207-08-9	Benzo(k)Fluoranthene	400	U
50-32-8	Benzo(a)Pyrene	400	U
193-39-5	Indeno(1,2,3-cd)Pyrene	400	U
53-70-3	Dibenz(a,h)Anthracene	400	U
191-24-2	Benzo(g,h,i)Perylene	400	U

(1) - Cannot be separated from Diphenylamine

9713508.2472

1F

EPA SAMPLE NO.

B09WK0

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8432

Level: (low/med) LOW Date Received: 03/25/94

% Moisture: 17 decanted: (Y/N) N Date Extracted: 03/30/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9713508.2473

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS-St. Louis Contract: 519-04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 30.2 (g/ml) G Lab File ID: _____

Level: (low/med) LOW Date Sampled : 03-22-94

% Moisture: not dec. 17 dec. _____ Date Extracted: 03-29-94

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04-01-94

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/Kg	Q
319-84-6	alpha-BHC	1.2	U
319-85-7	beta-BHC	2.4	U
319-86-8	delta-BHC	3.6	U
58-89-9	gamma-BHC (Lindane)	1.6	U
76-44-8	Heptachlor	1.2	U
309-00-2	Aldrin	1.6	U
1024-57-3	Heptachlor epoxide	33	U
959-98-8	Endosulfan I	5.6	U
60-57-1	Dieldrin	0.80	U
72-55-9	4,4'-DDE	1.6	U
72-20-8	Endrin	2.4	U
33213-65-9	Endosulfan II	1.6	U
72-54-8	4,4'-DDD	4.4	U
1031-07-8	Endosulfan sulfate	26	U
50-29-3	4,4'-DDT	4.8	U
72-43-5	Methoxychlor	70	U
53494-70-5	Endrin Aldehyde	9.2	U
57-74-9	Tech. Chlordane	5.6	U
8001-35-2	Toxaphene	96	U
11104-28-2	Aroclor-1221	40	U
11141-28-2	Aroclor-1232	40	U
53469-21-9/12674-11-2	Aroclor-1242/1016	25	U
12672-29-6	Aroclor-1248	40	U
11097-57-4	Aroclor1254	40	U
11096-82-5	Aroclor-1660	40	U

U: Concentration of analyte is less than the value given.

9713508.2474

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BFM8

Lab Name: ITAS_ST._LOUIS Contract: 519.04

Lab Code: ITMO Case No.: SAS No.: SDG No.: W0014

Matrix (soil/water): SOIL Lab Sample ID: 4796-001

Level (low/med): LOW Date Received: 03/30/94

% Solids: 89.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2360			P
7440-36-0	Antimony	5.5	U	N	P
7440-38-2	Arsenic	12.7			F
7440-39-3	Barium	25.5	B		P
7440-41-7	Beryllium	0.32	B		P
7440-43-9	Cadmium	0.62	B		P
7440-70-2	Calcium	3300			P
7440-47-3	Chromium	2.9			P
7440-48-4	Cobalt	6.8	B		P
7440-50-8	Copper	7.8			P
7439-89-6	Iron	12700			P
7439-92-1	Lead	3.0		N*	F
7439-95-4	Magnesium	1730			P
7439-96-5	Manganese	165		N*	P
7439-97-6	Mercury	0.90			CV
7440-02-0	Nickel	7.8	B		P
7440-09-7	Potassium	531	B		P
7782-49-2	Selenium	0.20	U	N	F
7440-22-4	Silver	0.82	U		P
7440-23-5	Sodium	156	B		P
7440-28-0	Thallium	0.49	B	N	F
7440-62-2	Vanadium	34.8			P
7440-66-6	Zinc	43.5			P
	Cyanide	0.03	B		AS
7440-32-6	Titanium	1860			P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN

ILM03.0

0055

9713508.2475

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BKM9

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____
Lab Code: ITMO__ Case No.:_____ SAS No.:_____ SDG No.: W0014_____
Matrix (soil/water): SOIL_ Lab Sample ID: 4846-002
Level (low/med): LOW__ Date Received: 04/06/94
% Solids: _97.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	5290			P
7440-36-0	Antimony_	5.1	U	N	P
7440-38-2	Arsenic__	4.6		S	F
7440-39-3	Barium___	84.5			P
7440-41-7	Beryllium	0.49	B		P
7440-43-9	Cadmium__	0.87	B		P
7440-70-2	Calcium__	7620			P
7440-47-3	Chromium_	4.8			P
7440-48-4	Cobalt___	9.1	B		P
7440-50-8	Copper___	14.6			P
7439-89-6	Iron____	19000			P
7439-92-1	Lead____	7.0		SN*	F
7439-95-4	Magnesium	4300			P
7439-96-5	Manganese	340		N*	P
7439-97-6	Mercury__	0.05	U		CV
7440-02-0	Nickel___	9.5			P
7440-09-7	Potassium	1350			P
7782-49-2	Selenium_	0.18	U	WN	F
7440-22-4	Silver___	0.76	U		P
7440-23-5	Sodium___	139	B		P
7440-28-0	Thallium_	0.31	U	N	F
7440-62-2	Vanadium_	30.5			P
7440-66-6	Zinc____	39.7			P
	Cyanide__	0.03	U		
7440-32-6_	Titanium_	1270			P

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM
Color After: COLORLESS Clarity After: _____ Artifacts: _____

Comments:

FORM I - IN

ILM03.0

9713508.2476

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BKN6

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____
Lab Code: ITMO__ Case No.:_____ SAS No.:_____ SDG No.: W0014_____
Matrix (soil/water): SOIL_ Lab Sample ID: 4846-003
Level (low/med): LOW__ Date Received: 04/06/94
% Solids: _96.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	5940			P
7440-36-0	Antimony_	5.1	U	N	P
7440-38-2	Arsenic__	2.9			F
7440-39-3	Barium___	87.1			P
7440-41-7	Beryllium	0.49	B		P
7440-43-9	Cadmium__	0.84	B		P
7440-70-2	Calcium__	5150			P
7440-47-3	Chromium_	5.5			P
7440-48-4	Cobalt___	8.8	B		P
7440-50-8	Copper___	11.9			P
7439-89-6	Iron_____	19000			P
7439-92-1	Lead_____	9.9		SN*	F
7439-95-4	Magnesium	4100			P
7439-96-5	Manganese	355		N*	P
7439-97-6	Mercury__	0.05	U		CV
7440-02-0	Nickel___	10.2			P
7440-09-7	Potassium	1680			P
7782-49-2	Selenium_	0.19	U	WN	F
7440-22-4	Silver___	0.76	U		P
7440-23-5	Sodium___	138	B		P
7440-28-0	Thallium_	0.31	U	N	F
7440-62-2	Vanadium_	30.6			P
7440-66-6	Zinc_____	42.2			P
	Cyanide__	0.03	U		
7440-32-6_	Titanium_	1270			P

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW___ Clarity After: _____ Artifacts: _____

Comments:

FORM I - IN

ILM03.0

9713508.2477

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BKP4

Lab Name: ITAS_ST._LOUIS Contract: 519.04

Lab Code: ITMO Case No.: SAS No.: SDG No.: W0014

Matrix (soil/water): SOIL Lab Sample ID: 4817-001

Level (low/med): LOW Date Received: 04/01/94

% Solids: 98.6

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5010			P
7440-36-0	Antimony	5.0	U	N	P
7440-38-2	Arsenic	3.1		S	F
7440-39-3	Barium	73.4			P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	0.54	B		P
7440-70-2	Calcium	4160			P
7440-47-3	Chromium	5.4			P
7440-48-4	Cobalt	7.9	B		P
7440-50-8	Copper	11.8			P
7439-89-6	Iron	17000			P
7439-92-1	Lead	4.9		SN*	F
7439-95-4	Magnesium	3780			P
7439-96-5	Manganese	315		N*	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	9.9			P
7440-09-7	Potassium	1590			P
7782-49-2	Selenium	0.18	U	N	F
7440-22-4	Silver	0.75	U		P
7440-23-5	Sodium	121	B		P
7440-28-0	Thallium	0.35	B	N	F
7440-62-2	Vanadium	23.6			P
7440-66-6	Zinc	36.9			P
	Cyanide	0.11	B		AS
7440-32-6	Titanium	1060			P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: COLORLESS Clarity After: Artifacts:

Comments:

FORM I - IN

ILM03.0

9713508.2478

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BKQ0

Lab Name: ITAS_ST._LOUIS Contract: 519.04

Lab Code: ITMO Case No.: SAS No.: SDG No.: W0014

Matrix (soil/water): SOIL Lab Sample ID: 4846-001

Level (low/med): LOW Date Received: 04/06/94

% Solids: 97.7

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5680			P
7440-36-0	Antimony	5.1	U	N	P
7440-38-2	Arsenic	2.6			F
7440-39-3	Barium	80.4			P
7440-41-7	Beryllium	0.49	B		P
7440-43-9	Cadmium	1.2			P
7440-70-2	Calcium	7890			P
7440-47-3	Chromium	5.0			P
7440-48-4	Cobalt	9.5	B		P
7440-50-8	Copper	14.8			P
7439-89-6	Iron	19600			P
7439-92-1	Lead	8.0		SN*	F
7439-95-4	Magnesium	4410			P
7439-96-5	Manganese	336		N*	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	10.1			P
7440-09-7	Potassium	1410			P
7782-49-2	Selenium	0.18	U	WN	F
7440-22-4	Silver	0.76	U		P
7440-23-5	Sodium	160	B		P
7440-28-0	Thallium	0.31	B	N	F
7440-62-2	Vanadium	29.0			P
7440-66-6	Zinc	40.1			P
	Cyanide	0.08	B		
7440-32-6	Titanium	1290			P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN

ILM03.0

9713508.2479

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS_ST._LOUIS Contract: 519.04

Lab Code: ITMO Case No.: SAS No.: SDG No.: W0014

Matrix (soil/water): SOIL Lab Sample ID: 4769-001

Level (low/med): LOW Date Received: 03/25/94

% Solids: 82.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7600			P
7440-36-0	Antimony	6.0	U	N	P
7440-38-2	Arsenic	3.2			F
7440-39-3	Barium	108			P
7440-41-7	Beryllium	0.54	B		P
7440-43-9	Cadmium	0.46	B		P
7440-70-2	Calcium	26000			P
7440-47-3	Chromium	13.8			P
7440-48-4	Cobalt	8.1	B		P
7440-50-8	Copper	17.6			P
7439-89-6	Iron	16300			P
7439-92-1	Lead	5.5		N*	F
7439-95-4	Magnesium	7310			P
7439-96-5	Manganese	447		N*	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	17.3			P
7440-09-7	Potassium	1700			P
7782-49-2	Selenium	0.22	U	N	F
7440-22-4	Silver	0.89	U		P
7440-23-5	Sodium	173	B		P
7440-28-0	Thallium	0.54	B	N	F
7440-62-2	Vanadium	24.5			P
7440-66-6	Zinc	38.0			P
	Cyanide	0.03	U		AS
7440-32-6	Titanium	753			P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN

ILM03.0

Project # 519.04
Analyst J. Capro
Reviewed by R. Patterson/05-02-94
Reviewed by R. Patterson/05-02-94
Page 1 of 1

ITAS ST. LOUIS

ANIONS BY I.C.

(ug/g) ug/L mg/L
(circle one)

Prep Date 04-18-94
Analysis Date 04-18-94
Loop Used Soil
Batch # 36290
Method # 300.0

Standard Value	Sample ID	Std ID	Solid Fract.	Dil.	Fl	Cl	SO_4	Fl Dry Wt	Cl Dry Wt	SO_4 Dry Wt	% Rec	RPD
	QCBLK36290				<0.986	<2.46	<9.86					
Fl 9.86 SO4 39.5	QCLCS36290	AL1588-94			9.27	9.09	36.8				Fl 94 Cl 92 SO4 93	
	4769-001		0.8289					<1.20	9.71	16.0		
	001DUP							<1.20	9.72	15.8		Fl <1 Cl <1 SO4 1
F 23.9	001MS	AL1589-94						28.7			F 120	
	4796-001		0.8979					<1.11	<2.78	16.0		
	4873-001		0.9491					<1.05	9.59	62.2		
	001DUP							<1.05	9.59	62.2		Fl <1 Cl <1 SO4 <1
F 20.9	001MS	AL1590-94						25.8			F 123	
	4817-001		0.9862					<1.01	7.76	11.9		
	4846-001		0.9770					<1.02	6.60	10.6		
	002		0.9778					<1.01	6.33	<10.1		
	003		0.9681					<1.03	9.97	12.3		
Cl 239 SO4 239	4769-001MS	AL1589-94	0.8289	X10					252	257	Cl 101 SO4 101	
Cl 209 SO4 209	4873-001MS	AL1590-94	0.9491	X10					218	281	Cl 100 SO4 105	

*COUNT CALCULATED RPD DUE TO VALUES BELOW REPORTING LIMIT

ST. LOUIS ENVIRONMENTAL

ITAS-ST. LOUIS

NITRATE/NITRITE-N REPORT

Pg. 1 of 1

Analyst: J. CARRO
Project No.: 518.04
Reviewed by: R. Patterson

Batch No.: 35922

PREP DATE: 04-18-94
Analysis Date: 04-19-94
Method No.: 353.1
Date: 04-29-94

LAB ID	STANDARD ID	RAW VALUE x	DILUTION ÷	SAMPLE VOLUME (L or g) =	NITRATE/ NITRITE x	EXTRACT VOLUME (L) ÷	FRACTION SOLID =	FINAL CONCENTRATION (ug/L)-N ((ug/g)-N)	% RECOVERY	RPD
QCBLK35922-1		-9.318		5.071		0.05	RP 04-29-94	* <0.493		
QCLCS35922-1	AMSB3-94	599.0		5.043				5.94	106	
4769-001		394.2		5.015			0.8289	* 4.74		
001DUP		395.3		5.032				4.74		<1
001MS	AMSB4-94	210.6	X5	5.072				12.5	116	
4796-001		195.7	X10	5.003			0.8979	21.8		
4873-001		276.1	X10	5.016			0.9491	29.0		
001DUP		270.0	X10	5.023				28.3		2
001MS	AMSB5-94	351.2	X10	5.041				36.7	131 **	
4817-001		204.8	X5	5.011			0.9862	10.4		
4846-001		599.2		5.023			0.9770	6.10		
002		618.0		5.063			0.9778	6.24		
003		665.3		5.023			0.9681	6.84		

* CORRECTED FOR % MOISTURE
** SAMPLE CONC. 4X > SPIKE AMT

SL-91-INORG-0039

ITAS - ST. LOUIS

TOC ANALYSIS

PREP DATE: 04-19-94
DATE OF ANALYSIS: 04-19-94
ANALYST: J. Flandreau
BATCH #: 36062

PAGE 1 OF 1

REVIEWED BY: R. Patterson / 05-02-94
REVIEWED BY: R. Patterson / 05-02-94
METHOD #: 9060
PROJECT #: 519.04

ANALYSIS TIME	LAB ID	STANDARD CONC.	VOLUME/ WEIGHT mg USED	DILUTION	FRACTION SOLID	INSTRUMENT PRINTOUT PPM C	CONC (MG/L OR UG/G)	SAMPLE AVERAGE & ~~RPD~~ RPD 05-02-94
	QCBLK36062-1		79.9	1.00	N/A	12.05	<25.0	Range
	QCLCS36062-1	599 ug/g	80.1	0.999	N/A	583.1	583	
	4817-001		JMF 04-29-94 ~~197~~ 46.2	1.73	.9862	1976	2000	
	001		46.0	1.74		2017	2050	$\bar{x}$ = 2020
	001		45.8	1.75		1899	1930	range = 1930
	001		47.8	1.67		2058	2090	2090

J. Flandreau 04-29-94

LCS True Value = 599 ug/g
Percent Recovery = 97

MS True Value = N/A
Percent Recovery = ↓

MSD True Value = N/A
Percent Recovery = ↓
RPD = ↓

mg/L TOC (water) = Instr. Printout (PPMC) x Dil. Factor
ug/g TOC (soil) = Instr. Printout (PPMC) / Fraction Solid

SL-91 INORG 0013 WESTON

0800

97 1508 2432

ITAS - ST. LOUIS

TOC ANALYSIS

PREP DATE: 05-11-94
DATE OF ANALYSIS: 05-11-94
ANALYST: J. Flandreau
BATCH #: 37578

PAGE 1 OF 1

REVIEWED BY: R. Patterson/05-12-94
REVIEWED BY: R. Patterson/05-12-94
METHOD #: 9060
PROJECT #: 519.04

ANALYSIS TIME	LAB ID	STANDARD CONC.	VOLUME/ WEIGHT mg USED	DILUTION	FRACTION SOLID	INSTRUMENT PRINTOUT PPM C	CONC (MG/L OR UG/G)	SAMPLE AVERAGE & ~~RPD~~ RANGE
	QCBLK 37578-1		79.6	1.01		13.85	<25.2	
	QCLCS 37578-1	597 ug/g	80.4	0.995		553.4	553	
	4817-001 DUP		17.1	4.68	.9862	1639	1660	$\bar{x}$ = 2160
	001 DUP		21.4	3.74		2074	2100	range = 1660 → 2620
	001 DUP		22.0	3.64		2588	2620	
	001 DUP		22.5	3.56		2207	2240	
	001 MS	1950 ug/g	20.8	3.85		4008	4060	$\bar{x}$ = 4050
	001 MS	1960 ug/g	20.7	3.86		4389	4450	range = 3550 → 4450
	001 MS	1990 ug/g	20.4	3.92		4083	4140	
	001 MS	1990 ug/g	20.4	3.92		3497	3550	

J. Flandreau 05-11-94

RP 05-12-94

LCS True Value = 597 ug/g
Percent Recovery = 93

MS True Value = 1970 ug/g
Percent Recovery = ~~96~~ 103
RP 05-12-94

MSD True Value = N/A
Percent Recovery =
RPD = 7

mg/L TOC (water) = Instr. Printout (PPMC) x Dil. Factor
ug/g TOC (soil) = Instr. Printout (PPMC) / Fraction Solid

SL 91-INORG-0013-WESTON

97125008.24436

1D
HBH ANALYSIS DATA SHEET

EPA SAMPLE NO.
B0BFM8

Lab Name: ITAS-St. Louis
Contract: 519.04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix : (soil/water) SOIL
Lab Sample ID: 4796-001

Sample wt/vol: 20.0 (g/ml) g
Lab File ID: _____

Level: (low/med) LOW
Date Sampled: 03-24-94

% Moisture: not dec. 10 dec. _____
Date Extracted: 04-05-94

Extraction: (SepF/Cont/Sonc/Shak) SHAK
Date Analyzed: 04-07-94

GPC Cleanup: (Y/N) N pH: _____
Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) mg/Kg	Q
	HBH (1)	28	U

U: Concentration of analyte is less than the value given.

(1): High Boiling Hydrocarbon (HBH) is quantitated as if it is Fuel Oil #2.

1D
HBH ANALYSIS DATA SHEET

EPA SAMPLE NO.
B0BKM9

Lab Name: ITAS-St. Louis
Contract: 519.04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix : (soil/water) SOIL
Lab Sample ID: 4846-002

Sample wt/vol: 20.1 (g/ml) g
Lab File ID: _____

Level: (low/med) LOW
Date Sampled: 04-04-94

% Moisture: not dec. 2 dec. _____
Date Extracted: 04-12-94

Extraction: (SepF/Cont/Sonc/Shak) SHAK
Date Analyzed: 04-21-94

GPC Cleanup: (Y/N) N pH: _____
Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) mg/Kg	Q
	HBH (1)	25	U

U: Concentration of analyte is less than the value given.

(1): High Boiling Hydrocarbon (HBH) is quantitated as if it is Fuel Oil #2.

FORM I HBH

1D
HBH ANALYSIS DATA SHEET

EPA SAMPLE NO.
B0BKN6

Lab Name: ITAS-St. Louis
Contract: 519.04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix : (soil/water) SOIL
Lab Sample ID: 4846-003

Sample wt/vol: 20.1 (g/ml) g
Lab File ID: _____

Level: (low/med) LOW
Date Sampled: 04-04-94

% Moisture: not dec. 3 dec. _____
Date Extracted: 04-12-94

Extraction: (SepF/Cont/Sonc/Shak) SHAK
Date Analyzed: 04-21-94

GPC Cleanup: (Y/N) N pH: _____
Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) mg/Kg	Q
	HBH (1)	26	U

U: Concentration of analyte is less than the value given.

(1): High Boiling Hydrocarbon (HBH) is quantitated as if it is Fuel Oil #2.

1D
HBH ANALYSIS DATA SHEET

EPA SAMPLE NO.
B0BKP4

Lab Name: ITAS-St. Louis Contract: 519.04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix : (soil/water) SOIL Lab Sample ID: 4817-001

Sample wt/vol: 20.0 (g/ml) g Lab File ID: _____

Level: (low/med) LOW Date Sampled: 03-30-94

% Moisture: not dec. 1 dec. _____ Date Extracted: 04-05-94

Extraction: (SepF/Cont/Sonc/Shak) SHAK Date Analyzed: 04-07-94

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) mg/Kg	Q
	HBH (1)	25	U

U: Concentration of analyte is less than the value given.

(1): High Boiling Hydrocarbon (HBH) is quantitated as if it is Fuel Oil #2.

FORM I HBH

1D
HBH ANALYSIS DATA SHEET

EPA SAMPLE NO.
B0BKQ0

Lab Name: ITAS-St. Louis
Contract: 519.04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix : (soil/water) SOIL
Lab Sample ID: 4846-001

Sample wt/vol: 20.1 (g/ml) g
Lab File ID: _____

Level: (low/med) LOW
Date Sampled: 04-04-94

% Moisture: not dec. 2 dec. _____
Date Extracted: 04-12-94

Extraction: (SepF/Cont/Sonc/Shak) SHAK
Date Analyzed: 04-20-94

GPC Cleanup: (Y/N) N pH: _____
Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) mg/Kg	Q
	HBH (1)	25	U

U: Concentration of analyte is less than the value given.

(1): High Boiling Hydrocarbon (HBH) is quantitated as if it is Fuel Oil #2.

FORM I HBH

1D
HBH ANALYSIS DATA SHEET

EPA SAMPLE NO.
B09WK0

Lab Name: ITAS-St. Louis Contract: 519.04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix : (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 20.1 (g/ml) g Lab File ID: _____

Level: (low/med) LOW Date Sampled: 03-22-94

% Moisture: not dec. 17 dec. _____ Date Extracted: 04-05-94

Extraction: (SepF/Cont/Sonc/Shak) SHAK Date Analyzed: 04-07-94

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) mg/Kg	Q
	HBH (1)	30	U

U: Concentration of analyte is less than the value given.

(1): High Boiling Hydrocarbon (HBH) is quantitated as if it is Fuel Oil #2.

FORM I HBH

9713508.2490

SAMPLE RECEIPT DOCUMENTATION

0000012

9713508.2491

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 3-22-94

Ice Chest No.: SML-127 — Field Logbook No.: EFL-1115

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: Government vehicle

Shipped to: IT, Richland

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) SAF # 94-065 NONE NOTED

Sample Identification

1) 40349101 B09WK0

40349089 3/25/94

A	1,250ml	P:CLP;TAL Metals,Hg,Ti
B	1,250ml	Gs:VOA CLP
C	1,250ml	aG:Semi-VOA CLP
D	1,125ml	G:Anions F,Cl,SO4 (EPA 300.0)
E	1,125ml	P/G:Anions NO2,NO3 (EPA 353.2)
F	1,250ml	aGs:PCB/Pest (8080)
G	1,125ml	G:Cyanide CLP
H	1,125ml	Gw:Kerosene (8015M)
	1,1000ml	P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

40349005 3/25/94 40349201

2) B09WK1

40349089 3/25/94

A	1,250ml	P:CLP;TAL Metals,Hg,Ti
B	1,250ml	Gs:VOA CLP
C	1,250ml	aG:Semi-VOA CLP
D	1,125ml	G:Anions F,Cl,SO4 (EPA 300.0)
L	1,125ml	P/G:Anions NO2,NO3 (EPA 353.2)
	1,250ml	aGs:PCB/Pest (8080)
	1,125ml	G:Cyanide CLP
	1,125ml	Gw:Kerosene (8015M)
	1,1000ml	P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

40349006 3/25/94

0000013

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
3-24-94 1310		3-25-94 10 00 am
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

9713508.2492

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector L E ROGERS S.A.F. # 94-065 Date 3-22-94

Company Contact L E ROGERS Telephone (509) 376-7690

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B09WK0	S	3-22-94	1225	1,250ml P:CLP;TAL Metals,Hg,Ti 1,250ml Gs:VOA CLP 1,250ml aG:Semi-VOA CLP 1,125ml G:Anions F,Cl,SO4 (EPA 300.0) 1,125ml P/G:Anions NO2,NO3 (EPA 353.2) 1,250ml aGs:PCB/Pest (8080) 1,125ml G:Cyanide CLP 1,125ml Gw:Kerosene (8015M) 1,1000ml P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include, Cs-134, Cs-137, Co-60, Eu- 152, Eu-154, Eu-155, K-40, Ru-106, Na-22, I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235, U-234, U-238 (ITAS-RD-3234) Np-237, (ITAS-RD-3208) Pu-238, Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241, Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)
B09WK1	S	3-22-94	1225	1,250ml P:CLP;TAL Metals,Hg,Ti 1,250ml Gs:VOA CLP 1,250ml aG:Semi-VOA CLP 1,125ml G:Anions F,Cl,SO4 (EPA 300.0) 1,125ml P/G:Anions NO2,NO3 (EPA 353.2) 1,250ml aGs:PCB/Pest (8080) 1,125ml G:Cyanide CLP 1,125ml Gw:Kerosene (8015M) 1,1000ml P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include, Cs-134, Cs-137, Co-60, Eu- 152, Eu-154, Eu-155, K-40, Ru-106, Na-22, I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235, U-234, U-238 (ITAS-RD-3234) Np-237, (ITAS-RD-3208) Pu-238, Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241, Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

*Type of Sample	A = Air	L = Liquid	SE = Sediment	T = Tissue	X = Other
	DL = Drum Liquids	O = Oil	SL = Sludge	W = Water	
	DS = Drum Solids	S = Soil	SO = Solid	WI = Wipe	

Field Information **IT, Richland**

Special Handling and/or Storage Maintain at 4C ; (SOIL)

Possible Sample Hazards NONE NOTED

A-6000-406 (06/91) WEF060

9213508.2493

INTERNATIONAL TECHNOLOGY CORPORATION

SAMPLE CHECK-IN LIST
SAMPLE NUMBER MATRIX

WHC ID NUMBER	SAMPLE LABEL NUMBER	LABORATORY ID NUMBER	AGREEMENT OF INFORMATION
B09hiK0	N/A	40347101 40349201	Yes
F04hiK1		40348906 40349005	
B09WJ9		40348905 40349004	

FORM NO. LS-043, Rev. 0, 2/94

0000015

RL#2066
all category I except B09WK0
is category II ARN 25 Mar 94

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date	Time	Screening Prep Date	Screening Prep Time	Count Date	Mnts Cntd	BACKGROUND Alpha	BACKGROUND Beta	BACKGROUND Mnts
WHC			32594		325	10	5	63	60

Customer ID	pH <2 Rcvd/Reiq	RESIDUE Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Counts Alpha	Total Counts Beta	Net Sample Counts/Minute Alpha	Net Sample Counts/Minute Beta	DPM / Aliqout Alpha	DPM / Aliqout Beta	uCi per Sample Alpha	uCi per Sample Beta	2 Sigma Error uCi per Sample Alpha	2 Sigma Error uCi per Sample Beta	pCi/(Gm or L) Alpha	pCi/(Gm or L) Beta	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Aliquot to Cat 1 Gm or Ltr Beta
WHC/SOIL																				
B09WK1		100.6	101	1400.0	36	2	32	0.12	2.15	1.1E+00	5.3E+00	7.1E-03	3.3E-02	1.5E-05	1.6E-05	5.1E+00	2.4E+01	Yes	2.0E+03	4.2E+03
B09WK2		79.1	79	1400.0	37	2	30	0.12	1.95	9.6E-01	4.7E+00	7.6E-03	3.7E-02	1.7E-05	6.3E-05	5.6E+00	2.7E+01	Yes	1.8E+03	3.8E+03
B09WK4		100.9	101	1550.0	38	0	6	-0.08	-0.25	-9E-01	-5E-01	-6E-03	-4E-03	-1E-05	-4E-06	-4E+00	-2E+00	Yes	-3E+03	-4E+04
B09WK5		96.9	97	1550.0	39	1	13	0.02	0.25	1.6E-01	6.1E-01	1.2E-03	4.4E-03	6.3E-06	2.2E-05	7.5E-01	2.9E+00	Yes	1.3E+04	3.5E+04
B09WK0	2066 001	83.6	84	1350.0	40	4	24	0.32	1.35	3.0E+00	3.0E+00	2.2E-02	2.2E-02	2.7E-05	1.4E-05	1.6E+01	1.6E+01	No	6.2E+02	6.2E+03
B09WJ9		95.6	96	1300.0	41	0	33	-0.06	2.25	-1E+00	5.6E+00	-6E-03	3.5E-02	-1E-05	6.5E-05	-5E+00	2.7E+01	Yes	-2E+03	3.7E+03
TOTAL	uCi							-0.06	-1.05	-3E-01	-2E+00	2.6E-02	1.3E-01	ERR	ERR	ERR	ERR	No	ERR	ERR

Temp 3°c Temp check 4°c Cur.# 587

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 340343
Page 1 of 2

Project Name/No. 1 SAF # 94-065
Sample Team Members 2
Profit Center No. 3 4632
Project Manager 4 Van Pettey
Purchase Order No. 6
Required Report Date 11 4/29/94

Samples Shipment Date 7 3/25/94
Lab Destination 8 St. Louis
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13

Bill to: 5 ITAS Richland
Report to: 10 ITAS Richland

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
403491 01 A	Boawko / Soil	3/22/94 1225	Amber glass	250ml	4°C	TAL Metals Hg Tl	100% full	
B			Amber			Voa Cp	FOR LAB USE ONLY	
C			Amber			Semi Voa Cp		
D			Clear	125ml		Anions F Cl SO4		
E			~~Amber~~ Clear			Anions NO2, NO3		
F			Amber	250ml		PCB/Pest 8080	FOR LAB USE ONLY	
G			Clear	125ml		CN		
H			Amber			kerosene 3/25/94		

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: 25
Return to Client ☒ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: 26
Normal ☒ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG# W0014

1. Relinquished by 28 (Signature/Affiliation)	Date: 3/25/94 Time: 1600	1. Received by 28 (Signature/Affiliation)	Date: 03-26-94 Time: 11:45
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

0000017

9715508.2495

White: To accompany samples Yellow: Field copy

*See back of form for special instructions

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 340343
Page 2 of 2

Project Name SAF#94065

Project No.

Samples Shipment Date 3/25/94

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
403491 02A	Trip Blank/H2O	3/25/94	Amber Glass vial	40ml.	4°C	VOA	100 FULL NO HEADSPACE	3°C
B	1	1	↓	1	1		↓	↓
	0000018							

White: To accompany samples; Yellow: Field copy

*See back of form for special instructions.

9713508.2497

Login No.: 4769

Condition Upon Receipt/Variance Report
ITAS - St. Louis Laboratory

Project Number: 519.04

Initiated By (signature): John Walker

Receipt Date/Time: 03-26-94 11:45

RFA/COC Numbers: 340343

Login Date and Time: 03-28-94 1146

Login Review Date/Time: 03-28-94 1225

Login Release Date and Time: 03-29-94 16:37

Information Checklist (circle Y or N):

1.	Y	N	Air Bill included with shipment? 377 2481 431	8.	Y	N	Custody seals on Sample Containers?
2.	Y	N	Damage to Shipping Containers?	9.	Y	N	Temperature of Container(s) 4 ± 2° C? List temperature(s) 3°c temp check 4°c
3.	Y	N	Shipping Containers Rad Surveyed?	10.	Y	N	Broken/Leaking Containers?
4.	Y	N	Custody Seals on Shipping Containers?	11.	Y	N	Do Sample Containers Match C of C?
5.	Y	N	Shipping Containers Opened in hood?	12.	Y	N	Are preservatives correct? 3°c
6.	Y	N	Client Chain of Custody included?	N/A	Y	N	Is the pH < 2 for acid preserved samples?
7.	Y	N	Headspace in VOA samples?		Y	N	Is the pH > 12 for base preserved samples?

Notes:

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". Comments: _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Project Management Review: W Price Date: 3/28/94

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

C.U.R. and C.O.C.
COPIED TO: W Price
DATE: 03-26-94 1400
TIME:
BY:

SL-92-QA-0026, Rev.1

ITAS - St. Louis March 29, 1994 07:51 am
Account: 10722 Project: 519.04 ITAS - Richland QAS No. 480 Rev. 0
Master Sample Login: 4769

Project Manager: L. 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:								
4769-001	B09WK0	Soil	22-MAR-94 12:25	25-MAR-94 16:00	29-APR-94	3772481431	3*	R2066-001
NOTE: CONTAINER #01A=METALS+HG+TI,01B=VOA,01C=SEM-VOA,01D=EPA-300.0,01E=EPA-353.2,01F=PCB-PEST,01G=CN,01H-KEROSENE, RICHLAND ID 403491								
1	AN - Amber Glass-250ML	AS/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		BNA/CLP90/04	S	COLD	22-APR-94	05-APR-94	R1C	(72172:100)
1		HG/CLP90/04	S	COLD	22-APR-94	20-APR-94	R1C	(72170:100)
1		ICAP/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		PB/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		PEST/8080/04	S	COLD	22-APR-94	05-APR-94	R1C	(72173:100)
1		PH/CLP/04	S	COLD	22-APR-94	08-APR-94	R1C	(72170:100)
1		PM/IT/04	S	COLD	22-APR-94	18-SEP-94	R1C	(72170:100)
1		SE/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		TL/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		VOA/CLP90/04	S	COLD	22-APR-94	05-APR-94	1091	(72171:100)
1	GN - Glass Jar-120ML	CL/300.0/04	S	COLD	22-APR-94	19-APR-94	R1C	(72174:100)
1		CN/CLP/04	S	COLD	22-APR-94	05-APR-94	R1C	(72176:100)
1		FL/300.0/04	S	COLD	22-APR-94	19-APR-94	R1C	(72174:100)
1		NO3/353.1/04	S	COLD	22-APR-94	19-APR-94	R1C	(72175:100)
1		SO4/300.0/04	S	COLD	22-APR-94	19-APR-94	R1C	(72174:100)
1		TPH/8015/04	S	COLD	22-APR-94	05-APR-94	R1C	(72177:100)
These Products have no assigned containers.								
		DATA/CUSTOM/04	S		27-APR-94	21-APR-94		
4769-001DUP	B09WK0	Soil	22-MAR-94 12:25	25-MAR-94 16:00	29-APR-94	3772481431	3*	R2066-001
NOTE: CONTAINER #01A=METALS+HG+TI,01B=VOA,01C=SEM-VOA,01D=EPA-300.0,01E=EPA-353.2,01F=PCB-PEST,01G=CN,01H-KEROSENE, RICHLAND ID 403491								
1	AN - Amber Glass-250ML	AS/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		HG/CLP90/04	S	COLD	22-APR-94	20-APR-94	R1C	(72170:100)
1		ICAP/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		PB/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		SE/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		TL/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1	GN - Glass Jar-120ML	CL/300.0/04	S	COLD	22-APR-94	19-APR-94	R1C	(72174:100)
1		CN/CLP/04	S	COLD	22-APR-94	05-APR-94	R1C	(72176:100)
1		FL/300.0/04	S	COLD	22-APR-94	19-APR-94	R1C	(72174:100)
1		NO3/353.1/04	S	COLD	22-APR-94	19-APR-94	R1C	(72175:100)
1		SO4/300.0/04	S	COLD	22-APR-94	19-APR-94	R1C	(72174:100)
4769-001MS	B09WK0	Soil	22-MAR-94 12:25	25-MAR-94 16:00	29-APR-94	3772481431	3*	R2066-001
NOTE: CONTAINER #01A=METALS+HG+TI,01B=VOA,01C=SEM-VOA,01D=EPA-300.0,01E=EPA-353.2,01F=PCB-PEST,01G=CN,01H-KEROSENE, RICHLAND ID 403491								

3*=Sample has not been rad screened.

0000020

9713508.2463

ITAS - St. Louis March 29, 1994 07:51 am
Account: 10722 Project: 519.04 ITAS - Richland QAS No. 480 Rev. 0
Master Sample Login: 4769

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 / Class	Received / Preservative	Due / Anal. Due Date	Shipper / Hold Date	Site	Rad Category Rad Sample No. / (Container Numbers:% Filled)
Comments								
Data:								
1	AN - Amber Glass-250ML	AS/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		BNA/CLP90/04	S	COLD	22-APR-94	05-APR-94	R1C	(72172:100)
1		HG/CLP90/04	S	COLD	22-APR-94	20-APR-94	R1C	(72170:100)
1		ICAP/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		PB/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		PEST/8080/04	S	COLD	22-APR-94	05-APR-94	R1C	(72173:100)
1		SE/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		TL/CLP90/04	S	COLD	22-APR-94	21-SEP-94	R1C	(72170:100)
1		VOA/CLP90/04	S	COLD	22-APR-94	05-APR-94	1091	(72171:100)
1	GN - Glass Jar-120ML	CL/300.0/04	S	COLD	22-APR-94	19-APR-94	R1C	(72174:100)
1		CN/CLP/04	S	COLD	22-APR-94	05-APR-94	R1C	(72176:100)
1		FL/300.0/04	S	COLD	22-APR-94	19-APR-94	R1C	(72174:100)
1		NO3/353.1/04	S	COLD	22-APR-94	19-APR-94	R1C	(72175:100)
1		SO4/300.0/04	S	COLD	22-APR-94	19-APR-94	R1C	(72174:100)
1		TPH/8015/04	S	COLD	22-APR-94	05-APR-94	R1C	(72177:100)
	These Products have no assigned containers.							
		DATA/CUSTOM/04	S		27-APR-94	21-APR-94		
4769-001MSD	B09MK0	Soil	22-MAR-94 12:25		25-MAR-94 16:00	29-APR-94	3772481431 3*	R2066-001
NOTE: CONTAINER #01A=METALS+HG+TI,01B=VOA,01C=SEM-VOA,01D=EPA-300.0,01E=EPA-353.2,01F=PCB-PEST,01G=CN,01H-KEROSENE, RICHLAND ID 403491								
1	AN - Amber Glass-250ML	BNA/CLP90/04	S	COLD	22-APR-94	05-APR-94	R1C	(72172:100)
1		PEST/8080/04	S	COLD	22-APR-94	05-APR-94	R1C	(72173:100)
1		VOA/CLP90/04	S	COLD	22-APR-94	05-APR-94	1091	(72171:100)
1	GN - Glass Jar-120ML	TPH/8015/04	S	COLD	22-APR-94	05-APR-94	R1C	(72177:100)
4769-002	TRIP BLANK	Water	25-MAR-94 00:00		25-MAR-94 16:00	29-APR-94	3772481431 1	Screening not Required
2	VI - Vial-40ml	HOLD//04	S	COLD	22-APR-94	04-APR-94	1091	(72182:100 72183:100)

3*=Sample has not been rad screened.

0000021

9413508.2499

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006445

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. [illegible]
Bill of Lading/Airbill No. N/A
Offsite Property No. N/A
Method of Shipment Government truck
Field Logbook No. N/A
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBFM8	S	3 24 94	1300	(1) 250ml aGs	VOA CLP	
BOBFM8	S			(1) 250ml aGs	Semi-VOA CLP	
BOBFM8	S			(1) 250ml ~~aGs~~	Metals -CLP TAL Titanium Mercury CPL 3 24 94	
BOBFM8	S			(1) 125ml aGs	Anions F, Cl, SO_4 EPA 300.0	
BOBFM8	S			(1) 125ml aGs	NO_2 NO_3 EPA 353.2	
BOBFM8	S			(1) 125ml aGs	Cyanide CPL	
BOBFM8	S			(1) 125ml aGs	Kerosene 8015M	
BOBFM8	S	3 24 94	1300	(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	
BOBFM9	S	3 24 94	0800	(1) 250ml aGs	VOA	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
Roy T Sickle	3-25-94	1530	[illegible]
[illegible]	3-26-94	0970	R Boyd IT 3-29-94 1130

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9413508.2501

0000022

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006445

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. 967
Bill of Lading/Airbill No. N/A
Offsite Property No. N/A
Method of Shipment Government truck
Field Logbook No. N/A
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
403545 01 A BOBFM8	S	3 24 94	1300	(1) 250ml aGs	VOA	CLP	
B BOBFM8	S			(1) 250ml aGs	Semi-VOA	CLP	
C BOBFM8	S			(1) 250ml ~~aGs~~	Metals -CLP TAL Titanium Mercury 3 24 94	CPL	
D BOBFM8	S			(1) 125ml aGs	Anions F, Cl, SO_4	EPA 300.0	
E BOBFM8	S			(1) 125ml aGs	NO_2 NO_3	EPA 353.2	
F BOBFM8	S			(1) 125ml aGs	Cyanide	CPL	
G BOBFM8	S			(1) 125ml aGs	Kerosene	8015M	
765546 BOBFM8	S	3 24 94	1300	(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		
02 BOBFM9	S	3 24 94	0800	(1) 250ml aGs	VOA		

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle Roy T Sickle	3-24-94	1530	[illegible]
[illegible]	3 [illegible] 94	0700	R Boyle IT 3-29-94 1130

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2501

0000023

OFFSITE RADIOACTIVE SHIPMENT RECORD

- EXTERIOR INSPECTION PERMITTED -

10717

SHIPPING INST.

SHIP TO:

Company

Address

City, State, Zip

Attention:

Contractor: ☐ PNL ☐ KEH ☒ WHC

Site Carrier

PR No. Veh No

Ship: ☐ Prepaid ☐ Collect Via:

☐ Motor-Rail ☐ Air Psgr

☐ Excl. Use ☐ Air Cargo

☒ DOE Veh ☐ Mail

☐ UPS Sur ☐

SHIPMENT DESCRIPTION AND CERTIFICATION

Proper Shipping Name	UN Number
Radioactive Material,	
1 Empty Packages	☐ UN 2908
2. Low Specific Activity, n.o.s	☐ UN 2912
3 Limited quantity, n.o.s.	☐ UN 2910
4. N.O.S.	☐ UN 2982
5. Fissile n.o.s.	☐ UN 2918
6. Special Form, n.o.s.	☐ UN 2974
7 Instruments & Articles	☐ UN 2911
8.	☒

Material Form: ☐ Special (A1) ☐ Normal (A2)

Labels Applied: ☐ Empty ☐ Radioactive LSA ☐ White I ☐ Yellow II ☐ Yellow III ☒ None ☐ Danger (Air Cargo) ☐ Secondary

Material Category: ☐ Empty ☐ Low Specific Act (LSA) ☒ Limited Quantity ☐ Type A Quantity ☐ Type B Quantity ☐ Highway Route Controlled Quantity

For Normal Form Identify:

Physical Form: ☒ Solid ☐ Liquid ☐ Ga

Chemical Form: ☐ Metal ☐ Oxide ☒ Elemental ☐ Nitrate

Other

TYPE PACKAGE: ☒ Strong Tight ☐ Type A ☐ Type B ☐ Type B (U) ☐ Type B (M)

CONSTRUCTION: ☐ Box, FB ☐ Wood ☐ Steel ☐ Drum ☐ Cask ☒ Other

FISSILE CLASS: ☒ Non Fissile ☐ Fissile Exempt ☐ Fissile I ☐ Fissile II ☐ Fissile III

Grams Fissile

SNM: ☒ No ☐ Yes ☐ < 1 gr ☐ Category I ☐ Category II ☐ Category III

ACCOUNTABILITY/SECURITY CONTROL

☐ Classified ☒ Unclassified

Consignee authorized to receive this qty ☒

Sig. Security Svc. Req ☐ NA ☒

Pu, EU > 1 g ☐ NU, DU > 1 Kg ☐

Security Escorts Req. ☐ Not Req ☒

External Cask Temperature N/A ☒

(Max. 122°F LTL, 180°F Ex. Use) °F

Packaging conforms to appropriate packaging procedure ☐ N/A ☒ Yes

Complies with D. O. T packaging marking and labeling requirements ☐ N/A ☒ Yes

Container acceptability documented (incl. 7A cert.) ☒ N/A ☐ Yes

Container examined: No evidence of deterioration or damage ☒ Ye

QA Inspection Current ☐ Yes ☒ N/A Seals required ☒ No ☐ Ye

Shipping Doc? Authorization No

No. Pkgs.	Model Package	COC/Spec. No.	Serial No.	Seal No	Isotopes	Curies/Pkg	T I	Gr Wt
1	Alpha Cyclo-	N/A						35 lbs
	(Strong Tight)							

(Shipper may describe package in detail on one of unused lines above) TOTAL

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable federal, state, local and international regulations for the transportation of hazardous materials

Certifier's Signature | Date | Organization | Complete Cost Code (inc end function)

AREA MONITOR

Surface Dose Rate of Package: ☒ ≤0.5 or ___ mrem/hr (N + βγ)

Dose Rate at 1 Meter from Surface of Package: ☒ ≤0.5 or ___ mrem/hr (N + βγ)

Smears of Outer Container: ☒ ≤ 22 dpm βγ/cm² ☒ ≤ 2.2 dpm α/cm²

TRUCK LOAD OR EXCLUSIVE USE

Surface: ☒ ≤ 200 mrem/hr (N + βγ)

@ 6 feet: ☒ ≤ 10 mrem/hr (N + βγ)

@ Cab or Sleeper: ☒ ≤ 2.0 mrem/hr (N + βγ)

Additional Data and Instructions (inc. Readings on Internal Packaging): N/A

Signature - Radiation Monitoring | Bldg. 202-S | Survey No. 107628 | Date 3/29/94

AUTHORIZATION FOR SHIPMENT

APPROVAL

AIR TRANSPORT CERTIFICATION ▸ Cargo Only: ☐ Danger Labels Applied

Passenger: ☐ 1 Ltd. Qty. ☐ 2. ≤ 3 T I ☐ 3 Research or Medical Diagnosis ☐ 4 Human Medical Research

Pkg. Dimensions

Traffic has inspected and verified preshipment compliance to DOT regulations

Authorized Signature ▸ Printed Name ▸ Date ▸ 3-29-94

APPROVED FOR OFFSITE SHIPMENT

TRAFFIC

B. L. No. | Date Shipped | E. T. A. | Routing ☐ N/A

Surveyed By | Date | Approved for Shipment Westinghouse Hanford Company | Date

Placards ☐ Yes ☒ No

Route Plan ☐ Yes ☒ No

*U.S. GPO: 1992-791-064/80001

S4-6000-088 (10/88)

Received 3/29/94 IFC

9213508.2503

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
1200 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(Per Shipping Container)

Date/Time Received 3/29/94 1130 Client Name WHC

Project/Client # 94-065 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) SML 467

1. Condition of shipping container? ok
2. Custody Seals on cooler intact? Yes ☑ No ☐
3. Custody Seals dated and signed? Yes ☑ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☑ No ☐
5. Vermiculite/packing material is: Wet ☒ (Dry 3/29/94) Dry ☑
6. Each sample is in a plastic bag? Yes ☑ No ☐
7. Number of sample containers in cooler: 9
8. Samples have: ✓ tape ✓ hazard labels ✓ custody seals ✓ appropriate sample labels
9. Samples are: ____ in good condition ____ leaking ____ broken ____ have air bubbles ____ other
10. Coolant present? Yes ☑ No ☐

Sample temperature 6°C

11. The following paperwork should be accounted for (N/A if not applicable):

Chain of Custody #'(s) 006445

Request for analysis #(s) N/A

Airbill # N/A Carrier N/A

12. Have any anomalies been identified above? Yes ☐ No ☑
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Tom Gilbert [signature] Date/Time 3/29/94 1130

FORM NO. LS-042, Rev.0 2 94

0000025

RL # 2092
Category III !
JRN 29 Mar 94

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC	3-29-94		3-29-94		3-29	10	13	219	240

	Customer ID	pH <2 Rcvd/Relq	Pincht Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Alpha	Counts Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Catagory 1 Yes/No	Aliquot to Cal 1 Gm or Ltr Alpha	Beta
Soil	B08FM8		7.9	95	950.0	22	151	9654	15.05	964.49	3.35E+01	2.07E+03	1.5E-01	9.3E+00	6.2E-05	4.4E-04	1.6E+02	9.8E+03	No	6.3E+01	1.0E+01
									-0.05	-0.91	-1.8E-01	-1.9E+00	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
									-0.05	-0.91	-1.8E-01	-1.9E+00	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
									-0.05	-0.91	-1.6E-01	-1.9E+00	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR

9713508.2504

0000026

INTERNATIONAL TECHNOLOGY CORPORATION

Temp 4° - Bottle
1° - Cooler

COR 559

519.04

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 340354
Page 1 of 2

Project Name/No. 1 Saf 94-065
Sample Team Members 2
Profit Center No. 3 4632
Project Manager 4 Van Petty
Purchase Order No. 6
Required Report Date 11

Samples Shipment Date 7 3-29-94
Lab Destination 8 St. Louis
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13

Bill to: 5 IT Richland
Report to: 10 IT Richland

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
40354501A	BOBFM8	3-24-94 1300	ag	250ml	Cool 4°	VOA	100% Full	Custody Seals Intact
B			ag			Semi VOA	FOR LAB USE ONLY	
C			Poly	250		Metal CN Tal Ti, Hg		
D			ag	125		300.0		
E						353.2		
F						cyanide	FOR LAB USE ONLY	
G						Reflexive		
40354502A	BOBFM9	3-24-94 0800		250		VOA	No "A" on bottle for Client Id	

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: 25
Return to Client ☑ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: 26
Normal ☐ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0014

1. Relinquished by 28 (Signature/Affiliation) R. Boyd IT	Date: 3-29-94 Time: 1600	1. Received by 29 (Signature/Affiliation) [signature]	Date: March 30, 1994 Time: 0945
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

0000027

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 340354
Page 2 of 2

Project Name

Project No.

Samples Shipment Date 3/29/94

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
403 545 03 A	Water / Trip Blank	3/29/94 1200	Glass	40ml	4°C	VOA	No Custody Seal	100% Full
B	1	1	1	1	1	1	↓	↓
							USE	ONLY
							USE	ONLY
							USE	ONLY
							USE	ONLY
							USE	ONLY
							USE	ONLY
							USE	ONLY
							USE	ONLY
							USE	ONLY
							USE	ONLY
							USE	ONLY
							USE	ONLY
							USE	ONLY
	0000028							

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

9714508 2906

9713508.2507

4796/
Login No.: 4799

Condition Upon Receipt/Variance Report
ITAS - St. Louis Laboratory

Project Number: 519.04 / 519.08

Initiated By (signature): [signature]

Receipt Date/Time: March 30, 1994 0945

RFA/COC Numbers: * See back

Login Date and Time: 04-01-94 15:46

Login Review Date/Time: 4-03-94 0800

Login Release Date and Time: 05-04-94 17:25

Information Checklist (circle Y or N):

1.	Y	(N)	Air Bill included with shipment? 395-1813-573 395-1541-903	8.	(Y)	N	Custody seals on Sample Containers? Broke
2.	Y	(N)	Damage to Shipping Containers?	9.	Y	(N)	Temperature of Container(s) 4 ± 2° C? List temperature(s) 3.1, 2.1
3.	(Y)	N	Shipping Containers Rad Surveyed?	10.	Y	(N)	Broken/Leaking Containers?
4.	(Y)	N	Custody Seals on Shipping Containers?	11.	(Y)	(N)	Do Sample Containers Match C of C?
5.	(Y)	N	Shipping Containers Opened in hood?	12.	Y	(N)	Are preservatives correct? pH on metals SS 3-30-94
6.	(Y)	N	Client Chain of Custody included?		Y	(N)	Is the pH < 2 for acid preserved samples?
7.	Y	(N)	Headspace in VOA samples? N/A		Y	N	Is the pH > 12 for base preserved samples?

Notes: 2 temperature bottles received - one for each cooler. Bottles were 4° and 2°C. 40354502A on COC while on container the "A" is missing. pH=7 for Aqueous metals sample. [preservation other than temperature for this not required for this sample per SAF 94-108 WP 4/4/94]
Cooler anteriors were both 1°

Corrective Action:

☒ Client's Name: J.T. Harvey Informed ~~verbally~~ fax on: 4/4/94 By: [initials]

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". Comments: _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Project Management Review: [signature] Date: 4/4/94

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

C.U.R. and C.O.C.
COPIED TO: Wade Price
DATE: March 30, 1994
TIME: 1430
BY: Stephen Schneider

SL-92-QA-0026, Rev.1

0000284

ITAS - St. Louis April 12, 1994 03:41 pm
Account: 10722 Project: 519.04 ITAS - Richland QAS No. 480 Rev. 0
Master Sample Login: 4796

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 / Class	Received / Preservative	Due / Anal. Due Date	Shipper / Hold Date	Rad Category / Site	Rad Sample No. / (Container Numbers:% Filled)
4796-001	808FM8	Soil	24-MAR-94 13:00	30-MAR-94 09:45	04-MAY-94	FED-EX	3	R2092-001
NOTE: CONTAINER #01A=VOA,01B=SEMI-VOA,01C=METALS + Ti,Hg,01D=EPA (300.0),01E=EPA (353.1),01F=CN,01G=KEROSENE. RICHLAND ID# 40354501								
1	AN - Amber Glass-250ML	BNA/CLP90/04	S	COLD	04-MAY-94	07-APR-94	R1B	(72639:100)
1		VOA/CLP90/04	S	COLD	04-MAY-94	07-APR-94	1091	(72638:100)
1	AN - Amber Glass-120ML	CL/300.0/04	S	COLD	04-MAY-94	21-APR-94	R1B	(72641:100)
1		CN/CLP/04	S	COLD	04-MAY-94	07-APR-94	R1B	(72643:100)
1		FL/300.0/04	S	COLD	04-MAY-94	21-APR-94	R1B	(72641:100)
1		NO3/353.1/04	S	COLD	04-MAY-94	21-APR-94	R1B	(72642:100)
1		SO4/300.0/04	S	COLD	04-MAY-94	21-APR-94	R1B	(72641:100)
1		TPH/8015/04	S	COLD	04-MAY-94	07-APR-94	R1B	(72644:100)
1	PN - Plastic-250ml	AS/CLP90/04	S	COLD	04-MAY-94	27-OCT-94	R1B	(72640:100)
1		HG/CLP90/04	S	COLD	04-MAY-94	26-MAY-94	R1B	(72640:100)
1		ICAP/CLP90/04	S	COLD	04-MAY-94	27-OCT-94	R1B	(72640:100)
1		PB/CLP90/04	S	COLD	04-MAY-94	27-OCT-94	R1B	(72640:100)
1		PH/CLP/04	S	COLD	04-MAY-94	14-MAY-94	R1B	(72640:100)
1		PM/IT/04	S	COLD	04-MAY-94	20-SEP-94	R1B	(72640:100)
1		SE/CLP90/04	S	COLD	04-MAY-94	27-OCT-94	R1B	(72640:100)
1		TL/CLP90/04	S	COLD	04-MAY-94	27-OCT-94	R1B	(72640:100)
4796-002	808FM9	Soil	24-MAR-94 08:00	30-MAR-94 09:45	04-MAY-94	FED-EX	3	Screening not Required
Richland ID # 40354502								
1	AN - Amber Glass-250ML	PM/IT/04	S	COLD	04-MAY-94	20-SEP-94	1091	(72645:100)
1		VOA/CLP90/04	S	COLD	04-MAY-94	07-APR-94	1091	(72645:100)
4796-003	40354503AAB	Water	29-MAR-94 12:00	30-MAR-94 09:45	04-MAY-94	FED-EX	1	Screening not Required
TRIP BLANK								
2	VI - Vial-40ml	HOLD//04	S	COLD	27-APR-94	10-MAY-94	1091	(72646:100 72647:100)

3*=Sample has not been rad screened.

0000029

9713508.2508

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006468

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations Z Ditch
Ice Chest No. SWL 413
Bill of Lading/Airbill No. N/A
Offsite Property No. W94-C-0369 #47
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
404018 01 A BOBKP4	S	5-10-94	1315	(1) 250ml aG	Semi-VOA	CLP	
B BOBKP4	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C BOBKP4	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D BOBKP4	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E BOBKP4	S			(1) 125ml G	Cyanide	CPL	
F BOBKP4	S			(1) 125ml Gs	TPH Diesel Range	8015m	
G BOBKP4	S			(1) 125ml aGs	TOC	9060	
404019 01 BOBKP4	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-1-94	1020	RW Arnold RW Arnold
RW Arnold RW Arnold	4-1-94	1210	Tom Gilmore ITAS

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9715508.2510

HAND DELIVERED 9713508.2510

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMEN
WESTINGHOUSE HANFORD		

PART I - TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Processing & Analytical Lab	Analytical Chemistry	Sampling & Mobile Lab

The following items are to be shipped from [X] Contractor [ ] Vendor

Routing GOVERNMENT TRUCK [ ] Prepaid [ ] Collect

Shipped to
Company IT ANALYTICAL
Address 2800 George Washington Way
City Richland State WA Zip Code 99352
Country

Off-site Custodian
Tami Heidelberg

On-site Custodian Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
3		POLYCOOLER. SAMPLES PACKED IN PLATIC BAGS AND STORED ON WET ICE	
		WEIGHT [illegible] COOLER # [illegible]	
		WEIGHT [illegible] COOLER # [illegible]	
		WEIGHT ____ COOLER # ____	

[ ] Classified [X] Unclassified [ ] Shipped Under DOE Contract [ ] Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property
[X] Required for Project Work. List Project No. SAP #94-065
[ ] Business Trip
[ ] Off-site Assignment
[ ] Shipment to Subcontractor. List Subcontract No.
[ ] Other (Please specify)

COC #	SAMPLE #
6473	BOBKP7
6474	BOBKP8
6454	BOBKM7
6466	BOBKN9
6468	BOBKP4
6469	BOBKP5
6262	BOBNQ4
6263	BOBNQ5

100000031

Samples require analysis that are not presently available at this site.

BILL OF LADING # N/A

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
	[illegible]	[illegible]

Location of and Contact for Property (Name/Phone No./Bldg./Area)
200 WEST/202-S C. D. Hayes / 373-7074 / 6269 / 600

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
03/01/94	PT2WA/Org Code: 12910	N/A

Originated By	Date	Authorized By	Date
~~Relinquished by:~~ [illegible]	[illegible]	302139 Jeannette E. Hyatt	03/01/94

Property Management Approval Date [illegible]

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

[illegible] ITAS 4/1/94 1210

54-3000-479 (05/93)

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

All "yes" are Category I.
B0BKP4 is Cat. III
Remaining "no" are Cat. II.

Customer Code	Recieved Date	Recieved Time	Screening Prep Date	Screening Prep Time	Count Date	Mnts Cnld	BACKGROUND Alpha	BACKGROUND Beta	BACKGROUND Mnts
WHC			40194		401	10	6	53	60

Customer ID	pH <2 Rcvd/Reiq	Pincht Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num	Total Alpha	Counts Beta	Net Sample Counts/Minute Alpha	Net Sample Counts/Minute Beta	DPM / Aliqout Alpha	DPM / Aliqout Beta	uCi per Sample Alpha	uCi per Sample Beta	2 Sigma Error uCi per Sample Alpha	2 Sigma Error uCi per Sample Beta	pCi/(Gm or L) Alpha	pCi/(Gm or L) Beta	Catagory 1 Yes/No	Aliquot to Cat.1 Gm or Lit Alpha	Aliquot to Cat.1 Gm or Lit Beta
WHC/SOIL																				
B0BNQ5		89.2	89	1250.0	37	0	9	-0.10	0.02	-1E+00	1.4E-01	-6E-03	9.2E-04	-1E-05	1.9E-06	-5E+00	7.3E-01	Yes	-2E+03	1.4E+05
B0BKP5		79.1	79	1200.0	38	5	40	0.40	3.12	3.6E+00	7.2E+00	2.4E-02	5.0E-02	2.8E-05	4.0E-05	2.0E+01	4.1E+01	No	4.9E+02	2.4E+03
B0BKN9		77.6	78	1150.0	39	6	31	0.50	2.22	4.5E+00	4.9E+00	3.0E-02	3.3E-02	3.0E-05	1.8E-05	2.6E+01	2.8E+01	No	3.9E+02	3.5E+03
B0BKP4		95.9	96	1200.0	40	35	57	3.40	4.62	3.5E+01	8.6E+00	2.0E-01	4.8E-02	8.7E-05	6.3E-06	1.7E+02	4.0E+01	No	6.0E+01	2.5E+03
B0BKM7		96.3	96	1300.0	41	12	148	1.10	13.92	1.1E+01	3.4E+01	6.6E-02	2.1E-01	4.9E-05	1.2E-04	5.1E+01	1.6E+02	No	2.0E+02	6.3E+02
B0BNQ4		97.5	98	1350.0	42	1	12	0.00	0.32	-2E-02	8.0E-01	-1E-04	5.0E-03	-1E-07	2.5E-04	-8E-02	3.7E+00	Yes	-1E+05	2.7E+04
B0BKP7		90.9	91	1250.0	43	0	13	-0.10	0.42	-1E+00	1.1E+00	-6E-03	7.1E-03	-1E-05	7.3E-06	-5E+00	5.7E+00	Yes	-2E+03	1.8E+04
B0BKP6		92.1	92	1350.0	44	0	9	-0.10	0.02	-1E+00	1.5E-01	-7E-03	9.7E-04	-1E-05	3.0E-07	-5E+00	7.2E-01	Yes	-2E+03	1.4E+05
TOTAL	uCi							-0.10	-0.86	-4E-01	-2E+00	3.0E-01	3.5E-01	ERR	ERR	ERR	ERR	No	ERR	ERR

RL#

2115

AAN 1 Apr 94

INTERNATIONAL TECHNOLOGY CORPORATION

CUR 2
Jump 5

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 340359
Page 1 of 1

Project Name/No. 1: 94-065
Sample Team Members 2:
Profit Center No. 3: 4632
Project Manager 4: Van Petley
Purchase Order No. 6:
Required Report Date 11: 5/6/94

Samples Shipment Date 7: 4/1/94
Lab Destination 8: St Louis
Lab Contact 9:
Project Contact/Phone 12:
Carrier/Waybill No. 13:

Bill to: 5 ITAS Richland
Report to: 10 ITAS Richland

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
40401801A	BOBKPH/Soil	3/30/94 1315	Glass	250ml	4°C	Semi Voa		
B			Poly	1		Metals TAl Hg Ti	FOR LAB USE ONLY	
C			Glass	125ml		Anions		
D						NO2/NO3		
E						CN		
F						TPH 8015	FOR LAB USE ONLY	
G						TOC		
4/1/94								

Special Instructions: 23 CAT III

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: 25
Return to Client ☒ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: 26
Normal ☒ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0014

1. Relinquished by 28 (Signature/Affiliation) ITAS	Date: 4/1/94 Time: 1600	1. Received by 28 (Signature/Affiliation)	Date: 04-02-94 Time: 0930
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

0000033

White: To accompany samples Yellow: Field copy

*See back of form for special instructions

INTERNATIONAL TECHNOLOGY CORPORATION

C.U.R. and C.O.C..
COPIED TO: W. Price
DATE: 04-02-94
TIME: 1100
BY: SW

Work Order No.: 4817

Condition Upon Receipt Variance Report
ITAS - St. Louis Laboratory

Client: IT Richland

Date: 04-02-94 0930

Project No: 519.04

Initiated by: Sue Stilson

Analysis Requested: Refer to RFA/COC

RFA/COC Numbers: 340359

Client Sample Numbers Affected: Entire Login

Condition/Variance (Check all that apply): Circle Number to Denote that Item was Evaluated. "NA" = "Not Applicable".

1. NA Not enough sample received for proper analysis.
   Received approximately: _____
2. ☐ Sample received broken/leaking.
3. ☐ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C
     Record temperature: 5 cooler / 5 temporal
   - ☐ pH _____
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain: _____
6. ☐ Paperwork received without sample.
7. ☐ No sample ID on sample container.
8. ☐ Custody tape disturbed/broken/missing.
9. NA Sample splits performed by lab.
10. NA Volatile sample received with approximately _____ mm headspace.
11. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
12. ☐ All coolers on airbill not received with shipment.
13. ☐ Other (explain below): Shipping containers not rad surveyed.

Fed X 395 3088 097
no airbill

Notes:

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". Comments: _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: (or designate) _____ Date: _____

Project Management Review: W. Price Date: 4/4/94

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

000034

ITAS - St. Louis April 05, 1994 03:00 pm
Account: 10722 Project: 519.04 ITAS - Richland QAS No. 480 Rev. 0
Master Sample Login: [illegible]

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: John Walker PM Review: [illegible]

Sample Header Template:

Sample No. / Comments / Data:	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
4817-001	BOBKP4	Soil	30-MAR-94 13:15	01-APR-94 12:10	06-MAY-94	3953088097 1		R2115-001

NOTE: CONTAINER #01A=SEMI-VOA,01C=ANIONS,01D=NO2/NO3,01E=CN,01F,KEROSENE,01G=TOC,01B=METALS-TI&HG-RICHLAND I.D.#40401801

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-250ML	BNA/CLP90/Q4	S	COLD	29-APR-94	13-APR-94	R8C	(73042:100)
1	AN - Amber Glass-120ML	CL/300.0/Q4	S	COLD	29-APR-94	27-APR-94	R8C	(73044:100)
1		CN/CLP/Q4	S	COLD	29-APR-94	13-APR-94	R8C	(73046:100)
1		FL/300.0/Q4	S	COLD	29-APR-94	27-APR-94	R8C	(73044:100)
1		NO3/353.1/Q4	S	COLD	29-APR-94	27-APR-94	R8C	(73045:100)
1		SO4/300.0/Q4	S	COLD	29-APR-94	27-APR-94	R8C	(73044:100)
1		TOC/9060/Q4	S	COLD	29-APR-94	27-APR-94	R8C	(73048:100)
1		TPH/8015/Q4	S	COLD	29-APR-94	13-APR-94	R8C	(73047:100)
1	PN - Plastic-250ml	AS/CLP90/Q4	S	COLD	29-APR-94	28-SEP-94	R8C	(73043:100)
1		HG/CLP90/Q4	S	COLD	29-APR-94	27-APR-94	R8C	(73043:100)
1		ICAP/CLP90/Q4	S	COLD	29-APR-94	28-SEP-94	R8C	(73043:100)
1		PB/CLP90/Q4	S	COLD	29-APR-94	28-SEP-94	R8C	(73043:100)
1		PH/CLP/Q4	S	COLD	29-APR-94	15-APR-94	R8C	(73043:100)
1		PM/IT/Q4	S	COLD	29-APR-94	26-SEP-94	R8C	(73043:100)
1		SE/CLP90/Q4	S	COLD	29-APR-94	28-SEP-94	R8C	(73043:100)
1		TL/CLP90/Q4	S	COLD	29-APR-94	28-SEP-94	R8C	(73043:100)

9713508.2514

3*=Sample has not been rad screened.

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006456

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No.
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP2 RKS 7 30 94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ 200 UP2 RKS 7 30 94
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS
15 Apr 94
STAND ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKM9	S	4-4-94	1110	(1) 250ml aG	Semi-VOA CLP	
BOBKM9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury 15 APR 94 ~~EPL~~	
BOBKM9	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKM9	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKM9	S			(1) 125ml G	Cyanide 15 APR 94 ~~EPL~~	
BOBKM9	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKM9~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
BOBKM9	S			(1) 1000ml Poly	Gross Alpha/Beta, ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. SICKLE	4-6-94	1020	R Boyd 4-6-94 1035

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2515

0000036

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006463

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 [illegible] 3.30.94
Sampling Locations ~~216-U-8-Crib~~ [illegible]
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS
SAPR 94
STAND ALONE DELIVERABLE

9713508.2516

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKN6	S	4-4-94	1030	(1) 250ml aG	Semi-VOA SAPR 94 CLP	
BOBKN6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury SAPR 94 CLP ~~-CPL~~	
BOBKN6	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKN6	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKN6	S			(1) 125ml G	Cyanide SAPR 94 CLP ~~-CPL~~	
BOBKN6	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKN6~~ SAPR 94	S			~~(1) 125ml aGs~~	~~TOC~~ [illegible] 4-4-94 9060	
BOBKN6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
[illegible] R.T. Sickle	4-6-94	1020	R. Boyd 4-6-94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000037

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006475

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations U1/U2 Tile Field
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS
5 Apr '94
STAND ALONE DELIVERABLE

9413508.2517

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKQ0	S	4-4-94	1110	(1) 250ml aG	Semi-VOA CLP	
BOBKQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury 5 April CLP ~~CPL~~	
BOBKQ0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKQ0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKQ0	S			(1) 125ml G	Cyanide 5 April CLP ~~CPL~~	
BOBKQ0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
BOBKQ0	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-6-94	1020	R. Boyd 4-6-94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2518

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
WESTINGHOUSE HANFORD		W4[illegible]

PART I - TO BE COMPLETED BY ORIGINATOR

Processing & Analytical Lab	Section Analytical Chemistry	Unit Sampling & Mobile Lab

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing GOVERNMENT TRUCK ☒ Prepaid ☐ Collect

Shipped to
Company IT ANALYTICAL
Address 2800 George Washington Way
City Richland State WA Zip Code 99352
Country

Off-site Custodian: Tami Heidelberg

On-site Custodian: Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1		POLYCOOLER SAMPLES PACKED IN PLASTIC BAGS AND STORED ON WET ICE WEIGHT 64 lb COOLER # SNL 413	

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

☒ Required for Project Work. List Project No. SAF #94-065 COC #006463 SAMPLE #BOBKM6
006456 BOBKM9
006475 BOBKQ0

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

☐ Other (Please specify) Samples require analysis that are not presently available at this site.

BILL OF LADING # N/A

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
[illegible]	[illegible]	4-6-94

Location of and Contact for Property (Name/Phone No./Bldg./Area)
200 WEST/202-S C. D. Hayes / 373-7074 / 6269 / 600

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
04/06/94	PT2WA/Org Code: 12910	N/A

Originated By	Date & time	Authorized By	Date
[illegible]	[illegible]	Jeannette E. Hyatt	[illegible]

Property Management Approval	Date
[illegible]	7/[illegible]/94

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

54-3000-479 (05/93)

000039

0000040

RL# 2124

All category III

JRN 6 Apr 94

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC/SOIL	40694		40694		*****	10	20	243	240

Customer ID WHC/SOIL	pH <2 Rcvd/Reiq	RESIDUE Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Counts Alpha	Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
B0BKM9		96.5	97	1500.0	49	22	195	2.12	18.49	2.12E+01	4.44E+01	1.5E-01	3.1E-01	8.1E-05	5.7E-05	9.9E+01	2.1E+02	No	1.0E+02	4.8E+02
B0BKN6		96.7	99	1300.0	50	21	161	2.02	15.09	2.07E+01	3.61E+01	1.2E-01	2.1E-01	6.8E-05	4.3E-05	9.4E+01	1.6E+02	No	1.1E+02	6.1E+02
B0BKQ0		86.6	87	1600.0	51	34	205	3.32	19.49	3.16E+01	4.50E+01	2.6E-01	3.7E-01	1.2E-04	9.3E-05	1.6E+02	2.3E+02	No	6.1E+01	4.3E+02
TOTAL	uCi							-0.08	-1.01	-2.9E-01	-2.1E+00	4.1E-01	6.9E-01	ERR	ERR	ERR	ERR	No	ERR	ERR

9713508.2519

INTERNATIONAL TECHNOLOGY CORPORATION

CUR 25
temp 1°

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 453503
Page 1 of 2

Project Name/No. [1] SAF 94-065
Sample Team Members [2]
Profit Center No. [3] 4632
Project Manager [4] Van Pettey
Purchase Order No. [6]
Required Report Date [11]

Samples Shipment Date [7] 4-6-94
Lab Destination [8] St. Louis
Lab Contact [9]
Project Contact/Phone [12]
Carrier/Waybill No. [13]

Bill to: [5] IT Richland
Report to: [10] IT Richland

ONE CONTAINER PER LINE

Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Pre-servative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
40409001 A	BOBKQ0 / soil	4-4-94 1110	aG	250ml	cool 4°	semi Voa	100% full	
B			Poly			Metals-clp total T, Hg	FOR LAB USE ONLY	
C			G	125ml		Anions EPA 300.0		
D						NO2 NO3 EPA 353.2		
E						cyanide		
F			Gs			TPH Diesel Range	FOR LAB USE ONLY	
40409002 A	BOBKM9		aG	250ml		semi Voa		
B			Poly			Metals-clp Tot T, Hg		

Special Instructions: [23]

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: [25]
Return to Client ☒ Disposal by Lab ☐ Archive ____ (mos.)

Turnaround Time Required: [26]
Normal ☐ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0014

1. Relinquished by [28] (Signature/Affiliation) R. Boyd IT	Date: 4-6-94 Time: 1600	1. Received by [28] (Signature/Affiliation) [illegible]	Date: 04-07-94 Time: 0900
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: [29]

0000041

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 453503
Page 2 of 2

Project Name WHC

Project No. SAF 94-065

Samples Shipment Date 4-6-94

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
40409002 C	BOBKM9/Soil	4-4-94 1110	G	125ml	Cool 4°	EPA 300.0	100% full	
D						EPA 353.2	FOR LAB USE ONLY	FOR LAB USE ONLY
E						Cyanide		
F			Gs			TPH Diesel Range		
40409003 A	BOBKM6	4-4-94 1030	aG	250ml		Semi VOA	FOR LAB USE ONLY	FOR LAB USE ONLY
B			Poly			Metals Cl, total, F, Hg		
C			G	125ml		EPA 300.0	FOR LAB USE ONLY	FOR LAB USE ONLY
D						EPA 353.2		
E						Cyanide		
F			Gs			TPH Diesel Range		
~~40409004 A~~	~~TRIP Blank~~	~~4-6-94 1600~~	~~aG~~	~~40ml~~		~~VOA~~ RB 4-6-94		
~~B~~		~~4-6-94 1600~~				~~VOA~~	FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
	0000042							

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions

INTERNATIONAL TECHNOLOGY CORPORATION

8/05-03-94

C.U.R. and C.O.C.
COPIED TO: W. Price
DATE: 04-07-94
TIME: 1500
BY: [illegible]

Work Order No.: 4846

Condition Upon Receipt Variance Report
ITAS - St. Louis Laboratory

Client: _____ Date: 04-07-94 0900

Project No: 519.04 Initiated by: [illegible]

Analysis Requested: Refer to RFA/COC RFA/COC Numbers: 453503

Client Sample Numbers Affected: Entire Login

Condition/Variance (Check all that apply): Circle Number to Denote that Item was Evaluated. "NA" = "Not Applicable".

1. NA Not enough sample received for proper analysis. Received approximately: _____
2. ☐ Sample received broken/leaking.
3. ☑ Sample received without proper preservative.
   - ☑ Cooler temperature not within 4°C ± 2°C
     Record temperature: 1° cooler
   - ☐ pH -1° temp. vial
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain: _____
6. ☐ Paperwork received without sample.
7. ☐ No sample ID on sample container.
8. ☐ Custody tape disturbed/broken/missing.
9. NA Sample splits performed by lab.
10. NA Volatile sample received with approximately _____ mm headspace.
11. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
12. ☐ All coolers on airbill not received with shipment.
13. ☐ Other (explain below): Shipping containers not rad surveyed.

Fed X sticker 39543[illegible]

Notes: _____

Corrective Action:

☑ Client's Name: J.T. Hawey Informed verbally on: 4/7/94 By: WHP
☐ Client's Name: _____ Informed in writing on: _____ By: _____

☑ Sample(s) processed "as is". Comments: note in narrative
☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: (or designate) _____ Date: _____

Project Management Review: [signature] Date: 4/7/94

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

0000043

ITAS - St. Louis April 08, 1994 08:14 am
Account: 10722 Project: 519.04 ITAS - Richland QAS No. 480 Rev. 0
Master Sample Login: 4846

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.
4846-001	B0BKQ0	Soil	04-APR-94 11:10	06-APR-94 09:00	11-MAY-94	FED-EX	3*	R2124-003

NOTE: CONTAINER #01A=SEMI-VOA,01B=METALS-CLP-TAL-TI-HG,01C=EPA (300.0),01D=NO2-NO3 (353.2),01E=CN,01F=TPH Kerosene Richland ID 40409001

Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1 AN - Amber Glass-250ML	BNA/CLP90/04	S	COLD	04-MAY-94	18-APR-94	R1D	(73538:100)
1 AN - Amber Glass-120ML	CL/300.0/04	S	COLD	04-MAY-94	02-MAY-94	R1D	(73540:100)
1	CN/CLP/04	S	COLD	04-MAY-94	18-APR-94	R1D	(73542:98)
1	FL/300.0/04	S	COLD	04-MAY-94	02-MAY-94	R1D	(73540:100)
1	NO3/353.1/04	S	COLD	04-MAY-94	02-MAY-94	R1D	(73541:99)
1	SO4/300.0/04	S	COLD	04-MAY-94	02-MAY-94	R1D	(73540:100)
1	TPH/8015/04	S	COLD	04-MAY-94	18-APR-94	R1D	(73543:97)
1 PM - Plastic-250ml	AS/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73539:100)
1	HG/CLP90/04	S	COLD	04-MAY-94	03-MAY-94	R1D	(73539:100)
1	ICAP/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73539:100)
1	PB/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73539:100)
1	PH/CLP/04	S	COLD	04-MAY-94	21-APR-94	R1D	(73539:100)
1	PM/IT/04	S	COLD	04-MAY-94	01-OCT-94	R1D	(73539:100)
1	SE/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73539:100)
1	TL/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73539:100)

Sample No. #	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
4846-002	B0BKN9	Soil	04-APR-94 11:10	06-APR-94 09:00	11-MAY-94	FED-EX	3*	R2124-002

NOTE: CONTAINER #01A=SEMI-VOA,01B=METALS-CLP-TAL-TI-HG,01C=EPA (300.0),01D=NO2-NO3 (353.2),01E=CN,01F=TPH Kerosene Richland ID 40409002

Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1 AN - Amber Glass-250ML	BNA/CLP90/04	S	COLD	04-MAY-94	18-APR-94	R1D	(73544:100)
1 AN - Amber Glass-120ML	CL/300.0/04	S	COLD	04-MAY-94	02-MAY-94	R1D	(73546:100)
1	CN/CLP/04	S	COLD	04-MAY-94	18-APR-94	R1D	(73548:98)
1	FL/300.0/04	S	COLD	04-MAY-94	02-MAY-94	R1D	(73546:100)
1	NO3/353.1/04	S	COLD	04-MAY-94	02-MAY-94	R1D	(73547:99)
1	SO4/300.0/04	S	COLD	04-MAY-94	02-MAY-94	R1D	(73546:100)
1	TPH/8015/04	S	COLD	04-MAY-94	18-APR-94	R1D	(73549:97)
1 PM - Plastic-250ml	AS/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73545:100)
1	HG/CLP90/04	S	COLD	04-MAY-94	03-MAY-94	R1D	(73545:100)
1	ICAP/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73545:100)
1	PB/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73545:100)
1	PH/CLP/04	S	COLD	04-MAY-94	21-APR-94	R1D	(73545:100)
1	PM/IT/04	S	COLD	04-MAY-94	01-OCT-94	R1D	(73545:100)
1	SE/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73545:100)
1	TL/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73545:100)

Sample No. #	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
4846-003	B0BKN6	Soil	04-APR-94 10:30	06-APR-94 09:00	11-MAY-94	FED-EX	3*	R2124-001

NOTE: CONTAINER #01A=SEMI-VOA,01B=METALS-CLP-TAL-TI-HG,01C=EPA (300.0),01D=NO2-NO3 (353.2),01E=CN,01F=TPH Kerosene Richland ID 40409003

Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1 AN - Amber Glass-250ML	BNA/CLP90/04	S	COLD	04-MAY-94	18-APR-94	R1D	(73550:100)
1 AN - Amber Glass-120ML	CL/300.0/04	S	COLD	04-MAY-94	02-MAY-94	R1D	(73552:100)

3*=Sample has not been rad screened.

0000044

9413508.2523

ITAS - St. Louis April 08, 1994 08:14 am
Account: 10722 Project: 519.04 ITAS - Richland QAS No. 480 Rev. 0
Master Sample Login: 4846

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.
Comments								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
Data:								
1		CN/CLP/04	S	COLD	04-MAY-94	18-APR-94	R1D	(73554:98)
1		FL/300.0/04	S	COLD	04-MAY-94	02-MAY-94	R1D	(73552:100)
1		NO3/353.1/04	S	COLD	04-MAY-94	02-MAY-94	R1D	(73553:99)
1		SO4/300.0/04	S	COLD	04-MAY-94	02-MAY-94	R1D	(73552:100)
1		TPH/8015/04	S	COLD	04-MAY-94	18-APR-94	R1D	(73555:97)
1	PM - Plastic-250ml	AS/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73551:100)
1		HG/CLP90/04	S	COLD	04-MAY-94	03-MAY-94	R1D	(73551:100)
1		ICAP/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73551:100)
1		PB/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73551:100)
1		PH/CLP/04	S	COLD	04-MAY-94	21-APR-94	R1D	(73551:100)
1		PM/IT/04	S	COLD	04-MAY-94	01-OCT-94	R1D	(73551:100)
1		SE/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73551:100)
1		TL/CLP90/04	S	COLD	04-MAY-94	04-OCT-94	R1D	(73551:100)

9713508.2524

3*=Sample has not been rad screened.

0000045

9713508.2525

LOG #: SL-94- 0241 page 1 of 2

ITAS-St. Louis
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): 519.04 ITAS- Richland
NCM INITIATED BY (Name/Date): R. Patterson 05-13-94
PARAMETER(S): TOC 9060
SAMPLE NUMBER(S) AFFECTED: 4817-001 DUP, MS

AREA:
- [ ] SHIP/REC
- [ ] ORG EXT
- [ ] INORG PREP
- [ ] OTHER
- [ ] GC
- [ ] HPLC
- [ ] GCMS
- [ ] GEN CHEM
- [ ] METALS
- [ ] GEO
- [ ] BIOASSAY
- [ ] RADIOCHEM
- [ ] COUNTING
- [ ] IH
- [ ] DATA VERIFICATION
- [ ] REPORTING

NONCONFORMANCE [check appropriate item(s)]:

1. [ ] Not enough sample received for proper analysis.
2. [x] Holding time exceeded by 14 days due to:
   - 2.1 [ ] CATEGORY I: Out of Laboratory Control
     - [ ] Holding time expired at receipt.
   - 2.2 [x] CATEGORY II: Laboratory Dependent
     - [ ] work backlog
     - [ ] instrument failure
     - [ ] communication
     - [ ] other (see #10)
   - 2.3 [ ] CATEGORY III: Laboratory Reruns
     - 2.3.1 [ ] *QA/QC:*
       - [ ] surrogates
       - [ ] internal standards
       - [ ] spike recoveries
       - [ ] blank contamination
     - 2.3.2 [ ] *CONFIRMATION:*
       - [ ] second column
       - [ ] contamination check
       - [ ] other (see #10)
     - 2.3.3 [ ] *DILUTION:*
       - [ ] over calibration
       - [ ] under calibration
       - [ ] other (see #10)
     - 2.3.4 [ ] *OTHER: (see #10)*
3. [ ] Sample lost during extraction/analysis, no re-prep or re-analysis possible.
4. [ ] QC data reported to client outside of:
   - [ ] method limits
   - [ ] internal limits
   - [ ] QAPP limits
   - [ ] contract limits
   - [ ] regulatory limits
   - [ ] blank criteria
5. [ ] Incorrect procedure(s) used. (See #10)
6. [ ] Invalid instrument calibration. (See #10)
7. [ ] Incorrect/incomplete data reported to client. (See #10)
8. [ ] Reported detection limit(s) higher than:
   - [ ] method limits
   - [ ] QAPP limits
   - [ ] contract limits
   - [ ] other (see #10)

   Due to:
   - [ ] sample matrix
   - [ ] insufficient sample
   - [ ] instrumentation
   - [ ] other (see #10)
9. [ ] Other (specify):
10. [ ] Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. [x] Client notified by (name and date): 5/10
   - [x] in writing 5/10 narrative
   - [ ] by FAX
   - [x] by phone 5/10
   - [ ] Other (explain)
2. [x] Client's name V. Petty and response
   - [x] process "as is"
   - [ ] resample
   - [ ] on hold til
   - [ ] Other (explain)

PROJECT MANAGER (signature & date): 5/12/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

000004SA

CORRECTIVE ACTION

☐ ROOT CAUSE: INITIALS/DATE RP 05-12-94

Project manager assigned QC after sample was out of hold time

☐ CORRECTIVE ACTION: INITIALS/DATE RP 05-12-94

Run QC out of hold time

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: DATE:

RESPONSIBLE MANAGER: R. Patterson DATE: 05-12-94

QC REVIEW

☒ NONCONFORMANCE ☐ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: JM Klyce DATE: 05-12-94

CORRECTIVE ACTION VERIFICATION

☐ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: JM Klyce DATE: 05-12-94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

0025000U

9713508.2527

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: 4-03-492-01 MATRIX: SOIL

WHC ID: BO9WK0 DATE RECEIVE 3/25/94

REPORTING UNIT pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	8.32E-01	1.33E-01	1.88E-01	2.41E-02	0.688	RD3302
CM-242	0.00E+00	0.00E+00	2.02E-02	1.83E-02	0.688	RD3302
CM-244	0.00E+00	0.00E+00	1.59E-02	1.44E-02	0.688	RD3302
NP-237	2.08E-02	1.86E-02	1.92E-02	1.13E-02	1	RD3208
PU-238	5.17E-02	3.91E-02	4.00E-02	2.00E-02	0.564	RD3209
PU239/40	1.47E+00	2.09E-01	3.14E-01	3.53E-02	0.564	RD3209
U-234	5.60E+01	1.23E+00	7.77E+00	4.17E-02	0.617	RD3234
U-235	2.37E+00	2.53E-01	4.11E-01	3.60E-02	0.617	RD3234
U-238DA	5.30E+01	1.20E+00	7.35E+00	3.81E-02	0.617	RD3234
*K-40	1.36E+01	7.06E-01	1.54E+00	N/A	N/A	RD3219
*CO-60	-1.89E-02	4.36E-02	4.36E-02	6.91E-02	N/A	RD3219
*EU-152	3.70E-02	1.65E-01	1.65E-01	2.67E-01	N/A	RD3219
*CS-137DA	9.99E+03	9.99E+02	9.99E+02	N/A	N/A	RD3219
*CS-134	-1.94E-01	2.78E-01	2.78E-01	4.36E-01	N/A	RD3219
*RU-106DA	-9.15E-01	2.90E+00	2.90E+00	4.58E+00	N/A	RD3219
*NA-22	1.06E-01	9.47E-02	9.53E-02	1.57E-01	N/A	RD3219
*EU-155	-4.82E-01	7.94E-01	7.95E-01	1.28E+00	N/A	RD3219
*EU-154	2.91E-01	2.59E-01	2.61E-01	4.29E-01	N/A	RD3219
* TH-234	4.21E+02	1.28E+02	1.35E+02	N/A	N/A	RD3219
*U-238DA	-4.93E-01	7.67E-01	7.68E-01	1.25E+00	N/A	RD3219
* I-129LP	-8.57E+02	1.82E+01	8.76E+01	2.66E+01	N/A	RD3219
ALPHA	8.13E+01	1.23E+01	1.51E+01	4.56E+00	1	RD3222
BETA	9.48E+03	6.29E+01	6.28E+02	2.95E+00	1	RD3222
TOTAL-SR	2.03E+00	1.54E-01	5.31E-01	9.76E-02	0.899	RD3204
*SE-79	4.60E+01	1.53E+00	7.32E+00	1.75E+00	0.557	RD3253
TC-99	4.62E+00	3.88E-01	1.83E+00	7.30E-01	0.691	ITAS-IT-RS-0001
URANIUM	1.44E+02	N/A	2.16E+01	1.00E-01	0.952	RD4200

* - SEE CASE NARRATIVE

682A-6-93

9713508.2528

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0014
LAB SAMPLE ID: 4-03-546-01
MATRIX: SOIL
WHC ID: BOBFM8
DATE RECEIVE 3/29/94
REPORTING UNIT pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	8.17E-01	1.37E-01	1.92E-01	1.55E-02	0.635	RD3302
CM-242	0.00E+00	0.00E+00	2.18E-02	1.97E-02	0.635	RD3302
CM-244	-4.60E-04	9.20E-04	9.23E-04	2.31E-02	0.635	RD3302
NP-237	4.17E-03	8.33E-03	8.38E-03	1.13E-02	1	RD3208
PU-238	5.52E-03	1.91E-02	1.92E-02	5.20E-02	0.453	RD3209
PU239/40	1.93E-01	8.42E-02	9.06E-02	2.49E-02	0.453	RD3209
U-234	1.63E+00	2.21E-01	3.21E-01	3.43E-02	0.553	RD3234
U-235	5.02E-02	3.98E-02	4.05E-02	4.01E-02	0.553	RD3234
U-238DA	1.76E+00	2.30E-01	3.41E-01	3.75E-02	0.553	RD3234
K-40	1.44E+01	4.41E-01	1.51E+00	N/A	N/A	RD3219
CO-60	-8.14E-03	1.18E-02	1.19E-02	1.93E-02	N/A	RD3219
EU-152	1.46E-01	5.54E-02	5.73E-02	1.04E-01	N/A	RD3219
CS-137DA	1.45E-01	2.03E-02	2.50E-02	N/A	N/A	RD3219
CS-134	-2.34E-02	1.07E-02	1.10E-02	1.66E-02	N/A	RD3219
RU-106DA	-1.27E-01	1.04E-01	1.05E-01	1.66E-01	N/A	RD3219
RA-224DA	1.42E+00	3.84E-02	1.47E-01	N/A	N/A	RD3219
NA-22	-4.77E-03	1.29E-02	1.29E-02	2.10E-02	N/A	RD3219
EU-155	7.10E-02	3.15E-02	3.22E-02	5.36E-02	N/A	RD3219
EU-154	-1.30E-02	3.52E-02	3.53E-02	5.74E-02	N/A	RD3219
RA-226DA	1.08E+00	5.04E-02	1.19E-01	N/A	N/A	RD3219
TH-234	1.25E+01	9.99E+00	1.01E+01	N/A	N/A	RD3219
U-238DA	1.24E+00	5.23E-02	1.34E-01	N/A	N/A	RD3219
AC-228	1.46E+00	9.16E-02	1.73E-01	N/A	N/A	RD3219
TL-208	4.84E-01	2.54E-02	5.46E-02	N/A	N/A	RD3219
BI-214	1.08E+00	5.04E-02	1.19E-01	N/A	N/A	RD3219
PB-212	1.34E+00	3.61E-02	1.39E-01	N/A	N/A	RD3219
PB-214	1.24E+00	5.23E-02	1.34E-01	N/A	N/A	RD3219
TH-232DA	1.46E+00	9.16E-02	1.73E-01	N/A	N/A	RD3219
RA-228DA	1.49E+00	9.34E-02	1.76E-01	N/A	N/A	RD3219
I-129LP	7.95E-01	5.68E-01	5.74E-01	1.05E+00	N/A	RD3219
ALPHA	2.12E+01	6.44E+00	6.83E+00	4.14E+00	1	RD3222
BETA	2.72E+01	3.71E+00	4.12E+00	2.82E+00	1	RD3222
TOTAL-SR	3.36E-02	4.32E-02	4.40E-02	9.72E-02	0.894	RD3204
SE-79	2.39E+00	8.73E-01	2.52E+00	1.75E+00	0.557	RD3253
TC-99	6.84E-02	3.15E-01	1.44E+00	7.30E-01	0.691	ITAS-IT-RS-0001
URANIUM	4.44E+00	N/A	6.66E-01	1.00E-01	0.952	RD4200

682A-6-93

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: 4-04-019-01 MATRIX: SOIL

WHC ID: BOBKP4 DATE RECEIVE 4/1/94

REPORTING UNIT pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	1.37E+01	4.95E-01	2.12E+00	2.39E-02	0.809	RD3302
CM-242	-3.58E-04	7.16E-04	7.18E-04	1.80E-02	0.809	RD3302
CM-244	-3.58E-04	7.16E-04	7.18E-04	1.80E-02	0.809	RD3302
NP-237	4.15E-03	8.30E-03	8.35E-03	1.12E-02	1	RD3208
PU-238	1.22E+00	1.46E-01	2.19E-01	2.45E-02	0.959	RD3209
PU239/40	7.49E+01	1.14E+00	1.01E+01	2.08E-02	0.959	RD3209
U-234	1.07E+00	2.12E-01	2.72E-01	5.90E-02	0.398	RD3234
U-235	1.01E-01	6.62E-02	6.81E-02	5.58E-02	0.398	RD3234
U-238DA	8.75E-01	1.92E-01	2.37E-01	5.21E-02	0.398	RD3234
K-40	1.32E+01	3.89E-01	1.38E+00	N/A	N/A	RD3219
CO-60	2.01E-03	8.95E-03	8.95E-03	1.48E-02	N/A	RD3219
EU-152	5.36E-02	4.00E-02	4.04E-02	7.06E-02	N/A	RD3219
CS-137DA	1.02E+01	7.56E-02	1.02E+00	N/A	N/A	RD3219
CS-134	-5.21E-03	1.04E-02	1.04E-02	1.63E-02	N/A	RD3219
RU-106DA	2.08E-02	1.04E-01	1.04E-01	1.68E-01	N/A	RD3219
RA-224DA	7.09E-01	3.25E-02	7.80E-02	N/A	N/A	RD3219
NA-22	-1.66E-03	1.00E-02	1.00E-02	1.67E-02	N/A	RD3219
EU-155	1.64E-02	3.30E-02	3.31E-02	5.48E-02	N/A	RD3219
EU-154	-1.06E-02	2.74E-02	2.75E-02	4.56E-02	N/A	RD3219
RA-226DA	5.75E-01	4.78E-02	7.47E-02	N/A	N/A	RD3219
U-238DA	5.59E-01	4.34E-02	7.08E-02	N/A	N/A	RD3219
AC-228	6.98E-01	6.89E-02	9.80E-02	N/A	N/A	RD3219
TL-208	2.38E-01	2.50E-02	3.45E-02	N/A	N/A	RD3219
BI-214	5.75E-01	4.78E-02	7.47E-02	N/A	N/A	RD3219
PB-212	6.78E-01	3.10E-02	7.46E-02	N/A	N/A	RD3219
PB-214	5.59E-01	4.34E-02	7.08E-02	N/A	N/A	RD3219
TH-232DA	6.98E-01	6.89E-02	9.80E-02	N/A	N/A	RD3219
RA-228DA	7.08E-01	6.99E-02	9.95E-02	N/A	N/A	RD3219
I-129LP	-8.50E-01	7.69E-01	7.73E-01	1.25E+00	N/A	RD3219
ALPHA	6.58E+02	3.46E+01	7.92E+01	4.73E+00	1	RD3222
BETA	3.45E+01	4.10E+00	4.69E+00	2.83E+00	1	RD3222
TOTAL-SR	7.11E-01	1.03E-01	1.99E-01	1.09E-01	0.755	RD3204
SE-79	-2.71E-01	8.15E-01	2.23E+00	1.75E+00	0.557	RD3253
TC-99	-2.28E-01	3.08E-01	1.42E+00	7.30E-01	0.691	ITAS-IT-RS-0001
URANIUM	3.17E+00	N/A	4.76E-01	1.00E-01	0.952	RD4200

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: 4-04-091-01 MATRIX: SOIL

WHC ID: BOBKQ0 DATE RECEIVE 4/6/94

REPORTING UNIT pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	8.05E-01	1.24E-01	1.76E-01	1.30E-02	0.756	RD3302
CM-242	0.00E+00	0.00E+00	1.44E-02	1.30E-02	0.756	RD3302
CM-244	4.79E-03	9.58E-03	9.61E-03	1.30E-02	0.756	RD3302
NP-237	7.92E-02	3.63E-02	4.01E-02	1.13E-02	1	RD3208
PU-238	2.25E-02	2.53E-02	2.55E-02	3.54E-02	0.665	RD3209
PU239/40	9.07E-01	1.51E-01	2.03E-01	1.69E-02	0.665	RD3209
U-234	1.05E+00	2.11E-01	2.71E-01	4.85E-02	0.392	RD3234
U-235	4.97E-02	4.76E-02	4.83E-02	5.67E-02	0.392	RD3234
U-238DA	1.16E+00	2.22E-01	2.90E-01	5.29E-02	0.392	RD3234
K-40	1.29E+01	3.50E-01	1.33E+00	N/A	N/A	RD3219
CO-60	1.23E-02	7.37E-03	7.47E-03	1.31E-02	N/A	RD3219
EU-152	8.88E-02	3.33E-02	3.44E-02	6.42E-02	N/A	RD3219
CS-137DA	8.34E+01	2.24E-01	8.34E+00	N/A	N/A	RD3219
CS-134	5.29E-03	2.01E-02	2.01E-02	3.31E-02	N/A	RD3219
RU-106DA	-9.20E-02	2.05E-01	2.05E-01	3.36E-01	N/A	RD3219
RA-224DA	6.42E-01	5.89E-02	8.71E-02	N/A	N/A	RD3219
NA-22	5.84E-03	8.41E-03	8.43E-03	1.47E-02	N/A	RD3219
EU-155	2.29E-02	6.53E-02	6.53E-02	1.00E-01	N/A	RD3219
EU-154	1.61E-02	2.32E-02	2.32E-02	4.06E-02	N/A	RD3219
RA-226DA	5.58E-01	6.85E-02	8.84E-02	N/A	N/A	RD3219
U-238DA	5.62E-01	9.11E-02	1.07E-01	N/A	N/A	RD3219
AC-228	6.60E-01	5.44E-02	8.55E-02	N/A	N/A	RD3219
BI-214	5.58E-01	6.86E-02	8.84E-02	N/A	N/A	RD3219
PB-212	6.16E-01	5.65E-02	8.35E-02	N/A	N/A	RD3219
PB-214	5.62E-01	9.11E-02	1.07E-01	N/A	N/A	RD3219
TH-232DA	6.60E-01	5.44E-02	8.55E-02	N/A	N/A	RD3219
RA-228DA	6.70E-01	5.51E-02	8.67E-02	N/A	N/A	RD3219
I-129LP	-5.57E+00	1.47E+00	1.57E+00	2.25E+00	N/A	RD3219
ALPHA	1.62E+01	5.79E+00	6.05E+00	4.57E+00	1	RD3222
BETA	1.23E+02	7.32E+00	1.09E+01	2.76E+00	1	RD3222
TOTAL-SR	8.89E+00	3.21E-01	2.20E+00	9.97E-02	0.838	RD3204
SE-79	1.03E+00	8.44E-01	2.37E+00	1.75E+00	0.557	RD3253
TC-99	3.65E-01	3.20E-01	1.46E+00	7.30E-01	0.691	ITAS-IT-RS-0001
URANIUM	2.52E+00	N/A	3.78E-01	1.00E-01	0.952	RD4200

9713508.2531

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0014
LAB SAMPLE ID:	4-04-091-02	MATRIX:	SOIL
WHC ID:	BOBKM9	DATE RECEIVE	4/6/94
REPORTING UNIT	pCi/g & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	6.00E-01	1.09E-01	1.44E-01	1.99E-02	0.731	RD3302
CM-242	-3.97E-04	7.93E-04	7.96E-04	1.99E-02	0.731	RD3302
CM-244	-7.93E-04	1.12E-03	1.13E-03	2.27E-02	0.731	RD3302
NP-237	1.50E-01	4.99E-02	5.94E-02	1.13E-02	1	RD3208
PU-238	-1.44E-03	2.89E-03	2.90E-03	3.46E-02	0.576	RD3209
PU239/40	3.26E-01	9.80E-02	1.11E-01	4.95E-02	0.576	RD3209
U-234	9.21E-01	2.64E-01	3.25E-01	1.20E-01	0.223	RD3234
U-235	5.00E-02	6.49E-02	6.57E-02	9.96E-02	0.223	RD3234
U-238DA	1.02E+00	2.77E-01	3.47E-01	1.11E-01	0.223	RD3234
K-40	1.23E+01	3.53E-01	1.28E+00	N/A	N/A	RD3219
CO-60	-3.07E-03	7.78E-03	7.78E-03	1.25E-02	N/A	RD3219
EU-152	7.82E-02	3.60E-02	3.69E-02	6.66E-02	N/A	RD3219
CS-137DA	5.84E+01	1.53E-01	5.84E+00	N/A	N/A	RD3219
CS-134	7.13E-03	1.70E-02	1.70E-02	2.80E-02	N/A	RD3219
RU-106DA	-1.05E-01	1.76E-01	1.76E-01	2.87E-01	N/A	RD3219
RA-224DA	6.62E-01	5.10E-02	8.35E-02	N/A	N/A	RD3219
NA-22	-9.22E-05	8.88E-03	8.88E-03	1.50E-02	N/A	RD3219
EU-155	6.98E-02	5.53E-02	5.57E-02	8.49E-02	N/A	RD3219
EU-154	-2.53E-04	2.44E-02	2.44E-02	4.13E-02	N/A	RD3219
RA-226DA	6.05E-01	6.29E-02	8.73E-02	N/A	N/A	RD3219
U-238DA	5.51E-01	7.71E-02	9.48E-02	N/A	N/A	RD3219
AC-228	7.36E-01	6.10E-02	9.56E-02	N/A	N/A	RD3219
TL-208	2.32E-01	3.42E-02	4.13E-02	N/A	N/A	RD3219
BI-212	4.83E-01	1.17E-01	1.27E-01	N/A	N/A	RD3219
BI-214	6.05E-01	6.29E-02	8.72E-02	N/A	N/A	RD3219
PB-212	6.32E-01	4.88E-02	7.98E-02	N/A	N/A	RD3219
PB-214	5.51E-01	7.71E-02	9.48E-02	N/A	N/A	RD3219
TH-232DA	7.36E-01	6.10E-02	9.56E-02	N/A	N/A	RD3219
RA-228DA	7.47E-01	6.20E-02	9.71E-02	N/A	N/A	RD3219
I-129LP	-2.48E+00	1.23E+00	1.25E+00	1.96E+00	N/A	RD3219
ALPHA	1.46E+01	5.66E+00	5.87E+00	5.15E+00	1	RD3222
BETA	9.59E+01	6.51E+00	9.08E+00	2.82E+00	1	RD3222
TOTAL-SR	1.03E+01	3.46E-01	2.57E+00	1.04E-01	0.854	RD3204
SE-79	1.80E+00	8.55E-01	2.44E+00	1.04E+00	0.557	RD3253
TC-99	4.79E-01	3.23E-01	1.47E+00	7.30E-01	0.691	ITAS-IT-RS-0001
URANIUM	3.57E+00	N/A	5.35E-01	1.00E-01	0.952	RD4200

682A-6-93

9713508.2532

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: 4-04-091-03 MATRIX: SOIL

WHC ID: BOBKN6 DATE RECEIVE 4/6/94

REPORTING UNIT pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	6.57E-01	1.11E-01	1.49E-01	2.12E-02	0.783	RD3302
CM-242	0.00E+00	0.00E+00	1.39E-02	1.25E-02	0.783	RD3302
CM-244	-3.71E-04	7.42E-04	7.44E-04	1.86E-02	0.783	RD3302
NP-237	3.83E-03	8.34E-03	8.38E-03	1.67E-02	1	RD3208
PU-238	9.84E-03	1.39E-02	1.40E-02	1.33E-02	0.847	RD3209
PU239/40	6.29E-02	3.55E-02	3.66E-02	2.35E-02	0.847	RD3209
U-234	1.38E+00	2.65E-01	3.56E-01	8.67E-02	0.329	RD3234
U-235	4.85E-02	5.06E-02	5.13E-02	5.77E-02	0.329	RD3234
U-238DA	1.21E+00	2.48E-01	3.24E-01	3.42E-02	0.329	RD3234
K-40	1.30E+01	3.83E-01	1.36E+00	N/A	N/A	RD3219
CO-60	5.43E-03	8.40E-03	8.42E-03	1.44E-02	N/A	RD3219
EU-152	2.72E-02	3.98E-02	3.98E-02	6.99E-02	N/A	RD3219
CS-137DA	2.98E+01	1.55E-01	2.99E+00	N/A	N/A	RD3219
CS-134	1.00E-02	1.41E-02	1.42E-02	2.26E-02	N/A	RD3219
RU-106DA	-2.87E-02	1.47E-01	1.47E-01	2.32E-01	N/A	RD3219
RA-224DA	6.80E-01	4.57E-02	8.19E-02	N/A	N/A	RD3219
NA-22	-5.44E-03	9.91E-03	9.92E-03	1.59E-02	N/A	RD3219
EU-155	3.86E-02	5.17E-02	5.19E-02	7.85E-02	N/A	RD3219
EU-154	-1.69E-02	2.73E-02	2.74E-02	4.36E-02	N/A	RD3219
RA-226DA	5.96E-01	5.41E-02	8.04E-02	N/A	N/A	RD3219
U-238DA	5.94E-01	6.49E-02	8.80E-02	N/A	N/A	RD3219
AC-228	6.79E-01	6.81E-02	9.61E-02	N/A	N/A	RD3219
TL-208	2.49E-01	3.49E-02	4.29E-02	N/A	N/A	RD3219
BI-214	5.96E-01	5.41E-02	8.04E-02	N/A	N/A	RD3219
PB-212	6.49E-01	4.36E-02	7.82E-02	N/A	N/A	RD3219
PB-214	5.94E-01	6.49E-02	8.80E-02	N/A	N/A	RD3219
TH-232DA	6.79E-01	6.81E-02	9.61E-02	N/A	N/A	RD3219
RA-228DA	6.89E-01	6.91E-02	9.76E-02	N/A	N/A	RD3219
I-129LP	-1.51E+00	9.99E-01	1.01E+00	1.61E+00	N/A	RD3219
ALPHA	9.88E+00	4.69E+00	4.81E+00	4.57E+00	1	RD3222
BETA	6.55E+01	5.46E+00	6.96E+00	2.88E+00	1	RD3222
TOTAL-SR	9.70E+00	3.43E-01	2.38E+00	1.08E-01	0.817	RD3204
SE-79	3.06E+00	8.91E-01	2.59E+00	1.74E+00	0.557	RD3253
TC-99	4.53E-01	3.22E-01	1.47E+00	7.30E-01	0.691	ITAS-IT-RS-0001
URANIUM	4.01E+00	N/A	6.02E-01	1.00E-01	0.952	RD4200

97135008.2933 161
DS 5/27/94

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): MWH 5-27-94

PARAMETER(S): Uro

SAMPLE NUMBER(S) AFFECTED: 40354601, 409102

MATRIX: Soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY
☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): tr yd < 30 %
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Daines 5/27/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9713508.2534

IT CORPORATION LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☐ **ROOT CAUSE:** INITIALS/DATE MMH 5-27-94

tr yd <30%

☐ **CORRECTIVE ACTION:** INITIALS/DATE _____

Rerun on 354601 is >30% rerun on 40409102 has 22.32 tr yd but is within 35% of the original for U239 & U234.
The rerun spike yield is <30% but radiochemical yield is within limits

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ **ACTIONS TO PREVENT RECURRENCE:** INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: M Kellogg DATE: 5-27-94

RESPONSIBLE MANAGER: Matt Hardy DATE: 5-27-94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: DATE: 5/27/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: DATE: 5/27/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

0021

160 9213508.2535

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): Joel T Kempema 5-26-94

PARAMETER(S): Gamma

SAMPLE NUMBER(S) AFFECTED: 40349201 W0014

MATRIX: Soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☒ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☒ contract limits ☐ other (see #10)

   Due to:
   - ☒ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify):
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date):_____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Davies 5/27/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0032

9713508.2536

IT CORPORATION LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ **ROOT CAUSE:** INITIALS/DATE MK 5-26-94

high Cs 137 causing interference and 25% dead time

☒ **CORRECTIVE ACTION:** INITIALS/DATE MK 5-26-94

Recounted 10 min - recount verified result
Reanalyzed in 25ml geometry - Report both results for initial 1000min count and reanalysis 10 min ct

☐ **RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:**

☐ **ACTIONS TO PREVENT RECURRENCE:** INITIALS/DATE

FIRST LEVEL SUPERVISOR: Joel Nemeno DATE: 5-26-94

RESPONSIBLE MANAGER: DATE:

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: DATE: 5/27/94

CORRECTIVE ACTION VERIFICATION

☐ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: DATE: 5/27/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

0033

9213508.2537

INTERNATIONAL TECHNOLOGY CORPORATION

03 30

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC SDG W0014

NCM INITIATED BY (Name/Date): [illegible] 5/20/94

PARAMETER(S): Se-79

SAMPLE NUMBER(S) AFFECTED: 40349201

MATRIX: SOIL

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): FALSE POSITIVE FOR Se-79
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Sam Davies 5/20/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0034A

IT CORPORATION LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☐ **ROOT CAUSE:** INITIALS/DATE nd 5/20/94

Interpretation of Raw Data indicates that activity attributed to Se-79 may be attributable to Cs-137

☐ **CORRECTIVE ACTION:** INITIALS/DATE nd 5/20/94

Report Data Note in Case Narrative

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☒ **ACTIONS TO PREVENT RECURRENCE:** INITIALS/DATE nd 5/20/94

Monitor for Trends

FIRST LEVEL SUPERVISOR: [signature] DATE: 5/20/94

RESPONSIBLE MANAGER: [signature] DATE: 5/20/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: [signature] DATE: 5/24/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 5/24/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

0034

9213508.2539

0142

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): Fred T Kempania 5-18-94

PARAMETER(S): I 129 by Gamma

SAMPLE NUMBER(S) AFFECTED: 4034920 W0014

MATRIX: Soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY
☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4 ☒ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis: no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): Cs137 interference
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Sergy Davies 5/23/94

0034B

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9713508.2940

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ **ROOT CAUSE:** INITIALS/DATE TK 5-18-94

high level Cs137 in sample — Matrix effect

☒ **CORRECTIVE ACTION:** INITIALS/DATE TK 5-19-94

Recount sample - recount data verifies interference
Note interference in case narrative

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ **ACTIONS TO PREVENT RECURRENCE:** INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: Joel R Campbell DATE: 5-19-94

RESPONSIBLE MANAGER: Les MacKellar DATE: 5/23/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: [signature] DATE: 5/24/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 5/24/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

0034C

9713508.2541

INTERNATIONAL TECHNOLOGY CORPORATION

0337

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): MMM 5-20-94

PARAMETER(S): Am

SAMPLE NUMBER(S) AFFECTED: L0349218, 15 W0014

MATRIX: soil

AREA: ☐ SHIP/REC ☑ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis: no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): low level Am contamination causing blk to be at the Yield level and the spike recovery to be 130%.
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Haines 5/23/94

FURTHER ACTION REQUIRED. SEE PAGE 2 OF 2

9713508.2942

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☐ **ROOT CAUSE:** INITIALS/DATE mma 5-20-94

low level Am 241 contamination

☐ **CORRECTIVE ACTION:** INITIALS/DATE mma 5-20-94

investigating source of contamination and working to get it eliminated. All samples except 4040 1901 are below the CL, 4040 1901 and its duplicate are 15X the CL.

☐ **RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:**

☐ **ACTIONS TO PREVENT RECURRENCE:** INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: M Kellogg DATE: 5-20-94

RESPONSIBLE MANAGER: W McKillop DATE: 5/23/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED: _____

ASSIGNED TO: _____

QC COORDINATOR: [signature] DATE: 5/24/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON: _____

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 5/24/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

3010

INTERNATIONAL TECHNOLOGY CORPORATION 3508.2543

LOG #: RD-94-_____ page 1 of 2

(TAS-Richland)
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): SB 5/19/94

PARAMETER(S): Tc99

SAMPLE NUMBER(S) AFFECTED: F0418401 + 40418401

MATRIX: soil W0014

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to
   - ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt
   - ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - ☐ CATEGORY III: Laboratory Reruns
     - 231 ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recovenes ☐ blank contamination
     - 232 ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 233 ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 234 ☐ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis: no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): Duplicate miss match.
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date) _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Gaines 5/20/94

FURTHER ACTION REQUIRED. SEE PAGE 2 OF 2

0034F

9713508.2544

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE SB 5/12/94

matrix effect inhomogeneity of soil

☒ CORRECTIVE ACTION: INITIALS/DATE SB 5/19/94

Report

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: [signature] DATE: 5/19/94

RESPONSIBLE MANAGER: [signature] DATE: 5/20/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED.

ASSIGNED TO _____

QC COORDINATOR: [signature] DATE: 5/20/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 5/20/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

003AC

9713508.2545

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94- 0145 page 1 of 2

ITAS-Related
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC SDG W0014 & SDG W0025

NCM INITIATED BY (Name/Date): D Swenson (for S Wheland) 5/20/94

PARAMETER(S): TC 99

SAMPLE NUMBER(S) AFFECTED: All samples in WO#s 403497, 403546, 404019, 404091, & 404184

MATRIX: SOIL

AREA: ☐ SHIPPING ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)
   - Due to:
     - ☐ sample matrix ☐ insufficient sample
     - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): SDG W0014 AND W0025 were Batched and analyzed TOGETHER. 1 BLANK WAS RUN IN THIS Batch & MATRIX SPIKES were ASSIGNED to SDG W0014
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Sergi Daines 5/20/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

00344

9713508.2546

IT CORPORATION

LOG #: RD-94-0145 page 2 of 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE

DID NOT ANALYZE SEPERATE BLANK AND MATRIX SPIKE FOR EACH SDG.

☐ CORRECTIVE ACTION: INITIALS/DATE

REPORT DATA WITH BATCH QC, LIST RESULTS FOR BLANK AND MATRIX SPIKES IN EACH DATA PACKAGE

RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

MEMO CLARIFYING QC REQUIREMENTS DISTRIBUTED TO TEAM LEADERS ON 5/20/94

FIRST LEVEL SUPERVISOR: [signature] DATE: 5/20/94

RESPONSIBLE MANAGER: W MacKillop DATE: 5/20/94

QC REVIEW

☒ NONCONFORMANCE ☐ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Ca DATE: 5/20/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Ca DATE: 5/20/94

0034I

9713508.2547

03010

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): GT 5/19/94

PARAMETER(S): Tc99

SAMPLE NUMBER(S) AFFECTED: F0418401 & 40418401

MATRIX: soil WOOD14

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1 ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2 ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis: no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)
   - Due to:
     - ☐ sample matrix ☐ insufficient sample
     - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): Duplicate mass match
10. ☐ Comments/Explanation:

0034J

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date) _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Jones 5/20/94

FURTHER ACTION REQUIRED. SEE PAGE 2 OF 2.

9713508.2948

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE SB 5/19/94

matrix effect inhomogeneity of soil

☒ CORRECTIVE ACTION: INITIALS/DATE SB 5/19/94

Report

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: [signature] DATE: 5/19/94

RESPONSIBLE MANAGER: [signature] DATE: 5/20/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO

QC COORDINATOR: [signature] DATE: 5/20/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 5/20/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

0034K

9713508.2549

INTERNATIONAL TECHNOLOGY CORPORATION

0318

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): WMM 5-20-94

PARAMETER(S): Pu

SAMPLE NUMBER(S) AFFECTED: F0401901 WC014

MATRIX: Soil

AREA: ☐ SHIP/REC ☑ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2 ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4 ☐ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis: no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): Sample actually boiled into tracer
10. ☐ Comments/Explanation:

0034L

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Greg Davies 5/20/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9713508.2550

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☐ ROOT CAUSE: INITIALS/DATE MMM 5-20-94

High sample activity + poor separation resulted in the Pu 239 counts totally masking the Pu 242 counts.

☐ CORRECTIVE ACTION: INITIALS/DATE MMM 5-20-94

Sample lost (F0 40 1401)

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: Jim Kellogg DATE: 5-20-94

RESPONSIBLE MANAGER: William F. Mackelle DATE: 5/20/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED.

ASSIGNED TO:

QC COORDINATOR: Jodie Carr DATE: 5/20/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Carr DATE: 5/20/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

0034M

9713508.2551

0131

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): Joel T Kempema 5-12-94

PARAMETER(S): Beta

SAMPLE NUMBER(S) AFFECTED: 4040910 2, F0409102

MATRIX: Soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☒ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis: no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): Duplicates outside 3σ error Recount OK
10. ☐ Comments/Explanation:

0034N

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Haines 5/17/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9713508.2552

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE TK 5-12-94

possible slight homogenity differential also counting statistics

☒ CORRECTIVE ACTION: INITIALS/DATE Fred Thompson 5-12

Recount - Recount data accepted within 3σ

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: Fred Thompson DATE: 5-12-94

RESPONSIBLE MANAGER: D. McKellar DATE: 5/19/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Cox DATE: 5/20/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cox DATE: 5/20/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

00341

9213508 2553

349

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland

LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number):	WHC
NCM INITIATED BY (Name/Date):	MMM 5-26-94
PARAMETER(S):	Np
SAMPLE NUMBER(S) AFFECTED:	W0409101, W0349201 W0014
MATRIX:	soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis: no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): matrix spike recovery out of limit
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name: _____ and response:
   - ☐ process as is ☐ resample
   - ☐ on hold till _____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Sey L Lines 5/27/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0034P

IT CORPORATION LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☐ ROOT CAUSE: INITIALS/DATE MWM 5-26-94

The matrix spike recovery is < 30%. The LCS spike recovery is 74%. Suspect a matrix problem.

☐ CORRECTIVE ACTION: INITIALS/DATE MWM 5-26-94

Rerun using different sample for matrix spike (used W0401901 and W0409102) The rerun matrix spikes failed and the LCS spike recovery is 62.5%. The LCS recovery on original + rerun is acceptable indicating a probable matrix effect on the failed matrix spike.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE_____

FIRST LEVEL SUPERVISOR: M Kellogg DATE: 5-26-94

RESPONSIBLE MANAGER: W MacKellar DATE: 5/27/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO

QC COORDINATOR: Jodie Carr DATE: 5/27/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Carr DATE: 5/27/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

9713508.2955

SAMPLE STATUS REPORT FOR E 5084. E-BLANK B09WK0 TIME: 3/23/94 8:47
DISPATCHED: 2/11/94 15:12 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/23/94 8:11

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

END OF REPORT

9713508.2556

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 3/25/94 10:00 AM Client Name WHC

Project/Client # SAF-065 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) GWS 127

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes ☑ No ☐
3. Custody Seals dated and signed? Yes ☑ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☑ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☑
6. Each sample is in a plastic bag? Yes ☑ No ☐
7. Number of sample containers in cooler: 27
8. Samples have: ✓ tape ____ hazard labels
   ✓ custody seals ____ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☐ No ☐
    Sample temperature ~~3/25/94 8°C~~ 5°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 ☒
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Tom Gilmore [signature] Date/Time 3/25/94

FORM NO. LS-042, Rev.0, 2/94

9713508.2557

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST
SAMPLE NUMBER MATRIX

WHC ID NUMBER	SAMPLE LABEL NUMBER	LABORATORY ID NUMBER	AGREEMENT OF INFORMATION
B09WK0	N/A	40349101 40349201	Yes
B09WK1	|	40348906 40349005	|
B09WJ9	|	40348905 40349004	|

FORM NO. LS-043, Rev. 0, 2/94

SAMPLE STATUS REPORT FOR E 5801. E-BLANK BOBFM8 TIME: 3/28/94 10:29
DISPATCHED: 3/21/94 11:21 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/25/94 8:15

EXT.	DETER.	RESULTS OR STATUS		OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********		***	***	******
1210	TB MISC	INCOMPLETE				VOGEL
1211	AT MISC	INCOMPLETE				VOGEL
2183	GEA-MISC	1.39000E 04 pCi/G	Cs-137	N	Y	VOGEL
4271	TOT-ACT	2.62296E 03 pCi/G		N	Y	VOGEL

END OF REPORT

Total Wt. = 2250 g

Cs-137

13900 pCi/g x 2250g = 31,275,000 pCi = 31.275 μCi

A_2 = 10 Ci

Ltd. Qty. = $\frac{A_2}{1000} = \frac{10}{1000}$ = .01 Ci = 10,000,000,000 pCi

$\frac{31,275,000}{10,000,000,000}$ = .0031 * Meets Limited Quantity

376-7551
Lon (shipping)

3-24-94
BOBFM9

SAMPLE STATUS REPORT FOR E 2261. E-BLANK ~~B08NR4~~ TIME: 10/ 4/93 8:21
DISPATCHED: 9/23/93 14:44 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/ 4/93 8: 9

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

END OF REPORT

9713508.2560

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 3/29/94 1130 Client Name WHC

Project/Client # 94-065 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) SML 467

1. Condition of shipping container? ok
2. Custody Seals on cooler intact? Yes ☑ No ☐
3. Custody Seals dated and signed? Yes ☑ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☑ No ☐
5. Vermiculite/packing material is: Wet ☒ 3/29/94 Dry ☑
6. Each sample is in a plastic bag? Yes ☑ No ☐
7. Number of sample containers in cooler: 9
8. Samples have: ✓ tape ✓ hazard labels ✓ custody seals ✓ appropriate sample labels
9. Samples are: ____ in good condition ____ leaking ____ broken ____ have air bubbles ____ other
10. Coolant present? Yes ☑ No ☐

Sample temperature 6°C

11. The following paperwork should be accounted for (N/A if not applicable):

Chain of Custody #'(s) 006445

Request for analysis #(s) N/A

Airbill # N/A Carrier N/A

12. Have any anomalies been identified above? Yes ☐ No ☑
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Tom Gilmore Tom G Date/Time 3/29/94 1130

FORM NO. LS-042, Rev.0, 2/94

9715608.2561

SAMPLE STATUS REPORT FOR E 5992. E-BLANK BOBKP4 TIME: 3/31/94 8:30
DISPATCHED: 3/30/94 11:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/31/94 8: 2

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

END OF REPORT

SAMPLE STATUS REPORT FOR E 5884. E-BLANK BOBKQ0 TIME: 4/ 5/94 8:31
DISPATCHED: 3/29/94 8:10 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 5/94 8: 7

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

END OF REPORT

SAMPLE STATUS REPORT FOR E 5876. E-BLANK BOBKM9 TIME: 4/ 5/94 8:31
DISPATCHED: 3/28/94 14:27 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 5/94 8: 7

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

END OF REPORT

SAMPLE STATUS REPORT FOR E 5894. E-BLANK BOBKN6 TIME: 4/ 5/94 8:31
DISPATCHED: 3/29/94 8:43 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 5/94 8: 7

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

END OF REPORT

9713508.2565

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
1300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 4-6-94 1025 Client Name WHC

Project/Client # SAF 94-065 Batch or Case # na

Cooler ID (if noted on the outside of cooler) ~~STV~~ SML 413

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☒
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: 21
8. Samples have: ____ tape ____ hazard labels
   ✓ custody seals ____ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 6°C

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) 006475, 006456, 006463
    Request for analysis #(s) N/A
    Airbill # N/A Carrier na
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature R. Boyd R. Boyd Date/Time 4-6-94 1025

FORM NO. LS-042, Rev.0, 2/94

BATCH SUMMARY/CHAIN OF CUSTODY

9713508.2566

ANALYSIS AM MATRIX _____ DUE DATE _____

W0014

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 0349218	1B		QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L 0349215	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE I CQU
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F 0401901	-		Duplicate of Sample # 40401901
40349201	-		
40354601	-		
40401901	-		
40409101	- 03		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by Bom on 5/11/94 Rec'd in C.R. by [illegible] on 5/19/94

Rec'd in Prep Lab by Bom on 5/10/94 Data Reviewed and anal. Prep stored MMM on 5-20-94

RD3221 5/11/94 Bom

Rec'd in Sep Lab by 5/16/94 on CO

Rec'd in Sep lab by N/A on _____ Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

- copy 5-19-94 [illegible]

[illegible]

4/29/94

*** AM/CMISO ***

9713508.2567

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

28-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-492

ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
VL034921B				
VL034921S				
1) 40349201		WHC	B09WK0	

ACTIONS (Initial & Date)

) INITIATED 3/28/94

) PREP LAB RECEIVED 5/10/94 BM

) SAMPLE REMAINDER STORED _____
R03221 5/11/94 BM

) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND
ANALYTICAL PREP STORED _____

0064

5/3/94

9713508.2568

*** AM/CMISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

30-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-546

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40354601		WHC	B0BFM8	

ACTIONS (Initial & Date)

) INITIATED 3/30/94

) PREP LAB RECEIVED 5/10/94 Br

) SAMPLE REMAINDER STORED _____
RD3221 5/11/94 Br

) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND
ANALYTICAL PREP STORED _____

9713508.2569 *** AM/CMISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

1-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0013

MATRIX : SOIL

BATCH NUMBER 4-019

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40401901		WHC	BOBKP4	
	F0401901				

ACTIONS (Initial & Date)

1) INITIATED RB 4/4/94

2) PREP LAB RECEIVED 5/10/94 Bm

3) SAMPLE REMAINDER STORED _____
RD3221 5/11/94 Bm

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713508.2520 *** AM/CMISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

6-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP WS014

MATRIX : SOIL

BATCH NUMBER 4-091

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40409101		WHC	B0BKQ0	
2)	40409102		WHC	B0BKM9	
3)	40409103		WHC	B0BKN6	

ACTIONS (Initial & Date)

) INITIATED RD 4/6/94

2) PREP LAB RECEIVED 5/10/94 BM

3) SAMPLE REMAINDER STORED _____
RD 3221 5/11/94 BM

) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND
ANALYTICAL PREP STORED _____

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS NP MATRIX Soil DUE DATE _____

W0014

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 03492~~1B~~ 2B 5/18/94 BM	-1B 2B		QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L 03492~~1S~~ 2S 5/18/94 BM	-1M or 1S (circle) 2S	EQR 054	QC BATCH MATRIX/REAGENT SPIKE 25.041 ± .3524
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F 04349201	-		Duplicate of Sample # 40439201
W0409101	EQR055		40409101 matrix spk
W0349201	-	EQR054	40349201 " "
40349201	-		
40354601	-		
40401901	-		
40409101	- 03		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by BM on 5/13/94 Rec'd in C.R. by [illegible] on 5/19/94

Rec'd in Prep Lab by BM on 5/10/94 Data Reviewed and anal. Prep stored MMM on 5-20-94

RD3221 5/12/94 BM 5/18/94 BM

Rec'd in Sep Lab by [illegible] on 5/18/94

Rec'd in Sep lab by N/A on _____ Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

[illegible] 5.19.94 Rerun all 5-20-94 MMM

9713508.2572

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404091, 3492, 4019, 3546

Lab Sample Numbers or SDG: W0014

Method/Test/Parameter: RD 3208 N.

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

Comments on any "No" response:

Analyst: M Kellogg Date: 5-26-94

Second Level Review: Sanj Daines Date: 5/27/94

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

ok to transfer 5-26-94 MMK

9713508.2593 *** NP-237 ***

4/29/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

28-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-492

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0349201 ~~L0349201~~	EQR ~~036~~ 054 5/18/94			
1)	40349201 W0349201 F0349201	EQR ~~044~~ 056 5/18/94	WHC	B09WK0	

ACTIONS (Initial & Date)

1) INITIATED 3/28/94

2) PREP LAB RECEIVED 5/10/94

3) SAMPLE REMAINDER STORED RD 3221 5/12/94

4) SEPARATION LAB RECEIVED 5/18/94

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2534 *** NP-237 ***

5/3/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

30-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-546

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40354601		WHC	B0BFM8	

ACTIONS (Initial & Date)

1) INITIATED 3/30/94

2) PREP LAB RECEIVED 5/10/94 Bom

3) SAMPLE REMAINDER STORED
RD3221 5/12/94 Bom 5/18/94 Bom

4) SEPARATION LAB RECEIVED

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND
ANALYTICAL PREP STORED

9713508.2575 *** NP-237 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

1-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0013

MATRIX : SOIL

BATCH NUMBER 4-019

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40401901 ✓		WHC	B0BKP4	

ACTIONS (Initial & Date)

1) INITIATED RB 4/4/94

2) PREP LAB RECEIVED 5/10/94 Bm

3) SAMPLE REMAINDER STORED _____
RD 3221 5/12/94 Bm 5/18/94 Bm

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND
ANALYTICAL PREP STORED _____

9713508.2576

*** NP-237 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

6-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 4-091

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40409101		WHC	BOBKQ0	
	W0409101 EQR OSS 5/18/94 Bm				
2)	40409102		WHC	BOBKM9	
3)	40409103		WHC	BOBKN6	

ACTIONS (Initial & Date)

1) INITIATED RD 4/6/94

2) PREP LAB RECEIVED 5/10/94 Bm

3) SAMPLE REMAINDER STORED
RD 3221 5/12/94 Bm 5/18/94 Bm

4) SEPARATION LAB RECEIVED

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2577

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS Pu - - MATRIX Soil DUE DATE _____

W0014

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L034921B	-1B		QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L034921S	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE IQHI
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F0401901	-		Duplicate of Sample # 40401901
40349201	-		
40354601	-		
40401901	-		
40409101	- 03		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by Bm on 5/11/94 Rec'd in C.R. by OD on 5/18/94

Rec'd in Prep Lab by Bm on 5/12/94 Data Reviewed and anal. Prep stored MWM on 5-20-94

RD 3221 5/11/94 Bm

Rec'd in Sep Lab by CB on 5/16/94

Rec'd in Sep lab by N/A on _____ Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

ED 5.18.94

9713508.2578

4/29/94

*** PUISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

28-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-492

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0349218 L0349215				
1)	40349201		WHC	B09WK0	

ACTIONS (Initial & Date)

1) INITIATED 3/28/94 3/28/94

2) PREP LAB RECEIVED 5/10/94

3) SAMPLE REMAINDER STORED _____
R03221 5/11/94

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713508.2579

5/3/94

*** PUISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

30-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0074

MATRIX : SOIL

BATCH NUMBER 3-546

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40354601		WHC	BOBFM8	

ACTIONS (Initial & Date)

1) INITIATED 3/30/94

2) PREP LAB RECEIVED 5/10/94 Bm

3) SAMPLE REMAINDER STORED _____
RD 3221 5/11/94 Bm

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713508.2580

*** PUISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

1-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0013

MATRIX : SOIL

BATCH NUMBER 4-019

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40401901		WHC	BOBKP4	
	F0401901				

ACTIONS (Initial & Date)

1) INITIATED BB 4/4/94

2) PREP LAB RECEIVED 5/10/94 BM

3) SAMPLE REMAINDER STORED RJ 3221 5/11/94 BM

4) SEPARATION LAB RECEIVED

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2531

*** PUISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

6-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 4-091

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40409101		WHC	B0BKQ0	
2)	40409102		WHC	B0BKM9	
3)	40409103		WHC	B0BKN6	

ACTIONS (Initial & Date)

1) INITIATED RD 4/6/94

2) PREP LAB RECEIVED 5/10/94 Br

3) SAMPLE REMAINDER STORED _____
RD 3221 5/11/94 Br

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713508.2532

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS Miso MATRIX Soil DUE DATE _____

W0014

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 034921B	-1B		QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L 034921S	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE EQIE
F 0401901	-		Duplicate of Sample # 40401901
40349201	-		
40354601	-		
40401901	-		
40409101	- 03		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by Bom on 5/11/94 Rec'd in C.R. by SK on 5-19-94

Rec'd in Prep Lab by Bom on 5/10/94 Data Reviewed and anal. Prep stored mm on 5-20-94

RD3221 5/11/94 Bom

Rec'd in Sep Lab by Eve on 5/12/94

Rec'd in Sep lab by N/A on _____ Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

rerun 54601, 409102 5-20-93 mm Ext 5.17.94

9713508.2533

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 403492, 3546, 4019, 4091

Lab Sample Numbers or SDG: WD014

Method/Test/Parameter: RD323Y Uss

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

Comments on any "No" response: The spike U235 recovery is within limits using on spike AU calc. 354601 & 409102 had tryd <30%. Rerun of 354601 was >30% tryd, rerun of 409102 was <30% indicating a possible matrix effect.

Analyst: M Kelley Date: 5-27-94

Second Level Review: Suzy Davies Date: 5/27/94

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

OK to transfer original & rerun data 5-27-94 [illegible]

9713508.2584

*** UISO ***

4/29/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

28-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W004

MATRIX : SOIL

BATCH NUMBER 3-492

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0349218 L0349215				
1)	40349201		WHC	B09WK0	

ACTIONS (Initial & Date)

1) INITIATED 3/28/94

2) PREP LAB RECEIVED 5/10/94

3) SAMPLE REMAINDER STORED _____
R03221 5/11/94

4) SEPARATION LAB RECEIVED 5/12/94

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND
ANALYTICAL PREP STORED _____

9713508.2585

*** UISO ***

5/3/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

30-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-546

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40354601		WHC	B0BFM8	

ACTIONS (Initial & Date)

1) INITIATED 3/30/94

2) PREP LAB RECEIVED 5/10/94 Bm

3) SAMPLE REMAINDER STORED _____
RD 3221 5/11/94 Bm

4) SEPARATION LAB RECEIVED 5/12/94 Ew

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND
ANALYTICAL PREP STORED _____

9713508.2536

*** UISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

1-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP U20013

MATRIX : SOIL

BATCH NUMBER 4-019

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40401901		WHC	BOBKP4	
	F0401901				

ACTIONS (Initial & Date)

1) INITIATED RD 4/4/94

2) PREP LAB RECEIVED 5/10/94 Bm

3) SAMPLE REMAINDER STORED _____
RD 3221 5/11/94 Bm

4) SEPARATION LAB RECEIVED 5/12/94 Ew

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713508.2587

*** UISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

6-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 4-091

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40409101		WHC	B0BKQ0	
2)	40409102		WHC	B0BKM9	
3)	40409103		WHC	B0BKN6	

ACTIONS (Initial & Date)

1) INITIATED RB 4/6/94

2) PREP LAB RECEIVED 5/10/94 Bm

3) SAMPLE REMAINDER STORED _____
RD 3221 5/11/94 Bm

4) SEPARATION LAB RECEIVED 5/12/94 Ew

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713508.2538

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS GAMMA MATRIX SOIL DUE DATE 4-29-94

1J0014

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 03 492	-1B	WHC	QC BATCH REAGENT BLANK
L 03 492	-1X Ottawa SAND		QC BATCH MATRIX BLANK
L 03 492	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE CAL 491
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F 0409102	-		Duplicate of Sample # 40409102
403 49201	-		CAT III
403 54601	-		
40401 01	-		
40409101	-03		
~~40418401~~ JN 5-4-94	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by JN on 5-4-94 Rec'd in C.R. by KC on 5-4-94

Rec'd in Prep Lab by JN on 5-4-94 Data Reviewed and anal. Prep stored JK on 5-20-94

Rec'd in Sep Lab by NA on NA

Rec'd in Sep lab by NA on NA Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

9713508.2539

4/29/94

*** GAMMA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

28-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-492

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0349210				
	L0349215		CAL 491		
1)	40349201		WHC	B09WK0	

ACTIONS (Initial & Date)

1) INITIATED 3/28/94

2) PREP LAB RECEIVED JN 4-27-94

3) SAMPLE REMAINDER STORED JN 5-4-94

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2590

5/3/94

*** GAMMA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

30-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-546

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40354601		WHC	B0BFM8	

ACTIONS (Initial & Date)

1) INITIATED 3/30/94

2) PREP LAB RECEIVED JN 4-27-94

3) SAMPLE REMAINDER STORED JN 5-4-94

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2591

*** GAMMA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

1-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP ~~W0013~~ W0014 SCL 5/23/94

MATRIX : SOIL

BATCH NUMBER 4-019

ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1) 40401901	/	WHC	BOBKP4	

ACTIONS (Initial & Date)

1) INITIATED RB 4/4/94

2) PREP LAB RECEIVED JN 4-20-94

3) SAMPLE REMAINDER STORED JN 5-4-94

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2592

*** GAMMA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

6-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0614

MATRIX : SOIL

BATCH NUMBER 4-091

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40409101 ✓		WHC	BOBKQ0	
2)	40409102 ✓		WHC	BOBKM9	
	F0409102 ✓	DUP			
3)	40409103		WHC	BOBKN6	

ACTIONS (Initial & Date)

1) INITIATED RB 4/6/94

2) PREP LAB RECEIVED JN 4-27-94

3) SAMPLE REMAINDER STORED JN 5-20-94

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2593

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/20/94

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Gamma

NAME/DATE MK / 5-25-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP SDGW0014

MATRIX Soil

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) 40349201		
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK NA

ITAS ID - SPIKE NA

CLIENT CODE

ACTIONS (Initial & Date)

PREP LAB RECEIVED 5/25/94 MK

SAMPLE REMAINDER RETURNED TO SCG ☒ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB N/A

COUNTING/MEASUREMENT MK 5-25-94

DATA REVIEWED

ANALYTICAL PREP STORED

RECOUNT

MK 5-25-94

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

Repackage in 25 ml geometry and count 100 minutes.

MK 5-25-94

RC-048 12/92 REV 2

9713508.2594

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS I 129 LP MATRIX SOIL DUE DATE 5-11-94

WO014

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 03 492	-1B	WHC	QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L 03 492	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE EQZK008
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F 0409102	-		Duplicate of Sample # 40409102
40349201	-		
40354601	-		
40401901	-		
40409101	-03		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by JN on 5-4-94 Rec'd in C.R. by OND on 5/4/94 5/4/94 OND

Rec'd in Prep Lab by JN on 5-4-94 Data Reviewed and anal. Prep stored JK on 5-15-94

Rec'd in Sep Lab by NA on NA

Rec'd in Sep lab by NA on NA Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

Due 5-11-94

9713508.2595 *** I-129LF ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-492

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0349215				
	L0349215			EQZK008	1001.5 ± 11.888
1)	40349201		WHC	B09WK0	

ACTIONS (Initial & Date)

) INITIATED JH 4/16/94

) PREP LAB RECEIVED JN 4-27-94

) SAMPLE REMAINDER STORED JN 5-4-94

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

Due 5-11-94

9713508.2596 *** I-129LP ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL 94-065

BATCH NUMBER 3546

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40354601		WHC	B0BFM8	

ACTIONS (Initial & Date)

) INITIATED JH 4/16/94

) PREP LAB RECEIVED JN 4-27-94

) SAMPLE REMAINDER STORED JN 5-4-94

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

Due 5-11-94

9415003.2597 *** I-129LP ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 4-091

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40409101		WHC	B0BKQ0	
2)	40409102		WHC	B0BKM9	
3)	40409103		WHC	B0BKN6	
	F0409102				

ACTIONS (Initial & Date)

) INITIATED JH 4/16/94

) PREP LAB RECEIVED gN 4-27-94

) SAMPLE REMAINDER STORED gN 5-4-94

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713508.2598

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/20/94

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ~~ANALYSIS~~ RECORD

ANALYSIS I129

NAME/DATE JTK / 5-17-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP ~~SW622~~ JTK 5-17 ~~W0022~~

MATRIX ~~Vegetation~~ JTK Soil 5-17-94

BATCH NUMBER W0014 SCG 5/23/94

ITAS ID	CUSTOMER ID	COMMENTS
1) 40349201		100mi
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

JTK 5-17-94

REFERENCED QC

ITAS ID - BLANK _____

ITAS ID - SPIKE _____

CLIENT CODE _____

ACTIONS (Initial & Date)

PREP LAB RECEIVED _____

SAMPLE REMAINDER RETURNED TO SCG _____ ☐ (CHECK ONE)

NO SAMPLE REMAINING _____ ☐

SEPARATION LAB _____

COUNTING/MEASUREMENT _____

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT 05/17/94

DATA REVIEWED JTK 5-19-94

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

DWP 5-11-94

*** I-129LF ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 4-019

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40401901		WHC	B0BKP4	

ACTIONS (Initial & Date)

) INITIATED JH 4/16/94

) PREP LAB RECEIVED JN 4-27-94

) SAMPLE REMAINDER STORED JN 5-4-94

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2600

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS ALPHA MATRIX SOIL DUE DATE 4-29-94/ W0094

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 03 492	-1B	WYC	QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L 03 492	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE EQEG196
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F 049102	-		Duplicate of Sample ~~#1~~ 4049102 SN 5-6-94
403 49201	-		
40354601	-		
40401901	-		
40409101	-03		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by JN on 5-6-94 Rec'd in C.R. by OR on 5/6/94

Rec'd in Prep Lab by JN on 5-6-94 Data Reviewed and anal. Prep stored ATK on 5-10-94

Rec'd in Sep Lab by NA on NA

Rec'd in Sep lab by NA on NA Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

0097 Files

9713508.2601

*** ALPHA ***

4/29/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

28-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-492

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0349218				
	L0349215	EQEG196	10.031 ± .096192		
1)	40349201		WHC	B09WK0	

ACTIONS (Initial & Date)

) INITIATED 3/28/94

) PREP LAB RECEIVED JN 4-27-94

) SAMPLE REMAINDER STORED JN 5-6-94

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2602

*** ALPHA ***

5/3/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

30-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-546

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40354601		WHC	B0BFM8	

ACTIONS (Initial & Date)

) INITIATED 3/30/94

) PREP LAB RECEIVED JN 4-27-94

) SAMPLE REMAINDER STORED JN 5-6-94

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

0099

9713508.2603

*** ALPHA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

1-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0013

MATRIX : SOIL

BATCH NUMBER 4-019

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40401901		WHC	B0BKP4	

ACTIONS (Initial & Date)

1) INITIATED PB 4/4/94

2) PREP LAB RECEIVED JN 4-27-94

3) SAMPLE REMAINDER STORED JN 5-6-94

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

0100

9713508.2604

*** ALPHA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

6-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP IW0014

MATRIX : SOIL

BATCH NUMBER 4-091

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40409101		WHC	BOBKQ0	
2)	40409102		WHC	BOBKM9	
	F0409102	DUP			
3)	40409103		WHC	BOBKN6	

ACTIONS (Initial & Date)

1) INITIATED RB 4-6-94

2) PREP LAB RECEIVED JN 4-27-94

3) SAMPLE REMAINDER STORED JN 5-6-94

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

0101

9713508.2605

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS BETA MATRIX SOIL DUE DATE 4-29-94

WCC14

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 03 492	-1B	WHC	QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L 03 492	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE EQAH 2134
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F 0409102	-		Duplicate of Sample # 40409102
40349201	-		
40354601	-		
~~40419001~~	-		
40401901	-		
40409101	-03		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by JN on 5-6-94 Rec'd in C.R. by OD on 5/6/94

Rec'd in Prep Lab by JN on 5-6-94 Data Reviewed and anal. Prep stored MK on 5-10-94

Rec'd in Sep Lab by NA on NA

Rec'd in Sep lab by NA on NA Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

9713508.2606

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/13

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ~~ANALYSIS~~ RECORD

ANALYSIS Beta

NAME/DATE MK / 5-11-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP WCC14

MATRIX Soil

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) 4C409102		
2) FC409102		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

MK 5-11-94

REANALYSIS

REFERENCED QC

ITAS ID - BLANK

ITAS ID - SPIKE

CLIENT CODE

ACTIONS (Initial & Date)

PREP LAB RECEIVED

SAMPLE REMAINDER RETURNED TO SCG ☐ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT SK 5-12-94

DATA REVIEWED MK 5-12-94

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

0103

RC-048 12/92 REV 2

4/29/94

9713508.2607 *** BETA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

28-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-492

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	~~L0349201~~				~~14233~~
	L0349218		L0349215	EQAH 2134	10.C88 I ~~14233~~ 17K5-16-94
1)	40349201		WHC	B09WK0	

ACTIONS (Initial & Date)

1) INITIATED 3/28/94

2) PREP LAB RECEIVED JN 4-22-94

3) SAMPLE REMAINDER STORED JN 5-6-94

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

0104

*** BETA ***

5/3/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

30-Mar-1994
Page 1

CUSTOMER: WHC SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL BATCH NUMBER 3-546

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40354601		WHC	B0BFM8	

ACTIONS (Initial & Date)

1) INITIATED 3/30/94

2) PREP LAB RECEIVED JN 12 94

3) SAMPLE REMAINDER STORED JN 5 6 94

4) SEPARATION LAB RECEIVED 14

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9715508.2609 *** BETA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

1-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0013

MATRIX : SOIL

BATCH NUMBER 4-019

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40401901		WHC	BOBKP4	

ACTIONS (Initial & Date)

1) INITIATED RB 4/4/94

2) PREP LAB RECEIVED JN 4-27-94

3) SAMPLE REMAINDER STORED JN 5-6-94

4) SEPARATION LAB RECEIVED NH

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2610

*** BETA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

6-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 4-091

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40409101		WHC	B0BKQ0	
2)	40409102		WHC	B0BKM9	
	FC409102	DUP			
3)	40409103		WHC	B0BKN6	

ACTIONS (Initial & Date)

1) INITIATED RB 4/6/94

2) PREP LAB RECEIVED JN 7-27-94

3) SAMPLE REMAINDER STORED JN 5-6-94

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2611

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS TOTAL-SR MATRIX SOIL DUE DATE 5/13/94

W0014

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L04091	-1B	WHC	QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L04091	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE FQCF 001 83.307 ± 1.1972 dpm
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F0409101	-		Duplicate of Sample # 40409101
40409101	- 03		3 sa
40349201	-		1 sa
40354601	-		1 sa
40401901	-		1 sa
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by [illegible] on 5-9-94 Rec'd in C.R. by [illegible] on 5/12/94

Rec'd in Prep Lab by [illegible] on 5-9-94 Data Reviewed and anal. Prep stored [illegible] on 5/13/94

Rec'd in Sep Lab by TK on 5-10-94

Rec'd in Sep lab by ↓ on ↓ Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

9713508.2612

*** TOTAL-SR ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

6-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP WD014

MATRIX : SOIL

BATCH NUMBER 4-091

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0409118				
	L0409115				
1)	40409101		WHC	BOBKQ0	
	F0409101-DUP				
2)	40409102		WHC	BOBKM9	
3)	40409103		WHC	BOBKN6	

ACTIONS (Initial & Date)

1) INITIATED lb 4/6/94

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713508.2643 *** TOTAL-SR ***

4/29/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

28-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-492

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40349201		WHC	B09WK0	

ACTIONS (Initial & Date)

1) INITIATED 3/28/94

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

0110

5/3/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

30-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP WG014

MATRIX : SOIL

BATCH NUMBER 3-546

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40354601		WHC	BOBFM8	

ACTIONS (Initial & Date)

) INITIATED 3/30/94

) PREP LAB RECEIVED _____

) SAMPLE REMAINDER STORED _____

) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713508.2649 *** TOTAL-SR ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

1-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP MKS-9-94 ~~W0013~~ W0014

MATRIX : SOIL

BATCH NUMBER 4-019

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40401901		WHC	BOBKP4	

ACTIONS (Initial & Date)

1) INITIATED RB 4/4/94

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

BATCH SUMMARY/CHAIN OF CUSTODY

9713508.2616

ANALYSIS Se MATRIX Soil DUE DATE _____

W0014

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 0349218	-1B	WHC	QC BATCH REAGENT BLANK
L _____	-1X		QC BATCH MATRIX BLANK
L 0349218	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE 5/12/94 EQBS
L _____	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F 04091 03	-		Duplicate of Sample # 40409103
W0401901	-		40401901
W0401 91D	-		Dup Spk 40401901
	-		
40349201	-		
40354601	-		
40401901	-03		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by [illegible] on 5/12/94 Rec'd in C.R. by [illegible] on 5/18/94

Rec'd in Prep Lab by [illegible] on 5/10/94 Data Reviewed and anal. Prep stored [illegible] on 5/23/94

RD 3221 5/11/94 [illegible]

Rec'd in Sep Lab by Susie on 5-17-94

Rec'd in Sep lab by N/A on N/A Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

9713508.2617 *** SE-79 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

1-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0013 W0014 SEG 5/24/94

MATRIX : SOIL

BATCH NUMBER 4-019

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40401901		WHC	B0BKP4	
	W0401901		EQBS019		
	W0401901	Dup	EQBS020		

ACTIONS (Initial & Date)

1) INITIATED RD 4/4/94

2) PREP LAB RECEIVED 5/10/94 Br

3) SAMPLE REMAINDER STORED _____
RD 3221 5/11/94 Br

4) SEPARATION LAB RECEIVED 5-17-94 Susie

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

4/29/94

9715900.3610 *** SE-79 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

28-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3492

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0349218				
	L0349215		EQBS018		
1)	40349201		WHC	B09WK0	

ACTIONS (Initial & Date)

1) INITIATED 3/28/94

2) PREP LAB RECEIVED 5/10/94 Bm

3) SAMPLE REMAINDER STORED
RD3221 5/11/94 Bm

4) SEPARATION LAB RECEIVED 5-25-94
17-94 Susan

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND
ANALYTICAL PREP STORED

0115

9713508.2619

*** SE-79 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

6-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 4-091

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40409101		WHC	B0BKQ0	
2)	40409102		WHC	B0BKM9	
3)	40409103		WHC	B0BKN6	
	F0409103				

ACTIONS (Initial & Date)

1) INITIATED RD 4/6/94

2) PREP LAB RECEIVED 5/10/94 Bm

3) SAMPLE REMAINDER STORED _____
RD322 | 5/11/94 Bm

4) SEPARATION LAB RECEIVED 5-17-94 [illegible]

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

5/3/94

*** SE-79 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

30-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W094

MATRIX : SOIL

BATCH NUMBER 3-546

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40354601		WHC	B0BFM8	

ACTIONS (Initial & Date)

1) INITIATED 3/30/94

2) PREP LAB RECEIVED 5/10/94 Bm

3) SAMPLE REMAINDER STORED _____
RD3221 5/11/94 Bm

4) SEPARATION LAB RECEIVED 5-17-94 Susan

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713508.2621

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS Tc-99 MATRIX Soil DUE DATE 4/29/94

W0014 & W0025

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 04091 L 04091 2	-1B 2B	WHC	QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L 04091 ~~L 04091 2~~ ~~L 04091 3~~ Jm 5/19/94	-1M or 1S ~~2M~~ (circle) 3M	EQnI 195	QC BATCH MATRIX/REAGENT SPIKE 67.6081 ± .8354 PCI/G 300.18 ± 3.7092
L04091	-2M or 2S (circle)	EQnJ 142	QC BATCH MATRIX/REAGENT SPIKE 22.52 ± .2783 PCI/G 99.99 ± 1.2355
W0014 F 0409101 F 0401901	-		Duplicate of Sample #
W0025 F 0418401	- 22.5946 ± .2792	PCI/G	L040911 N 2 N mistake.
W0409102 = EQnJ141 W0401901 = EQnJ 143	100.32 ± 1.2397 - 22.5338 ± .2784 100.05 ± 1.2363	PCI/G	3 N 4 N Beki.
L040913m = EQnI194	300.27 ± 3.7104 - 67.6284 ± .8357 ~~100.05 ± 1.2363~~ Jm 5/19/94	PCI/G	
SDG W0014 4040901	- 03		
4034920 1	- 01		
4035460 1	- 01		
4040190 1	- 01		
SDG W0025 4041840 1	- 01		
	-		
	-		
	-		
	-		

Batched and QC updated by MM on 5/16/94 Rec'd in C.R. by [illegible] on 5/16/94

Rec'd in Prep Lab by MM on 5/06/94 Data Reviewed and anal. Prep stored [illegible] on 5/19/94

Rec'd in Sep Lab by MM on 5/06/94

Rec'd in Sep lab by NA on NA Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

9216508.3622

*** TC-99 ***

4/29/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

28-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-492

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40349201		WHC	B09WK0	

ACTIONS (Initial & Date)

1) INITIATED 3/28/94

2) PREP LAB RECEIVED JN 4-27-94

3) SAMPLE REMAINDER STORED JN 5-5-94

4) SEPARATION LAB RECEIVED [illegible] 5-5-94

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9213588.2623

*** TC-99 ***

5/3/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

30-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP WOO14

MATRIX : SOIL

BATCH NUMBER 3-546

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40354601		WHC	B0BFM8	

ACTIONS (Initial & Date)

1) INITIATED 3/30/94

2) PREP LAB RECEIVED 4-27-94

3) SAMPLE REMAINDER STORED 5-5-94

4) SEPARATION LAB RECEIVED

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2624

*** TC-99 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

1-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP ~~W0013~~ DM 5-19-94 W0014

MATRIX : SOIL

BATCH NUMBER 4-019

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40401901		WHC	BOBKP4	

ACTIONS (Initial & Date)

1) INITIATED RB 4/4/94

2) PREP LAB RECEIVED JN 4-27-94

3) SAMPLE REMAINDER STORED JN 5-5-94

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713508.2625

*** TC-99 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

6-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W6014

MATRIX : SOIL

BATCH NUMBER 4-091

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L040911 N		L040911 B	L040911 M	L040913 M L040914 N
	L040912 N		L040912 B	L040912 M	L040913 N W0401901
1)	40409101		WHC	B0BKQ0	
2)	40409102		WHC	B0BKM9	
3)	40409103		WHC	B0BKN6	

ACTIONS (Initial & Date)

1) INITIATED RB 4/6/94

2) PREP LAB RECEIVED JN 4-27-94

3) SAMPLE REMAINDER STORED JN 5-5-94

4) SEPARATION LAB RECEIVED 5/06/94 mm

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9713508.2626

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS_____ - MATRIX_____ DUE DATE_____

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L034921B	-1B		QC BATCH REAGENT BLANK
L034921X L034922X	1X 2X		QC BATCH MATRIX BLANK
L034921S L034921M	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE EQIK
L034922M	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F0409101	-		Duplicate of Sample # 40409101
40349201	-		
40354601	-		
40401901	-		
40409101	-03		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by Bm on 5/13/94 Rec'd in C.R. by [illegible] on 5/18/94

Rec'd in Prep Lab by Bm on 5/10/94 Data Reviewed and anal. Prep stored PK on 5-19-94

RD3221 5/12/94 Bm

Rec'd in Sep Lab by NA on

Rec'd in Sep lab by NA on Samples Disposed by on

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

9715509.2627

*** URANIUM ***

4/29/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

28-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-492

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0349213		L0349213X	L0349213M	EQIK085
	L0349213	EQIK084	L0349222X	L0349222M	EQIK086
1)	40349201		WHC	B09WK0	

ACTIONS (Initial & Date)

1) INITIATED 3/28/94

2) PREP LAB RECEIVED 5/10/94 Bm

3) SAMPLE REMAINDER STORED NA
RD3221 5/12/94 Bm

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB NA

6) DATA REVIEWED AND
ANALYTICAL PREP STORED RK 5-19-94

9416508.2628

*** URANIUM ***

5/3/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

30-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 3-546

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40354601		WHC	BOBFM8	

ACTIONS (Initial & Date)

1) INITIATED 3/30/94

2) PREP LAB RECEIVED 5/10/94

3) SAMPLE REMAINDER STORED NA
RD3221 5/12/94

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB NA

6) DATA REVIEWED AND
ANALYTICAL PREP STORED PK 5-19-94

9713508.2629

*** URANIUM ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

1-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP ~~W0013~~ W0014 SCG 5/30/94

MATRIX : SOIL

BATCH NUMBER 4-019

ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1) 40401901		WHC	BOBKP4	

ACTIONS (Initial & Date)

1) INITIATED RB 4/4/94

2) PREP LAB RECEIVED 5/10/94 Bm

3) SAMPLE REMAINDER STORED NA
RD3221 5/12/94 Bm

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB NA

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5-19-94

9713508.2630

*** URANIUM ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

6-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0014

MATRIX : SOIL

BATCH NUMBER 4-091

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40409101		WHC	BOBKQ0	
2)	40409102		WHC	BOBKM9	
3)	40409103		WHC	BOBKN6	
	F0409101				

ACTIONS (Initial & Date)

1) INITIATED RB 4/6/94

2) PREP LAB RECEIVED 5/10/94 BM

3) SAMPLE REMAINDER STORED NA
RD3221 5/12/94 BM

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB NA

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5-19-94

9713508.2631

MEMORANDUM

JUN 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record

June 11, 1994

FR: Christina Jensen, Golder Associates Inc

RE: GENERAL CHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0014-ITC-025 (923-E418 W0014W.UP2)

INTRODUCTION

This memorandum presents the results of data validation on data package W0014-ITC-025 prepared by International Technology Corporation (IT) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09WK0	03/22/94	SOIL	SEE NOTE 1
B0BFM8	03/24/94	SOIL	SEE NOTE 1
B0BKM9	03/24/94	SOIL	SEE NOTE 1
B0BKP4	03/30/94	SOIL	SEE NOTE 1 AND 2
B0BKN6	04/04/94	SOIL	SEE NOTE 1
B0BKQ0	04/04/94	SOIL	SEE NOTE 1

Notes: 1. The samples were analyzed for IC anions (chloride, fluoride and sulfate) and nitrate+nitrite.
2. The sample was analyzed for Total Organic Carbon (TOC).

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

RECEIVED JUN 16 1994 VALIDATION DOCUMENTATION SDLA

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

01

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of six samples were validated in this data package with a total of 25 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets the normal work plan objectives of 90 percent.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

No minor deficiencies were identified during data validation which required qualification of data.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9713508.2633

Attachment 1

Glossary of Data Reporting Qualifiers

9715508.2654

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

9713508.2635

Attachment 2

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 6/11/94	PAGE 1 OF 1
COMMENTS: W0014-ITE-025			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
no qualification of the data was made			

L-06

9713508.2637

Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

Validated Data Summary, Data Package: W0014-ITC-025

	Samp#	B09WK0		B0BFM8		B0BKM9		B0BKN6		B0BKP4		B0BKQ0	
	Date	3-22-94		3-24-94		4-4-94		4-4-94		3-30-94		4-4-94	
	Location	---		216-U-8		U1/U2 TILE FIELD		U1/U2 TILE FIELD		Z DITCH		U1/U2 TILE FIELD	
	Depth	-		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
FLUORIDE	MG/KG	1.200	U	1.110	U	1.010	U	1.030	U	1.010	U	1.020	U
CHLORIDE	MG/KG	9.710		2.780	U	6.330		9.970		7.760		6.600	
SULFATE	MG/KG	16.000		16.000		10.100	U	12.300		11.900		10.600	
NITRATE+NITRITE	MG-N/KG	4.740		21.800		6.240		6.840		10.400		6.100	
TOTAL ORGANIC CARBON	MG/KG	---		---		---		---		2020.000		---	

9713508.2638

Verified 5/13/94

U-08

ITAS - ST. LOUIS

TOC ANALYSIS

PREP DATE: 04-19-94
DATE OF ANALYSIS: 04-19-94
ANALYST: J. Flandreau
BATCH #: 36062

PAGE 1 OF 1

REVIEWED BY: R. Patterson/05-02-94
REVIEWED BY: R. Patterson/05-02-94
METHOD #: 9060
PROJECT #: 519.04

ANALYSIS TIME	LAB ID	STANDARD CONC.	VOLUME/ WEIGHT mg USED	DILUTION	FRACTION SOLID	INSTRUMENT PRINTOUT PPM C	CONC (MG/L OR UG/G)	SAMPLE AVERAGE & ~~RPD~~ RPD 05-02-94
	QCBLK36062-1		79.9	1.00	N/A	12.05	<25.0	Range
	QCLCS36062-1	599 ug/g.	80.1	0.999	N/A	583.1	583	
	4817-001	BDBKP4	JMF04-29-94 ~~197~~ 46.2	1.73	.9862	1976	2000	
	001		46.0	1.74		2017	2050	$\bar{x}$ = 2020
	001		45.8	1.75		1899	1930	range = 1930
	001		47.8	1.67		2058	2090	2090

J. Flandreau 04-29-94

LCS True Value = 599 ug/g
Percent Recovery = 97

MS True Value = N/A
Percent Recovery = ↓

MSD True Value = N/A
Percent Recovery = ↓
RPD = ↓

mg/L TOC (water) = Instr. Printout (PPMC) x Dil. Factor
ug/g TOC (soil) = Instr. Printout (PPMC) / Fraction Solid

SL-91 INORG 0013 WESTON

0084

9713008.2639

Project # 519.04
Analyst J. Carpio
Reviewed by R. Patterson/05-02-94
Reviewed by R. Patterson/05-02-94
Page 1 of 1

ITAS ST. LOUIS

ANIONS BY I.C.

(ug/g) ug/L mg/L
(circle one)

Prep Date 04-18-94
Analysis Date 04-18-94
Loop Used 50 ml
Batch # 36290
Method # 300.0

Standard Value	Sample ID	Std ID	Solid Fract.	Dil.	Fl	Cl	SO_4	Fl Dry Wt	Cl Dry Wt	SO_4 Dry Wt	% Rec	RPD
	QCBLK36290				<0.986	<2.46	<9.86	Q				
Fl 9.86 SO4 39.5	QCLCS36290	AL1588-94			9.27	9.09	36.8				Fl 94 Cl 92 SO4 93	
	4769-001	BOBWK0	0.8289					<1.20U	9.71	16.0		
	001DUP							<1.20	9.72	15.8		Fl # Cl<1 SO4 1
F 23.9	001MS	AL1589-94						28.7			F 120	
	4796-001	BOBFM8	0.8979					<1.11U	<2.78U	16.0		
	4873-001		0.9491					<1.05	9.59	62.2		
	001DUP							<1.05	9.59	62.2		Fl # Cl<1 SO4<1
F 20.9	001MS	AL1590-94						25.8			F 123	
	4817-001	BOBKP4	0.9862					<1.01U	7.76	11.9		
	4846-001	BOBKQ0	0.9770					<1.02U	6.60	10.6		
	002	BOBKM9	0.9778					<1.01U	6.33	<10.1U		
	003	BOBKN6	0.9681					<1.03U	9.97	12.3		
Cl 239 SO4 239	4769-001MS	AL1589-94	0.8289	X10					252	257	Cl 101 SO4 101	
Cl 209 SO4 209	4873-001MS	AL1590-94	0.9491	X10					218	281	Cl 100 SO4 105	

Verified 5/11/94

* CALCULATED RPD DUE TO VALUES BELOW REPORTING LIMIT

9413608 2600

ST. LOUIS ENERGY LABS

ITAS-ST. LOUIS

NITRATE/NITRITE-N REPORT

Pg. 1 of 1

Analyst: J. CARRO
Project No.: 519.04
Reviewed by: R. Patterson

Batch No.: 35922

PREP DATE: 04-18-94
Analysis Date: 04-19-94
Method No.: 353.1
Date: 04-29-94

LAB ID	STANDARD ID	RAW VALUE x	DILUTION ÷	SAMPLE VOLUME (L or g) =	NITRATE/ NITRITE x	EXTRACT VOLUME (L) ÷	FRACTION SOLID =	FINAL CONCENTRATION (ug/L)-N (ug/g)-N	% RECOVERY	RPD
CB1135922-1		-9.318		5.071		0.05	RD 04-29-94	* <0.493		
LCS35922-1	AMSB3-94	599.0		5.043				5.94	106	
4769-001	BOBWRD	394.2		5.015			0.8289	* 4.74		
001DUP		395.3		5.032				4.74		<1
001MS	AMSB4-94	210.6	X5	5.072				12.5	116	
4796-001	BOBFM8	195.7	X10	5.003			0.8979	21.8		
273-001		276.1	X10	5.016			0.9491	29.0		
001DUP		270.0	X10	5.023				28.3		2
001MS	AMSB5-94	351.2	X10	5.041				36.7	131 **	
4817-001	BOBKP4	204.8	X5	5.011			0.9862	10.4		
4846-001	BOBKQ0	599.2		5.023			0.9770	6.10		
002	BOBKM9	618.0		5.063			0.9778	6.24		
003	BOBKN6	665.3		5.023			0.9681	6.84		

Verified 5/11/94

* CORRECTED FOR % MOISTURE
** SAMPLE CONC. 4X > SPIKE AMT

SL-91-INORG-0039

9713508.2642

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

9713508.2643

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

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

May 12, 1994

Attention: J. A. Lerch

Project number	:	519.04
Date Received by Lab	:	March 25 & 30, 1994 and April 1 & 6, 1994
Number of Samples	:	Seven (7)
Sample Type	:	Soil
SDG Number	:	W0014

I. Introduction

On March 25 and 30 and April 1 and 6, 1994, a total of seven (7) soil samples were received by ITAS-Richland and transferred to ITAS-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
4769-001	BO9WK0	40349101	Soil	03/25/94
4796-001	BOBFM8	40354501	Soil	03/30/94
4796-002	BOBFM9	40354502	Soil	03/30/94
4817-001	BOBKP4	40401801	Soil	04/01/94
4846-001	BOBKQ0	40409001	Soil	04/06/94
4846-002	BOBKM9	40409002	Soil	04/06/94
4846-003	BOBKN6	40409003	Soil	04/06/94

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: VOA, BNA and Metals including Cyanide by CLP/90 protocol. Chloride, Sulfate and Fluoride by EPA method 300.0. Nitrate by EPA method 353.1. Total Petroleum Hydrocarbons (Kerosene) by method 8015.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike/Matrix Spike Duplicate or Duplicate analyses were performed for all analyses based on protocol.

IV. Comments

The samples received by ITAS-St. Louis on 04/07/94 arrived in a cooler whose internal temperature was 1°C. The laboratory proceeded with the analyses per the client's request.

Samples QCBLK34692, BO9WK0 (4769-001MS, -001MSD), BOBFM8 (4796-001) and BOBKPP4 (4817-001) for BNA were analyzed after a continuing calibration which failed criteria for N-Nitroso-di-n-propylamine in that the %D for this compound was 48.3%, above the 40% maximum. See NCM SL-94-0228. It is noteworthy that this compound gave acceptable recoveries in the MS and MSD at 68% and 68%, similar to the other compounds, indicating that there was no affect on the results. This compound was not detected in the unspiked samples.

For Fluoride sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

For Cyanide sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

The Matrix Spike and Duplicate analyses for Total Organic Carbon were inadvertently overlooked when the samples were originally analyzed. Upon review of the data package this nonconformance was noted and the analyses were performed at this time. However, the analyses were performed out of holding time. Results for the sample were performed within holding time. All results are reported, but charges for the matrix spike and duplicate do not appear on the invoice. See nonconformance memo SL-94-0241.

Kerosene results are noted as High Boiling Hydrocarbons on the TPH forms. They are quantitated against a Fuel Oil #2 (diesel) standard curve which is proved to have the same response factors as that of Kerosene (Fuel Oil #1) within minimal error. The response factor correlation is demonstrated by the running of a single, mid-level calibration standard at the beginning of the analytical batch. This calibration verification data is contained in the data package. This procedure is outlined in ITAS-St. Louis SOP SL4055.

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
z:\annelers\hanw0014.nar

9713508.2646

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 3-22-94

Ice Chest No.: SML-127

Field Logbook No.: EFL-1115

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: Government vehicle

Shipped to: IT, Richland

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) SAF # 94-065 NONE NOTED

Sample Identification

1) B09WK0

40349101 3/25/94

A 1,250ml P:CLP;TAL Metals,Hg,Ti
B 1,250ml Gs:VOA CLP
C 1,250ml aG:Semi-VOA CLP
D 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
E 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
F 1,250ml aGs:PCB/Pest (8080)
G 1,125ml G:Cyanide CLP
H 1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

40349005 3/25/94
40349201

2) B09WK1

40349 3/25/94

A 1,250ml P:CLP;TAL Metals,Hg,Ti
B 1,250ml Gs:VOA CLP
C 1,250ml aG:Semi-VOA CLP
D 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
E 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,250ml aGs:PCB/Pest (8080)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

40349006 3/25/94

0000013

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
3-24-94 Joyce E. Rogers 1310	[illegible]	3-25-94 10 cc am
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006445

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. [illegible]
Bill of Lading/Airbill No. N/A
Offsite Property No. N/A
Method of Shipment Government truck
Field Logbook No. N/A
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBFM8	S	3 24 94	1300	(1) 250ml aGs	VOA CLP	
BOBFM8	S			(1) 250ml aGs	Semi-VOA CLP	
BOBFM8	S			(1) 250ml ~~aGs~~	Metals -CLP TAL Titanium Mercury CPL 3-24-94	
BOBFM8	S			(1) 125ml aGs	Anions F, Cl, SO_4 EPA 300.0	
BOBFM8	S			(1) 125ml aGs	NO_2 NO_3 EPA 353.2	
BOBFM8	S			(1) 125ml aGs	Cyanide CPL	
BOBFM8	S			(1) 125ml aGs	Kerosene 8015M	
BOBFM8	S	3-24-94	1300	(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	
BOBFM9	S	3 24 94	0900	(1) 250ml aGs	VOA	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
[signature] Roy T Sickle	3-25-94	1530	[signature]
[signature]	3-26-94	0930	R Boyd IT 3-29-94 1130

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2647

0000022

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006468

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations Z Ditch
Ice Chest No. SWL 415
Bill of Lading/Airbill No. N/A
Offsite Property No. W94-C 0369 #47
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
404018 01 A	BOBKP4	S	5-x-94	1315	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKP4	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKP4	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKP4	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKP4	S			(1) 125ml G	Cyanide	CPL	
F	BOBKP4	S			(1) 125ml Gs	TPH Diesel Range	8015m	
G	BOBKP4	S			(1) 125ml aGs	TOC	9060	
404019 01	BOBKP4	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-1-94	1030	Ray Arnold Ray Arnold
Ray Arnold Ray Arnold	4-1-94	1210	Tom Gilmore ITAS

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000030

9413508.2948

C-18

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006456

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP2 RAC 3 30-94
Sampling Locations ~~216-U-8 Crib~~ 200 UP2 RAC 3 30-94
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

15 April 94
STAND ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKM9	S	4-4-94	1110	(1) 250ml aG	Semi-VOA CLP	
BOBKM9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury 15 APR 94 CLP EPL	
BOBKM9	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKM9	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKM9	S			(1) 125ml G	Cyanide 15 APR 94 CLP CPL	
BOBKM9	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKM9~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
BOBKM9	S			(1) 1000ml Poly	Gross Alpha/Beta, ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-6-94	1020	R Boyd JT 4-6-94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2649

0000036

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006463

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8-Vitrified Clay Pipeline~~ 200 UP L
Sampling Locations ~~216-U-8-Crib~~
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS
STAND ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKN6	S	4-4-94	1030	(1) 250ml aG	Semi-VOA CLP	
BOBKN6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CLP ~~CPL~~	
BOBKN6	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKN6	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKN6	S			(1) 125ml G	Cyanide CLP ~~CPL~~	
BOBKN6	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKN6~~	S			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
BOBKN6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-6-94	1020	R. Boyd 4-6-94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000037

9713508.2650

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006475

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations U1/U2 Tile Field
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS
5 Apr 94
STAND ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKQ0	S	4-4-94	1110	(1) 250ml aG	Semi-VOA CLP	
BOBKQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury 5 April CLP ~~CPL~~	
BOBKQ0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKQ0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKQ0	S			(1) 125ml G	Cyanide 5 April CLP ~~CPL~~	
BOBKQ0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
BOBKQ0	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-6-94	1020	R. Boyd 4-6-94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9413508.2661

0000038

0021

HOLDING TIME SUMMARY

SDG:		VALIDATOR: C Jensen			DATE: 6/11/94	PAGE 1 OF 1	
COMMENTS: W0014-ITC-025							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0GWK0	F, Cl, SO_4, NO_2/NO_3	3/22/94	4/18/94	4/19/94	27	1	
B0BFM8	F, Cl, SO_4, NO_2/NO_3	3/24/94			25		
B0PKM9		4/4/94			14		
B0PKN6		4/4/94			14		
B0PKQ0		4/4/94			14		
B0PKP4		3/30/94			19		
B0PKP4	TOC	3/30/94	4/19/94		5/4/94 20		~~5/4/94~~ none

9713508.2652
WHC-SD-EN-SPP-002, Rev. 2

9713508.2653

Attachment 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	(E)

PROJECT: 200 UP 2		DATA PACKAGE: W0014-ITC-035
VALIDATOR: C Jensen	LAB: ITE	DATE: 6/11/94
CASE:		SDG:

ANALYSES PERFORMED

☒ Anions/IC	☐ TOC	☐ TOX	☐ TPH-418.1	Oil and Grease	Alkalinity
☐ Ammonia	☐ BOD/COD	☐ Chloride	☐ Chromium-VI	☐ pH	☒ NO_3/NO_2
☐ Sulfate	☐ TDS	☐ TKN	☐ Phosphate	☐	☐
☒ TOC	☐	☐	☐	☐	☐

SAMPLES/MATRIX Soils —	B09WK0
	B0BFW8
	B0BKP4
	B0BKM9
TOC for B0BKP4 only	B0BKN6
	B0BKQ0

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments: Verification performed by WHC.

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) ~~No~~ N/A gj 6/11/94

Comments: ~~The TOC holding time~~ gj 6/11/94

The TOC holding times for the MS/~~MSD~~ 6/11/94 and Duplicate were analyzed outside holding time but the sample was within holding time. No qualification of the sample (B0BKP4) was made.

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

Was initial calibration performed for all applicable analyses? (Yes) No N/A
Are initial calibration results acceptable? . . . . . (Yes) No N/A
Was a calibration check performed for all applicable analyses? (Yes) No N/A
Are calibration check results acceptable? . . . . . (Yes) No N/A
Comments: ~~An LCS was run just prior to sample analysis as a continuing cal. check and was acceptable.~~ Continuing calibration was analyzed and acceptable. 5/11/94.

4. BLANKS

Were laboratory blanks analyzed? . . . . . (Yes) No N/A
Are laboratory blank results acceptable? . . . . . (Yes) No N/A
Were field/trip blanks analyzed? . . . . . Yes No (N/A)
Are field/trip blank results acceptable? . . . . . Yes No (N/A)
Comments:

5. ACCURACY

Were spike samples analyzed at the required frequency? . . . . (Yes) No N/A
Are spike recoveries acceptable? . . . . . (Yes) No N/A
Were LCS analyses performed at the required frequency? . . . . (Yes) No N/A
Are LCS recoveries acceptable? . . . . . (Yes) No N/A
Comments: MS analyzed for Fl only. LCS analyzed using Fl, Cl, SO_4, all acceptable %R.

MS analyzed for TOC was out of holding time, however, was within limits. No qualification of the data was necessary.

6. PRECISION

Were laboratory duplicate samples analyzed at the required frequency? . . . . . (Yes) No N/A
Are laboratory duplicate sample RPD values acceptable? . . . . (Yes) No N/A
Are field duplicate RPD values acceptable? . . . . . Yes No (N/A)
Are field split RPD values acceptable? . . . . . Yes No (N/A)

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Comments: The ~~tot~~ 06/04/94 duplicate TOC sample was analyzed outside the holding time, however, within limits. No qualification of 06/04/94 was made based on QC samples.

7. ANALYTE QUANTITATION

Was analyte quantitation performed properly? . . . . . (Yes) No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . (Yes) No N/A

Are results supported in the raw data? . . . . . (Yes) No N/A

Are results calculated properly? . . . . . (Yes) No N/A

Do results meet the CRDLs? . . . . . (Yes) No N/A

Comments:

Results were reported on handwritten bench sheets.

The TOC result is an average of 4 runs.

QC samples Extracted outside holding time

ITAS - ST. LOUIS

TOC ANALYSIS

PAGE 1 OF 1

PREP DATE: 05-11-94
DATE OF ANALYSIS: 05-11-94
ANALYST: J. Flandreau
BATCH #: 37578

QC Samples only, within limits

REVIEWED BY: R. Patterson/05-12-94
REVIEWED BY: R. Patterson/05-12-94
METHOD #: 9060
PROJECT #: 519.04

ANALYSIS TIME	LAB ID	STANDARD CONC.	VOLUME/ WEIGHT mg USED	DILUTION	FRACTION SOLID	INSTRUMENT PRINTOUT PPM C	CONC (MG/L OR UG/G)	SAMPLE AVERAGE & ~~RPD~~ RANGE
	QCBLK37578-1		79.6	1.01		13.85	<25.2	
	QCLCS 37578-1	597 ug/g	80.4	0.995		553.4	553	
	4817-001DUP	BOBKP4	17.1	4.68	.9862	1639	1660	$\bar{x}$ = 2160
	001DUP		21.4	3.74		2074	2100	range = 1660 → 2620
	001DUP		22.0	3.64		2588	2620	
	001DUP		22.5	3.56		2207	2240	
	001MS	1950 ug/g	20.8	3.85		4008	4060	$\bar{x}$ = 4050
	001MS	1960 ug/g	20.7	3.86		4389	4450	range = 3550 → 4450
	001MS	1990 ug/g	20.4	3.92		4083	4140	
	001MS	1990 ug/g	20.4	3.92		3497	3550	

J. Flandreau 05-11-94

RP 05-12-94

971508.2677

LCS True Value = 597 ug/g
Percent Recovery = 93

MS True Value = 1970 ug/g
Percent Recovery = ~~96~~ 103
RP 05-12-94

MSD True Value = N/A
Percent Recovery =
RPD = 7

mg/L TOC (water) = Instr. Printout (PPMC) x Dil. Factor
ug/g TOC (soil) = Instr. Printout (PPMC) / Fraction Solid

SL 91-INORG-0013 WESTON

4817-001 $\bar{x}$ = 2020 ug/g

9713508.2658

MEMORANDUM

JUN 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record

June 11, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: GENERAL GC DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0014-ITC-025 (923-E418 W0014G.UP2)

INTRODUCTION

This memorandum presents the results of data validation on data package W0014-ITC-025 prepared by International Technology Corporation (IT) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09WK0	03/22/94	SOIL	SEE NOTE 1
B0BFM8	03/24/94	SOIL	
B0BKM9	03/24/94	SOIL	
B0BKP4	03/30/94	SOIL	
B0BKN6	04/04/94	SOIL	
B0BKQ0	04/04/94	SOIL	

Notes: 1. The samples were analyzed for Kerosene using Method 8015M.

JUN 16 1994
VALIDATION DOCUMENTATION
SDLA

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

01

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of six samples were validated in this data package with a total of six determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets the normal work plan objectives of 90 percent.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

No minor deficiencies were identified during data validation which required qualification of data.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9713508.2660

Attachment 1

Glossary of Data Reporting Qualifiers

9715908.2661

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UJN - Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

9713508.2662

Attachment 2

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY

SDG:	VALIDATOR: Clemen	DATE: 6/11/97	PAGE 1 OF 1
COMMENTS: GC W0014-ITC-025			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
No qualification of the data was required			

9713508.2664

Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

Validated Data Summary, Data Package: W0014-ITC-025

	Samp#	B09WK0		B0BFM8		B0BFM9		B0BKN6		B0BKP4		B0BKQ0	
	Date	3-22-94		3-24-94		3-24-94		4-4-94		3-30-94		4-4-94	
	Location	---		216-U-8		216-U-8		U1/U2 TILE FIELD		Z DITCH		U1/U2 TILE FIELD	
	Depth	---		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
KEROSENE	MG/KG	30.000	U	28.000	U	25.000	U	26.000	U	25.000	U	25.000	U

9713508.2665

Verified
ok 01/3/94

30-03

9713508.2666

1D
HBH ANALYSIS DATA SHEET

EPA SAMPLE NO.
B0BFM8

Lab Name: ITAS-St. Louis Contract: 519.04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix : (soil/water) SOIL Lab Sample ID: 4796-001

Sample wt/vol: 20.0 (g/ml) g Lab File ID: _____

Level: (low/med) LOW Date Sampled: 03-24-94

% Moisture: not dec. 10 dec. _____ Date Extracted: 04-05-94

Extraction: (SepF/Cont/Sonc/Shak) SHAK Date Analyzed: 04-07-94

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) mg/Kg	Q
	HBH (1)	28	U

U: Concentration of analyte is less than the value given.

(1): High Boiling Hydrocarbon (HBH) is quantitated as if it is Fuel Oil #2.

FORM I HBH

Verified
5/6/1994

1D
HBH ANALYSIS DATA SHEET

EPA SAMPLE NO.
B0BKM9

Lab Name: ITAS-St. Louis
Contract: 519.04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix : (soil/water) SOIL
Lab Sample ID: 4846-002

Sample wt/vol: 20.1 (g/ml) g
Lab File ID: _____

Level: (low/med) LOW
Date Sampled: 04-04-94

% Moisture: not dec. 2 dec. _____
Date Extracted: 04-12-94

Extraction: (SepF/Cont/Sonc/Shak) SHAK
Date Analyzed: 04-21-94

GPC Cleanup: (Y/N) N pH: _____
Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) mg/Kg	Q
	HBH (1)	25	U

U: Concentration of analyte is less than the value given.

(1): High Boiling Hydrocarbon (HBH) is quantitated as if it is Fuel Oil #2.

FORM I HBH

Verified 5/6/94

9215582.2669

1D
HBH ANALYSIS DATA SHEET

EPA SAMPLE NO.
B0BKN6

Lab Name: ITAS-St. Louis Contract: 519.04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix : (soil/water) SOIL Lab Sample ID: 4846-003

Sample wt/vol: 20.1 (g/ml) g Lab File ID: _____

Level: (low/med) LOW Date Sampled: 04-04-94

% Moisture: not dec. 3 dec. _____ Date Extracted: 04-12-94

Extraction: (SepF/Cont/Sonc/Shak) SHAK Date Analyzed: 04-21-94

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) mg/Kg	Q
	HBH (1)	26	U

U: Concentration of analyte is less than the value given.

(1): High Boiling Hydrocarbon (HBH) is quantitated as if it is Fuel Oil #2.

FORM I HBH

verified
5/16/94

1D
HBH ANALYSIS DATA SHEET

EPA SAMPLE NO.
B0BKP4

Lab Name: ITAS-St. Louis
Contract: 519.04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix : (soil/water) SOIL
Lab Sample ID: 4817-001

Sample wt/vol: 20.0 (g/ml) g
Lab File ID: _____

Level: (low/med) LOW
Date Sampled: 03-30-94

% Moisture: not dec. 1 dec. _____
Date Extracted: 04-05-94

Extraction: (SepF/Cont/Sonc/Shak) SHAK
Date Analyzed: 04-07-94

GPC Cleanup: (Y/N) N pH: _____
Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) mg/Kg	Q
	HBH (1)	25	U

U: Concentration of analyte is less than the value given.

(1): High Boiling Hydrocarbon (HBH) is quantitated as if it is Fuel Oil #2.

FORM I HBH

Verified
5/6/94

1D
HBH ANALYSIS DATA SHEET

EPA SAMPLE NO.
B0BKQ0

Lab Name: ITAS-St. Louis Contract: 519.04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix : (soil/water) SOIL Lab Sample ID: 4846-001

Sample wt/vol: 20.1 (g/ml) g Lab File ID: _____

Level: (low/med) LOW Date Sampled: 04-04-94

% Moisture: not dec. 2 dec. _____ Date Extracted: 04-12-94

Extraction: (SepF/Cont/Sonc/Shak) SHAK Date Analyzed: 04-20-94

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) mg/Kg	Q
	HBH (1)	25	U

U: Concentration of analyte is less than the value given.

(1): High Boiling Hydrocarbon (HBH) is quantitated as if it is Fuel Oil #2.

FORM I HBH

Verified 5/6/1/94

1D
HBH ANALYSIS DATA SHEET

EPA SAMPLE NO.
B09WK0

Lab Name: ITAS-St. Louis
Contract: 519.04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix : (soil/water) SOIL
Lab Sample ID: 4769-001

Sample wt/vol: 20.1 (g/ml) g
Lab File ID: _____

Level: (low/med) LOW
Date Sampled: 03-22-94

% Moisture: not dec. 17 dec. _____
Date Extracted: 04-05-94

Extraction: (SepF/Cont/Sonc/Shak) SHAK
Date Analyzed: 04-07-94

GPC Cleanup: (Y/N) N pH: _____
Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) mg/Kg	Q
	HBH (1)	30	U

U: Concentration of analyte is less than the value given.

(1): High Boiling Hydrocarbon (HBH) is quantitated as if it is Fuel Oil #2.

FORM I HBH

Verified
5/11/94

9713508.2672

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

W0014

9413508.2677

HANFORD ANALYTICAL SERVICES MANAGEMENT

RECORD OF DISPOSITION

ROD-94-0066
Record of Disposition No.

DATE: March 28, 1994	LABORATORY: IT
PROJECT TITLE/NO.: 200-UP-2/SAF 94-065	NCR NO.: n/a

SAMPLE IDENTIFICATION NUMBERS: All samples to be analyzed for Kerosene and/or Titanium.

DESCRIPTION OF EVENT:

Clarification is being provided to the laboratory for samples being analyzed for Kerosene and Titanium (Ti).

DISPOSITION OF SAMPLES:

IT will analyze for Kerosene by performing a modification to method 8015 (TPH) in which the peak search is started earlier to pick up the kerosene. As an additional element to the metals TAL, Ti will be analyzed for using ICP methodology.

APPROVAL SIGNATURES:

J. A. Lerch — 3/28/94
CAS Project Coordinator (Print/Sign Name) — Date

M. A. Wasemiller — 3/28/94
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

9713508.2674

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

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

May 12, 1994

Attention: J. A. Lerch

Project number	:	519.04
Date Received by Lab	:	March 25 & 30, 1994 and April 1 & 6, 1994
Number of Samples	:	Seven (7)
Sample Type	:	Soil
SDG Number	:	W0014

I. Introduction

On March 25 and 30 and April 1 and 6, 1994, a total of seven (7) soil samples were received by ITAS-Richland and transferred to ITAS-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
4769-001	BO9WK0	40349101	Soil	03/25/94
4796-001	BOBFM8	40354501	Soil	03/30/94
4796-002	BOBFM9	40354502	Soil	03/30/94
4817-001	BOBKP4	40401801	Soil	04/01/94
4846-001	BOBKQ0	40409001	Soil	04/06/94
4846-002	BOBKM9	40409002	Soil	04/06/94
4846-003	BOBKN6	40409003	Soil	04/06/94

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: VOA, BNA and Metals including Cyanide by CLP/90 protocol. Chloride, Sulfate and Fluoride by EPA method 300.0. Nitrate by EPA method 353.1. Total Petroleum Hydrocarbons (Kerosene) by method 8015.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike/Matrix Spike Duplicate or Duplicate analyses were performed for all analyses based on protocol.

IV. Comments

The samples received by ITAS-St. Louis on 04/07/94 arrived in a cooler whose internal temperature was 1°C. The laboratory proceeded with the analyses per the client's request.

Samples QCBLK34692, BO9WK0 (4769-001MS, -001MSD), BOBFM8 (4796-001) and BOBKPP4 (4817-001) for BNA were analyzed after a continuing calibration which failed criteria for N-Nitroso-di-n-propylamine in that the %D for this compound was 48.3%, above the 40% maximum. See NCM SL-94-0228. It is noteworthy that this compound gave acceptable recoveries in the MS and MSD at 68% and 68%, similar to the other compounds, indicating that there was no affect on the results. This compound was not detected in the unspiked samples.

For Fluoride sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

For Cyanide sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

The Matrix Spike and Duplicate analyses for Total Organic Carbon were inadvertently overlooked when the samples were originally analyzed. Upon review of the data package this nonconformance was noted and the analyses were performed at this time. However, the analyses were performed out of holding time. Results for the sample were performed within holding time. All results are reported, but charges for the matrix spike and duplicate do not appear on the invoice. See nonconformance memo SL-94-0241.

Westinghouse Hanford Company
May 12, 1994
Project Number: 519.04
Page 3

Kerosene results are noted as High Boiling Hydrocarbons on the TPH forms. They are quantitated against a Fuel Oil #2 (diesel) standard curve which is proved to have the same response factors as that of Kerosene (Fuel Oil #1) within minimal error. The response factor correlation is demonstrated by the running of a single, mid-level calibration standard at the beginning of the analytical batch. This calibration verification data is contained in the data package. This procedure is outlined in ITAS-St. Louis SOP SL4055.

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
z:\annelars\hanw0014.nar

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006468

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations Z Ditch
Ice Chest No. SWL 415
Bill of Lading/Airbill No. N/A
Offsite Property No. W94-C-0367 #47
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
404018 01 A	BOBKP4	S	3-30-94	1315	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKP4	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKP4	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKP4	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKP4	S			(1) 125ml G	Cyanide	CPL	
F	BOBKP4	S			(1) 125ml Gs	TPH Diesel Range	8015m	
G	BOBKP4	S			(1) 125ml aGs	TOC	9060	
404019 01	BOBKP4	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-1-94	1030	RW Arnold RW Arnold
RW Arnold RW Arnold	4-1-94	1210	Tom Gilmore ITAS

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006445

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. [illegible]
Bill of Lading/Airbill No. N/A
Offsite Property No. N/A
Method of Shipment Government truck
Field Logbook No. N/A
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
BOBFM8	S	3 24.94	1300	(1) 250ml aGs	VOA	CLP	
BOBFM8	S			(1) 250ml aGs	Semi-VOA	CLP	
BOBFM8	S			(1) 250ml ~~aGs~~ P	Metals -CLP TAL Titanium Mercury 3 24 94	CPL	
BOBFM8	S			(1) 125ml aGs	Anions F, Cl, SO_4	EPA 300.0	
BOBFM8	S			(1) 125ml aGs	NO_2 NO_3	EPA 353.2	
BOBFM8	S			(1) 125ml aGs	Cyanide	CPL	
BOBFM8	S			(1) 125ml aGs	Kerosene	8015M	
BOBFM8	S	3-24-94	1300	(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		
BOBFM9	S	3 24.94	0900	(1) 250ml aGs	VOA		

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
[signature] Roy T Sickle	3-25-94	1530	[signature]
[signature]	3-25-94	0930	R Boyd IT 3-29-94 1130

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2678

U-21

0000022

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006456

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP-2 PAC 3 30-94
Sampling Locations ~~216-U-8 Crib~~ 200 UP-2 PAC 3 30-94
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS
15 April 94
STAND ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKM9	S	4-4-94	1110	(1) 250ml aG	Semi-VOA CLP	
BOBKM9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury 15 Apr CLP ~~CPI~~	
BOBKM9	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKM9	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKM9	S			(1) 125ml G	Cyanide 15 Apr CLP ~~CPI~~	
BOBKM9	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKM9~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
BOBKM9	S			(1) 1000ml Poly	Gross Alpha/Beta, ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
R.T. Sickle	4-6-94	1020	R Boyd JT 4-6-94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2679

U-22

0000036

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006463

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No.
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 [illegible]
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8-Crib~~ [illegible]
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS
SAP 5 Apr 94
STAND ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKN6	S	4-4-94	1030	(1) 250ml aG	Semi-VOA — SAP 5 Apr 94 CLP	
BOBKN6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury — CLP ~~CPL~~	
BOBKN6	S			(1) 125ml G	Anions F, Cl, SO_4 — EPA 300.0	
BOBKN6	S			(1) 125ml G	NO_2 NO_3 — EPA 353.2	
BOBKN6	S			(1) 125ml G	Cyanide — SAP 5 Apr 94 CLP ~~CPL~~	
BOBKN6	S			(1) 125ml Gs	TPH Diesel Range — 8015m'	
~~BOBKN6~~	S			~~(1) 125ml aGs~~	~~TOC~~ [illegible] 4-4-94 — 9060	
BOBKN6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

SAP 5 Apr 94

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
R.T. Sickle	4-6-94	1020	R. Boyd 4-6-94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000037

9713508.2680

U-23

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006475

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations U1/U2 Tile Field
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS
SHIP ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKQ0	S	4.4.94	1110	(1) 250ml aG	Semi-VOA CLP	
BOBKQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ~~CPL~~	
BOBKQ0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKQ0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKQ0	S			(1) 125ml G	Cyanide ~~CPL~~	
BOBKQ0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4.4.94 9060	
BOBKQ0	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-6-94	1020	R. Boyd 4-6-94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9413508.2681

C-24

0000038

9713508.2692

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 3-22-94

Ice Chest No.: SML-127 — Field Logbook No.: EFL-1115

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: Government vehicle

Shipped to: IT, Richland

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) SAF # 94-065 NONE NOTED

Sample Identification

1) B09WK0

40349101

~~40349~~ 3/25/94 ~~00~~

A 1,250ml P:CLP;TAL Metals,Hg,Ti
B 1,250ml Gs:VOA CLP
C 1,250ml aG:Semi-VOA CLP
D 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
E 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
F 1,250ml aGs:PCB/Pest (8080)
G 1,125ml G:Cyanide CLP
H 1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

~~40349005~~ 3/25/94 40349201

2) B09WK1

~~40349~~ 3/25/94

A 1,250ml P:CLP;TAL Metals,Hg,Ti
B 1,250ml Gs:VOA CLP
C 1,250ml aG:Semi-VOA CLP
D 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
E 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,250ml aGs:PCB/Pest (8080)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

~~40349006~~ 3/25/94

0000013

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
3-24-94 Lorene E. Rogers 1310	[illegible]	3-25-94 10 [illegible]
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

9713508.2693

Attachment 5

Data Validation Supporting Documentation

GENERAL GC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200 UP 2	DATA PACKAGE: W0014-ITC-025
VALIDATOR: C. Jensen / LAB: ITC	DATE: 6/11/94
CASE:	SDG:

ANALYSES PERFORMED					
☐ 8010	☒ 8015 m	☐ 8020	☐ 8021	8140	8141
☐ 8150	☐ 8151	☐ WTPH-HCID	☐ WTPH-G	☐ WTPH-D	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX: Soils

B0TK44 B0TK00
B0TFM8 - B0YWK0 -
B0TKM4 -
B0TKJ6

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments: Verification performed by WHC

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

C-27

GENERAL GC DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

3.1 INITIAL CALIBRATION

Was an initial calibration performed? . . . . . Yes No N/A

Are %RSD values for calibration or response factors acceptable? . . . . . Yes No N/A

Comments:

3.2 CONTINUING CALIBRATION

Was a continuing calibration check performed? . . . . . Yes No N/A

Are %D values for calibration or response factors acceptable? . Yes No N/A

Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments:

5. ACCURACY

Were surrogates analyzed? . . . . . Yes No N/A

Are surrogate recoveries acceptable? . . . . . Yes No N/A

Were MS/MSD samples analyzed? . . . . . Yes No N/A

Are MS/MSD recoveries acceptable? . . . . . Yes No N/A

Were LCS samples analyzed? . . . . . Yes No N/A

Are LCS recoveries acceptable? . . . . . Yes No N/A

GENERAL GC DATA VALIDATION CHECKLIST

Comments: Surrogate limits were not determined by the laboratory limits of 50-150%R were used and all surrogate recoveries were acceptable. LCS recoveries were also within 50-150%; same as above for MS/MSD.

6. PRECISION

Are MS/MSD sample RPD values acceptable? . . . . . (Yes) No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No (N/A)

Are field split RPD values acceptable? . . . . . Yes No (N/A)

Comments:

7. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . (Yes) No N/A

Is compound quantitation acceptable? . . . . . (Yes) No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . (Yes) No N/A

Are all results supported in the raw data? . . . . . (Yes) No N/A

Do results meet the CRQLs? See note (1) . . . . . (Yes) No N/A

Comments: (1) The reporting limit for this analysis by ITC is .25 mg/kg.

HOLDING TIME SUMMARY

SDG:	VALIDATOR: C. Jensen	DATE: 6/11/94	PAGE 1 OF 1
COMMENTS: W0014-ITC-075			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09KP4	Kerosene	3/30/94	4/5/94	4/7/94	6	2	none
B09FM8		3/24/94	4/5/94	4/7/94	12	2	
~~B09FM9~~		3/24/94	6/11/94				
B09KW9		4/4/94	4/12/94	4/21/94	8	9	
B09KN6		4/4/94		4/21/94	8	9	
B09KQ0		4/4/94		4/20/94	8	8	
B09WK0		3/22/94	4/5/94	4/7/94	14	2	

630

9713508.2608

MEMORANDUM

JUN 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record

June 6, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: VOLATILE DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0014-ITC-025 (923-E418 W0014V.UP2)

INTRODUCTION

This memorandum presents the results of data validation on data package W0014-ITC-025 prepared by International Technology Corporation (IT) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09WK0	03/22/94	SOIL	SEE NOTE 1
B0BFM8	03/24/94	SOIL	
B0BFM9	03/24/94	SOIL	

Notes: 1. The samples were analyzed for target compound list (TCL) volatile organics.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

RECEIVED JUN 16 1994 VALIDATION DOCUMENTATION SDLA

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

01

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of three samples were validated in this data package with a total of 99 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets the normal work plan objectives of 90 percent.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Laboratory Blank

- Methylene chloride was detected in the laboratory blanks. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

TENTATIVELY IDENTIFIED COMPOUND EVALUATION

Tentatively identified compounds (TICs) reported by the laboratory were evaluated during validation and qualified as follows:

- TICs were detected in the sample(s) and determined to be valid, resulting in qualification of the results as presumptive and valid (JN).

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9713508.2690

Attachment 1

Glossary of Data Reporting Qualifiers

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UJN - Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

9713508.2692

Attachment 2

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY

SDG:	VALIDATOR: CJensen	DATE: 6/6/94	PAGE 1 OF 1
COMMENTS: VOA pkg W0014-ITC-025			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene Chloride	U	B0BFM18, B0BFM19	Laboratory blank

9713508.2694

Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

Validated Data Summary, Data Package: W0014-ITC-025

	Samp#	B09WK0		B0BFM8		B0BFM9	
	Date	3-22-94		3-24-94		3-24-94	
	Location	---		216-U-8		216-U-8	
	Depth	---		---		---	
	Type	SOIL		SOIL		SOIL	
	Comments	---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	UG/KG	12.000	U	11.000	U	10.000	U
BROMOMETHANE	UG/KG	12.000	U	11.000	U	10.000	U
VINYL CHLORIDE	UG/KG	12.000	U	11.000	U	10.000	U
CHLOROETHANE	UG/KG	12.000	U	11.000	U	10.000	U
METHYLENE CHLORIDE	UG/KG	12.000	U	11.000	U	10.000	U
ACETONE	UG/KG	12.000	U	17.000		11.000	
CARBON DISULFIDE	UG/KG	12.000	U	11.000	U	10.000	U
1,1-DICHLOROETHENE	UG/KG	12.000	U	11.000	U	10.000	U
1,1-DICHLOROETHANE	UG/KG	12.000	U	11.000	U	10.000	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	12.000	U	11.000	U	10.000	U
CHLOROFORM	UG/KG	12.000	U	11.000	U	10.000	U
1,2-DICHLOROETHANE	UG/KG	12.000	U	11.000	U	10.000	U
2-BUTANONE	UG/KG	12.000	U	11.000	U	10.000	U
1,1,1-TRICHLOROETHANE	UG/KG	12.000	U	11.000	U	10.000	U
CARBON TETRACHLORIDE	UG/KG	12.000	U	11.000	U	10.000	U
VINYL ACETATE	UG/KG	12.000	U	11.000	U	10.000	U
BROMODICHLOROMETHANE	UG/KG	12.000	U	11.000	U	10.000	U
1,2-DICHLOROPROPANE	UG/KG	12.000	U	11.000	U	10.000	U
CIS-1,3-DICHLOROPROPENE	UG/KG	12.000	U	11.000	U	10.000	U
TRICHLOROETHENE	UG/KG	12.000	U	11.000	U	10.000	U
DIBROMOCHLOROMETHANE	UG/KG	12.000	U	11.000	U	10.000	U
1,1,2-TRICHLOROETHANE	UG/KG	12.000	U	11.000	U	10.000	U
BENZENE	UG/KG	12.000	U	11.000	U	10.000	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	12.000	U	11.000	U	10.000	U
BROMOFORM	UG/KG	12.000	U	11.000	U	10.000	U
4-METHYL-2-PENTANONE	UG/KG	12.000	U	11.000	U	10.000	U
2-HEXANONE	UG/KG	12.000	U	11.000	U	10.000	U
TETRACHLOROETHENE	UG/KG	12.000	U	11.000	U	10.000	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	12.000	U	11.000	U	10.000	U
TOLUENE	UG/KG	12.000	U	3.000	J	10.000	U
CHLOROBENZENE	UG/KG	12.000	U	11.000	U	10.000	U
ETHYLBENZENE	UG/KG	12.000	U	11.000	U	10.000	U
STYRENE	UG/KG	12.000	U	11.000	U	10.000	U
XYLENES (TOTAL)	UG/KG	12.000	U	11.000	U	10.000	U

9713508.2685

9713508.2696

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BFM8

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

Z16-U-8 CMB

Matrix: (soil/water) SOIL Lab Sample ID: 4796-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: E8472

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: not dec. 10 Date Analyzed: 04/06/94

GC Column: DB-624 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	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	11 ~~3~~	~~BJ~~ U
67-64-1	Acetone	17	
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	3	J
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

Q

Verified 6/06/94

0009

FORM I VOA 3/90

0006

9713508.2697

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0BFM8

216-U-8 Cr.b

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4796-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: E8472

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: not dec. 10 Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1.	UNKNOWN	19.35	53	~~J~~	JN
2.	UNKNOWN	22.15	63	~~J~~	JN
3.	UNKNOWN	24.86	17	~~J~~	JN

FORM I VOA-TIC

Verified 9/6/94

9713508.2698

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0BFM9

216-U-8 Crib

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4796-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: E8473

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: not dec. .02 5/6/94 Date Analyzed: 04/06/94

GC Column: DB-624 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	10 ~~2~~	~~BJ~~ U
67-64-1	Acetone	11	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

FORM I VOA

Verified 5/6/94

9713508.2699

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0BFM9

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

216-U-8 Crib

Matrix: (soil/water) SOIL Lab Sample ID: 4796-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: E8473

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: not dec. Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1.	UNKNOWN	19.35	47	~~J~~	JN
2.	UNKNOWN	21.12	7	~~J~~	JN
3.	UNKNOWN	22.14	120	~~J~~	JN
4.	UNKNOWN	22.34	9	~~J~~	JN
5.	UNKNOWN	24.85	6	~~J~~	JN

FORM I VOA-TIC

Verified 9/6/94

9713508.2700

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B8148

Level: (low/med) LOW Date Received: 03/25/94

% Moisture: not dec. 17 Date Analyzed: 03/29/94

GC Column: DB-624 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	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	12	U
67-64-1	Acetone	12	U
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

Verified GJ 6/6/94

9713508.2701

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B8148

Level: (low/med) LOW Date Received: 03/25/94

% Moisture: not dec. 17 Date Analyzed: 03/29/94

GC Column: DB-624 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	22.65	7 ~~9~~	~~J~~

Q

JN

FORM I VOA-TIC

Verified 6/6/94

3/90 14

~~0011~~

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

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

May 12, 1994

Attention: J. A. Lerch

Project number	:	519.04
Date Received by Lab	:	March 25 & 30, 1994 and April 1 & 6, 1994
Number of Samples	:	Seven (7)
Sample Type	:	Soil
SDG Number	:	W0014

I. Introduction

On March 25 and 30 and April 1 and 6, 1994, a total of seven (7) soil samples were received by ITAS-Richland and transferred to ITAS-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
4769-001	BO9WK0	40349101	Soil	03/25/94
4796-001	BOBFM8	40354501	Soil	03/30/94
4796-002	BOBFM9	40354502	Soil	03/30/94
4817-001	BOBKP4	40401801	Soil	04/01/94
4846-001	BOBKQ0	40409001	Soil	04/06/94
4846-002	BOBKM9	40409002	Soil	04/06/94
4846-003	BOBKN6	40409003	Soil	04/06/94

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.

Regional Office
13715 N. Rider Trail • Earth City, Missouri 63045-1205 • 314-298-8566 • FAX: 314-298-8757

IT Corporation is a wholly owned subsidiary of International Technology Corporation

---

Analyses requested: VOA, BNA and Metals including Cyanide by CLP/90 protocol. Chloride, Sulfate and Fluoride by EPA method 300.0. Nitrate by EPA method 353.1. Total Petroleum Hydrocarbons (Kerosene) by method 8015.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike/Matrix Spike Duplicate or Duplicate analyses were performed for all analyses based on protocol.

IV. Comments

The samples received by ITAS-St. Louis on 04/07/94 arrived in a cooler whose internal temperature was 1°C. The laboratory proceeded with the analyses per the client's request.

Samples QCBLK34692, BO9WK0 (4769-001MS, -001MSD), BOBFM8 (4796-001) and BOBKPP4 (4817-001) for BNA were analyzed after a continuing calibration which failed criteria for N-Nitroso-di-n-propylamine in that the %D for this compound was 48.3%, above the 40% maximum. See NCM SL-94-0228. It is noteworthy that this compound gave acceptable recoveries in the MS and MSD at 68% and 68%, similar to the other compounds, indicating that there was no affect on the results. This compound was not detected in the unspiked samples.

For Fluoride sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

For Cyanide sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

The Matrix Spike and Duplicate analyses for Total Organic Carbon were inadvertently overlooked when the samples were originally analyzed. Upon review of the data package this nonconformance was noted and the analyses were performed at this time. However, the analyses were performed out of holding time. Results for the sample were performed within holding time. All results are reported, but charges for the matrix spike and duplicate do not appear on the invoice. See nonconformance memo SL-94-0241.

Kerosene results are noted as High Boiling Hydrocarbons on the TPH forms. They are quantitated against a Fuel Oil #2 (diesel) standard curve which is proved to have the same response factors as that of Kerosene (Fuel Oil #1) within minimal error. The response factor correlation is demonstrated by the running of a single, mid-level calibration standard at the beginning of the analytical batch. This calibration verification data is contained in the data package. This procedure is outlined in ITAS-St. Louis SOP SL4055.

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
z:\annelars\hanw0014.nar

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006445

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. [illegible]
Bill of Lading/Airbill No. N/A
Offsite Property No. N/A
Method of Shipment Government truck
Field Logbook No. N/A
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
BOBFM8	S	3 24.94	1300	(1) 250ml aGs	VOA	CLP	
BOBFM8	S			(1) 250ml aGs	Semi-VOA	CLP	
BOBFM8	S			(1) 250ml ~~aGs~~ P	Metals -CLP TAL Titanium Mercury 3-24-94	CPL	
BOBFM8	S			(1) 125ml aGs	Anions F, Cl, SO_4	EPA 300.0	
BOBFM8	S			(1) 125ml aGs	NO_2 NO_3	EPA 353.2	
BOBFM8	S			(1) 125ml aGs	Cyanide	CPL	
BOBFM8	S			(1) 125ml aGs	Kerosene	8015M	
BOBFM8	S	3-24-94	1300	(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		
BOBFM9	S	3 24.94	0900	(1) 250ml aGs	VOA		

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
[signature] Roy T Sickle	3-25-94	1530	[signature]
[signature]	3-26-94	0970	R Boyd LT 3-29-94 1130

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2706

0000022

19

9713508.2707

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 3-22-94

Ice Chest No.: SML-127 — Field Logbook No.: EFL-1115

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: Government vehicle

Shipped to: IT, Richland

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) SAF # 94-065 NONE NOTED

Sample Identification

1) 40349101 — B09WK0

40349101 3/25/94

A 1,250ml P:CLP;TAL Metals,Hg,Ti
B 1,250ml Gs:VOA CLP
C 1,250ml aG:Semi-VOA CLP
D 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
E 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
F 1,250ml aGs:PCB/Pest (8080)
G 1,125ml G:Cyanide CLP
H 1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

40349005 3/25/94
40349201

2) B09WK1

40349201

A 1,250ml P:CLP;TAL Metals,Hg,Ti
B 1,250ml Gs:VOA CLP
C 1,250ml aG:Semi-VOA CLP
D 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
E 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,250ml aGs:PCB/Pest (8080)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

40349006 3/25/94

0000013

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
3-24-94 Lorene E. Rogers 1310	[illegible]	3-25-94 10 [illegible]
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

9715508.2708

Attachment 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200 WP2	DATA PACKAGE: W0014-ITC-025	
VALIDATOR: C Jensen	LAB: ITC	DATE: 6/6/94
CASE:	SDG:	

ANALYSES PERFORMED					
☒ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (packed column)	☐ CLP Semivolatiles	☐ SW-846 8270 (cap column)	☐ SW-846 (packed column)
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX soils / 609FM8
609FM9
609WK0

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments: Verification performed by WHC

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION

Is the GC/MS tuning/performance check acceptable? . . . . . (Yes) No N/A

Are initial calibrations acceptable? . . . . . (Yes) No N/A

Are continuing calibrations acceptable? . . . . . (Yes) No N/A

Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . (Yes) No N/A

Are laboratory blank results acceptable? . . . . . Yes (No) N/A

Were field/trip blanks analyzed? . . . . . Yes No (N/A)

Are field/trip blank results acceptable? . . . . . Yes No (N/A)

Comments: VBLK01 - 15 µg/kg methyl acetate associated with B09WK0
VBLK02 - 35 µg/kg methyl assoc. with B0BFM8, B0BFM9
methyl for B0BFM8 and B0BFM9 qualified U+ elevated RQL.
There were no TICs detected in the lab. blanks.

5. ACCURACY

Were surrogates/System Monitoring Compounds analyzed? . . . . . (Yes) No N/A

Are surrogate/System Monitoring Compound recoveries acceptable? (Yes) No N/A

Were MS/MSD samples analyzed? . . . . . (Yes) No N/A

Are MS/MSD results acceptable? . . . . . (Yes) No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments:

7. SYSTEM PERFORMANCE

Were internal standards analyzed? . . . . . Yes No N/A

Are internal standard areas acceptable? . . . . . Yes No N/A

Are internal standard retention times acceptable? . . . . . Yes No N/A

Comments:

8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . Yes No N/A

Is compound quantitation acceptable? . . . . . Yes No N/A

Comments:

9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Do results meet the CRQLs? . . . . . Yes No N/A

Has the laboratory properly identified and coded all TIC? . . . Yes No N/A

Comments: One tic at RT 22.65, sample P209WK0, was found at 7 ug/kg but reported at 9. The value has been corrected on FORM 1E.

HOLDING TIME SUMMARY

SDG:	VALIDATOR: Jungen	DATE: 6/6/94	PAGE 1 OF 1
COMMENTS: VOA pkg W0014-IFC-025			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0PWK0	VOA	3/22/94	6/6/94	3/29/94	6/6/94	7	none
B0BFM8	↓	3/24/94	6/6/94	4/6/94	6/6/94	13	↓
B0BFM9	↓	3/24/94		4/6/94		13	

9713508.2712

9713508.2715

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK02

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: V76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: QCBLK35232

Sample wt/vol: 5.00 (g/mL) G Lab File ID: E8469

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 04/06/94

GC Column: DB-624 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	3	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

x10 = 30

FORM I VOA

Verified 6/6/94

3/90

0014

9713508.2714

JUN 1994
RECEIVED
TQO

MEMORANDUM

TO: 200-UP-2 Project QA Record

June 8, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: SEMIVOLATILES DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0014-ITC-025 (923-E418 W0014B.UP2)

INTRODUCTION

This memorandum presents the results of data validation on data package W0014-ITC-025 prepared by International Technology Corporation (IT) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

RECEIVED
JUN 16 1994
VALIDATION DOCUMENTATION
SDLA

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09WK0	03/22/94	SOIL	SEE NOTE 1
B0BFM8	03/24/94	SOIL	
B0BKP4	03/30/94	SOIL	
B0BKM9	04/04/94	SOIL	
B0BKN6	04/04/94	SOIL	
B0BKQ0	04/04/94	SOIL	

Notes: 1. The samples were analyzed for target compound list (TCL) semivolatile organics.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met with the exception of deficiencies identified below.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of six samples were validated in this data package with a total of 384 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets the normal work plan objectives of 90 percent.

MAJOR DEFICIENCIES

There were no major deficiencies identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Calibrations

- The initial calibration relative response factor (RRF) was unacceptable for benzo(k)fluoranthene. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

- The continuing calibration percent differences for N-nitroso-di-n-propylamine and 2-chloronaphthalene were unacceptable. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

Laboratory Blanks

- Bis(2-ethylhexyl)phthalate and Di-n-butylphthalate were detected in the laboratory blanks. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

TENTATIVELY IDENTIFIED COMPOUND EVALUATION

Tentatively identified compounds (TICs) reported by the laboratory were evaluated during validation and qualified as follows:

been qualified due to associated blank contamination and have been determined to be presumptive and valid (UJN).

- TICs were detected in the sample(s) and identified as common laboratory contaminants, resulting in qualification of the results as unusable (R) as shown in Attachment 3.

- TICs were detected in the sample(s) and determined to be valid, resulting in qualification of the results as presumptive and valid (JN).

- TICs reported by the laboratory as "unknown" have been corrected to "siloxane", resulting from column bleed, following review of the spectra and qualified as unusable (R .

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9713508.2717

Attachment 1

Glossary of Data Reporting Qualifiers

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UJN - Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

9715508.2219

Attachment 2

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY

SDG:	VALIDATOR: Cjensen	DATE: 6/6/94	PAGE 1 OF 1
COMMENTS: SVOA WO014-ITC-025			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
benzo(k)fluoranthene	~~UR~~ UJ	SBLK01, BOBWK0	ICAL RRF
↓	↓	BOBFM8, BOBKP4	< limit
		SBLK02	↓
N-Nitroso-Di-n-propylamine	UJ	SBLK01	CCAL %D > ~~30~~ 25 6/7/94
N-nitroso-Di-n-propylamine	UJ	BOBWK0, BOBFM8, BOBKP4, SBLK02, 6/7/94 ~~BOBWK0M5, MISD~~	CCAL %D > 25
↓	↓		↓
2-chloronaphthalene	UJ	BOBKQ0, BOBKM9, BOBKN6, SBLK03	CCAL %D > 25
↓	↓		↓
bis(2 ethylhexyl)phthalate	U	BOBKM9	SBLK01
bis(2 ethylhexyl)phthalate	U	BOBKM9, BOBKQ0	SBLK03
Di-n-butylphthalate	U	BOBKM9, BOBKN6, BOBKQ0	SBLK03

9713508.2721

Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

Validated Data Summary, Data Package: W0014-ITC-025

	Samp#	B09WK0		B0BFM8		B0BKM9		B0BKN6		B0BKP4		B0BKQ0	
	Date	3-22-94		3-24-94		4-4-94		4-4-94		3-30-94		4-4-94	
	Location	---		216-U-8		U1/U2 TILE FIELD		U1/U2 TILE FIELD		Z DITCH		U1/U2 TILE FIELD	
	Depth	---		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PHENOL	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
2-CHLOROPHENOL	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
1,3-DICHLOROBENZENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
1,4-DICHLOROBENZENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
1,2-DICHLOROBENZENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
2-METHYLPHENOL	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
BIS(2-CHLOROISOPROPYL)ETHER	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
4-METHYLPHENOL	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	400.000	UJ	370.000	UJ	330.000	U	340.000	U	330.000	UJ	340.000	U
HEXACHLOROETHANE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
NITROBENZENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
ISOPHORONE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
2-NITROPHENOL	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
2,4-DIMETHYLPHENOL	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
2,4-DICHLOROPHENOL	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
1,2,4-TRICHLOROBENZENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
NAPHTHALENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
4-CHLOROANILINE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
HEXACHLOROBUTADIENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
2-METHYLNAPHTHALENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
2,4,6-TRICHLOROPHENOL	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
2,4,5-TRICHLOROPHENOL	UG/KG	960.000	U	890.000	U	810.000	U	820.000	U	810.000	U	810.000	U
2-CHLORONAPHTHALENE	UG/KG	400.000	U	370.000	U	330.000	UJ	340.000	UJ	330.000	U	340.000	UJ
2-NITROANILINE	UG/KG	960.000	U	890.000	U	810.000	U	820.000	U	810.000	U	810.000	U
DIMETHYLPHTHALATE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
ACENAPHTHYLENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
2,6-DINITROTOLUENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
3-NITROANILINE	UG/KG	960.000	U	890.000	U	810.000	U	820.000	U	810.000	U	810.000	U

Verified 5/10/94

9713508.2722

5

Validated Data Summary, Data Package: W0014-ITC-025

	Samp#	B09WK0		B0BFM8		B0BKM9		B0BKN6		B0BKP4		B0BKQ0	
	Date	3-22-94		3-24-94		4-4-94		4-4-94		3-30-94		4-4-94	
	Location	---		216-U-8		U1/U2 TILE FIELD		U1/U2 TILE FIELD		Z DITCH		U1/U2 TILE FIELD	
	Depth	---		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ACENAPHTHENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
2,4-DINITROPHENOL	UG/KG	960.000	U	890.000	U	810.000	U	820.000	U	810.000	U	810.000	U
4-NITROPHENOL	UG/KG	960.000	U	890.000	U	810.000	U	820.000	U	810.000	U	810.000	U
DIBENZOFURAN	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
2,4-DINITROTOLUENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
DIETHYLPHTHALATE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
FLUORENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
4-NITROANILINE	UG/KG	960.000	U	890.000	U	810.000	U	820.000	U	810.000	U	810.000	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	960.000	U	890.000	U	810.000	U	820.000	U	810.000	U	810.000	U
N-NITROSODIPHENYLAMINE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
HEXACHLOROBENZENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
PENTACHLOROPHENOL	UG/KG	960.000	U	890.000	U	810.000	U	820.000	U	810.000	U	810.000	U
PHENANTHRENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
ANTHRACENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
CARBAZOLE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
DI-N-BUTYLPHTHALATE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
FLUORANTHENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
PYRENE	UG/KG	80.000	J	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
BUTYLBENZYLPHTHALATE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
3,3'-DICHLOROBENZIDINE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
BENZO(A)ANTHRACENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
CHRYSENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
DI-N-OCTYLPHTHALATE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
BENZO(B)FLUORANTHENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
BENZO(K)FLUORANTHENE	UG/KG	400.000	UJ	370.000	UJ	330.000	U	340.000	U	330.000	UJ	340.000	U
BENZO(A)PYRENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
DIBENZ(A,H)ANTHRACENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U
BENZO(G,H,I)PERYLENE	UG/KG	400.000	U	370.000	U	330.000	U	340.000	U	330.000	U	340.000	U

Verified
5/10/94

9713508.2723

9713508.2724

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
u1/u2 Tile Field

B0BKM9

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-002

Sample wt/vol: 30.20 (g/mL) G Lab File ID: D5610

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Q
108-95-2	Phenol	330	U	
111-44-4	bis(2-Chloroethyl)Ether	330	U	
95-57-8	2-Chlorophenol	330	U	
541-73-1	1,3-Dichlorobenzene	330	U	
106-46-7	1,4-Dichlorobenzene	330	U	
95-50-1	1,2-Dichlorobenzene	330	U	
95-48-7	2-Methylphenol	330	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U	
106-44-5	4-Methylphenol	330	U	
621-64-7	N-Nitroso-Di-n-Propylamine	330	~~U~~	5/6/94 ~~UJ~~ U
67-72-1	Hexachloroethane	330	U	
98-95-3	Nitrobenzene	330	U	
78-59-1	Isophorone	330	U	
88-75-5	2-Nitrophenol	330	U	
105-67-9	2,4-Dimethylphenol	330	U	
111-91-1	bis(2-Chloroethoxy)Methane	330	U	
120-83-2	2,4-Dichlorophenol	330	U	
120-82-1	1,2,4-Trichlorobenzene	330	U	
91-20-3	Naphthalene	330	U	
106-47-8	4-Chloroaniline	330	U	
87-68-3	Hexachlorobutadiene	330	U	
59-50-7	4-Chloro-3-Methylphenol	330	U	
91-57-6	2-Methylnaphthalene	330	U	
77-47-4	Hexachlorocyclopentadiene	330	U	
88-06-2	2,4,6-Trichlorophenol	330	U	
95-95-4	2,4,5-Trichlorophenol	810	U	
91-58-7	2-Chloronaphthalene	330	~~U~~	UJ
88-74-4	2-Nitroaniline	810	U	
131-11-3	Dimethyl Phthalate	330	U	
208-96-8	Acenaphthylene	330	U	
606-20-2	2,6-Dinitrotoluene	330	U	
99-09-2	3-Nitroaniline	810	U	
83-32-9	Acenaphthene	330	U	

FORM I SV-1

verified 5/6/94

L-3/90

0029

9713508.2725

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
W/uz Tile Field

B0BKM9

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-002

Sample wt/vol: 30.20 (g/mL) G Lab File ID: D5610

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330 ~~78~~	~~BJ~~ U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330 ~~35~~	~~BJ~~ U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

Verified 5/6/94

FORM I SV-2

3/90 12

0023

9713508.2726

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
W/UZ Tile Field
B0BKM9

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-002

Sample wt/vol: 30.20 (g/mL) G Lab File ID: D5610

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1.	UNKNOWN Siloxane Column Bleed	6.79	300	~~J~~	R
2.	UNKNOWN	9.44	860	~~J~~	JN
3.	UNKNOWN	12.07	220	~~J~~	JN
4. 112958	Eicosane	27.06	150	JN	
5.	UNKNOWN	28.56	350	~~J~~	JN
6.	UNKNOWN	28.94	110	~~J~~	JN
7.	UNKNOWN	29.27	98	~~J~~	JN
8.	UNKNOWN	29.64	70	~~J~~	JN
9.	UNKNOWN	30.06	280	~~J~~	JN
10.	UNKNOWN	31.99	78	~~J~~	JN

FORM I SV-TIC

Verified cj 6/8/94

3/90

13

9713508.2727

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
Z16-U-8 Crib

B0BFM8

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4796-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8435

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	370	U
111-44-4	bis(2-Chloroethyl)Ether	370	U
95-57-8	2-Chlorophenol	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-Di-n-Propylamine	370	~~U~~ UJ
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2,4-Dimethylphenol	370	U
111-91-1	bis(2-Chloroethoxy)Methane	370	U
120-83-2	2,4-Dichlorophenol	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
59-50-7	4-Chloro-3-Methylphenol	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2,4,6-Trichlorophenol	370	U
95-95-4	2,4,5-Trichlorophenol	890	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	890	U
131-11-3	Dimethyl Phthalate	370	U
208-96-8	Acenaphthylene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
99-09-2	3-Nitroaniline	890	U
83-32-9	Acenaphthene	370	U

Q

Verified 5/6/8/94

~~AA10~~

9713508.2728

IC

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-U-8 Crib

B0BFM8

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4796-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8435

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	890	U
100-02-7	4-Nitrophenol	890	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	890	U
534-52-1	4,6-Dinitro-2-Methylphenol	890	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	890	U
85-01-8	Phenanthrene	370	U
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-n-Butylphthalate	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)Anthracene	370	U
218-01-9	Chrysene	370	U
117-81-7	bis(2-Ethylhexyl)Phthalate	370 ~~47~~	~~BJ~~ U
117-84-0	Di-n-Octyl Phthalate	370	U
205-99-2	Benzo(b)Fluoranthene	370	U
207-08-9	Benzo(k)Fluoranthene	370	~~U~~ ~~UR~~ U.
50-32-8	Benzo(a)Pyrene	370	U.
193-39-5	Indeno(1,2,3-cd)Pyrene	370	U
53-70-3	Dibenz(a,h)Anthracene	370	U
191-24-2	Benzo(g,h,i)Perylene	370	U

Q

5/6/94

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

verified 5/6/94

3/8d5

~~0020~~

9715508.2729

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
216-U-8 Crib

B0BFM8

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4796-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8435

Level: (low/med) LOW Date Received: 03/30/94

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.7

Number TICs found: 6

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1.	UNKNOWN	7.15	310	~~J~~	UJ
2.	UNKNOWN	16.80	900	~~J~~	JN
3.	UNKNOWN	19.76	230	~~J~~	UJ
4.	UNKNOWN	22.42	160	~~J~~	UJ
5.	UNKNOWN	24.51	82	~~J~~	JN
6.	UNKNOWN	28.59	140	~~J~~	JN

FORM I SV-TIC

verified 5/18/94

3/90 16

~~AA 27~~

9713508.2730

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
W1/W2 Tile Field

B0BKN6

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-003

Sample wt/vol: 30.10 (g/mL) G Lab File ID: D5611

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 3 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
108-95-2	Phenol	340	U	
111-44-4	bis(2-Chloroethyl)Ether	340	U	
95-57-8	2-Chlorophenol	340	U	
541-73-1	1,3-Dichlorobenzene	340	U	
106-46-7	1,4-Dichlorobenzene	340	U	
95-50-1	1,2-Dichlorobenzene	340	U	
95-48-7	2-Methylphenol	340	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U	
106-44-5	4-Methylphenol	340	U	
621-64-7	N-Nitroso-Di-n-Propylamine	340	~~U~~	~~UJ~~ U
67-72-1	Hexachloroethane	340	U	
98-95-3	Nitrobenzene	340	U	
78-59-1	Isophorone	340	U	
88-75-5	2-Nitrophenol	340	U	
105-67-9	2,4-Dimethylphenol	340	U	
111-91-1	bis(2-Chloroethoxy)Methane	340	U	
120-83-2	2,4-Dichlorophenol	340	U	
120-82-1	1,2,4-Trichlorobenzene	340	U	
91-20-3	Naphthalene	340	U	
106-47-8	4-Chloroaniline	340	U	
87-68-3	Hexachlorobutadiene	340	U	
59-50-7	4-Chloro-3-Methylphenol	340	U	
91-57-6	2-Methylnaphthalene	340	U	
77-47-4	Hexachlorocyclopentadiene	340	U	
88-06-2	2,4,6-Trichlorophenol	340	U	
95-95-4	2,4,5-Trichlorophenol	820	U	
91-58-7	2-Chloronaphthalene	340	~~U~~	UJ
88-74-4	2-Nitroaniline	820	U	
131-11-3	Dimethyl Phthalate	340	U	
208-96-8	Acenaphthylene	340	U	
606-20-2	2,6-Dinitrotoluene	340	U	
99-09-2	3-Nitroaniline	820	U	
83-32-9	Acenaphthene	340	U	

FORM I SV-1

8/89

P7

verified 5/6/94

9713508.2731

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
U1/U2 Tile Field

B0BKN6

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-003

Sample wt/vol: 30.10 (g/mL) G Lab File ID: D5611

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 3 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	820	U
100-02-7	4-Nitrophenol	820	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	820	U
534-52-1	4,6-Dinitro-2-Methylphenol	820	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	820	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340 ~~80~~	~~BJ~~ U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

verified 5/18/94

3/9018

9713508.2732

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
u1/u2 Tile Field

B0BKN6

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-003

Sample wt/vol: 30.10 (g/mL) G Lab File ID: D5611

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 3 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1.	UNKNOWN Siloxane Column Bleed	6.79	170	~~J~~	R
2.	UNKNOWN Siloxane Column Bleed	9.43	550	~~J~~	R
3.	UNKNOWN	12.06	200	~~J~~	JN
4.	UNKNOWN	27.06	160	~~J~~	JN
5.	UNKNOWN	28.56	400	~~J~~	JN
6.	UNKNOWN	28.92	82	~~J~~	JN
7.	UNKNOWN	29.27	93	~~J~~	JN
8.	UNKNOWN	29.74	93	~~J~~	JN
9.	UNKNOWN	30.06	320	~~J~~	JN
10.	UNKNOWN	32.32	100	~~J~~	JN

Verified
5/6/94

9713508.2733

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
2 Ditch

B0BKP4

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4817-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8436

Level: (low/med) LOW Date Received: 04/01/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	~~U~~ UJ
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethyl Phthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	330	U

Q

FORM I SV-1

3/90 20

Verified 5/6/94

0028

9713508.2734

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
Z Ditch

B0BKP4

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4817-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8436

Level: (low/med) LOW Date Received: 04/01/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	~~U~~
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

Q

5/6/94 ~~UR~~ U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

verified 5/6/94

3/90-21

~~0029~~

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
Ditch
B0BKP4

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4817-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8436

Level: (low/med) LOW Date Received: 04/01/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.	UNKNOWN	7.15	140	~~J~~	UJA
2.	UNKNOWN Siloxane Column Bleed	9.46	530	~~J~~	R
3.	UNKNOWN	12.10	110	~~J~~	JN
4.	UNKNOWN	19.76	380	~~J~~	UJA
5.	Unknown Phthalate	20.38	120	~~J~~ R	~~J~~
6.	UNKNOWN	20.89	72	~~J~~	UJA
7.	UNKNOWN	22.41	91	~~J~~	UJA

FORM I SV-TIC

revised 6/13/94
Verified 6/8/94

3/90 22

~~0030~~

9713508.2736

1B

Depth 4-6 5/6/94

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
w/uz Tile Field

B0BKQ0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: D5609

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	~~U~~ UJ
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	340	~~U~~ UJ
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethyl Phthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	340	U

Q

5/6/94

FORM I SV-1

3/90 23

verified 5/6/94

0031

9713508.2737

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Depth 5/6/8/94

EPA SAMPLE NO.
W1/W2 Tile Field

B0BKQ0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: D5609

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340 ~~100~~	~~BJ~~ U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340 ~~42~~	~~BJ~~ U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

verified 5/6/8/94

3/90 24

0032

Depth 6/8/94

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
W/UZ Tile Field

B0BKQ0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4846-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: D5609

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

Number TICs found: 12

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1.	UNKNOWN	6.79	140	~~J~~	JN
2.	UNKNOWN ~~Siloxane Column Bleed~~ Siloxane	7.44	190	~~J~~	R J
3.	UNKNOWN Siloxane Column Bleed	9.43	520	J	R
4.	UNKNOWN	12.06	130	~~J~~	JN
5.	UNKNOWN	27.06	150	~~J~~	JN
6.	UNKNOWN	28.57	380	~~J~~	JN
7.	UNKNOWN	29.29	100	~~J~~	JN
8.	UNKNOWN	29.52	85	~~J~~	JN
9.	UNKNOWN	29.64	130	~~J~~	JN
10.	UNKNOWN	29.76	160	~~J~~	JN
11.	UNKNOWN	30.06	330	~~J~~	JN
12.	UNKNOWN	32.01	92	~~J~~	JN

Verified 5/18/94

9713508.2739

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8432

Level: (low/med) LOW Date Received: 03/25/94

% Moisture: 17 decanted: (Y/N) N Date Extracted: 03/30/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-Di-n-Propylamine	400	~~U~~ UJ
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	bis(2-Chloroethoxy)Methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	960	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	960	U
131-11-3	Dimethyl Phthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U
99-09-2	3-Nitroaniline	960	U
83-32-9	Acenaphthene	400	U

verified 06/08/94

9713508.2740

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8432

Level: (low/med) LOW Date Received: 03/25/94

% Moisture: 17 decanted: (Y/N) N Date Extracted: 03/30/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	960	U
100-02-7	4-Nitrophenol	960	U
132-64-9	Dibenzofuran	400	U
121-14-2	2,4-Dinitrotoluene	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	960	U
534-52-1	4,6-Dinitro-2-Methylphenol	960	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	960	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-Butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	80	J
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	400	U
56-55-3	Benzo(a)Anthracene	400	U
218-01-9	Chrysene	400	U
117-81-7	bis(2-Ethylhexyl)Phthalate	110	J
117-84-0	Di-n-Octyl Phthalate	400	U
205-99-2	Benzo(b)Fluoranthene	400	U
207-08-9	Benzo(k)Fluoranthene	400	~~U~~
50-32-8	Benzo(a)Pyrene	400	U
193-39-5	Indeno(1,2,3-cd)Pyrene	400	U
53-70-3	Dibenz(a,h)Anthracene	400	U
191-24-2	Benzo(g,h,i)Perylene	400	U

Q

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 verified 5/6/94 3/90

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H8432

Level: (low/med) LOW Date Received: 03/25/94

% Moisture: 17 decanted: (Y/N) N Date Extracted: 03/30/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

Number TICs found: 0

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

P

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

FORM I SV-TIC

Verified 5/6/8/94

9715508.2742

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

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

May 12, 1994

Attention: J. A. Lerch

Project number	:	519.04
Date Received by Lab	:	March 25 & 30, 1994 and April 1 & 6, 1994
Number of Samples	:	Seven (7)
Sample Type	:	Soil
SDG Number	:	W0014

I. Introduction

On March 25 and 30 and April 1 and 6, 1994, a total of seven (7) soil samples were received by ITAS-Richland and transferred to ITAS-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
4769-001	BO9WK0	40349101	Soil	03/25/94
4796-001	BOBFM8	40354501	Soil	03/30/94
4796-002	BOBFM9	40354502	Soil	03/30/94
4817-001	BOBKP4	40401801	Soil	04/01/94
4846-001	BOBKQ0	40409001	Soil	04/06/94
4846-002	BOBKM9	40409002	Soil	04/06/94
4846-003	BOBKN6	40409003	Soil	04/06/94

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.

Regional Office
13715 N. Rider Trail • Earth City, Missouri 63045-1205 • 314-298-8566 • FAX: 314-298-8757

IT Corporation is a wholly owned subsidiary of International Technology Corporation

---

Analyses requested: VOA, BNA and Metals including Cyanide by CLP/90 protocol. Chloride, Sulfate and Fluoride by EPA method 300.0. Nitrate by EPA method 353.1. Total Petroleum Hydrocarbons (Kerosene) by method 8015.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike/Matrix Spike Duplicate or Duplicate analyses were performed for all analyses based on protocol.

IV. Comments

The samples received by ITAS-St. Louis on 04/07/94 arrived in a cooler whose internal temperature was 1°C. The laboratory proceeded with the analyses per the client's request.

Samples QCBLK34692, BO9WK0 (4769-001MS, -001MSD), BOBFM8 (4796-001) and BOBKPP4 (4817-001) for BNA were analyzed after a continuing calibration which failed criteria for N-Nitroso-di-n-propylamine in that the %D for this compound was 48.3%, above the 40% maximum. See NCM SL-94-0228. It is noteworthy that this compound gave acceptable recoveries in the MS and MSD at 68% and 68%, similar to the other compounds, indicating that there was no affect on the results. This compound was not detected in the unspiked samples.

For Fluoride sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

For Cyanide sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

The Matrix Spike and Duplicate analyses for Total Organic Carbon were inadvertently overlooked when the samples were originally analyzed. Upon review of the data package this nonconformance was noted and the analyses were performed at this time. However, the analyses were performed out of holding time. Results for the sample were performed within holding time. All results are reported, but charges for the matrix spike and duplicate do not appear on the invoice. See nonconformance memo SL-94-0241.

Kerosene results are noted as High Boiling Hydrocarbons on the TPH forms. They are quantitated against a Fuel Oil #2 (diesel) standard curve which is proved to have the same response factors as that of Kerosene (Fuel Oil #1) within minimal error. The response factor correlation is demonstrated by the running of a single, mid-level calibration standard at the beginning of the analytical batch. This calibration verification data is contained in the data package. This procedure is outlined in ITAS-St. Louis SOP SL4055.

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
z:\annelars\hanw0014.nar

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006463

Collector R.T. Sickle
SAF No. 94-065
Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay~~ Pipeline
Telephone 372-3293
Sampling Locations ~~216-U-8-Crib~~
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS
STAND ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKN6	S	4-4-94	1030	(1) 250ml aG	Semi-VOA CLP	
BOBKN6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CLP ~~EPL~~	
BOBKN6	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKN6	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKN6	S			(1) 125ml G	Cyanide CLP ~~CPL~~	
BOBKN6	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKN6~~	S			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
BOBKN6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-6-94	1020	R. Boyd 4-6-94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000037

9713508.2746

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006456

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No.
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation 216-U-8 ~~Vitrified Clay Pipeline~~ 200 4.22 [illegible] 3.30.94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ [illegible] 3.30.94
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS
15 Apr 94
STAND ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKM9	S	4.4.94	1110	(1) 250ml aG	Semi-VOA CLP	
BOBKM9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury 15 Apr 94 CLP ~~EPC~~	
BOBKM9	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKM9	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKM9	S			(1) 125ml G	Cyanide 15 Apr 94 CLP CPC	
BOBKM9	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKM9~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ [illegible] 4.4.94 9060	
BOBKM9	S			(1) 1000ml Poly	Gross Alpha/Beta, ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-6-94	1020	R Boyd JT 4-6-94 1035

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2741

6.33

0000036

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006468

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations Z Ditch
Ice Chest No. SWL 413
Bill of Lading/Airbill No. N/A
Offsite Property No. W94-0 0369 #47
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404018 01 A	BOBKP4	S	5-20-94	1315	(1) 250ml aG	Semi-VOA CLP	
B	BOBKP4	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CPL	
C	BOBKP4	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKP4	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKP4	S			(1) 125ml G	Cyanide CPL	
F	BOBKP4	S			(1) 125ml Gs	TPH Diesel Range 8015m	
G	BOBKP4	S			(1) 125ml aGs	TOC 9060	
404019 01	BOBKP4	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-1-94	1020	Ray Arnold Ray Arnold
Ray Arnold Ray Arnold	4-1-94	1210	Tom Gilmore Tom Gilmore ITAS

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2748

0034

0000030

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006445

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. 7167
Bill of Lading/Airbill No. N/A
Offsite Property No. N/A
Method of Shipment Government truck
Field Logbook No. N/A
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
403345 01 A BOBFM8	S	3 24.94	1300	(1) 250ml aGs	VOA CLP	
B BOBFM8	S			(1) 250ml aGs	Semi-VOA CLP	
C BOBFM8	S			(1) 250ml ~~aGs~~ P	Metals -CLP TAL Titanium Mercury CPL 3 24 94	
D BOBFM8	S			(1) 125ml aGs	Anions F, Cl, SO_4 EPA 300.0	
E BOBFM8	S			(1) 125ml aGs	NO_2 NO_3 EPA 353.2	
F BOBFM8	S			(1) 125ml aGs	Cyanide CPL	
G BOBFM8	S			(1) 125ml aGs	Kerosene 8015M	
403546 BOBFM8	S	3.24.94	1300	(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	
02 BOBFM9	S	3 24.94	0800	(1) 250ml aGs	VOA	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
Roy T Sickle	3-24-94	1530	[illegible]
[illegible]	3-24-94	0930	R Boyd IT 3-29-94 1130

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000023

9713508.2746

C535

9713508.2750

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 3-22-94

Ice Chest No.: SMH-127 — Field Logbook No.: EFL-1115

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: Government vehicle

Shipped to: IT, Richland

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) SAF # 94-065 NONE NOTED

Sample Identification

1) 40349101 — B09WK0

40349089 3/25/94 06

A	1,250ml	P:CLP;TAL Metals,Hg,Ti
B	1,250ml	Gs:VOA CLP
C	1,250ml	aG:Semi-VOA CLP
D	1,125ml	G:Anions F,Cl,SO4 (EPA 300.0)
E	1,125ml	P/G:Anions NO2,NO3 (EPA 353.2)
F	1,250ml	aGs:PCB/Pest (8080)
G	1,125ml	G:Cyanide CLP
H	1,125ml	Gw:Kerosene (8015M)
	1,1000ml	P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

40349095 3/25/94 40349201

2) B09WK1

40349097 3/25/94

A	1,250ml	P:CLP;TAL Metals,Hg,Ti
B	1,250ml	Gs:VOA CLP
C	1,250ml	aG:Semi-VOA CLP
D	1,125ml	G:Anions F,Cl,SO4 (EPA 300.0)
E	1,125ml	P/G:Anions NO2,NO3 (EPA 353.2)
	1,250ml	aGs:PCB/Pest (8080)
	1,125ml	G:Cyanide CLP
	1,125ml	Gw:Kerosene (8015M)
	1,1000ml	P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

40349006 3/25/94

0000013

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
3-24-94 Joyce E. Rogers 1310	[signature]	3-25-94 10 cc
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006475

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations U1/U2 Tile Field
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS
5 Apr 94
STAND ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKQ0	S	4.4.94	1110	(1) 250ml aG	Semi-VOA CLP	
BOBKQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury 5 Apr 94 ~~CPL~~	
BOBKQ0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKQ0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKQ0	S			(1) 125ml G	Cyanide 5 Apr 94 ~~CPL~~	
BOBKQ0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4.4.94 9060	
BOBKQ0	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4.6.94	1020	R. Boyd 4.6.94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2731

0000038

6031

9713508.2752

Attachment 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200 UP 2		DATA PACKAGE: W0014-ITC-025
VALIDATOR: C. Jensen	LAB: ITC	DATE: 6/7/94
CASE:		SDG:

ANALYSES PERFORMED

☐ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (packed column)	☑ CLP Semivolatiles	☐ SW-846 8270 (cap column)	☐ SW-846 (packed column)
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX soil

B0B7M8	B0B7W0
B0BKM9	
B0BKN6	
B0BKP4	
B0BKQ0	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . Yes No N/A

Is a case narrative present? . . . . . Yes No N/A

Comments: verification performed by WHC

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . Yes No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION

Is the GC/MS tuning/performance check acceptable? . . . . . (Yes) No N/A

Are initial calibrations acceptable? . . . . . Yes (No) N/A

Are continuing calibrations acceptable? . . . . . Yes (No) N/A

Comments: See attached ICAL and CCAL forms and qualification on B-7. ICAL RRF for benzo(k)fluoranthene was .643, limit is 0.7. Associated samples SBLK01 02, BOBWK0, BOBFW8, BOBKP4 qual. ~~UJ~~ 4/18/94 UJ CCAL 4/18/94 N-Nitroso-Di-n-propylamine %D > limit, SBLK02 qualified CCAL 4/20/94 N-nitroso-Di-n-propylamine %D > limit BOBWK0 BOBFW8, BOBKP4, BLK. BOBWK0MS/MSD qualified UJ. see comment page A-4, (1)

4. BLANKS

Were laboratory blanks analyzed? . . . . . (Yes) No N/A

Are laboratory blank results acceptable? . . . . . Yes (No) N/A

Were field/trip blanks analyzed? . . . . . Yes No (N/A)

Are field/trip blank results acceptable? . . . . . Yes No (N/A)

Comments: TCL detected in SBLK01, associated results qualified U for BEHP. SBLK03 contained di-n-butyl phthalate and BEHP, associated results qualified U if detected.
TICs were detected in the laboratory blanks and compared against associated sample results. See comment (2)

5. ACCURACY

Were surrogates/System Monitoring Compounds analyzed? . . . . . (Yes) No N/A

Are surrogate/System Monitoring Compound recoveries acceptable? (Yes) No N/A

Were MS/MSD samples analyzed? . . . . . (Yes) No N/A

Are MS/MSD results acceptable? . . . . . (Yes) No N/A

Comments:

0040

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments:

7. SYSTEM PERFORMANCE

Were internal standards analyzed? . . . . . Yes No N/A

Are internal standard areas acceptable? . . . . . Yes No N/A

Are internal standard retention times acceptable? . . . . . Yes No N/A

Comments:

8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . Yes No N/A

Is compound quantitation acceptable? . . . . . Yes No N/A

Comments:

9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Do results meet the CRQLs? . . . . . Yes No N/A

Has the laboratory properly identified and coded all TIC? . . . Yes No N/A

Comments: TCS detected in SPIKED were compared against BOTH BOPKPH.

GC/MS ORGANIC DATA VALIDATION CHECKLIST

Comments (attach additional sheets as necessary):

① CCAL ~~4/26/94~~ 4/28/94 2 chloronaphthalene %D exceeded limit associated with BOBKQ0, BOBKM9, BOBKN6 & SBLK03, results qualified NJ.

② SBLK02 contained 9.6 ug/kg of BEHP which was not high enough to qualify the associated sample BOSWK0.

HOLDING TIME SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 6/6/94	PAGE 1 OF 1
COMMENTS: SVOA W0014-ITC-025			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0TWK0	SVOA	3/22/94	3/30/94	4/20/94	8	21	none
~~B0TWK1~~	~~3/22/94~~	~~3/22/94~~					
B0BFM8		3/24/94	4/7/94	4/20/94	14	13	none
B0BKP4		3/30/94	4/7/94	4/20/94	8	13	
B0BKM9		4/4/94	4/12/94	4/28/94	8	16	
B0BKN6		4/4/94	4/12/94	4/28/94	8	16	
B0BKQ0		4/4/94	4/12/94	4/28/94	8	16	

9713508.2767
WHC-SD-EN-SPP-002, Rev. 2

9713508.2758

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK01

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: QCBLK35239

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H8410

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/18/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	~~U~~ UJ
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethyl Phthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

Verified 9/6/94

9713508.2759

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK01

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: QCBLK35239

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H8410

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/18/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
51-28-5	2,4-Dinitrophenol	800	U	
100-02-7	4-Nitrophenol	800	U	
132-64-9	Dibenzofuran	330	U	
121-14-2	2,4-Dinitrotoluene	330	U	
84-66-2	Diethylphthalate	330	U	
7005-72-3	4-Chlorophenyl-phenylether	330	U	
86-73-7	Fluorene	330	U	
100-01-6	4-Nitroaniline	800	U	
534-52-1	4,6-Dinitro-2-Methylphenol	800	U	
86-30-6	N-Nitrosodiphenylamine (1)	330	U	
101-55-3	4-Bromophenyl-phenylether	330	U	
118-74-1	Hexachlorobenzene	330	U	
87-86-5	Pentachlorophenol	800	U	
85-01-8	Phenanthrene	330	U	
120-12-7	Anthracene	330	U	
86-74-8	Carbazole	330	U	
84-74-2	Di-n-Butylphthalate	330	U	
206-44-0	Fluoranthene	330	U	
129-00-0	Pyrene	330	U	
85-68-7	Butylbenzylphthalate	38	J	380
91-94-1	3,3'-Dichlorobenzidine	330	U	
56-55-3	Benzo(a)Anthracene	330	U	
218-01-9	Chrysene	330	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	660		x10 6600
117-84-0	Di-n-Octyl Phthalate	120	J	x10 1200
205-99-2	Benzo(b)Fluoranthene	330	U	
207-08-9	Benzo(k)Fluoranthene	330	~~U~~	~~UR~~ U 5/18/94
50-32-8	Benzo(a)Pyrene	330	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U	
53-70-3	Dibenz(a,h)Anthracene	330	U	
191-24-2	Benzo(g,h,i)Perylene	330	U	

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

Verified 5/6/94

assoc. with Probe 4 PB35KP4

9713508.2760

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLK01

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: QCBLK35239

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H8410

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/18/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

Number TICs found: 16

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.	UNKNOWN	7.19	160	~~J~~	JN
2.	UNKNOWN	19.63	98	~~J~~	JN
3.	UNKNOWN	19.81	330	~~J~~	JN
4.	UNKNOWN	20.95	91	~~J~~	JN
5. 57114	Octadecanoic acid	22.49	110	JN	
6. 80057	Phenol, 4,4'-(1-methylethyli	22.73	110	JN	
7.	UNKNOWN	26.79	85	~~J~~	JN
8.	UNKNOWN	27.50	98	~~J~~	JN
9.	UNKNOWN	27.89	81	~~J~~	JN
10.	UNKNOWN	28.05	100	~~J~~	JN
11.	Unknown Phthalate	28.28	170	~~J~~	JN
12.	UNKNOWN	29.28	78	~~J~~	JN
13.	Unknown Phthalate	29.68	87	~~J~~	JN
14.	Unknown Phthalate	29.73	87	~~J~~	JN
15.	UNKNOWN	30.20	92	~~J~~	JN
16.	Unknown Phthalate	30.37	230	~~J~~	JN

verified
cj 6/15/94

assoc. with
BOTTLE
P108KP4

FORM I SV-TIC

9713508.2761

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK03

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: QCBLK35518

Sample wt/vol: 30.00 (g/mL) G Lab File ID: D5599

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
108-95-2	Phenol	330	U	
111-44-4	bis(2-Chloroethyl)Ether	330	U	
95-57-8	2-Chlorophenol	330	U	
541-73-1	1,3-Dichlorobenzene	330	U	
106-46-7	1,4-Dichlorobenzene	330	U	
95-50-1	1,2-Dichlorobenzene	330	U	
95-48-7	2-Methylphenol	330	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U	
106-44-5	4-Methylphenol	330	U	
621-64-7	N-Nitroso-Di-n-Propylamine	330	~~U~~	~~UJ~~ U
67-72-1	Hexachloroethane	330	U	
98-95-3	Nitrobenzene	330	U	
78-59-1	Isophorone	330	U	
88-75-5	2-Nitrophenol	330	U	
105-67-9	2,4-Dimethylphenol	330	U	
111-91-1	bis(2-Chloroethoxy)Methane	330	U	
120-83-2	2,4-Dichlorophenol	330	U	
120-82-1	1,2,4-Trichlorobenzene	330	U	
91-20-3	Naphthalene	330	U	
106-47-8	4-Chloroaniline	330	U	
87-68-3	Hexachlorobutadiene	330	U	
59-50-7	4-Chloro-3-Methylphenol	330	U	
91-57-6	2-Methylnaphthalene	330	U	
77-47-4	Hexachlorocyclopentadiene	330	U	
88-06-2	2,4,6-Trichlorophenol	330	U	
95-95-4	2,4,5-Trichlorophenol	800	U	
91-58-7	2-Chloronaphthalene	330	~~U~~	UJ
88-74-4	2-Nitroaniline	800	U	
131-11-3	Dimethyl Phthalate	330	U	
208-96-8	Acenaphthylene	330	U	
606-20-2	2,6-Dinitrotoluene	330	U	
99-09-2	3-Nitroaniline	800	U	
83-32-9	Acenaphthene	330	U	

U-47

Verified 5/6/94

AA12

9713508.2762

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK03

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: QCBLK35518

Sample wt/vol: 30.00 (g/mL) G Lab File ID: D5599

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
51-28-5	2,4-Dinitrophenol	800	U	
100-02-7	4-Nitrophenol	800	U	
132-64-9	Dibenzofuran	330	U	
121-14-2	2,4-Dinitrotoluene	330	U	
84-66-2	Diethylphthalate	330	U	
7005-72-3	4-Chlorophenyl-phenylether	330	U	
86-73-7	Fluorene	330	U	
100-01-6	4-Nitroaniline	800	U	
534-52-1	4,6-Dinitro-2-Methylphenol	800	U	
86-30-6	N-Nitrosodiphenylamine (1)	330	U	
101-55-3	4-Bromophenyl-phenylether	330	U	
118-74-1	Hexachlorobenzene	330	U	
87-86-5	Pentachlorophenol	800	U	
85-01-8	Phenanthrene	330	U	
120-12-7	Anthracene	330	U	
86-74-8	Carbazole	330	U	
84-74-2	Di-n-Butylphthalate	110	J	x10 = 110
206-44-0	Fluoranthene	330	U	
129-00-0	Pyrene	330	U	
85-68-7	Butylbenzylphthalate	330	U	
91-94-1	3,3'-Dichlorobenzidine	330	U	
56-55-3	Benzo(a)Anthracene	330	U	
218-01-9	Chrysene	330	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	110	J	x10=1100
117-84-0	Di-n-Octyl Phthalate	330	U	
205-99-2	Benzo(b)Fluoranthene	330	U	
207-08-9	Benzo(k)Fluoranthene	330	U	
50-32-8	Benzo(a)Pyrene	330	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U	
53-70-3	Dibenz(a,h)Anthracene	330	U	
191-24-2	Benzo(g,h,i)Perylene	330	U	

(1) - Cannot be separated from Diphenylamine

verified 5/6/8/94

GS 5/02. with

3/6/94 8

FORM I SV-2

BOBKQ0 BOBKQ9 BOBKW6

DD41

9713508.2263

1F

EPA SAMPLE NO.

SBLK03

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: QCBLK35518

Sample wt/vol: 30.00 (g/mL) G Lab File ID: D5599

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 04/12/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

Verified 5/6/94

FORM I SV-TIC

5/94

9713508.2764

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK02

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: QCBLK34692

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H8430

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 03/30/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	~~U~~ UJ
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethyl Phthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

3/950

verified 5/6/94

9713508.2745

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK02

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: QCBLK34692

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H8430

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 03/30/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-Methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	~~330~~	~~U~~
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	~~U~~
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

verified 5/6/94

3/89

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLK02

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: QCBLK34692

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H8430

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 03/30/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/20/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

FORM I SV-TIC

Verified 5/6/94

4452

3/90

9713508.2767

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Instrument ID: MSH Calibration Date(s): 04/12/94 04/12/94

BOBWKOMS/MSD Calibration Times: 1331 1627

Assoc. with SBLK01, BOBWK0, BOBFLS, BOBKT4, SBLK02

LAB FILE ID: RRF20 = H8340 RRF50 = H8341
RRF80 = H8342 RRF120= H8343 RRF160= H8344

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Diethylphthalate	1.554	1.596	1.674	1.549	1.462	1.567	4.9
4-Chlorophenyl-phenylether *	0.704	0.688	0.678	0.666	0.610	0.669	5.4*
Fluorene *	1.387	1.370	1.367	1.314	1.227	1.333	4.9*
4-Nitroaniline		0.366	0.295	0.260	0.231	0.288	20.2
4,6-Dinitro-2-Methylphenol		0.181	0.190	0.186	0.176	0.183	3.3
N-Nitrosodiphenylamine (1)	0.439	0.443	0.412	0.377	0.357	0.406	9.3
4-Bromophenyl-phenylether *	0.234	0.241	0.248	0.237	0.224	0.237	3.7*
Hexachlorobenzene *	0.292	0.295	0.292	0.280	0.262	0.284	4.8*
Pentachlorophenol *		0.189	0.196	0.199	0.183	0.192	3.7*
Phenanthrene *	1.143	1.157	1.195	1.152	1.060	1.141	4.4*
Anthracene *	1.154	1.157	1.152	1.071	1.023	1.111	5.5*
Carbazole	1.089	0.900	0.778	0.610	0.607	0.797	25.7
Di-n-Butylphthalate	1.694	1.711	1.788	1.732	1.658	1.717	2.8
Fluoranthene *	1.279	1.316	1.335	1.273	1.246	1.290	2.8*
Pyrene *	1.443	1.470	1.523	1.510	1.452	1.480	2.4*
Butylbenzylphthalate	0.811	0.871	0.950	0.978	0.960	0.914	7.7
3,3'-Dichlorobenzidine	0.364	0.322	0.277	0.279	0.311	0.311	11.5
Benzo(a)Anthracene *	1.178	1.225	1.256	1.283	1.236	1.236	3.2*
Chrysene *	1.175	1.203	1.209	1.174	1.112	1.175	3.3*
bis(2-Ethylhexyl)Phthalate	1.129	1.204	1.241	1.234	1.171	1.196	3.9
Di-n-Octyl Phthalate	1.906	2.065	2.143	2.129	2.001	2.049	4.8
Benzo(b)Fluoranthene *	1.112	1.166	1.244	1.371	1.415	1.262	10.3*
Benzo(k)Fluoranthene *	1.164	1.140	1.058	0.910	0.634	0.981	22.2*
Benzo(a)Pyrene *	1.043	1.092	1.108	1.060	1.006	1.062	3.8*
Indeno(1,2,3-cd)Pyrene *	1.020	1.132	1.246	1.367	1.245	1.202	10.9*
Dibenz(a,h)Anthracene *	0.975	1.038	1.058	1.033	0.926	1.006	5.4*
Benzo(g,h,i)Perylene *	0.996	1.092	1.134	1.131	1.041	1.079	5.5*
Nitrobenzene-d5 *	0.385	0.401	0.425	0.418	0.407	0.407	3.8*
2-Fluorobiphenyl *	1.427	1.396	1.453	1.424	1.366	1.413	2.4*
Terphenyl-d14 *	0.968	0.985	1.019	1.010	0.958	0.988	2.7*
Phenol-d5 *	1.511	1.571	1.658	1.724	1.666	1.626	5.2*
2-Fluorophenol *	1.318	1.350	1.415	1.450	1.402	1.387	3.8*
2,4,6-Tribromophenol	0.258	0.251	0.249	0.242	0.221	0.244	5.8
2-Chlorophenol-d4 *	1.315	1.362	1.405	1.413	1.334	1.366	3.1*
1,2-Dichlorobenzene-d4 *	0.917	0.962	0.951	0.934	0.849	0.923	4.8*

(1) Cannot be separated from Diphenylamine
* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

FORM VI SV-2 3/90

RRF min. for Benzo(k)fluoranthene is 0.7
assoc. results qualified ~~5/6/94~~ 5/6/94

0000433

00053

9713508.2768

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Instrument ID: MSD Calibration date: 04/28/94 Time: 1053

Lab File ID: D5596 Init. Calib. Date(s): 04/26/94 04/26/94

Init. Calib. Times: 1328 1623

Assoc. with BOBKQ0, BOBKM9, BOBKN6, SBLK03

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Phenol	1.644	1.531	0.800	6.9	25.0
bis(2-Chloroethyl)Ether	1.287	1.272	0.700	1.2	25.0
2-Chlorophenol	1.300	1.274	0.800	2.0	25.0
1,3-Dichlorobenzene	1.402	1.405	0.600	-0.2	25.0
1,4-Dichlorobenzene	1.411	1.453	0.500	-3.0	25.0
1,2-Dichlorobenzene	1.390	1.385	0.400	0.4	25.0
2-Methylphenol	1.169	1.118	0.700	4.4	25.0
2,2'-oxybis(1-Chloropropane)	2.031	1.563		23.0	
4-Methylphenol	1.258	1.182	0.600	6.0	25.0
N-Nitroso-Di-n-Propylamine	1.098	0.980	0.500	10.8	25.0
Hexachloroethane	0.625	0.639	0.300	-2.2	25.0
Nitrobenzene	0.353	0.343	0.200	2.8	25.0
Isophorone	0.646	0.608	0.400	5.9	25.0
2-Nitrophenol	0.244	0.244	0.100	0.0	25.0
2,4-Dimethylphenol	0.315	0.304	0.200	3.5	25.0
bis(2-Chloroethoxy)Methane	0.418	0.410	0.300	1.9	25.0
2,4-Dichlorophenol	0.285	0.304	0.200	-6.7	25.0
1,2,4-Trichlorobenzene	0.307	0.340	0.200	-10.8	25.0
Naphthalene	0.959	0.970	0.700	-1.1	25.0
4-Chloroaniline	0.312	0.225		27.9	
Hexachlorobutadiene	0.172	0.199		-15.7	
4-Chloro-3-Methylphenol	0.321	0.304	0.200	5.3	25.0
2-Methylnaphthalene	0.605	0.621	0.400	-2.6	25.0
Hexachlorocyclopentadiene	0.299	0.224		25.1	
2,4,6-Trichlorophenol	0.317	0.334	0.200	-5.4	25.0
2,4,5-Trichlorophenol	0.380	0.378	0.200	0.5	25.0
2-Chloronaphthalene	1.222	0.809	0.800	33.8	25.0
2-Nitroaniline	0.422	0.341		19.2	
Dimethyl Phthalate	1.349	1.342		0.5	
Acenaphthylene	1.764	1.779	1.300	-0.9	25.0
2,6-Dinitrotoluene	0.327	0.321	0.200	1.8	25.0
3-Nitroaniline	0.268	0.090		66.4	
Acenaphthene	1.163	1.178	0.800	-1.3	25.0
2,4-Dinitrophenol	0.204	0.147		27.9	
4-Nitrophenol	0.166	0.146		12.0	
Dibenzofuran	1.561	1.548	0.800	0.8	25.0
2,4-Dinitrotoluene	0.423	0.461	0.200	-9.0	25.0

All other compounds must meet a minimum RRF of 0.010.

0000463

FORM VII SV-1 3/90

Assoc. with BOBKQ0, BOBKM9, BOBKN6

9713508.2769

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Instrument ID: MSH Calibration date: 04/20/94 Time: 1449

Lab File ID: H8429 Init. Calib. Date(s): 04/12/94 04/12/94

Init. Calib. Times: 1331 1627

BOBWKO, BOBFMS, BOBSKP4, SBLK07, BOBWKOMS, WKOMSD

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Phenol	1.944	1.977	0.800	-1.7	25.0
bis(2-Chloroethyl)Ether	1.592	1.758	0.700	-10.4	25.0
2-Chlorophenol	1.391	1.422	0.800	-2.2	25.0
1,3-Dichlorobenzene	1.533	1.525	0.600	0.5	25.0
1,4-Dichlorobenzene	1.507	1.514	0.500	-0.5	25.0
1,2-Dichlorobenzene	1.408	1.456	0.400	-3.4	25.0
2-Methylphenol	1.085	1.271	0.700	-17.1	25.0
2,2'-oxybis(1-Chloropropane)	0.364	0.448		-23.1	
4-Methylphenol	1.153	1.328	0.600	-15.2	25.0
N-Nitroso-Di-n-Propylamine	0.778	1.154	0.500	-48.3	25.0
Hexachloroethane	0.599	0.709	0.300	-18.4	25.0
Nitrobenzene	0.415	0.512	0.200	-23.4	25.0
Isophorone	0.834	0.969	0.400	-16.2	25.0
2-Nitrophenol	0.278	0.267	0.100	4.0	25.0
2,4-Dimethylphenol	0.316	0.347	0.200	-9.8	25.0
bis(2-Chloroethoxy)Methane	0.518	0.583	0.300	-12.6	25.0
2,4-Dichlorophenol	0.329	0.319	0.200	3.0	25.0
1,2,4-Trichlorobenzene	0.366	0.352	0.200	3.8	25.0
Naphthalene	1.050	1.077	0.700	-2.6	25.0
4-Chloroaniline	0.422	0.442		-4.7	
Hexachlorobutadiene	0.183	0.181		1.1	
4-Chloro-3-Methylphenol	0.316	0.334	0.200	-5.7	25.0
2-Methylnaphthalene	0.672	0.629	0.400	6.4	25.0
Hexachlorocyclopentadiene	0.430	0.438		-1.9	
2,4,6-Trichlorophenol	0.449	0.420	0.200	6.5	25.0
2,4,5-Trichlorophenol	0.526	0.541	0.200	-2.9	25.0
2-Chloronaphthalene	1.624	1.519	0.800	6.5	25.0
2-Nitroaniline	0.460	0.584		-27.0	
Dimethyl Phthalate	1.701	1.672		1.7	
Acenaphthylene	2.013	2.128	1.300	-5.7	25.0
2,6-Dinitrotoluene	0.411	0.392	0.200	4.6	25.0
3-Nitroaniline	0.371	0.438		-18.1	
Acenaphthene	1.249	1.304	0.800	-4.4	25.0
2,4-Dinitrophenol	0.259	0.246		5.0	
4-Nitrophenol	0.226	0.273		-20.8	
Dibenzofuran	1.771	1.861	0.800	-5.1	25.0
2,4-Dinitrotoluene	0.507	0.518	0.200	-2.2	25.0

(1) Cannot be separated from Diphenylamine
All other compounds must meet a minimum RRF of 0.010.

0000478

9713508.2770

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ITAS-ST.LOUIS Contract: 519-04

Lab Code: ITSL Case No.: S76901 SAS No.: SDG No.: W0014

Instrument ID: MSH Calibration date: 04/18/94 Time: 0932

Lab File ID: H8396 Init. Calib. Date(s): 04/12/94 04/12/94

Init. Calib. Times: 1331 1627

assoc. with SBLK01

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Phenol	1.944	1.900	0.800	2.3	25.0
bis(2-Chloroethyl)Ether	1.592	1.661	0.700	-4.3	25.0
2-Chlorophenol	1.391	1.363	0.800	2.0	25.0
1,3-Dichlorobenzene	1.533	1.506	0.600	1.8	25.0
1,4-Dichlorobenzene	1.507	1.506	0.500	0.1	25.0
1,2-Dichlorobenzene	1.408	1.409	0.400	-0.1	25.0
2-Methylphenol	1.085	1.143	0.700	-5.3	25.0
2,2'-oxybis(1-Chloropropane)	0.364	0.449		-23.4	
4-Methylphenol	1.153	1.199	0.600	-4.0	25.0
N-Nitroso-Di-n-Propylamine	0.778	1.011	0.500	-30.0	25.0
Hexachloroethane	0.599	0.648	0.300	-8.2	25.0
Nitrobenzene	0.415	0.455	0.200	-9.6	25.0
Isophorone	0.834	0.894	0.400	-7.2	25.0
2-Nitrophenol	0.278	0.273	0.100	1.8	25.0
2,4-Dimethylphenol	0.316	0.325	0.200	-2.8	25.0
bis(2-Chloroethoxy)Methane	0.518	0.557	0.300	-7.5	25.0
2,4-Dichlorophenol	0.329	0.339	0.200	-3.0	25.0
1,2,4-Trichlorobenzene	0.366	0.390	0.200	-6.6	25.0
Naphthalene	1.050	1.052	0.700	-0.2	25.0
4-Chloroaniline	0.422	0.351		16.8	
Hexachlorobutadiene	0.183	0.206		-12.6	
4-Chloro-3-Methylphenol	0.316	0.325	0.200	-2.8	25.0
2-Methylnaphthalene	0.672	0.677	0.400	-0.7	25.0
Hexachlorocyclopentadiene	0.430	0.527		-22.6	
2,4,6-Trichlorophenol	0.449	0.461	0.200	-2.7	25.0
2,4,5-Trichlorophenol	0.526	0.578	0.200	-9.9	25.0
2-Chloronaphthalene	1.624	1.617	0.800	0.4	25.0
2-Nitroaniline	0.460	0.498		-8.3	
Dimethyl Phthalate	1.701	1.699		0.1	
Acenaphthylene	2.013	2.024	1.300	-0.5	25.0
2,6-Dinitrotoluene	0.411	0.423	0.200	-2.9	25.0
3-Nitroaniline	0.371	0.273		26.4	
Acenaphthene	1.249	1.249	0.800	0.0	25.0
2,4-Dinitrophenol	0.259	0.254		1.9	
4-Nitrophenol	0.226	0.223		1.3	
Dibenzofuran	1.771	1.881	0.800	-6.2	25.0
2,4-Dinitrotoluene	0.507	0.545	0.200	-7.5	25.0

(1) Cannot be separated from Diphenylamine
All other compounds must meet a minimum RRF of 0.010.

FORM VII SV-1 3/90

00004471

9713508.2731

MEMORANDUM

TO: 200-UP-2 Project QA Record June 8, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: PESTICIDE/PCB DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0014-ITC-025 (923-E418 W0014P.UP2)

INTRODUCTION

This memorandum presents the results of data validation on data package W0014-ITC-025 prepared by International Technology Corporation (IT) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09WK0	03/22/94	SOIL	SEE NOTE 1

Notes: 1. The samples were analyzed for target compound list (TCL) pesticides/PCBs.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

RECEIVED
JUN 16 1994
VALIDATION DOCUMENTATION
SDLA

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for the sample results with the exception of several compounds as noted in Attachment 5. Detection limits were not specified for Method 8080, therefore were compared to the CLP SOW 90 detection limits with the moisture content taken into account.

0001

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data package with a total of 25 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets the normal work plan objectives of 90 percent.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

No deficiencies were identified during data validation which required qualification of data.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9716508.2235

Attachment 1

Glossary of Data Reporting Qualifiers

6603

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UJN - Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

9716508.2775

Attachment 2

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY

SDG:	VALIDATOR: Cjenzen	DATE: 6/8/94	PAGE 1 OF 1
COMMENTS: Pest PCB W0014-ITC-D25			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
no qualification of the data was made			

9713508.2707

Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

Validated Data Summary, Data Package: W0014-ITC-025

	Samp#	B09WK0	
	Date	3-22-94	
	Location	---	
	Depth	---	
	Type	SOIL	
	Comments	---	
Parameter	Units	Result	Q
ALPHA-BHC	UG/KG	1.200	U
BETA-BHC	UG/KG	2.400	U
DELTA-BHC	UG/KG	3.600	U
GAMMA-BHC (LINDANE)	UG/KG	1.600	U
HEPTACHLOR	UG/KG	1.200	U
ALDRIN	UG/KG	1.600	U
HEPTACHLOR EPOXIDE	UG/KG	33.000	U
ENDOSULFAN I	UG/KG	5.600	U
DIELDRIN	UG/KG	0.800	U
4,4'-DDE	UG/KG	1.600	U
ENDRIN	UG/KG	2.400	U
ENDOSULFAN II	UG/KG	1.600	U
4,4'-DDD	UG/KG	4.400	U
ENDOSULFAN SULFATE	UG/KG	26.000	U
4,4'-DDT	UG/KG	4.800	U
METHOXYCHLOR	UG/KG	70.000	U
ENDRIN ALDEHYDE	UG/KG	9.200	U
TECH. CHLORDANE	UG/KG	5.600	U
TOXAPHENE	UG/KG	96.000	U
AROCLOR-1221	UG/KG	40.000	U
AROCLOR-1232	UG/KG	40.000	U
AROCLOR-1242/1016	UG/KG	25.000	U
AROCLOR-1248	UG/KG	40.000	U
AROCLOR-1254	UG/KG	40.000	U
AROCLOR-1260	UG/KG	40.000	U

Verified
8/10/94

U-08

9713508.2739

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS-St. Louis Contract: 519-04

Lab Code: ITSL Case No.: _____ SAS No.: _____ SDG No.: W0014

Matrix: (soil/water) SOIL Lab Sample ID: 4769-001

Sample wt/vol: 30.2 (g/ml) G Lab File ID: _____

Level: (low/med) LOW Date Sampled : 03-22-94

% Moisture: not dec. 17 dec. _____ Date Extracted: 03-29-94

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04-01-94

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1

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

CAS NO.	Compound		Q
319-84-6	alpha-BHC	1.2	U
319-85-7	beta-BHC	2.4	U
319-86-8	delta-BHC	3.6	U
58-89-9	gamma-BHC (Lindane)	1.6	U
76-44-8	Heptachlor	1.2	U
309-00-2	Aldrin	1.6	U
1024-57-3	Heptachlor epoxide	33	U
959-98-8	Endosulfan I	5.6	U
60-57-1	Dieldrin	0.80	U
72-55-9	4,4'-DDE	1.6	U
72-20-8	Endrin	2.4	U
33213-65-9	Endosulfan II	1.6	U
72-54-8	4,4'-DDD	4.4	U
1031-07-8	Endosulfan sulfate	26	U
50-29-3	4,4'-DDT	4.8	U
72-43-5	Methoxychlor	70	U
53494-70-5	Endrin Aldehyde	9.2	U
57-74-9	Tech. Chlordane	5.6	U
8001-35-2	Toxaphene	96	U
11104-28-2	Aroclor-1221	40	U
11141-28-2	Aroclor-1232	40	U
53469-21-9/12674-11-2	Aroclor-1242/1016	25	U
12672-29-6	Aroclor-1248	40	U
11097-57-4	Aroclor1254	40	U
11096-82-5	Aroclor-1660	40	U

U: Concentration of analyte is less than the value given.

Verified 5/6/94

FORM I PEST 1/87 Rev.

U-09

0040

9713508.2780

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

Analyses requested: VOA, BNA and Metals including Cyanide by CLP/90 protocol. Chloride, Sulfate and Fluoride by EPA method 300.0. Nitrate by EPA method 353.1. Total Petroleum Hydrocarbons (Kerosene) by method 8015.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike/Matrix Spike Duplicate or Duplicate analyses were performed for all analyses based on protocol.

IV. Comments

The samples received by ITAS-St. Louis on 04/07/94 arrived in a cooler whose internal temperature was 1°C. The laboratory proceeded with the analyses per the client's request.

Samples QCBLK34692, BO9WK0 (4769-001MS, -001MSD), BOBFM8 (4796-001) and BOBKPP4 (4817-001) for BNA were analyzed after a continuing calibration which failed criteria for N-Nitroso-di-n-propylamine in that the %D for this compound was 48.3%, above the 40% maximum. See NCM SL-94-0228. It is noteworthy that this compound gave acceptable recoveries in the MS and MSD at 68% and 68%, similar to the other compounds, indicating that there was no affect on the results. This compound was not detected in the unspiked samples.

For Fluoride sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

For Cyanide sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

The Matrix Spike and Duplicate analyses for Total Organic Carbon were inadvertently overlooked when the samples were originally analyzed. Upon review of the data package this nonconformance was noted and the analyses were performed at this time. However, the analyses were performed out of holding time. Results for the sample were performed within holding time. All results are reported, but charges for the matrix spike and duplicate do not appear on the invoice. See nonconformance memo SL-94-0241.

Kerosene results are noted as High Boiling Hydrocarbons on the TPH forms. They are quantitated against a Fuel Oil #2 (diesel) standard curve which is proved to have the same response factors as that of Kerosene (Fuel Oil #1) within minimal error. The response factor correlation is demonstrated by the running of a single, mid-level calibration standard at the beginning of the analytical batch. This calibration verification data is contained in the data package. This procedure is outlined in ITAS-St. Louis SOP SL4055.

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
z:\annelars\hanw0014.nar

9713508.2703

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 3-22-94

Ice Chest No.: SML-127

Field Logbook No.: EFL-1115

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: Government vehicle

Shipped to: IT, Richland

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) SAF # 94-065 NONE NOTED

Sample Identification

1) 40349101

B09WK0

~~40349~~ 3/25/94

A 1,250ml P:CLP;TAL Metals,Hg,Ti
B 1,250ml Gs:VOA CLP
C 1,250ml aG:Semi-VOA CLP
D 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
E 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
F 1,250ml aGs:PCB/Pest (8080)
G 1,125ml G:Cyanide CLP
H 1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

~~40349005~~ 3/25/94 40349201

2) B09WK1

~~40349~~ 3/25/94

A 1,250ml P:CLP;TAL Metals,Hg,Ti
B 1,250ml Gs:VOA CLP
C 1,250ml aG:Semi-VOA CLP
D 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
E 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,250ml aGs:PCB/Pest (8080)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

40349006 3/25/94

0000013

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
3-24-94 1310		3-25-94 10 cc
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

9713508.2704

Attachment 5

Data Validation Supporting Documentation

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200 WP2 DV		DATA PACKAGE: W0014-ITC-025	
VALIDATOR: C. Yunsen	LAB: ITC	DATE: 6/8/94	
CASE:		SDG:	

6/8/94

ANALYSES PERFORMED

☒ CLP3/90	☒ SW-846 8080	☐ SW-846 8081	☐	☐	☐

SAMPLES/MATRIX Soil BD9WK0

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . Yes (No) N/A

Comments: The laboratory narrative did not include a summary of the PEST/PCB analysis.

Verification performed by WHC

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (METHOD 8080 AND 8081)

Are DDT retention times acceptable . . . . . Yes No (N/A)

Are calibration standard retention times acceptable? . . . . . (Yes) No N/A

Are DDT and endrin breakdowns acceptable? . . . . . (Yes) No N/A

PESTICIDE/PCB DATA VALIDATION CHECKLIST

Are DBC retention times acceptable? . . . . . Yes No N/A

Is the GC/MS tuning/performance check acceptable? . . . . . Yes No N/A

Comments: Initial and continuing calibrations were a modified 8080, all calibration criteria were met.

3.2 CALIBRATIONS (METHOD 8080 AND 8081)

Are ~~EVAL~~ Jud B standard calibration factors and 5/6/8/94 %D ~~%RSD~~ values acceptable? . . . . . Yes No N/A

Are quantitation column calibration factor 5/6/8/94 %D ~~%RSD~~ values acceptable? . . . . . Yes No N/A

Were the analytical sequence requirements met? . . . . . Yes No N/A

Are continuing calibration %D values acceptable? . . . . . Yes No N/A

Comments: The calibrations are modified using 8080 and a CLP-like reporting.

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Was the initial calibration sequence performed? . . . . . Yes No N/A

Was the resolution acceptable in the resolution check mix? . . Yes No N/A

Is resolution acceptable in the PEM, INDA and INDB? . . . . . Yes No N/A

Are DDT and Endrin breakdowns acceptable? . . . . . Yes No N/A

Are retention times in PEMs and calibration mixes acceptable? . Yes No N/A

Are RPD values in the PEMs acceptable? . . . . . Yes No N/A

Are %RSD values acceptable? . . . . . Yes No N/A

Comments:

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Were the analytical sequence requirements met? . . . . . Yes No N/A

Is resolution acceptable in the PEMs? . . . . . Yes No N/A

Are initial calibrations acceptable? . . . . . Yes No N/A

00016

PESTICIDE/PCB DATA VALIDATION CHECKLIST

Are retention times acceptable in the PEMs, INDA and INDB mixes? . . . . . Yes No N/A

Are RPD values in the PEMs acceptable? . . . . . Yes No N/A

Are the DDT and endrin breakdowns acceptable? . . . . . Yes No N/A

Was GPC cleanup performed? . . . . . Yes No N/A

Is the GPC calibration check acceptable? . . . . . Yes No N/A

Was Florisil cleanup performed? . . . . . Yes No N/A

Is the Florisil performance check acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments:

5. ACCURACY

Were surrogates analyzed? . . . . . Yes No N/A

Are surrogate recoveries acceptable? . . . . . Yes ~~No~~ N/A 6/18/94

Were MS/MSD samples analyzed? . . . . . Yes No N/A

Are MS/MSD results acceptable? . . . . . Yes No N/A

Were LCS samples analyzed? . . . . . Yes No N/A

Are LCS results acceptable? . . . . . Yes No N/A

Comments: TCMX and DBC added to samples and QC. LCS recoveries were within ~~50-150 as referenced in~~ limits provided by the laboratory 6/18/94 ~~the data validation~~ procedures. The MS/MSD. Surrogate advisory QC limits not provided, 50-150 used. All results within limits.

0017

PESTICIDE/PCB DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD values acceptable? . . . . . (Yes) No N/A

Are laboratory duplicate results acceptable? . . . . . Yes No (N/A)

Are field duplicate RPD values acceptable? . . . . . Yes No (N/A)

Are field split RPD values acceptable? . . . . . Yes No (N/A)

Comments: RPD limits were not provided by the laboratory however, the RPD were ≤ 16% which is considered acceptable.

7. SYSTEM PERFORMANCE

Is chromatographic performance acceptable? . . . . . (Yes) No N/A

Are positive results resolved acceptably? . . . . . Yes No (N/A)

Comments: There were no positive results for the sample (B39WK0)

8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . Yes No (N/A)

Is compound quantitation acceptable? . . . . . Yes No (N/A)

Comments: No positive results were detected

9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? . . . . . (Yes) No N/A

Are all results supported in the raw data? . . . . . (Yes) No N/A

Do results meet the CRQLs? . . . . . Yes (No) N/A

Comments: Pest/PCB 8080 was requested on the chain of custody

Delta-BHC was reported at a slightly higher limit 2.4 ug/kg than the required 2.04, other compounds exceeding the CRQLs were ~~Also~~ heptachlor epoxide, endosulfan I endosulfan sulfate, 4,4'DDT, methoxychlor, endrin aldehyde, no qualification was required to the sample results.

HOLDING TIME SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 6/8/94	PAGE 1 OF 1
COMMENTS: Pest/PCB W0014-ETC-025			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
609WK0	Pest/PCB	3/22/94	3/29/94	4/1/94	7	3	none

9713508.2790

MEMORANDUM

JUN 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record

June 10, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: INORGANICS DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0014-ITC-025 (923-E418 W0014M.UP2)

INTRODUCTION

This memorandum presents the results of data validation on data package W0014-ITC-025 prepared by International Technology Corporation (IT) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

RECEIVED JUN 16 1994 VALIDATION DOCUMENTATION

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09WK0	03/22/94	SOIL	SEE NOTE 1
B0BFM8	03/24/94	SOIL	
B0BKM9	03/24/94	SOIL	
B0BKN6	04/04/94	SOIL	
B0BKP4	03/30/94	SOIL	
B0BKQ0	04/04/94	SOIL	

Notes: 1. The samples were analyzed for target analyte list (TAL) metals, cyanide and titanium.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

RECEIVED JUN 16 1994 VALIDATION DOCUMENTATION

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met with the exception of deficiencies identified below.

Accuracy. Goals for accuracy were met with the exception of deficiencies identified below.

Sample Result Verification. All sample results were supported in the raw data.

01

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of six samples were validated in this data package with a total of 150 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets the normal work plan objectives of 90 percent.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Laboratory Blanks

- Beryllium and cyanide were detected in the calibration blanks at positive concentrations. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

- Antimony, chromium, silver, cyanide and mercury were detected in the calibration and preparation blanks at negative concentrations. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

Spike Sample Recovery

- The spike sample recoveries for antimony, lead, manganese, selenium and thallium were unacceptable. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

Laboratory Duplicates

- The laboratory duplicate relative percent difference for lead was unacceptable. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

Analytical Spike Recovery

- The analytical spike recovery for selenium for sample B0BKQ0 was unacceptable. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

revised page
5/6/24/94

03

9713508.2793

Attachment 1

Glossary of Data Reporting Qualifiers

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

9713508.2745

Attachment 2

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY

SDG:	VALIDATOR: Chrisen	DATE: 6/9/94	PAGE 1 OF 1
COMMENTS: Inorganics W0014-ITC-025			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	UJ	~~BOFWK0~~ all 6/9/94	negative ICB
Beryllium	U	all	ICB contam.
Chromium	J	BOFFW8, BOBKP4	negative PBLK
↓	↓	BOBKQ0, BOBKM9	↓
↓	↓	BOBKN6	↓
Silver	UJ	BOFWK0, BOBFW8	neg. PBLK
↓	↓	BOBKP4, BOBKQ0	↓
↓	↓	BOBKM9, BOBKN6	↓
Cyanide	U	BOFFW8	positive ICB
↓	BJ	BOBKP4	neg. PBLK
↓	UJ	BOBKM9, BOBKN6	↓
Antimony	~~J~~ 6/15/94, UJ	all	SSR <75 but >30%
lead	J	all	↓
6/15/94 ~~Magnesium~~ manganese	J	all	↓
Selenium	UJ	all	↓
Thallium	BJ, UJ	all	↓
lead	J	all	Duplicate RPD
Mercury	UJ	BOFWK0, BOBKP4	neg. blank ICB
↓	↓	BOBKQ0, BOBKM9	↓
↓	↓	BOBKN6	↓
6/24/94 Selenium	UJ	BOBKQ0	GFAA Analytical Spike %R

revised page 6/24/94

9713508.2797

Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

Validated Data Summary, Data Package: W0014-ITC-025

	Samp#	B09WK0		B0BFM8		B0BKM9		B0BKN6		B0BKP4		B0BKQ0	
	Date	3-22-94		3-24-94		4-4-94		4-4-94		3-30-94		4-4-94	
	Location	---		216-U-8		U1/U2 TILE FIELD		U1/U2 TILE FIELD		Z DITCH		U1/U2 TILE FIELD	
	Depth	---		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	MG/KG	7600.000		2360.000		5290.000		5940.000		5010.000		5680.000	
ANTIMONY	MG/KG	6.000	UJ	5.500	UJ	5.100	UJ	5.100	UJ	5.000	UJ	5.100	UJ
ARSENIC	MG/KG	3.200		12.700		4.600		2.900		3.100		2.600	
BARIUM	MG/KG	108.000		25.500	B	84.500		87.100		73.400		80.400	
BERYLLIUM	MG/KG	0.540	U	0.320	U	0.490	U	0.490	U	0.450	U	0.490	U
CADMIUM	MG/KG	0.460	B	0.620	B	0.870	B	0.840	B	0.540	B	1.200	
CALCIUM	MG/KG	26000.000		3300.000		7620.000		5150.000		4160.000		7890.000	
CHROMIUM	MG/KG	13.800		2.900	J	4.800	J	5.500	J	5.400	J	5.000	J
COBALT	MG/KG	8.100	B	6.800	B	9.100	B	8.800	B	7.900	B	9.500	B
COPPER	MG/KG	17.600		7.800		14.600		11.900		11.800		14.800	
IRON	MG/KG	16300.000		12700.000		19000.000		19000.000		17000.000		19600.000	
LEAD	MG/KG	5.500	J	3.000	J	7.000	J	9.900	J	4.900	J	8.000	J
MAGNESIUM	MG/KG	7310.000		1730.000		4300.000		4100.000		3780.000		4410.000	
MANGANESE	MG/KG	447.000	J	165.000	J	340.000	J	355.000	J	315.000	J	336.000	J
MERCURY	MG/KG	0.060	UJ	0.900		0.050	UJ	0.050	UJ	0.050	UJ	0.050	UJ
NICKEL	MG/KG	17.300		78.000	B	9.500		10.200		9.900		10.100	
POTASSIUM	MG/KG	1700.000		531.000	B	1350.000		1680.000		1590.000		1410.000	
SELENIUM	MG/KG	0.220	UJ	0.200	UJ	0.180	UJ	0.190	UJ	0.180	UJ	0.180	UJ
SILVER	MG/KG	0.890	UJ	0.820	UJ	0.760	UJ	0.760	UJ	0.750	UJ	0.760	UJ
SODIUM	MG/KG	173.000	B	156.000	B	139.000	B	138.000	B	121.000	B	160.000	B
THALLIUM	MG/KG	0.540	BJ	0.490	BJ	0.310	UJ	0.310	UJ	0.350	BJ	0.310	BJ
VANADIUM	MG/KG	24.500		34.800		30.500		30.600		23.600		29.000	
ZINC	MG/KG	38.000		43.500		39.700		42.200		36.900		40.100	
CYANIDE	MG/KG	0.030	U	0.030	U	0.030	UJ	0.030	UJ	0.110	BJ	0.080	B
TITANIUM	MG/KG	753.000		1860.000		1270.000		1270.000		1060.000		1290.000	

Verified 5/10/94

9713508.2748

9713508.2749

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BKQ0

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____
Lab Code: ITMO___ Case No.:_____ SAS No.:_____ SDG No.: W0014_____
Matrix (soil/water): SOIL_ Lab Sample ID: 4846-001
Level (low/med): LOW__ Date Received: 04/06/94
% Solids: _97.7

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5680			P	
7440-36-0	Antimony	5.1	~~U~~	N	P	UJ
7440-38-2	Arsenic	2.6			F	
7440-39-3	Barium	80.4			P	
7440-41-7	Beryllium	0.49	~~B~~		P	U
7440-43-9	Cadmium	1.2			P	
7440-70-2	Calcium	7890			P	
7440-47-3	Chromium	5.0			P	J
7440-48-4	Cobalt	9.5	B		P	
7440-50-8	Copper	14.8			P	
7439-89-6	Iron	19600			P	
7439-92-1	Lead	8.0		SN*	F	J
7439-95-4	Magnesium	4410			P	J gj 6/15/94
7439-96-5	Manganese	336		N*	P	J
7439-97-6	Mercury	0.05	~~U~~		CV	UJ
7440-02-0	Nickel	10.1			P	
7440-09-7	Potassium	1410			P	
7782-49-2	Selenium	0.18	~~U~~	WN	F	UJ
7440-22-4	Silver	0.76	~~U~~		P	UJ
7440-23-5	Sodium	160	B		P	
7440-28-0	Thallium	0.31	~~B~~	N	F	BJ
7440-62-2	Vanadium	29.0			P	
7440-66-6	Zinc	40.1			P	
	Cyanide	0.08	B			
7440-32-6	Titanium	1290			P	

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW___ Clarity After: _____ Artifacts: _____

Comments:

verified gj 10/9/94

FORM I - IN

ILM03.0

9713508.2800

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BKM9

Lab Name: ITAS_ST._LOUIS Contract: 519.04

Lab Code: ITMO Case No.: SAS No.: SDG No.: W0014

Matrix (soil/water): SOIL Lab Sample ID: 4846-002

Level (low/med): LOW Date Received: 04/06/94

% Solids: 97.8

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5290			P	
7440-36-0	Antimony	5.1	U	N	P	UJ
7440-38-2	Arsenic	4.6		S	F	
7440-39-3	Barium	84.5			P	
7440-41-7	Beryllium	0.49	~~B~~		P	U
7440-43-9	Cadmium	0.87	B		P	
7440-70-2	Calcium	7620			P	
7440-47-3	Chromium	4.8			P	J
7440-48-4	Cobalt	9.1	B		P	
7440-50-8	Copper	14.6			P	
7439-89-6	Iron	19000			P	
7439-92-1	Lead	7.0		SN*	F	J
7439-95-4	Magnesium	4300			P	J
7439-96-5	Manganese	340		N*	P	J 6/15/94
7439-97-6	Mercury	0.05	U		CV	UJ
7440-02-0	Nickel	9.5			P	
7440-09-7	Potassium	1350			P	
7782-49-2	Selenium	0.18	U	WN	F	UJ
7440-22-4	Silver	0.76	U		P	UJ
7440-23-5	Sodium	139	B		P	
7440-28-0	Thallium	0.31	U	N	F	UJ
7440-62-2	Vanadium	30.5			P	
7440-66-6	Zinc	39.7			P	
	Cyanide	0.03	U			UJ
7440-32-6	Titanium	1270			P	

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: Artifacts:

Comments:

Verified 6/14/94

FORM I - IN

ILM03.0

9713508.2811

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BKN6

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____
Lab Code: ITMO__ Case No.:_____ SAS No.:_____ SDG No.: W0014_____
Matrix (soil/water): SOIL_ Lab Sample ID: 4846-003
Level (low/med): LOW__ Date Received: 04/06/94
% Solids: _96.8

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5940			P	
7440-36-0	Antimony	5.1	~~U~~	N	P	UJ
7440-38-2	Arsenic	2.9			F	
7440-39-3	Barium	87.1			P	
7440-41-7	Beryllium	0.49	~~B~~		P	U
7440-43-9	Cadmium	0.84	B		P	
7440-70-2	Calcium	5150			P	
7440-47-3	Chromium	5.5			P	J
7440-48-4	Cobalt	8.8	B		P	
7440-50-8	Copper	11.9			P	
7439-89-6	Iron	19000			P	
7439-92-1	Lead	9.9		SN*	F	J
7439-95-4	Magnesium	4100			P	~~J~~
7439-96-5	Manganese	355		N*	P	J 5/6/1 5/14
7439-97-6	Mercury	0.05	~~U~~		CV	UJ
7440-02-0	Nickel	10.2			P	
7440-09-7	Potassium	1680			P	
7782-49-2	Selenium	0.19	~~U~~	WN	F	UJ
7440-22-4	Silver	0.76	~~U~~		P	UJ
7440-23-5	Sodium	138	B		P	
7440-28-0	Thallium	0.31	~~U~~	N	F	UJ
7440-62-2	Vanadium	30.6			P	
7440-66-6	Zinc	42.2			P	
	Cyanide	0.03	~~U~~			UJ
7440-32-6	Titanium	1270			P	

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW___ Clarity After: _____ Artifacts: _____

Comments:

Verified 5/6/1994

FORM I - IN

ILM03.0

9713508.2812

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B09WK0

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____
Lab Code: ITMO___ Case No.:_____ SAS No.:_____ SDG No.: W0014_____
Matrix (soil/water): SOIL_ Lab Sample ID: 4769-001
Level (low/med): LOW__ Date Received: 03/25/94
% Solids: _82.9

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	7600			P	
7440-36-0	Antimony	6.0	~~U~~	N	P	UJ
7440-38-2	Arsenic	3.2			F	
7440-39-3	Barium	108			P	
7440-41-7	Beryllium	0.54	~~B~~		P	U
7440-43-9	Cadmium	0.46	B		P	
7440-70-2	Calcium	26000			P	
7440-47-3	Chromium	13.8			P	
7440-48-4	Cobalt	8.1	B		P	
7440-50-8	Copper	17.6			P	
7439-89-6	Iron	16300			P	
7439-92-1	Lead	5.5		N*	F	J
7439-95-4	Magnesium	7310			P	J
7439-96-5	Manganese	447		N*	P	J
7439-97-6	Mercury	0.06	~~U~~		CV	UJ 5/11/94
7440-02-0	Nickel	17.3			P	
7440-09-7	Potassium	1700			P	
7782-49-2	Selenium	0.22	~~U~~	N	F	UJ
7440-22-4	Silver	0.89	~~U~~		P	UJ
7440-23-5	Sodium	173	B		P	
7440-28-0	Thallium	0.54	~~B~~	N	F	BJ
7440-62-2	Vanadium	24.5			P	
7440-66-6	Zinc	38.0			P	
	Cyanide	0.03	U		AS	
7440-32-6	Titanium	753			P	

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW___ Clarity After: _____ Artifacts: _____

Comments:

Verified 6/9/94

FORM I - IN

ILM03.0

9713508.2805

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BFM8

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____
Lab Code: ITMO__ Case No.:_____ SAS No.:_____ SDG No.: W0014_____
Matrix (soil/water): SOIL_ Lab Sample ID: 4796-001
Level (low/med): LOW__ Date Received: 03/30/94
% Solids: _89.8

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	2360			P	
7440-36-0	Antimony	5.5	~~U~~	N	P	UJ
7440-38-2	Arsenic	12.7			F	
7440-39-3	Barium	25.5	B		P	
7440-41-7	Beryllium	0.32	~~B~~		P	U
7440-43-9	Cadmium	0.62	B		P	
7440-70-2	Calcium	3300			P	
7440-47-3	Chromium	2.9			P	J
7440-48-4	Cobalt	6.8	B		P	
7440-50-8	Copper	7.8			P	
7439-89-6	Iron	12700			P	
7439-92-1	Lead	3.0		N*	F	J
7439-95-4	Magnesium	1730			P	~~J~~ 6/16/94
7439-96-5	Manganese	165		N*	P	J
7439-97-6	Mercury	0.90			CV	
7440-02-0	Nickel	7.8	B		P	
7440-09-7	Potassium	531	B		P	
7782-49-2	Selenium	0.20	~~U~~	N	F	UJ
7440-22-4	Silver	0.82	~~U~~		P	UJ
7440-23-5	Sodium	156	B		P	
7440-28-0	Thallium	0.49	~~B~~	N	F	BJ
7440-62-2	Vanadium	34.8			P	
7440-66-6	Zinc	43.5			P	
	Cyanide	0.03	~~B~~		AS	U
7440-32-6	Titanium	1860			P	

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW___ Clarity After: _____ Artifacts: _____

Comments:

Verified 06/9/94

FORM I - IN

ILM03.0

9713508.2811

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BKP4

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____
Lab Code: ITMO__ Case No.:_____ SAS No.:_____ SDG No.: W0014_____
Matrix (soil/water): SOIL_ Lab Sample ID: 4817-001
Level (low/med): LOW__ Date Received: 04/01/94
% Solids: _98.6

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5010			P	
7440-36-0	Antimony	5.0	~~U~~	N	P	UJ
7440-38-2	Arsenic	3.1		S	F	
7440-39-3	Barium	73.4			P	
7440-41-7	Beryllium	0.45	~~B~~		P	U
7440-43-9	Cadmium	0.54	B		P	
7440-70-2	Calcium	4160			P	
7440-47-3	Chromium	5.4			P	J
7440-48-4	Cobalt	7.9	B		P	
7440-50-8	Copper	11.8			P	
7439-89-6	Iron	17000			P	
7439-92-1	Lead	4.9		SN*	F	J
7439-95-4	Magnesium	3780			P	~~J~~ ij 6/15/94
7439-96-5	Manganese	315		N*	P	J
7439-97-6	Mercury	0.05	U		CV	UJ
7440-02-0	Nickel	9.9			P	
7440-09-7	Potassium	1590			P	
7782-49-2	Selenium	0.18	~~U~~	N	F	UJ
7440-22-4	Silver	0.75	~~U~~		P	UJ
7440-23-5	Sodium	121	B		P	
7440-28-0	Thallium	0.35	~~B~~	N	F	BJ
7440-62-2	Vanadium	23.6			P	
7440-66-6	Zinc	36.9			P	
	Cyanide	0.11	~~B~~		AS	BJ
7440-32-6	Titanium	1060			P	

Color Before: BROWN____ Clarity Before: _____ Texture: FINE__
Color After: COLORLESS Clarity After: _____ Artifacts: _____

Comments:

verified 5/19/94

FORM I - IN

ILM03.0

9713508.2815

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

9715506.2806

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

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

May 12, 1994

Attention: J. A. Lerch

Project number	:	519.04
Date Received by Lab	:	March 25 & 30, 1994 and April 1 & 6, 1994
Number of Samples	:	Seven (7)
Sample Type	:	Soil
SDG Number	:	W0014

I. Introduction

On March 25 and 30 and April 1 and 6, 1994, a total of seven (7) soil samples were received by ITAS-Richland and transferred to ITAS-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
4769-001	BO9WK0	40349101	Soil	03/25/94
4796-001	BOBFM8	40354501	Soil	03/30/94
4796-002	BOBFM9	40354502	Soil	03/30/94
4817-001	BOBKP4	40401801	Soil	04/01/94
4846-001	BOBKQ0	40409001	Soil	04/06/94
4846-002	BOBKM9	40409002	Soil	04/06/94
4846-003	BOBKN6	40409003	Soil	04/06/94

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: VOA, BNA and Metals including Cyanide by CLP/90 protocol. Chloride, Sulfate and Fluoride by EPA method 300.0. Nitrate by EPA method 353.1. Total Petroleum Hydrocarbons (Kerosene) by method 8015.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike/Matrix Spike Duplicate or Duplicate analyses were performed for all analyses based on protocol.

IV. Comments

The samples received by ITAS-St. Louis on 04/07/94 arrived in a cooler whose internal temperature was 1°C. The laboratory proceeded with the analyses per the client's request.

Samples QCBLK34692, BO9WK0 (4769-001MS, -001MSD), BOBFM8 (4796-001) and BOBKPP4 (4817-001) for BNA were analyzed after a continuing calibration which failed criteria for N-Nitroso-di-n-propylamine in that the %D for this compound was 48.3%, above the 40% maximum. See NCM SL-94-0228. It is noteworthy that this compound gave acceptable recoveries in the MS and MSD at 68% and 68%, similar to the other compounds, indicating that there was no affect on the results. This compound was not detected in the unspiked samples.

For Fluoride sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

For Cyanide sample BO9WK0 (4769-001) the laboratory was unable to calculate a Relative Percent Difference (RPD) due to sample concentrations below the detection limit.

The Matrix Spike and Duplicate analyses for Total Organic Carbon were inadvertently overlooked when the samples were originally analyzed. Upon review of the data package this nonconformance was noted and the analyses were performed at this time. However, the analyses were performed out of holding time. Results for the sample were performed within holding time. All results are reported, but charges for the matrix spike and duplicate do not appear on the invoice. See nonconformance memo SL-94-0241.

Kerosene results are noted as High Boiling Hydrocarbons on the TPH forms. They are quantitated against a Fuel Oil #2 (diesel) standard curve which is proved to have the same response factors as that of Kerosene (Fuel Oil #1) within minimal error. The response factor correlation is demonstrated by the running of a single, mid-level calibration standard at the beginning of the analytical batch. This calibration verification data is contained in the data package. This procedure is outlined in ITAS-St. Louis SOP SL4055.

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
z:\annelars\hanw0014.nar

9713508.2809

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 3-22-94

Ice Chest No.: SML-127 — Field Logbook No.: EFL-1115

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: Government vehicle

Shipped to: IT, Richland

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) SAF # 94-065 NONE NOTED

40349101 — Sample Identification

1) B09WK0

~~40349~~ 3/25/94 06

A 1,250ml P:CLP;TAL Metals,Hg,Ti
B 1,250ml Gs:VOA CLP
C 1,250ml aG:Semi-VOA CLP
D 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
E 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
F 1,250ml aGs:PCB/Pest (8080)
G 1,125ml G:Cyanide CLP
H 1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

~~40349005~~ 3/25/94 40349201

2) B09WK1

~~40349~~ 3/25/94

A 1,250ml P:CLP;TAL Metals,Hg,Ti
B 1,250ml Gs:VOA CLP
C 1,250ml aG:Semi-VOA CLP
D 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
E 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,250ml aGs:PCB/Pest (8080)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

~~40349006~~ 3/25/94

0000013

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
3-24-94 1310		3-25-94 10 am
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

006445

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. 967
Bill of Lading/Airbill No. N/A
Offsite Property No. N/A
Method of Shipment Government truck
Field Logbook No. N/A
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
403345 01 A BOBFM8	S	3 24.94	1300	(1) 250ml aGs	VOA	CLP	
B BOBFM8	S			(1) 250ml aGs	Semi-VOA	CLP	
C BOBFM8	S			(1) 250ml ~~aGs~~ P	Metals -CLP TAL Titanium Mercury 3 24 94	CPL	
D BOBFM8	S			(1) 125ml aGs	Anions F, Cl, SO_4	EPA 300.0	
E BOBFM8	S			(1) 125ml aGs	NO_2 NO_3	EPA 353.2	
F BOBFM8	S			(1) 125ml aGs	Cyanide	CPL	
G BOBFM8	S			(1) 125ml aGs	Kerosene	8015M	
703546 BOBFM8	S	3 24 94	1300	(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		
02 BOBFM9	S	3 24 94	0900	(1) 250ml aGs	VOA		

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
Roy T Sickle	3-24-94	1530	[illegible]
[illegible]	3-24-94	0930	R Boyd IT 3-29-94 1130

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000023

9413508.2810

U-21

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006468

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations Z Ditch
Ice Chest No. SWL 413
Bill of Lading/Airbill No. N/A
Offsite Property No. W94-C-0367 #47
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404018 01 A	BOBKP4	S	5-10-94	1315	(1) 250ml aG	Semi-VOA CLP	
B	BOBKP4	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CPL	
C	BOBKP4	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKP4	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKP4	S			(1) 125ml G	Cyanide CPL	
F	BOBKP4	S			(1) 125ml Gs	TPH Diesel Range 8015m	
G	BOBKP4	S			(1) 125ml aGs	TOC 9060	
404019 01	BOBKP4	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-1-94	1020	Ray Arnold Ray Arnold
Ray Arnold Ray Arnold	4-1-94	1210	Tom Gilmore Tom Gilmore ITAS

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2811

L-22

0000030

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006456

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP2 RAS 3 30-94
Sampling Locations ~~216-U-8 Crib~~ 200 UP2 RAS 3 30-94
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

15 April
STAND ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKM9	S	4-4-94	1110	(1) 250ml aG	Semi-VOA CLP	
BOBKM9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury 15 Apr CLP ~~EPT~~	
BOBKM9	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKM9	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKM9	S			(1) 125ml G	Cyanide 15 Apr CLP ~~EPT~~	
BOBKM9	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKM9~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
BOBKM9	S			(1) 1000ml Poly	Gross Alpha/Beta, ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-6-94	1020	R Boyd Jr 4-6-94 1035

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2842

0000036

L-23

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006463

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 [illegible] 3.30.94
Sampling Locations ~~216-U-8-Crib~~ [illegible]
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS
STAND ALONE DELIVERABLE
5 Apr 94

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKN6	S	4-4-94	1030	(1) 250ml aG	Semi-VOA 5 Apr 94 CLP	
BOBKN6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CLP ~~EPL~~	
BOBKN6	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKN6	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKN6	S			(1) 125ml G	Cyanide 5 Apr 94 CLP ~~CBL~~	
BOBKN6	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKN6~~	S			~~(1) 125ml aGs~~	~~TOC~~ [illegible] 4-4-94 9060	
BOBKN6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

5 Apr 94

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
[signature] R.T. SICKLE	4-6-94	1020	R. Boyd 4-6-94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2813

U-24

0000037

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006475

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations U1/U2 Tile Field
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS
STAND ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKQ0	S	4.4.94	1110	(1) 250ml aG	Semi-VOA CLP	
BOBKQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ~~CPL~~	
BOBKQ0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKQ0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKQ0	S			(1) 125ml G	Cyanide ~~CPL~~	
BOBKQ0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4.4.94 9060	
BOBKQ0	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4.6.94	1020	R. Boyd 4.6.94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000038

9713508.2811

9713508.2805

Attachment 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200 WP7		DATA PACKAGE: W0014-ITC-025
VALIDATOR: C Jensen	LAB: ITC	DATE: 6/10/94
CASE:		SDG:

ANALYSES PERFORMED					
☒ CLP/ICP	☒ CLP/GFAA	☒ CLP/Hg	☒ CLP/Cyanide	☒ Ti	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☐	☐

SAMPLES/MATRIX Soils

B09FM8 B09W K0
B09FM9
B09KN6
B09K24
B09K30

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments: verification performed by WHC.

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . . Yes No N/A
Are initial calibrations acceptable? . . . . . Yes No N/A
Are ICP interference checks acceptable? . . . . . Yes No N/A
Were ICV and CCV checks performed on all instruments? . . . . . Yes No N/A
Are ICV and CCV checks acceptable? . . . . . Yes No N/A
Comments:

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes No N/A
Are ICB and CCB results acceptable? . . . . . Yes No N/A
Were preparation blanks analyzed? . . . . . Yes No N/A
Are preparation blank results acceptable? . . . . . Yes No N/A
Were field/trip blanks analyzed? . . . . . Yes No N/A
Are field/trip blank results acceptable? . . . . . Yes No N/A
Comments: Sb, Be, Cr, Ag and Cu were detected in the blanks. Associated samples have been qualified using negative/positive BV rules.

5. ACCURACY

Were spike samples analyzed? . . . . . Yes No N/A
Are spike sample recoveries acceptable? . . . . . Yes No N/A
Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A
Are LCS recoveries acceptable? . . . . . Yes No N/A
Comments: SSR were <75 but >30 for Sb, Pb, ~~Ag~~, Mn Se and Tl, results qualified J, UJ 5/04/94

6-28

W0004-ITC-025
Metals

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? . . comment ① . . . . . Yes No N/A
Are laboratory duplicate samples RPD values acceptable? . . . . Yes No N/A
Were ICP serial dilution samples analyzed? . . . . . Yes No N/A
Are ICP serial dilution %D values acceptable? . . . . . Yes No N/A
Are field duplicate RPD values acceptable? . . . . . Yes No N/A
Are field split RPD values acceptable? . . . . . Yes No N/A

Comments: ① The laboratory indicated with a * that manganese was outside the duplicate criteria. However, this was acceptable and no qualification was made. 5/6/94

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A
Are duplicate injection %RSD values acceptable? . . . . . Yes No N/A
Were analytical spikes performed as required? . . . . . Yes No N/A
Are analytical spike recoveries acceptable? See note below ① . . . . . Yes No N/A
Was MSA performed as required? . . . . . Yes No N/A
Are MSA results acceptable? . . . . . Yes No N/A

Comments: ① The analytical spike for B0BKN9 was flagged with a "W" however, the spike %R was 90%, no qualification of the data is necessary. ② The analytical spike %R for Se for B0BKR0 was unacceptable and qualified as estimated UJ. The analytical spike for B0BKN6 was flagged "W" but was acceptable.

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A
Are all results supported in the raw data? . . . . . Yes No N/A
Are results calculated properly? . . . . . Yes No N/A
Do results meet the CRDLs? . . . . . Yes No N/A

Comments: The cyanide result for sample B0BKQ0 is correctly reported on the form 1 but not correctly transcribed in the raw data. The Form 1 will remain as written and no qualification of the data is necessary.

revised page 5/6/94

U-29

HOLDING TIME SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 6/9/94	PAGE 1 OF 3
COMMENTS: Inorganics W0014-ITC-025			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09WK0	ICP	3/22/94	4/11/94	4/11/94	20	0	none
	Hg		4/15/94	4/15/94	24	0	
	Cu		3/31/94 ~~4/4/94~~ 4/6/94	4/5/94	9	5	
	GFAA Pb		4/11/94	4/11/94	20	0	
	As			4/11/94	20	0	
	Se			4/12/94	21	1	
	Tl			4/11/94	20	0	
BOTTOMS	ICP	3/24/94	4/11/94	4/11/94	18	0	
	Hg		4/15/94	4/15/94	22	0	
	Cu		3/31/94 ~~4/4/94~~ 4/6/94	4/5/94	11	1	
	GFAA Pb		4/11/94	4/13/94	18	2	
	As			4/11/94	18	0	
	Se			4/12/94	18	1	
	Tl			4/11/94	18	0	

9713508.2846
WHC-SD-EN-SPP-002, Rev. 2

HOLDING TIME SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 6/9/94	PAGE 2 OF 3
COMMENTS: W0014 ITC 025			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0BKP4	ICP	3/30/94	4/11/94	4/11/94	12	0	none
	Hg		4/15/94	4/15/94	16	0	none
	Cu		5/6/94 ~~4/13/94~~ 4/14/94	4/6/94	~~37~~ 7	0	~~B~~ 5/24/94 none
	GFAA Pb		4/11/94	4/12/94	12	1	none
	As			4/12/94	12	1	
	Se			4/12/94	12	1	
	Tl			4/11/94	12	0	
B0BK119	ICP	4/04/94	4/11/94	4/11/94	7	0	
	Hg		4/15/94	4/15/94	11	0	
	Cu		5/6/94 ~~4/13/94~~ 4/13/94	4/13/94	9	0	
	GFAA Pb		4/11/94	4/12/94	7	1	
	As			4/12/94	7	1	
	Se			4/12/94	7	1	
	Tl			4/11/94	7	0	

9713508.2801
WHC-SD-EN-SPP-002, Rev. 2

HOLDING TIME SUMMARY

SDG:	VALIDATOR:	DATE:	PAGE 3 OF 3
COMMENTS: W0014-ITR-075			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0BKN6	ICP	4/4/94	4/11/94	4/11/94	7	0	none
	Hg		4/15/94	4/15/94	11	0	
	Cn		5/6/94 ~~3/31/94~~ 4/11/94	4/13/94	9	0	
	GFAA Pb		4/11/94	4/12/94	7	1	
	As			4/11/94	7	0	
	Se			4/12/94	7	1	
	Tl			4/11/94	7	0	
B0BKQ0	ICP	4/4/94	4/11/94	4/11/94	7	0	
	Hg		4/15/94	4/15/94	11	0	
	Cn		5/6/94 ~~3/31/94~~ 4/13/94	4/13/94	9	0	
	GFAA Pb		4/11/94	4/12/94	7	1	
	As			4/11/94	7	0	
	Se			4/12/94	7	1	
	Tl			4/11/94	7	0	

9713508.2841
WHC-SD-EN-SPP-002, Rev. 2

BLANK AND SAMPLE DATA SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 6/9/94	PAGE 1 OF 1
COMMENTS: Inorganics W0014- ITC-025			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
	Cyanide ICB 4/15/94	2.176			ug/L	10.88		B0BFW8	U
	Cyanide PBLK 4/6/94	-2.156			ug/L		21.56	B0BKP4	BJ
	Cyanide PBLK 4/13/94	-1.124			ug/L		11.24	B0BKM9 B0BKN6	UJ
	Mercury ICB 4/15	-.039			ug/L	5x= .078		B0BWK0	UJ
	↓	↓			↓	↓		B0BKP4	UJ
								B0BKQ0	UJ
								B0BKM9	UJ
								B0BKN6	UJ

9713508.2823

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0014_____

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	51.2	U	51.2	U	51.2	U	51.2	U	10.240	U	P
Antimony	-29.0	B	24.8	U	24.8	U	24.8	U	4.960	U	P
Arsenic	-1.5	B	1.2	U	1.2	U	1.2	U	0.240	U	F
Barium	2.2	U	2.2	U	2.2	U	2.2	U	0.440	U	P
Beryllium	0.5	B	0.8	B	0.6	B	0.3	B	0.040	U	P
Cadmium	1.6	U	1.6	U	1.6	U	1.6	U	0.320	U	P
Calcium	26.6	U	40.0	B	43.8	B	26.6	U	6.892	B	P
Chromium	-5.3	B	-5.0	B	4.2	U	4.2	U	-0.896	B	P
Cobalt	4.2	U	4.2	U	4.2	U	4.2	U	0.840	U	P
Copper	4.9	U	4.9	U	4.9	U	4.9	U	0.980	U	P
Iron	-7.8	B	8.8	B	11.2	B	7.8	B	9.244	B	P
Lead	1.0	U	1.0	U	1.0	U			0.200	U	F
Magnesium	32.3	U	32.3	U	32.3	U	32.3	U	6.460	U	P
Manganese	2.7	U	2.7	U	2.7	U	2.7	U	0.540	U	P
Mercury	0.1	U	0.1	U	0.1	U			0.050	U	CV
Nickel	18.6	U	18.6	U	18.6	U	18.6	U	3.720	U	P
Potassium	263.4	U	263.4	U	263.4	U	263.4	U	52.680	U	P
Selenium	0.9	U	0.9	U	0.9	U	0.9	U	0.180	U	F
Silver	-5.8	B	3.7	U	-3.8	B	3.7	U	-0.956	B	P
Sodium	46.7	U	46.7	U	46.7	U	46.7	U	9.340	U	P
Thallium	1.5	U	1.5	U	1.5	U	1.5	U	0.300	U	F
Vanadium	-22.1	B	12.2	U	12.2	U	12.2	U	2.440	U	P
Zinc	-1.8	B	1.5	U	1.5	U	-1.6	B	0.306	U	P
Cyanide	3.8	B	2.9	B	1.4	B			-0.026	B	AS
Titanium	3.0	U	3.0	U	3.4	B	3.5	B	0.600	U	P

FORM III - IN

ILM03.0

verified
cj 4/9/94

9713508.2824

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B09WK0S

Lab Name: ITAS_ST._LOUIS Contract: 519.04

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W0014

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

% Solids for Sample: 82.9

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									NR
Antimony	75-125	70.6779		5.9831	U	120.63	58.6	N	P
Arsenic	75-125	11.4475		3.2159		9.65	85.3		F
Barium	75-125	568.5718		107.7805		482.51	95.5		P
Beryllium	75-125	12.6900		0.5380	B	12.06	100.8		P
Cadmium	75-125	12.3281		0.4560	B	12.06	98.4		P
Calcium									NR
Chromium	75-125	60.1761		13.8166		48.25	96.1		P
Cobalt	75-125	124.9578		8.1496	B	120.63	96.8		P
Copper	75-125	76.1954		17.6478		60.31	97.1		P
Iron									NR
Lead	75-125	8.9385		5.4982		4.83	71.2	N	F
Magnesium									NR
Manganese	75-125	487.4572		446.5090		120.63	33.9	N	P
Mercury	75-125	0.6333		0.0603	U	0.60	105.6		CV
Nickel	75-125	135.1001		17.3221		120.63	97.6		P
Potassium									NR
Selenium	75-125	1.5440		0.2171	U	2.41	64.1	N	F
Silver	75-125	11.1966		0.8926	U	12.06	92.8		P
Sodium									NR
Thallium	75-125	9.4524		0.5356	B	12.06	73.9	N	F
Vanadium	75-125	145.1604		24.5308		120.63	100.0		P
Zinc	75-125	158.3957		37.9590		120.63	99.8		P
Cyanide	75-125	27.4648		0.0287	U	28.83	95.3		AS
Titanium	75-125	946.4222		753.1966		241.25	80.1		P

Comments: Sb, Pb, ~~Mg~~ Mn, Se & Tl qualified J, UJ
5/15/94 6/9/94

FORM V (Part 1) - IN ILM03.0

9713508.2825

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B09WK0D

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____

Lab Code: ITMO__ Case No._____ SAS No._____ SDG No.: W0014_____

Matrix (soil/water): SOIL_ Level (low/med): _LOW__

% Solids for Sample: _82.9 % Solids for Duplicate: __82.9

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		7596.2485		8051.2473		5.8		P
Antimony		5.9831	U	5.9831	U			P
Arsenic	2.4	3.2159		4.0555		23.1		F
Barium	48.3	107.7805		103.5416		4.0		P
Beryllium		0.5380	B	0.5766	B	6.9		P
Cadmium		0.4560	B	0.6996	B	42.2		P
Calcium		26047.9180		26909.0157		3.3		P
Chromium		13.8166		13.3245		3.6		P
Cobalt		8.1496	B	8.9771	B	9.7		P
Copper	6.0	17.6478		16.4753		6.9		P
Iron		16301.9710		17308.4801		6.0		P
Lead	10	5.4982		9.0953		49.3	*	F
Magnesium		7308.8540		7148.0507		2.2		P
Manganese		446.5090		355.5609		22.7	*	P
Mercury		0.0603	U	0.0603	U			CV
Nickel	9.6	17.3221		17.0277		1.7		P
Potassium	1206.3	1696.1834		1667.0398		1.7		P
Selenium		0.2171	U	0.2171	U			F
Silver		0.8926	U	0.8926	U			P
Sodium		173.2545	B	181.9180	B	4.9		P
Thallium		0.5356	B	0.3619	U	200.0		F
Vanadium	12.1	24.5308		27.1025		10.0		P
Zinc		37.9590		38.9795		2.7		P
Cyanide		0.0287	U	0.0286	U			AS
Titanium		753.1966		869.1146		14.3		P

ok 5/6/94

FORM VI - IN

ILM03.0

Soil limits are 35% RPD for results over 5x CRDL.
Manganese within limits.
Lead limits exceeded, results qualified J for detects.
5/6/94 ~~[illegible]~~

ACCURACY DATA SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 6/24/94	PAGE 1 OF 1	
COMMENTS: GFAA N0014-ITC-025				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
Selem 6/24/94				
	Selenium	81.9	608KQ0	UJ

mw/my 6/24/94

9713508.2811 WRC-SD-EN-SPP-002, Rev. 2

9713508.2827

JUN 1994
RECEIVED
TQO

MEMORANDUM

TO: 200-UP-2 Project QA Record

June 23, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: RADIOCHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0014-ITC-025, (923-E418, Filename W0014R.UP2)

INTRODUCTION

This memo presents the results of data validation on data package W0014-ITC-025 prepared by IT Analytical Services of Richland, Washington. The samples validated along with the analyses reported and the method of analysis is listed in the following table.

RECEIVED
JUN 24 1994
VALIDATION DOCUMENTATION
SDLA

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09WK0	03/22/94	SOIL	SEE NOTE 1
B0BFM8	03/24/94	SOIL	
B0BKP4	03/30/94	SOIL	
B0BKQ0	04/04/94	SOIL	
B0BKM9	04/04/94	SOIL	
B0BKN6	04/04/94	SOIL	

Note 1. The samples were analyzed for americium-241, neptunium-237, plutonium-238, 239/240 and uranium-234, 235 and 238 by alpha spectroscopy; iodine-129 and selected radionuclides by gamma spectroscopy; gross alpha, gross beta and strontium-90 by gas proportional counting; selenium-79 and technetium-99 by liquid scintillation counting and total uranium by kinetic phosphorimetry.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met with the exception of the deficiencies identified under "Minor Deficiencies".

Accuracy. Goals for accuracy were met with the exception of the deficiencies identified under "Minor Deficiencies".

Sample Result Verification. All sample results were supported in the raw data. Minimum detectable activities (MDA) could not be verified by recalculation for selenium-79 and technetium-99, resulting in qualification of non-detected results as estimated (UJ). Technetium-99 and iodine-129 MDAs were not provided in the raw data, resulting in qualification of all results as estimated (J for detects, UJ for non-detects). In addition, the results for technetium-99 could not be verified by recalculation resulting in qualification of detected results as estimated (J). Attachment 2 provides a summary of the samples affected and the resulting qualifications.

Detection Limits. Detection limit goals were met for all analytes with the exception of cobalt-60, europium-152, europium-154, technetium-99, plutonium-238 and iodine-129 for several samples as shown in Attachment 5.

Completeness. The data package was complete for all requested analyses. Six samples were validated in this data package with a total of 207 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified which resulted in qualification of sample results as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Calibrations

- The initial calibration correlation coefficient for the total uranium high standard (50 ng) was unacceptable. Attachments 2 and 5 provide a summary of the sample results affected and qualifications applied.

Laboratory Duplicates

- The laboratory duplicate criteria was exceeded for total uranium and plutonium-238, 239/240. Attachments 2 and 5 provide a summary of the sample results affected and qualifications applied.

Laboratory Control Samples

- The laboratory control sample recoveries for uranium-235 and selenium-79 were unacceptable. Attachments 2 and 5 provide a summary of the sample results affected and qualifications applied.

Spike Sample Recovery

- The spike sample recovery for selenium-79 was unacceptable. Attachments 2 and 5 provide a summary of the sample results affected and qualifications applied.

DATA REPORTING

- Results reported at a concentration of less than the minimum detectable activity (MDA) have been qualified as undetected (U) and the MDA is reported in the validated data summary in Attachment 3.

- The laboratory case narrative indicated the selenium-79 result for sample B09WK0 was a false positive. Qualification was not applied because the result was verified in the raw data.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Radiochemical Analyses, WHC-SD-EN-SPP-001, Rev. 1, 1993. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1

GLOSSARY OF RADIOCHEMISTRY DATA REPORTING QUALIFIERS

U - Indicates the constituent was analyzed for, but was not detected at a concentration above the minimum detectable activity (MDA). The concentration reported is the MDA corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and was not detected at a concentration above the MDA. Due to a quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample MDA. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. The concentration reported is qualified as estimated due to a quality control deficiency identified during data validation. The associated data should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported is qualified as unusable due to a quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported is qualified as unusable due to a quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

SDG: W0014-ITC-025	VALIDATOR: C. Jensen	DATE: June 23, 1994	PAGE 1 OF 1
COMMENTS: RADIOCHEMISTRY			
ANALYTE	QUALIFIER	SAMPLES AFFECTED	REASON
TOTAL URANIUM	J	B09WK0	INITIAL CALIBRATION r <.995
TOTAL URANIUM	J	ALL	DUPLICATE RPD EXCEEDED
U-235	J, UJ	ALL	LCS >30 AND <70
SE-79	J, UJ	ALL	LCS >30 AND <70
U-235	J	B0BFM8, B0BKP4, B09WK0	LCS >130
SE-79	J, UJ	ALL	MATRIX SPIKE %R > 10 AND < 60
PU-238, 239/240	J, UJ	ALL	NO DUPLICATE REPORTED DUE TO INTERFERENCE
I-129	UJ	ALL	MDAs NOT PROVIDED IN THE RAW DATA
TC-99	UJ	B0BKM9, B0BFM8, B0BKP4, B0BKN6, B0BKQ0	MDAs NOT PROVIDED IN THE RAW DATA
TC-99	UJ	B0BKM9, B0BFM8, B0BKP4, B0BKN6, B0BKQ0	MDAs NOT VERIFIABLE BY RECALCULATION
SE-79	UJ	B0BKP4, B0BKQ0	MDAs NOT VERIFIABLE BY RECALCULATION
TC-99	J	B09WK0	RESULTS NOT VERIFIABLE BY RECALCULATION

9713508.2B12

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0014-ITC-025

	Samp#	B09WK0		B0BFM8		B0BKM9		B0BKN6		B0BKP4		B0BKQ0	
	Date	3-22-94		3-24-94		4-4-94		4-4-94		3-30-94		4-4-94	
	Location	---		216-U-8		U1/U2 TILE FIELD		U1/U2 TILE FIELD		Z DITCH		U1/U2 TILE FIELD	
	Depth	---		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
AMERICIUM-241	PCI/G	0.832		0.817		0.600		0.657		13.700		0.805	
CURIUM-242	PCI/G	0.018	U	0.020	U	0.020	U	0.013	U	0.018	U	0.013	U
CURIUM-244	PCI/G	0.014	U	0.023	U	0.023	U	0.019	U	0.018	U	0.013	U
NEPTUNIUM-237	PCI/G	0.011	U	0.011	U	0.150		0.011	U	0.011	U	0.079	
PLUTONIUM-238	PCI/G	0.052	J	0.052	UJ	0.035	UJ	0.013	UJ	1.220	J	0.035	UJ
PLUTONIUM-239/240	PCI/G	1.470	J	0.193	J	0.326	J	0.063	J	74.900	J	0.907	J
URANIUM-234	PCI/G	56.000		1.630		0.921		1.380		1.070		1.050	
URANIUM-235	PCI/G	2.370	J	0.050	J	0.100	UJ	0.058	UJ	0.101	J	0.057	UJ
URANIUM-238	PCI/G	53.000		1.760		1.020		1.210		0.875		1.160	
POTASSIUM-40	PCI/G	13.600		14.400		12.300		0.130		13.200		12.900	
COBALT-60	PCI/G	0.069	U	0.019	U	0.013	U	0.014	U	0.015	U	0.013	U
EUROPIUM-152	PCI/G	0.267	U	0.146		0.078		0.070	U	0.071	U	0.089	
CESIUM-137	PCI/G	9990.000		0.145		58.400		29.800		10.200		83.400	
CESIUM-134	PCI/G	0.436	U	0.017	U	0.028	U	0.023	U	0.016	U	0.033	U
RUTHENIUM-106	PCI/G	4.580	U	0.166	U	0.287	U	0.232	U	0.168	U	0.336	U
RADIUM-224	PCI/G	---		1.420		0.662		0.680		0.709		0.642	
SODIUM-22	PCI/G	0.157	U	0.021	U	0.015	U	0.016	U	0.017	U	0.015	U
EUROPIUM-155	PCI/G	1.280		0.071		0.085	U	0.079	U	0.055	U	0.100	U
EUROPIUM-154	PCI/G	0.429	U	0.057	U	0.041	U	0.044	U	0.046	U	0.041	U
RADIUM-226	PCI/G	---		1.080		0.605		0.596		0.575		0.558	
THORIUM-234	PCI/G	421.000		12.500		---		---		---		---	
URANIUM-238 (by gamma scan)	PCI/G	1.250	U	1.240		0.551		0.594		0.559		0.562	
ACTINIUM-228	PCI/G	---		1.460		0.736		0.679		0.698		0.660	
THALLIUM-208	PCI/G	---		0.484		0.232		0.249		0.238		---	
BISMUTH-212	PCI/G	---		---		0.483		---		---		---	
BISMUTH-214	PCI/G	---		1.080		0.605		0.596		0.575		0.558	
LEAD-212	PCI/G	---		1.340		0.632		0.649		0.678		0.616	
LEAD-214	PCI/G	---		1.240		0.551		0.594		0.559		0.562	
THORIUM-232	PCI/G	---		1.460		0.736		0.679		0.698		0.660	
RADIUM-228	PCI/G	---		1.490		0.747		0.689		0.708		0.670	
IODINE-129	PCI/G	26.600	UJ	1.050	UJ	1.960	UJ	1.610	UJ	1.250	UJ	2.250	UJ
ALPHA	PCI/G	81.300		21.200		14.600		9.880		658.000		16.200	
BETA	PCI/G	9480.000		27.200		95.900		65.500		34.500		123.000	
TOTAL STRONTIUM	PCI/G	2.030		0.097	U	10.300		9.700		0.711		8.890	
SELENIUM-79	PCI/G	46.000	J	2.390	J	1.800	J	3.060	J	1.750	UJ	1.750	UJ
TECHNETIUM-99	PCI/G	4.620	J	0.730	UJ	0.730	UJ	0.730	UJ	0.730	UJ	0.730	UJ
URANIUM	UG/G	144.000	J	4.440	J	3.570	J	4.010	J	3.170	J	2.520	J

Verified
5/6/23/94

007

9713508.2803

9713508.2844

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: 4-03-492-01 MATRIX: SOIL

WHC ID: BO9WK0 DATE RECEIVE 3/25/94

REPORTING UNIT pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	①
AM-241	8.32E-01	1.33E-01	1.88E-01	2.41E-02	0.688	RD3302	
CM-242	0.00E+00	0.00E+00	2.02E-02	1.83E-02	0.688	RD3302	U
CM-244	0.00E+00	0.00E+00	1.59E-02	1.44E-02	0.688	RD3302	U
NP-237	0 ~~2.08E-02~~	1.86E-02	1.92E-02	1.13E-02	1	RD3208	U
PU-238	5.17E-02	3.91E-02	4.00E-02	2.00E-02	0.564	RD3209	J
PU239/40	1.47E+00	2.09E-01	3.14E-01	3.53E-02	0.564	RD3209	J
U-234	5.60E+01	1.23E+00	7.77E+00	4.17E-02	0.617	RD3234	
U-235	2.37E+00	2.53E-01	4.11E-01	3.60E-02	0.617	RD3234	J
U-238DA	5.30E+01	1.20E+00	7.35E+00	3.81E-02	0.617	RD3234	
*K-40	1.36E+01	7.06E-01	1.54E+00	N/A	N/A	RD3219	
*CO-60	-1.89E-02	4.36E-02	4.36E-02	6.91E-02	N/A	RD3219	U
*EU-152	3.70E-02	1.65E-01	1.65E-01	2.67E-01	N/A	RD3219	U
*CS-137DA	9.99E+03	9.99E+02	9.99E+02	N/A	N/A	RD3219	
*CS-134	-1.94E-01	2.78E-01	2.78E-01	4.36E-01	N/A	RD3219	U
*RU-106DA	-9.15E-01	2.90E+00	2.90E+00	4.58E+00	N/A	RD3219	U
*NA-22	1.06E-01	9.47E-02	9.53E-02	1.57E-01	N/A	RD3219	U
*EU-155	-4.82E-01	7.94E-01	7.95E-01	1.28E+00	N/A	RD3219	U
*EU-154	2.91E-01	2.59E-01	2.61E-01	4.29E-01	N/A	RD3219	U
* TH-234	4.21E+02	1.28E+02	1.35E+02	N/A	N/A	RD3219	
*U-238DA	-4.93E-01	7.67E-01	7.68E-01	1.25E+00	N/A	RD3219	U
* I-129LP	-8.57E+02	1.82E+01	8.76E+01	2.66E+01	N/A	RD3219	UJ
ALPHA	8.13E+01	1.23E+01	1.51E+01	4.56E+00	1	RD3222	
BETA	9.48E+03	6.29E+01	6.28E+02	2.95E+00	1	RD3222	
TOTAL-SR	2.03E+00	1.54E-01	5.31E-01	9.76E-02	0.899	RD3204	
*SE-79	4.60E+01	1.53E+00	7.32E+00	1.75E+00	0.557	RD3253	J
TC-99	4.62E+00	3.88E-01	1.83E+00	7.30E-01	0.691	ITAS-IT-RS-0001	~~J~~ J 6/22/94 *
URANIUM	1.44E+02	N/A	2.16E+01	1.00E-01	0.952	RD4200	J

* - SEE CASE NARRATIVE

verified
6/22/94

~~0010~~ 008

682A-6-93

9713508.2805

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: 4-03-546-01 MATRIX: SOIL

WHC ID: BOBFM8 DATE RECEIVE 3/29/94

REPORTING UNIT pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	8.17E-01	1.37E-01	1.92E-01	1.55E-02	0.635	RD3302	
CM-242	0.00E+00	0.00E+00	2.18E-02	1.97E-02	0.635	RD3302	U
CM-244	-4.60E-04	9.20E-04	9.23E-04	2.31E-02	0.635	RD3302	U
NP-237	4.17E-03	8.33E-03	8.38E-03	1.13E-02	1	RD3208	U
PU-238	5.52E-03	1.91E-02	1.92E-02	5.20E-02	0.453	RD3209	UJ
PU239/40	1.93E-01	8.42E-02	9.06E-02	2.49E-02	0.453	RD3209	J
U-234	1.63E+00	2.21E-01	3.21E-01	3.43E-02	0.553	RD3234	
U-235	5.02E-02	3.98E-02	4.05E-02	4.01E-02	0.553	RD3234	J
U-238DA	1.76E+00	2.30E-01	3.41E-01	3.75E-02	0.553	RD3234	
K-40	1.44E+01	4.41E-01	1.51E+00	N/A	N/A	RD3219	
CO-60	-8.14E-03	1.18E-02	1.19E-02	1.93E-02	N/A	RD3219	U
EU-152	1.46E-01	5.54E-02	5.73E-02	1.04E-01	N/A	RD3219	
CS-137DA	1.45E-01	2.03E-02	2.50E-02	N/A	N/A	RD3219	
CS-134	-2.34E-02	1.07E-02	1.10E-02	1.66E-02	N/A	RD3219	U
RU-106DA	-1.27E-01	1.04E-01	1.05E-01	1.66E-01	N/A	RD3219	U
RA-224DA	1.42E+00	3.84E-02	1.47E-01	N/A	N/A	RD3219	
NA-22	-4.77E-03	1.29E-02	1.29E-02	2.10E-02	N/A	RD3219	U
EU-155	7.10E-02	3.15E-02	3.22E-02	5.36E-02	N/A	RD3219	
EU-154	-1.30E-02	3.52E-02	3.53E-02	5.74E-02	N/A	RD3219	U
RA-226DA	1.08E+00	5.04E-02	1.19E-01	N/A	N/A	RD3219	
TH-234	1.25E+01	9.99E+00	1.01E+01	N/A	N/A	RD3219	
U-238DA	1.24E+00	5.23E-02	1.34E-01	N/A	N/A	RD3219	
AC-228	1.46E+00	9.16E-02	1.73E-01	N/A	N/A	RD3219	
TL-208	4.84E-01	2.54E-02	5.46E-02	N/A	N/A	RD3219	
BI-214	1.08E+00	5.04E-02	1.19E-01	N/A	N/A	RD3219	
PB-212	1.34E+00	3.61E-02	1.39E-01	N/A	N/A	RD3219	
PB-214	1.24E+00	5.23E-02	1.34E-01	N/A	N/A	RD3219	
TH-232DA	1.46E+00	9.16E-02	1.73E-01	N/A	N/A	RD3219	
RA-228DA	1.49E+00	9.34E-02	1.76E-01	N/A	N/A	RD3219	
I-129LP	7.95E-01	5.68E-01	5.74E-01	1.05E+00	N/A	RD3219	UJ
ALPHA	2.12E+01	6.44E+00	6.83E+00	4.14E+00	1	RD3222	
BETA	2.72E+01	3.71E+00	4.12E+00	2.82E+00	1	RD3222	
TOTAL-SR	3.36E-02	4.32E-02	4.40E-02	9.72E-02	0.894	RD3204	U
SE-79	2.39E+00	8.73E-01	2.52E+00	1.75E+00	0.557	RD3253	J
TC-99	6.84E-02	3.15E-01	1.44E+00	7.30E-01	0.691	ITAS-IT-RS-0001	UJ
URANIUM	4.44E+00	N/A	6.66E-01	1.00E-01	0.952	RD4200	J

verified
5/6/22/94

~~0011~~ 009

682A-6-93

9713508.2836

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: 4-04-091-02 MATRIX: SOIL

WHC ID: BOBKM9 DATE RECEIVE 4/6/94

REPORTING UNIT pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	6.00E-01	1.09E-01	1.44E-01	1.99E-02	0.731	RD3302	
CM-242	-3.97E-04	7.93E-04	7.96E-04	1.99E-02	0.731	RD3302	U
CM-244	-7.93E-04	1.12E-03	1.13E-03	2.27E-02	0.731	RD3302	U
NP-237	1.50E-01	4.99E-02	5.94E-02	1.13E-02	1	RD3208	
PU-238	-1.44E-03	2.89E-03	2.90E-03	3.46E-02	0.576	RD3209	UJ
PU239/40	3.26E-01	9.80E-02	1.11E-01	4.95E-02	0.576	RD3209	J
U-234	9.21E-01	2.64E-01	3.25E-01	1.20E-01	0.223	RD3234	
U-235	5.00E-02	6.49E-02	6.57E-02	9.96E-02	0.223	RD3234	UJ
U-238DA	1.02E+00	2.77E-01	3.47E-01	1.11E-01	0.223	RD3234	
K-40	1.23E+01	3.53E-01	1.28E+00	N/A	N/A	RD3219	
CO-60	-3.07E-03	7.78E-03	7.78E-03	1.25E-02	N/A	RD3219	U
EU-152	7.82E-02	3.60E-02	3.69E-02	6.66E-02	N/A	RD3219	
CS-137DA	5.84E+01	1.53E-01	5.84E+00	N/A	N/A	RD3219	
CS-134	7.13E-03	1.70E-02	1.70E-02	2.80E-02	N/A	RD3219	U
RU-106DA	-1.05E-01	1.76E-01	1.76E-01	2.87E-01	N/A	RD3219	U
RA-224DA	6.62E-01	5.10E-02	8.35E-02	N/A	N/A	RD3219	
NA-22	-9.22E-05	8.88E-03	8.88E-03	1.50E-02	N/A	RD3219	U
EU-155	6.98E-02	5.53E-02	5.57E-02	8.49E-02	N/A	RD3219	U
EU-154	-2.53E-04	2.44E-02	2.44E-02	4.13E-02	N/A	RD3219	U
RA-226DA	6.05E-01	6.29E-02	8.73E-02	N/A	N/A	RD3219	
U-238DA	5.51E-01	7.71E-02	9.48E-02	N/A	N/A	RD3219	
AC-228	7.36E-01	6.10E-02	9.56E-02	N/A	N/A	RD3219	
TL-208	2.32E-01	3.42E-02	4.13E-02	N/A	N/A	RD3219	
BI-212	4.83E-01	1.17E-01	1.27E-01	N/A	N/A	RD3219	
BI-214	6.05E-01	6.29E-02	8.72E-02	N/A	N/A	RD3219	
PB-212	6.32E-01	4.88E-02	7.98E-02	N/A	N/A	RD3219	
PB-214	5.51E-01	7.71E-02	9.48E-02	N/A	N/A	RD3219	
TH-232DA	7.36E-01	6.10E-02	9.56E-02	N/A	N/A	RD3219	
RA-228DA	7.47E-01	6.20E-02	9.71E-02	N/A	N/A	RD3219	
I-129LP	-2.48E+00	1.23E+00	1.25E+00	1.96E+00	N/A	RD3219	UJ
ALPHA	1.46E+01	5.66E+00	5.87E+00	5.15E+00	1	RD3222	
BETA	9.59E+01	6.51E+00	9.08E+00	2.82E+00	1	RD3222	
TOTAL-SR	1.03E+01	3.46E-01	2.57E+00	1.04E-01	0.854	RD3204	
SE-79	1.80E+00	8.55E-01	2.44E+00	1.04E+00	0.557	RD3253	J
TC-99	4.79E-01	3.23E-01	1.47E+00	7.30E-01	0.691	ITAS-IT-RS-0001	UJ
URANIUM	3.57E+00	N/A	5.35E-01	1.00E-01	0.952	RD4200	J

Verified 06/22/94

9713508.2807

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: 4-04-091-03 MATRIX: SOIL

WHC ID: BOBKN6 DATE RECEIVE 4/6/94

REPORTING UNIT pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	6.57E-01	1.11E-01	1.49E-01	2.12E-02	0.783	RD3302	
CM-242	0.00E+00	0.00E+00	1.39E-02	1.25E-02	0.783	RD3302	U
CM-244	-3.71E-04	7.42E-04	7.44E-04	1.86E-02	0.783	RD3302	U
NP-237	~~3.83E-03~~	8.34E-03	8.38E-03	~~1.31E-02~~	1	RD3208	U
PU-238	9.84E-03	1.39E-02	1.40E-02	1.33E-02	0.847	RD3209	UJ
PU239/40	6.29E-02	3.55E-02	3.66E-02	2.35E-02	0.847	RD3209	J
U-234	1.38E+00	2.65E-01	3.56E-01	8.67E-02	0.329	RD3234	
U-235	4.85E-02	5.06E-02	5.13E-02	5.77E-02	0.329	RD3234	UJ
U-238DA	1.21E+00	2.48E-01	3.24E-01	3.42E-02	0.329	RD3234	
K-40	1.30E+01	3.83E-01	1.36E+00	N/A	N/A	RD3219	
CO-60	5.43E-03	8.40E-03	8.42E-03	1.44E-02	N/A	RD3219	U
EU-152	2.72E-02	3.98E-02	3.98E-02	6.99E-02	N/A	RD3219	U
CS-137DA	2.98E+01	1.55E-01	2.99E+00	N/A	N/A	RD3219	
CS-134	1.00E-02	1.41E-02	1.42E-02	2.26E-02	N/A	RD3219	U
RU-106DA	-2.87E-02	1.47E-01	1.47E-01	2.32E-01	N/A	RD3219	U
RA-224DA	6.80E-01	4.57E-02	8.19E-02	N/A	N/A	RD3219	
NA-22	-5.44E-03	9.91E-03	9.92E-03	1.59E-02	N/A	RD3219	U
EU-155	3.86E-02	5.17E-02	5.19E-02	7.85E-02	N/A	RD3219	U
EU-154	-1.69E-02	2.73E-02	2.74E-02	4.36E-02	N/A	RD3219	U
RA-226DA	5.96E-01	5.41E-02	8.04E-02	N/A	N/A	RD3219	
U-238DA	5.94E-01	6.49E-02	8.80E-02	N/A	N/A	RD3219	
AC-228	6.79E-01	6.81E-02	9.61E-02	N/A	N/A	RD3219	
TL-208	2.49E-01	3.49E-02	4.29E-02	N/A	N/A	RD3219	
BI-214	5.96E-01	5.41E-02	8.04E-02	N/A	N/A	RD3219	
PB-212	6.49E-01	4.36E-02	7.82E-02	N/A	N/A	RD3219	
PB-214	5.94E-01	6.49E-02	8.80E-02	N/A	N/A	RD3219	
TH-232DA	6.79E-01	6.81E-02	9.61E-02	N/A	N/A	RD3219	
RA-228DA	6.89E-01	6.91E-02	9.76E-02	N/A	N/A	RD3219	
I-129LP	-1.51E+00	9.99E-01	1.01E+00	1.61E+00	N/A	RD3219	UJ
ALPHA	9.88E+00	4.69E+00	4.81E+00	4.57E+00	1	RD3222	
BETA	6.55E+01	5.46E+00	6.96E+00	2.88E+00	1	RD3222	
TOTAL-SR	9.70E+00	3.43E-01	2.38E+00	1.08E-01	0.817	RD3204	
SE-79	3.06E+00	8.91E-01	2.59E+00	1.74E+00	0.557	RD3253	J
TC-99	4.53E-01	3.22E-01	1.47E+00	7.30E-01	0.691	ITAS-IT-RS-0001	UJ
URANIUM	4.01E+00	N/A	6.02E-01	1.00E-01	0.952	RD4200	J

verified
5/12/94

682A-6-93

9713508.2818

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: 4-04-019-01 MATRIX: SOIL

WHC ID: BOBKP4 DATE RECEIVE 4/1/94

REPORTING UNIT pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	1.37E+01	4.95E-01	2.12E+00	2.39E-02	0.809	RD3302	
CM-242	-3.58E-04	7.16E-04	7.18E-04	1.80E-02	0.809	RD3302	U
CM-244	-3.58E-04	7.16E-04	7.18E-04	1.80E-02	0.809	RD3302	U
NP-237	4.15E-03	8.30E-03	8.35E-03	1.12E-02	1	RD3208	U
PU-238	1.22E+00	1.46E-01	2.19E-01	2.45E-02	0.959	RD3209	J
PU239/40	7.49E+01	1.14E+00	1.01E+01	2.08E-02	0.959	RD3209	J
U-234	1.07E+00	2.12E-01	2.72E-01	5.90E-02	0.398	RD3234	
U-235	1.01E-01	6.62E-02	6.81E-02	5.58E-02	0.398	RD3234	J
U-238DA	8.75E-01	1.92E-01	2.37E-01	5.21E-02	0.398	RD3234	
K-40	1.32E+01	3.89E-01	1.38E+00	N/A	N/A	RD3219	
CO-60	2.01E-03	8.95E-03	8.95E-03	1.48E-02	N/A	RD3219	U
EU-152	5.36E-02	4.00E-02	4.04E-02	7.06E-02	N/A	RD3219	U
CS-137DA	1.02E+01	7.56E-02	1.02E+00	N/A	N/A	RD3219	
CS-134	-5.21E-03	1.04E-02	1.04E-02	1.63E-02	N/A	RD3219	U
RU-106DA	2.08E-02	1.04E-01	1.04E-01	1.68E-01	N/A	RD3219	U
RA-224DA	7.09E-01	3.25E-02	7.80E-02	N/A	N/A	RD3219	
NA-22	-1.66E-03	1.00E-02	1.00E-02	1.67E-02	N/A	RD3219	U
EU-155	1.64E-02	3.30E-02	3.31E-02	5.48E-02	N/A	RD3219	U
EU-154	-1.06E-02	2.74E-02	2.75E-02	4.56E-02	N/A	RD3219	U
RA-226DA	5.75E-01	4.78E-02	7.47E-02	N/A	N/A	RD3219	
U-238DA	5.59E-01	4.34E-02	7.08E-02	N/A	N/A	RD3219	
AC-228	6.98E-01	6.89E-02	9.80E-02	N/A	N/A	RD3219	
TL-208	2.38E-01	2.50E-02	3.45E-02	N/A	N/A	RD3219	
BI-214	5.75E-01	4.78E-02	7.47E-02	N/A	N/A	RD3219	
PB-212	6.78E-01	3.10E-02	7.46E-02	N/A	N/A	RD3219	
PB-214	5.59E-01	4.34E-02	7.08E-02	N/A	N/A	RD3219	
TH-232DA	6.98E-01	6.89E-02	9.80E-02	N/A	N/A	RD3219	
RA-228DA	7.08E-01	6.99E-02	9.95E-02	N/A	N/A	RD3219	
I-129LP	-8.50E-01	7.69E-01	7.73E-01	1.25E+00	N/A	RD3219	UJ
ALPHA	6.58E+02	3.46E+01	7.92E+01	4.73E+00	1	RD3222	
BETA	3.45E+01	4.10E+00	4.69E+00	2.83E+00	1	RD3222	
TOTAL-SR	7.11E-01	1.03E-01	1.99E-01	1.09E-01	0.755	RD3204	
SE-79	-2.71E-01	8.15E-01	2.23E+00	1.75E+00	0.557	RD3253	UJ
TC-99	-2.28E-01	3.08E-01	1.42E+00	7.30E-01	0.691	ITAS-IT-RS-0001	UJ
URANIUM	3.17E+00	N/A	4.76E-01	1.00E-01	0.952	RD4200	J

verified
5/12/94

682A-6-93

9713508.2889

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: 4-04-091-01 MATRIX: SOIL

WHC ID: BOBKQ0 DATE RECEIVE 4/6/94

REPORTING UNIT pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	
AM-241	8.05E-01	1.24E-01	1.76E-01	1.30E-02	0.756	RD3302	
CM-242	0.00E+00	0.00E+00	1.44E-02	1.30E-02	0.756	RD3302	U
CM-244	4.79E-03	9.58E-03	9.61E-03	1.30E-02	0.756	RD3302	U
NP-237	7.92E-02	3.63E-02	4.01E-02	1.13E-02	1	RD3208	
PU-238	2.25E-02	2.53E-02	2.55E-02	3.54E-02	0.665	RD3209	UJ
PU239/40	9.07E-01	1.51E-01	2.03E-01	1.69E-02	0.665	RD3209	J
U-234	1.05E+00	2.11E-01	2.71E-01	4.85E-02	0.392	RD3234	
U-235	4.97E-02	4.76E-02	4.83E-02	5.67E-02	0.392	RD3234	UJ
U-238DA	1.16E+00	2.22E-01	2.90E-01	5.29E-02	0.392	RD3234	
K-40	1.29E+01	3.50E-01	1.33E+00	N/A	N/A	RD3219	
CO-60	1.23E-02	7.37E-03	7.47E-03	1.31E-02	N/A	RD3219	U
EU-152	8.88E-02	3.33E-02	3.44E-02	6.42E-02	N/A	RD3219	
CS-137DA	8.34E+01	2.24E-01	8.34E+00	N/A	N/A	RD3219	
CS-134	5.29E-03	2.01E-02	2.01E-02	3.31E-02	N/A	RD3219	U
RU-106DA	-9.20E-02	2.05E-01	2.05E-01	3.36E-01	N/A	RD3219	U
RA-224DA	6.42E-01	5.89E-02	8.71E-02	N/A	N/A	RD3219	
NA-22	5.84E-03	8.41E-03	8.43E-03	1.47E-02	N/A	RD3219	U
EU-155	2.29E-02	6.53E-02	6.53E-02	1.00E-01	N/A	RD3219	U
EU-154	1.61E-02	2.32E-02	2.32E-02	4.06E-02	N/A	RD3219	U
RA-226DA	5.58E-01	6.85E-02	8.84E-02	N/A	N/A	RD3219	
U-238DA	5.62E-01	9.11E-02	1.07E-01	N/A	N/A	RD3219	
AC-228	6.60E-01	5.44E-02	8.55E-02	N/A	N/A	RD3219	
BI-214	5.58E-01	6.86E-02	8.84E-02	N/A	N/A	RD3219	
PB-212	6.16E-01	5.65E-02	8.35E-02	N/A	N/A	RD3219	
PB-214	5.62E-01	9.11E-02	1.07E-01	N/A	N/A	RD3219	
TH-232DA	6.60E-01	5.44E-02	8.55E-02	N/A	N/A	RD3219	
RA-228DA	6.70E-01	5.51E-02	8.67E-02	N/A	N/A	RD3219	
I-129LP	-5.57E+00	1.47E+00	1.57E+00	2.25E+00	N/A	RD3219	UJ
ALPHA	1.62E+01	5.79E+00	6.05E+00	4.57E+00	1	RD3222	
BETA	1.23E+02	7.32E+00	1.09E+01	2.76E+00	1	RD3222	
TOTAL-SR	8.89E+00	3.21E-01	2.20E+00	9.97E-02	0.838	RD3204	
SE-79	1.03E+00	8.44E-01	2.37E+00	1.75E+00	0.557	RD3253	UJ
TC-99	3.65E-01	3.20E-01	1.46E+00	7.30E-01	0.691	ITAS-IT-RS-0001	UJ
URANIUM	2.52E+00	N/A	3.78E-01	1.00E-01	0.952	RD4200	J

Verified
5/6/22/94

D13

~~0013~~

682A-6-93

9713508.2840

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

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

May 27, 1994

Attention: J.A.Lerch

SAF Number	:	94-065
Date SDG Closed	:	April 8, 1994
Number of Samples	:	Six (6)
Sample Type	:	Soil
SDG Number	:	W0014
Data Deliverable	:	Stand Alone

I. Introduction

On March 25 and 29, 1994, and April 1 and 6, 1994, six soil samples were received by ITAS-Richland for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the WHC specific IDs:

ITAS-Richland ID	WHC ID	Matrix	Date of Receipt
403492-01A	B09WK0	Soil	3/25/94
403546-01A	B0BFM8	Soil	3/29/94
404019-01A	B0BKP4	Soil	4/1/94
404091-01A	B0BKQ0	Soil	4/6/94
404091-02A	B0BKM9	Soil	4/6/94
404091-03A	B0BKN6	Soil	4/6/94

Regional Office
2800 George Washington Way • Richland, Washington 99352-1613 • 509-375-3131 • FAX: 509-375-5590

IT Corporation is a wholly owned subsidiary of International Technology Corporation

---

II. Analytical Results/Methodology

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

The requested analyses were:

Alpha Spectroscopy
Americium-241, Curium-244 by method ITAS-RD-3302
Neptunium-237 by method ITAS-RD-3208
Plutonium-238, -239/40 by method ITAS-RD-3209
Uranium-234, -235, -238 by method ITAS-RD-3234
Gamma Spectroscopy
Gamma Scan by method ITAS-RD-3219
Iodine-129 by method ITAS-RD-3219
Gas Proportional Counting
Gross Alpha by method ITAS-RD-3222
Gross Beta by method ITAS-RD-3222
Strontium-90 by method ITAS-RD-3204
Liquid Scintillation Counting
Selenium-79 by method ITAS-RD-3253
Technetium-99 by method ITAS-IT-RS-0001
Total Uranium
Total Uranium by method ITAS-RD-4200

III. Quality Control

The analytical results for each analysis performed under SDG W0014 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results except for gross alpha and gross beta quality control sample results which are reported in pCi/sample.

IV. Comments

The initial radioactivity screening of the samples classified them as Category III with the exception of WHC sample B09WK0 which was classified as Category II.

The COC forms submitted with these samples incorrectly requested method ITAS-RD-3322 for gross alpha and gross beta analyses. The correct method is ITAS-RD-3222.

Alpha Spectroscopy

Americium-241, Curium-244 by method ITAS-RD-3302
The analytical results indicated Am-241 contamination at a level below the contractual detection limit. The LCS is biased high (129.6%) possibly due to the contamination. The batch blank results are acceptable and the sample results are all less than the contractual detection limit with the exception of B0BKP4 which has Am-241 activity that is 15 times the contractual detection limit, therefore the results are accepted. The sample and sample duplicate results are within the 3 sigma control limit.

Neptunium-237 by method ITAS-RD-3208
Two matrix spikes were analyzed with the batch and both matrix spikes did not meet the 30% recovery limit. The LCS recovery was 74.8% and the batch blank was within limits. The batch was reanalyzed using different samples for the matrix spikes and again the matrix spike recoveries were less than 30%. The reanalysis LCS had a recovery of 62.5%. The failure of the matrix spikes to meet the recovery requirements is attributed to a matrix effect and the original results are reported. The sample and sample duplicate results are within the 3 sigma control limit.

Plutonium-238, -239/40 by method ITAS-RD-3209
The duplicate sample of B0BKP4 failed due to high sample activity and poor separation (the tracer peak could not be separated from the Pu-239 peak). The LCS, batch blank, and sample results are acceptable.

Uranium-234, -235, -238 by method ITAS-RD-3234

The LCS results are acceptable for U-234 and U-238. The U-235 recovery is outside of the contract limits. The data are accepted based on the acceptable U-234 and U-238 recoveries. The batch blank result is acceptable. The sample and sample duplicate results are within the 3 sigma control limit. Samples B0BFM8 and B0BKM9 were reanalyzed due to tracer yields of less than 30%. The reanalysis of the samples improved the tracer yields of sample B0BFM8 from 29.1% to 55.3%, and of sample B0BKM9 from 16.7% to 26.9%. The reanalysis tracer yield for sample B0BKM9 is not within limits, however, the low yields for both samples are attributed matrix effect. The reanalysis results for both B0BFM8 and B0BKM9 are within 3 sigma of the original results and the reanalysis data are accepted and reported for these two samples. The reanalysis LCS results are acceptable for U-234 and U-238, however, the U-235 recovery is outside of contract limits and the tracer yield is 11.9%. The reanalysis LCS is accepted based on acceptable U-234 and U-238 recoveries. The reanalysis blank is within contractual requirements.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219

The effect of the high levels of Cs-137 should be considered when evaluating the data reported for sample B09WK0. The high Cs-137 caused interference and 25% "dead-time" on the detector during counting. The original results are reported and have been flagged with an asterisk in the result table. The sample was repackaged and recounted to verify that the interference observed is a matrix effect. The LCS, batch blank, sample and sample duplicate results are acceptable.

Iodine-129 by method ITAS-RD-3219

The effect of the high levels of Cs-137 should be considered when evaluating the data reported for sample B09WK0. The high Cs-137 caused interferences in the I-129 spectra. The results have been flagged with an asterisk in the result table. The sample was recounted to verify that the interference observed is a matrix effect. The LCS, batch blank, sample and sample duplicate results are acceptable.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The LCS and batch blank results are acceptable. The sample and sample duplicate results are within the 3 sigma control limit.

Gross Beta by method ITAS-RD-3222
The LCS and batch blank results are acceptable. The sample and sample duplicate were recounted due to results that were outside the 3 sigma control limit. The recount results are acceptable and are reported.

Strontium-90 by method ITAS-RD-3204
The LCS and batch blank results are acceptable. The sample and sample duplicate results are within the 3 sigma control limit.

Liquid Scintillation Counting

Selenium-79 by method ITAS-RD-3253
The result for sample B09WK0 is believed to be a false positive. The raw data indicates that activity reported as Se-79 may be attributed to the high Cs-137 activity of the sample (matrix effect). The result is flagged on the data table with an asterisk. The LCS and batch blank results are acceptable. Two matrix spikes were analyzed with the set and their average yield was used for batch yield corrections. The sample and sample duplicate results are within the 3 sigma control limit.

Technetium-99 by method ITAS-IT-RS-0001
The LCS and batch blank results are acceptable. Two matrix spikes were analyzed with the set and their average yield was used for the batch yield correction. The sample and sample duplicate results are not within the 3 sigma control limit. The data are accepted due to the possibility of a matrix effect caused by nonhomogeneity of the soil. The set was analyzed with SDG W0025 due to an error in batching.

Total Uranium

Total Uranium by method ITAS-RD-4200
The LCS, batch blank, sample and sample duplicate results are acceptable. Two matrix spikes were analyzed with this set and their average yield (95.2%) is used for the yield correction of the batch.

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

Reviewed and approved:

Suzanne Gaines
Project Manager

9713508.2847

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 3-22-94

Ice Chest No.: SML-127 — Field Logbook No.: EFL-1115

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: Government vehicle

Shipped to: IT, Richland

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) SAF # 94-065 NONE NOTED

Sample Identification

1) B09WK0

40349101 3/25/94

A	1,250ml	P:CLP;TAL Metals,Hg,Ti
B	1,250ml	Gs:VOA CLP
C	1,250ml	aG:Semi-VOA CLP
D	1,125ml	G:Anions F,Cl,SO4 (EPA 300.0)
E	1,125ml	P/G:Anions NO2,NO3 (EPA 353.2)
F	1,250ml	aGs:PCB/Pest (8080)
G	1,125ml	G:Cyanide CLP
H	1,125ml	Gw:Kerosene (8015M)
	1,1000ml	P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

40349005 3/25/94 40349201

2) B09WK1

40349 3/25/94

A	1,250ml	P:CLP;TAL Metals,Hg,Ti
B	1,250ml	Gs:VOA CLP
C	1,250ml	aG:Semi-VOA CLP
D	1,125ml	G:Anions F,Cl,SO4 (EPA 300.0)
E	1,125ml	P/G:Anions NO2,NO3 (EPA 353.2)
	1,250ml	aGs:PCB/Pest (8080)
	1,125ml	G:Cyanide CLP
	1,125ml	Gw:Kerosene (8015M)
	1,1000ml	P/G:Gross alpha (ITAS-RD-3322) Gross beta (ITAS-RD-3322), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22,I-129 (ITAS-RD-3219), Total Uranium (ITAS-RD-4200, ITAS-RD-4201) U-235,U-234,U-238 (ITAS-RD-3234) Np-237,(ITAS-RD-3208) Pu-238,Pu-239/240 (ITAS-RD-3209) Sr-90 (ITAS-RD-3204) Tc-99 (ITAS-IT-RS-0001) Am-241,Cm-244 (ITAS-RD-3302) Se-79 (ITAS-RD-3253)

40349006 3/25/94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
3-24-94 Lorene E. Rogers 1310	Kaunstattinlug ITAS	3-25-94 10 00 am
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006445

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. SML-467
Bill of Lading/Airbill No. N/A
Offsite Property No. NA
Method of Shipment Government truck
Field Logbook No. NA
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
103545 01 A BOBFM8	S	3-24-94	1300	(1) 250ml aGs	VOA CLP	
B BOBFM8	S			(1) 250ml aGs	Semi-VOA CLP	
C BOBFM8	S			(1) 250ml ~~aGs~~ P 3-24-94	Metals -CLP TAL Titanium Mercury CPL	
D BOBFM8	S			(1) 125ml aGs	Anions F, Cl, SO_4 EPA 300.0	
E BOBFM8	S			(1) 125ml aGs	NO_2 NO_3 EPA 353.2	
F BOBFM8	S			(1) 125ml aGs	Cyanide CPL	
G BOBFM8	S			(1) 125ml aGs	Kerosene 8015M	
035460 BOBFM8	S	3-24-94	1300	(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	
02 BOBFM9	S	3-24-94	0800	(1) 250ml aGs	VOA	

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
Roy T Sickle	3-25-94	1530	[illegible]
[illegible]	3-29-94	0930	R Boyd IT 3-29-94 1130

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2848

022

0042

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006468

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations Z Ditch
Ice Chest No. SWL 413
Bill of Lading/Airbill No. N/A
Offsite Property No. W94-0-0369 #47
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
04018 01 A	BOBKP4	S	3-30-94	1315	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKP4	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKP4	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKP4	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKP4	S			(1) 125ml G	Cyanide	CPL	
F	BOBKP4	S			(1) 125ml Gs	TPH Diesel Range	8015m	
G	BOBKP4	S			(1) 125ml aGs	TOC	9060	
04019 01	BOBKP4	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-1-94	1000	RM Arnold RM Arnold
RM Arnold RM Arnold	4-1-94	1210	Tom Gilmore ITAS

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2816

0048

023

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006475

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations U1/U2 Tile Field
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS
5 Apr 94
STAND ALONE DELIVERABLE

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
01A BOBKQ0	S	4-4-94	1110	(1) 250ml aG	Semi-VOA CLP	
B BOBKQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury 5 Apr 94 CLP ~~CPL~~	
C BOBKQ0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D BOBKQ0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E BOBKQ0	S			(1) 125ml G	Cyanide 5 Apr 94 CLP ~~CPL~~	
F BOBKQ0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RJL 4-4-94 9060	
1040801 BOBKQ0	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-6-94	1020	R. Boyd 4-6-94 1025 2160

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2860

0053

024

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006456

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No.
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP2 PJE 7-30-94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ U1/U2 Tile Field PJE 7-30-94
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS
5 Apr 94
STAND ALONE DELIVERABLE

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
4090 WA	BOBKM9	S	4-4-94	1110	(1) 250ml aG	Semi-VOA CLP	
B	BOBKM9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury 5 Apr 94 CLP ~~CPL~~	
C	BOBKM9	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKM9	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKM9	S			(1) 125ml G	Cyanide 5 Apr 94 CLP ~~CPL~~	
F	BOBKM9	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKM9~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
040902	BOBKM9	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-6-94	1020	R Boyd 4-6-94 1025

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0054

9713508.2871

025

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006463

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 PLL 3.30.94
Sampling Locations ~~216-U-8 Crib~~ U1/U2 Tile Field PLL 3.30.94
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS
STAND ALONE DELIVERABLE
5 Apr 94

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBKN6	S	4-4-94	1030	(1) 250ml aG	Semi-VOA 5 Apr 94 CLP	
BOBKN6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CLP ~~CPL~~	
BOBKN6	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
BOBKN6	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
BOBKN6	S			(1) 125ml G	Cyanide 5 Apr 94 CLP ~~CPL~~	
BOBKN6	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKN6~~	S			~~(1) 125ml aGs~~	~~TOC~~ PLL 4-4-94 9060	
BOBKN6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

03A B C D E F

4 Apr 94 10/10/03

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. SICKLE	4-6-94	1020	R. Boyd 4-6-94 1025 2100

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9713508.2832

0055

02

9713508.2853

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200 UP2		DATA PACKAGE: W0014-ITC-026	
VALIDATOR: C Jensen	LAB: ITC	DATE: 6/18/94	
CASE:		SDG:	

ANALYSES PERFORMED

☑ Gross Alpha/Beta	☑ Strontium-90	☑ Technetium-99	☑ Alpha Spectroscopy	☑ Gamma Spectroscopy	
☑ Total Uranium	☐ Radium-22	☐ Tritium	☑ I-129		

SAMPLES/MATRIX Soil

B09WK0 B0BKN6
B0BFM8
B0BKP4
B0BKQ0
B0BKM9

1. Completeness . . . . . ☐ N/A

Technical verification forms present? . . . . . (Yes) No N/A

Comments: verification performed by WHC.

2. Initial Calibration . . . . . ☐ N/A

Instruments/detectors calibrated within one year of sample analysis? . . . . . Yes (No) N/A

Initial calibration acceptable? . . . . . Yes (No) N/A

Standards NIST traceable? . . . . . (Yes) No N/A

Standards Expired? . . . . . Yes (No) N/A

Comments: uranium r^2 for the high range was .963, result B09WK0 qualified J

No qualification applied to data because of ICAL > 1 yr.

3. Continuing Calibration . . . . . ☐ N/A

Calibration checked within one week of sample analysis? . . . Yes No N/A
Calibration check acceptable? . . . . . Yes No N/A
Calibration check standards NIST traceable? . . . . . Yes No N/A
Calibration check standards expired? . . . . . Yes No N/A

Comments: An NIST traceable LCS was run with the samples.

4. Blanks . . . . . ☐ N/A

Method blank analyzed? . . . . . Yes No N/A
Method blank results acceptable? . . . . . Yes No N/A
Analytes detected in method blank? . . . . . Yes No N/A
Field blank(s) analyzed? . . . . . Yes No N/A
Field blank results acceptable? . . . . . Yes No N/A
Analytes detected in field blank(s)? . . . . . Yes No N/A
Transcription/Calculation Errors? . . . . . Yes No N/A

Comments: Analytes detected in the blank were not high enough to qualify associated results.

5. Matrix Spikes . . . . . ☐ N/A

Matrix spike analyzed? . . . . . Yes No N/A
Spike recoveries acceptable? . . . . . Yes No N/A
Spike source traceable? . . . . . Yes No N/A
Spike source expired? . . . . . Yes No N/A
Transcription/Calculation Errors? . . . . . Yes No N/A

Comments: Se-79 MS %R was 42%, all results qualified J, UJ

6. Laboratory Control Samples . . . . . ☐ N/A

LCS analyzed? . . . . . (Yes) No N/A
LCS recoveries acceptable? . . . . . Yes (No) N/A
LCS traceable? . . . . . (Yes) No N/A
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: U235, Se79 were unacceptable, results qualified J, UJ

7. Chemical Recovery . . . . . ☐ N/A

Chemical carrier added? . . . . . (Yes) No N/A
Chemical recovery acceptable? . . . . . Yes (No) N/A
Chemical carrier traceable? . . . . . (Yes) No N/A
Chemical carrier expired? . . . . . Yes (No) N/A
Transcription/Calculation errors? . . . . . Yes (No) N/A

Comments: The yield for LCS sample L-03-546-OS U234,235 and 238DA was 11.9%. No qualification is applied to sample results since this recovery is only specific to the LCS sample.

8. Duplicates . . . . . ☐ N/A

Duplicates Analyzed? . . . . . (Yes) (No) N/A
RPD Values Acceptable? . . . . . Yes (No) N/A
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: The Total U RPD was >35 and Dup Sample result was >52 RPD. All sample results were qualified J

A duplicate was attempted to be analyzed for sample B0BKP4, but "failed" due to high sample activity and poor separation for plutonium 238, 239/240. All results for these Pu isotopes will be qualified J, UJ.

9. Field QC Samples . . . . . ☒ N/A

Field duplicate sample(s) analyzed? . . . . . Yes No (N/A)
Field duplicate RPD values acceptable? . . . . . Yes No (N/A)
Field split sample(s) analyzed? . . . . . Yes No (N/A)
Field split RPD values acceptable? . . . . . Yes No (N/A)
Performance audit sample(s) analyzed? . . . . . Yes No (N/A)
Performance audit sample results acceptable? . . . . . Yes No (N/A)

Comments:

10. Holding Times

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments: Samples collected 3/22/94 - 4/4/94. All results reported 5/28/94, < 180 days therefore, all samples were analyzed in

11. Results and Detection Limits (Levels D & E) . . . . . ☐ N/A

Results reported for all required sample analyses? . . . . . (Yes) No N/A
Results supported in raw data? . . . . . (Yes) No N/A
Results Acceptable? . . . . . (Yes) No N/A
Transcription/Calculation errors? . . . . . (Yes) No N/A
MDA's meet required detection limits? . . . . . Yes (No) N/A
Transcription/calculation errors? . . . . . (Yes) No N/A

Comments: Np 237 result for BOBKNC was reported at 3.83 E-03 and a MDA 1.67 E-02. This result was not supported in the raw data. The result for BOBKNC has been corrected to 0 and an MDA of 1.31 E-02. Also, Np 237 for BOBWRC was corrected to 0 as shown in the raw data. See comments on following page

Comments:

Interferences as noted in the laboratory case narrative are:

1. Matrix effects for Np-237 based on spike recoveries, however, the LCS was within limits.

2. High Cs-137 levels caused interference for ~~all~~ analytical results for gamma scan for sample B09WK0. Also for the I-129 analysis, the Cs-137 interference was observed.

3. Se-79 result for B09WK0 was identified as a false positive, however no qualification was made based on this belief.

4. The MDAs could not be verified based on the raw data for I-129 and Tc-99 because they were not provided. All results for I-129 ~~and Tc-99~~ have been qualified as estimated J, UJ. The Tc-99 nondetects were also qualified estimated (UJ) 2/19/97

5. The MDAs did not meet the RDLs for the following:

Sample	ISOTOPE	MDA	RDL
B09WK0	Co-60	.0691	.05
	Eu-152	.267	.10
	Eu-154	.429	.10
B0BKM9	Tc-99	.73	.5
B0BFM8	Pu-238	.052	.05
	Tc-99	.73	.50
B0BKP4, B0BKN6	Tc-99	.73	.50
B0BKQ0	I-129	2.25	2
	Tc-99	.73	.50

No qualification is made based on MDAs / RDLs above.

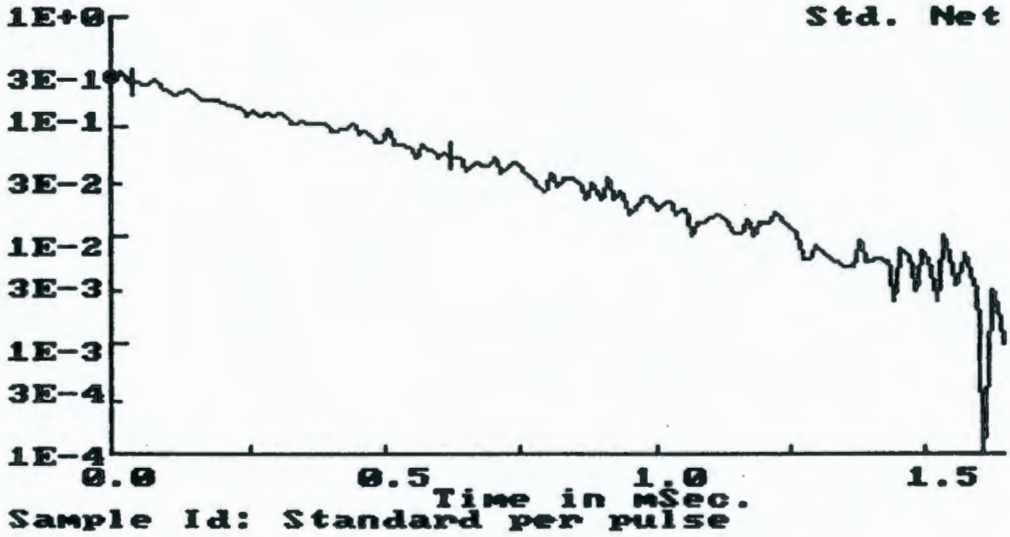
Comments:

6. The MDAs were not verifiable by recalculation for TC-99, ~~U235~~ and Se-79. Non-detects were qualified as estimated (UJ)

STANDARD REPORT

User ID: APURYEAR
26165
Disk Standard Seq. #: 26165
Range: HIGH, Point: A
Lifetime = 367.092 ± 10.918 uS
Calibrated at 50.980 ng / 1.000 ml
Ref. Lifetime = 288.653 µS

Time/Date: 05:25:29 05-19-1994
Background Seq. #: 26162
Intercept = 2.8320E-01/pulse ± 3.1%
LASER Pulses = 2000
R^2 = 0.963



associated with BOQWKO
Total uranium
5/26/21/94

9713508.2861

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: F-04-091-01

WHC ID: BOBKQ0

REPORTING UNITS pCi/g & ug/g

Q

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
TOTAL-SR	8.43E+00	3.04E-01	2.15E+00	1.03E-01	0.927	RD3204
TC-99	3.68E-01	3.19E-01	1.46E+00	7.30E-01	0.691	ITAS-IT-RS-0001
URANIUM	3.87E+00	N/A	5.81E-01	1.00E-01	0.952	RD4200

U

RPD CALCULATIONS

ISOTOPE	SAMPLE RESULT Q	DUPLICATE RESULT Q	RPD	RDL	Q
TOTAL-SR	8.89E+00	8.43E+00	5.31	.1	ok
TC-99	3.65E-01 U	3.68E-01 U	0.82	.5	ok
URANIUM	2.52E+00	3.87E+00	42.25	.1	J/UJ

U RPD >35 for soils >5X RDL

035

5/23/99

~~0016~~

682A-6-93

9713508.2862

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: F-04-091-02

WHC ID: BOBKM9

REPORTING UNITS pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
K-40	1.37E+01	4.08E-01	1.43E+00	N/A	N/A	RD3219	
CO-60	1.10E-02	8.81E-03	8.88E-03	1.58E-02	N/A	RD3219	U
EU-152	2.60E-02	3.93E-02	3.94E-02	6.80E-02	N/A	RD3219	U
CS-137DA	6.14E+01	1.92E-01	6.15E+00	N/A	N/A	RD3219	
CS-134	1.94E-02	1.98E-02	1.99E-02	3.18E-02	N/A	RD3219	U
RU-106DA	3.08E-01	2.01E-01	2.03E-01	3.28E-01	N/A	RD3219	U
RA-224DA	7.56E-01	6.63E-02	1.01E-01	N/A	N/A	RD3219	
NA-22	1.08E-02	1.02E-02	1.03E-02	1.80E-02	N/A	RD3219	U
EU-155	8.06E-02	6.56E-02	6.61E-02	1.09E-01	N/A	RD3219	U
EU-154	5.15E-03	2.91E-02	2.91E-02	4.94E-02	N/A	RD3219	U
RA-226DA	6.41E-01	7.32E-02	9.73E-02	N/A	N/A	RD3219	
U-238DA	6.15E-01	8.59E-02	1.06E-01	N/A	N/A	RD3219	
AC-228	8.38E-01	6.65E-02	1.07E-01	N/A	N/A	RD3219	
TL-208	2.53E-01	3.83E-02	4.59E-02	N/A	N/A	RD3219	
BI-214	6.41E-01	7.32E-02	9.73E-02	N/A	N/A	RD3219	
PB-212	7.23E-01	6.34E-02	9.62E-02	N/A	N/A	RD3219	
PB-214	6.15E-01	8.59E-02	1.06E-01	N/A	N/A	RD3219	
TH-232DA	8.38E-01	6.65E-02	1.07E-01	N/A	N/A	RD3219	
RA-228DA	8.51E-01	6.75E-02	1.09E-01	N/A	N/A	RD3219	
I-129LP	-4.07E+00	1.29E+00	1.35E+00	1.99E+00	N/A	RD3219	U
ALPHA	8.14E+00	4.32E+00	4.41E+00	4.48E+00	1	RD3222	
BETA	1.07E+02	6.89E+00	9.88E+00	2.91E+00	1	RD3222	

5/6/23/94

682A-6-93

9713508.2863

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

RPD CALCULATIONS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: 4-04-091-02

WHC ID: BOBKM9

REPORTING UNITS pCi/g

ISOTOPE	SAMPLE RESULT Q	DUPLICATE RESULT Q	RPD	Q	RDL
K-40	1.23E+01	1.37E+01	10.77		–
CO-60	-3.07E-03 U	1.10E-02 U	354.85		
EU-152	7.82E-02	~~-2.50E-02~~ 1.00E-02 U	100.19		
CS-137DA	5.84E+01	6.14E+01	5.01		
CS-134	7.13E-03 U	1.94E-02 U	92.50		
RU-106DA	-1.05E-01 U	3.08E-01 U	406.90		
RA-224DA	6.62E-01	7.56E-01	13.26		–
NA-22	-9.22E-05 U	1.08E-02 U	203.44		
EU-155	6.98E-02 U	8.06E-02 U	14.36		
EU-154	-2.53E-04 U	5.15E-03 U	220.67		
RA-226DA	6.05E-01	6.41E-01	5.78		–
U-238DA	5.51E-01	6.15E-01	10.98		
AC-228	7.36E-01	8.38E-01	12.96		–
TL-208	2.32E-01	2.53E-01	8.66		–
BI-214	6.05E-01	6.41E-01	5.78		–
PB-212	6.32E-01	7.23E-01	13.43		–
PB-214	5.51E-01	6.15E-01	10.98		–
TH-232DA	7.36E-01	8.38E-01	12.96		–
RA-228DA	7.47E-01	8.51E-01	13.02		–
I-129LP	-2.48E+00 U	-4.07E+00 U	48.55		2
ALPHA	1.46E+01	8.14E+00	56.82	oh	
BETA	9.59E+01	1.07E+02	10.94	oh.	

– duplicate not evaluated, RDL not available.

no qualification based on these duplicate results

5/4/23/94

~~0018~~ 037

682A-6-93

9713508.2864

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: F-04-091-03

WHC ID: BOBKN6

REPORTING UNITS pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
SE-79	2.27E+00	8.69E-01	2.50E+00	1.75E+00	0.557	RD3253

RPD CALCULATIONS

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD	RDL
SE-79	3.06E+00	2.27E+00	29.64	10

results acceptable

5/6/23/94

038

~~0019~~

682A-6-93

9713508.2865

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: F-04-019-01

WHC ID: BOBKP4

REPORTING UNITS pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q	RDL
AM-241	1.54E+01	5.10E-01	2.33E+00	2.25E-02	0.862	RD3302		
CM-242	-3.37E-04	6.74E-04	6.76E-04	1.69E-02	0.862	RD3302	U	
CM-244	-1.01E-03	1.17E-03	1.18E-03	2.10E-02	0.862	RD3302	U	
U-234	1.32E+00	2.15E-01	2.92E-01	4.36E-02	0.476	RD3234		
U-235	1.90E-01	8.21E-02	8.69E-02	4.36E-02	0.476	RD3234		
U-238DA	1.36E+00	2.18E-01	2.98E-01	2.37E-02	0.476	RD3234		
TC-99	4.95E-01	3.22E-01	1.47E+00	7.30E-01	0.691	ITAS-IT-RS-0001	U	

RPD CALCULATIONS

ISOTOPE	SAMPLE RESULT Q	DUPLICATE RESULT Q	RPD	Q	RDL
AM-241	1.37E+01	1.54E+01	11.68	ok	.05
CM-242	-3.58E-04 U	-3.37E-04 U	6.04		–
CM-244	3.58E-04 U	-1.01E-03 U	419.63		.05
U-234	1.07E+00	1.32E+00	20.92	ok	.3
U-235	0.101	1.90E-01	61.17		.3
U-238DA	0.875 ~~U~~	1.36E+00	43.40	ok	.3
TC-99	-0.228 U	4.95E-01 U	541.57		.5

all results acceptable

CJ 6/23/94

039

0020

682A-6-93

9713508.2866

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: F-03-492-01

WHC ID: BO9WK0

REPORTING UNITS pCi/g

Q

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	
NP-237	-3.33E-04	6.66E-04	6.70E-04	1.68E-02	1	RD3208	U

RPD CALCULATIONS

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT Q	RPD
NP-237	0 ~~2.08E-02~~ U	-3.33E-04 U	206.51

no qualification of results.

040

5/6/23/94 0021

682A-6-93

9713508.2867

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: F-03-546-01

WHC ID: BOBFM8

REPORTING UNITS pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
U-234	1.89E+00	3.42E-01	4.92E-01	8.72E-02	0.269	RD3234
U-235	2.84E-02	4.38E-02	4.41E-02	7.05E-02	0.269	RD3234
U-238DA	1.34E+00	2.88E-01	3.81E-01	7.05E-02	0.269	RD3234

RPD CALCULATIONS

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD	RDL	Q
U-234	1.63E+00	1.89E+00	14.77	.3	ok.
U-235	5.02E-02	2.84E-02	55.47	.3	ok
U-238DA	1.76E+00	1.34E+00	27.10	.3	

all results are acceptable.

041

~~0022~~

5/6/23/94

682A-6-93

9713508.2868

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

BLANK RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: L-03-492-1B

REPORTING UNITS pCi/g & ug/g

Q 5X

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	
AM-241 ✓	5.35E-01	1.20E-01	1.52E-01	3.75E-02	0.547	RD3302	2.675
CM-242	-2.84E-03	4.01E-03	4.04E-03	4.01E-02	0.547	RD3302	u
CM-244	0.00E+00	0.00E+00	2.00E-02	1.80E-02	0.547	RD3302	u
PU-238	-2.84E-03	4.01E-03	4.04E-03	4.01E-02	0.587	RD3209	u
PU239/40	1.42E-02	2.01E-02	2.02E-02	1.92E-02	0.587	RD3209	u
U-234	3.71E-03	1.26E-02	1.26E-02	3.49E-02	0.674	RD3234	u
U-235	-9.90E-04	1.40E-03	1.41E-03	2.83E-02	0.674	RD3234	u
U-238DA	1.09E-02	1.76E-02	1.76E-02	3.08E-02	0.674	RD3234	u
K-40	1.08E+00	1.61E-01	1.94E-01	3.43E-01	N/A	RD3219	5.4
CO-60	4.26E-03	7.51E-03	7.52E-03	1.40E-02	N/A	RD3219	u
EU-152	-1.09E-02	4.43E-02	4.43E-02	7.29E-02	N/A	RD3219	u
CS-137DA	3.54E-03	8.48E-03	8.49E-03	1.48E-02	N/A	RD3219	u
CS-134	8.77E-04	7.41E-03	7.41E-03	1.25E-02	N/A	RD3219	u
RU-106DA	-7.09E-02	7.53E-02	7.56E-02	1.22E-01	N/A	RD3219	u
NA-22	1.41E-02	7.73E-03	7.86E-03	1.56E-02	N/A	RD3219	u
EU-155	8.42E-03	1.65E-02	1.65E-02	2.63E-02	N/A	RD3219	u
EU-154	3.97E-02	2.17E-02	2.21E-02	4.39E-02	N/A	RD3219	u
I-129LP	-1.81E-01	3.34E-01	3.35E-01	5.65E-01	N/A	RD3219	u
ALPHA	1.23E-02	5.88E-02	5.88E-02	1.17E-01	1	RD3222	u
BETA	-6.82E-02	3.40E-01	3.40E-01	6.33E-01	1	RD3222	u
SE-79	-5.26E-02	8.14E-01	2.25E+00	1.55E-01	0.557	RD3253	u
URANIUM	1.44E-02	0.00E+00	2.16E-03	1.00E-01	0.952	RD4200	u

9713508.2869

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

BLANK RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: L-03-492-1X

REPORTING UNITS pCi/g & ug/g

Q

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	
K-40	4.64E-01	8.85E-02	9.99E-02	1.84E-01	N/A	RD3219	232 no qua
CO-60	-1.17E-03	4.81E-03	4.81E-03	8.32E-03	N/A	RD3219	u
EU-152	-1.81E-02	2.85E-02	2.85E-02	4.43E-02	N/A	RD3219	u
CS-137DA	-3.00E-04	5.05E-03	5.05E-03	8.63E-03	N/A	RD3219	u
CS-134	-2.92E-03	4.71E-03	4.72E-03	7.72E-03	N/A	RD3219	u
RU-106DA	-1.94E-02	4.32E-02	4.32E-02	7.13E-02	N/A	RD3219	u
NA-22	1.03E-04	4.75E-03	4.75E-03	8.42E-03	N/A	RD3219	
EU-155	1.43E-02	1.09E-02	1.10E-02	1.84E-02	N/A	RD3219	u
EU-154	2.60E-03	1.36E-02	1.36E-02	2.39E-02	N/A	RD3219	u
URANIUM	2.91E-01	N/A	4.36E-02	1.00E-01	0.952	RD4200	1.45 5X

LAB SAMPLE ID: L-03-492-2X

REPORTING UNITS pCi/g & ug/g

Q

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
URANIUM	2.91E-01	N/A	4.36E-02	1.00E-01	0.952	RD4200

All sample results are >5X the blank results, no qualification.

5/6/23/94

~~0024~~

682A-6-93

9713508.2870

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

BLANK RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: L-04-091-1B

REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
TOTAL-SR	1.15E-02	3.99E-02	4.00E-02	9.58E-02	0.937	RD3204	U
TC-99	1.11E-01	3.14E-01	1.44E+00	7.30E-01	0.691	0001	U

LAB SAMPLE ID: L-04-091-2B

REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	
TC-99	3.49E-01	3.19E-01	1.46E+00	7.30E-01	0.691	0001	U

LAB SAMPLE ID: L-03-546-0B

REPORTING UNITS pCi/g &ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	
U-234	9.73E-02	6.10E-02	6.28E-02	5.19E-02	0.454	RD3234	5X = .486
U-235	2.53E-02	3.19E-02	3.21E-02	4.58E-02	0.454	RD3234	U
U-238DA	3.45E-02	3.68E-02	3.72E-02	4.58E-02	0.454	RD3234	U

LAB SAMPLE ID: L-03-492-2B

REPORTING UNITS pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	
NP-237	-3.33E-04	3.33E-04	3.35E-04	1.68E-02	1	RD3208	U

all sample results >5X the blank results 0025
6/23/94

682A-6-93

9713508.2831

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

LABORATORY CONTROL SAMPLES

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: L-03-492-1S

REPORTING UNITS pCi/g & ug/g

Q

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY	
AM-241 ✓	5.84E+00	3.89E-01	1.07E+00	1.75E-02	0.561 ✓	4.51E+00	129 ✓	
PU239/40	3.27E+00	3.33E-01	5.87E-01	5.82E-02	0.491	3.40E+00	96	
U-234	1.82E+00	3.18E-01	4.55E-01	6.90E-02	0.301	1.62E+00	112	
U-235	3.82E-02	4.81E-02	4.86E-02	6.90E-02	0.301	7.38E-02	52	J/UJ
U-238DA	1.81E+00	3.17E-01	4.53E-01	3.75E-02	0.301	1.69E+00	107	
CS-137DA	3.16E-01	3.16E-02	4.47E-02	N/A	N/A	3.58E-01	88	
RA-226DA	8.69E-01	6.42E-02	1.08E-01	N/A	N/A	1.16E+00	75	
U-238DA	9.91E-01	5.93E-02	1.16E-01	N/A	N/A	1.05E+00	94	
TH-232DA	1.98E+00	1.14E-01	2.28E-01	N/A	N/A	1.87E+00	106	
I-129LP	1.08E+01	1.13E+00	1.56E+00	N/A	N/A	9.02E+00	120	
ALPHA	4.17E+00	4.14E-01	8.14E-01	1.00E-01	1	4.52E+00	92	
BETA	4.54E+00	7.11E-01	7.80E-01	5.98E-01	1	4.54E+00	100	
SE-79	2.41E+01	4.85E+00	5.42E+00	N/A	0.96	4.51E+01	53	J, UJ
URANIUM	1.03E+01	N/A	1.55E+00	1.00E-01	0.952	1.00E+01	103	

5/12/04

9713508.2872

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

LABORATORY CONTROL SAMPLES

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: L-03-492-1M

REPORTING UNITS ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
URANIUM	1.03E+01	N/A	1.55E+00	1.00E-01	9.52E-01	1.00E+01	103

LAB SAMPLE ID: L-03-492-2M

REPORTING UNITS ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
URANIUM	9.70E+00	0.00E+00	1.45E+00	1.00E-01	0.952	1.00E+01	97

LAB SAMPLE ID: L-04-091-1S

REPORTING UNITS pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
TOTAL-SR	5.88E+00	2.57E-01	1.50E+00	9.76E-02	0.91	6.25E+00	94

LAB SAMPLE ID: L-04-091-1M

REPORTING UNITS pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
TC-99	6.18E+01	8.87E-01	7.95E+00	N/A	0.691	6.76E+01	91

All acceptable %R

SJ 6/23/94

682A-6-93

9713508.2873

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

LABORATORY CONTROL SAMPLES

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: L-04-091-2M

REPORTING UNITS pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
TC-99	2.54E+01	6.17E-01	3.96E+00	7.30E-01	0.691	2.25E+01	113

LAB SAMPLE ID: L-04-091-3M

REPORTING UNITS pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
TC-99	6.45E+01	9.01E-01	8.25E+00	7.30E-01	0.691	6.76E+01	95

LAB SAMPLE ID: L-03-546-0S

REPORTING UNITS pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
U-234	1.74E+00	4.94E-01	6.81E-01	1.74E-01	0.119	1.62E+00	107
U-235	1.31E-01	1.40E-01	1.44E-01	1.74E-01	0.119	7.41E-02	177
U-238DA	2.13E+00	5.45E-01	7.93E-01	9.45E-02	0.119	1.70E+00	125

>130, J

LAB SAMPLE ID: L-03-492-2S

REPORTING UNITS pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
NP-237	4.22E+00	1.33E-01	4.74E-01	1.90E-02	1	5.64	75

J detected results U-235

6/23/94

682A-6-93

9713508.2874

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

MATRIX SPIKE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0014

LAB SAMPLE ID: W-04-019-01

REPORTING UNITS pCi/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
SE-79	1.88E+01	3.37E+00	3.86E+00	N/A	N/A	4.51E+01	42
TC-99	6.94E+01	1.82E+00	1.14E+01	7.30E-01	N/A	1.00E+02	69

LAB SAMPLE ID: W-04-091-02

REPORTING UNITS pCi/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
TC-99	6.90E+01	1.82E+00	1.13E+01	7.30E-01	N/A	1.00E+02	69

LAB SAMPLE ID: W-04-019-1D

REPORTING UNITS pCi/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
SE-79	3.14E+01	5.58E+00	6.40E+00	N/A	N/A	4.51E+01	70

*SPIKE RESULT CORRECTED FOR SAMPLE RESULT

Se 79.. results qual. J, UJ

5/6/23/94

~~0029~~ 048

682A-6-93

W0014-ITC-025

Americium/Curium	
HEIS No.:	B0BFM8
Lab ID:	40354601
Aliquot:	2.00E+00
Am241 net cpm:	0.7150
Am241 bkg cpm:	0.0000
Spl count time:	200
Bkg count time:	2500
Eff d/c:	3.225
Decay:	1
Yield:	0.635
Am241 calc:	8.17E-01
Am241 rptd:	8.17E-01
Am241 MDA calc:	1.55E-02
Am241 MDA rptd:	1.55E-02
Cm244 net cpm:	-0.0004
Cm244 bkg cpm:	0.0004
Cm244 decay:	1.006
Cm244 calc:	-4.60E-04
Cm244 rptd:	-4.60E-04
Cm244 MDA calc:	2.31E-02
Cm244 MDA rptd:	2.31E-02
Cm242 net cpm:	0.0000
Cm242 bkg cpm:	0.0000
Cm242 decay:	1.274
Cm242 calc.:	0.00E+00
Cm242 rptd:	0.00E+00
Cm242 MDA calc:	1.97E-02
Cm242 MDA rptd:	1.97E-02
Neptunium	
HEIS No.:	B0BFM8
Lab ID:	40354601
Aliquot:	2.00E+00
Np237 net cpm:	0.005
Np237 bkg cpm:	0
Spl count time:	200
Bkg count time:	2500
Eff d/c:	3.7
Decay:	1
Yield:	1
Np237 calc:	4.16E-03
Np237 rptd:	4.17E-03
Np237 MDA calc:	1.13E-02
Np237 MDA rptd:	1.13E-02

6/23/94

W0014-ITC-025

Plutonium	
HEIS No.:	B0BFM8
Lab ID:	40354601
Aliquot:	2.00E+00
Pu238 net cpm:	0.003
Pu238 bkg cpm:	0.002
Spl count time:	200
Bkg count time:	1000
Pu238 Eff d/c:	3.703
Decay:	1.001
Yield:	0.453
Pu238 calc:	5.52E-03
Pu238 rptd:	5.52E-03
Pu238 MDA calc:	5.20E-02
Pu238 MDA rptd:	5.20E-02
Pu239 net cpm:	0.105
Pu239 bkg cpm:	0
Pu239 d/c:	3.7
Pu239 decay:	1
Pu239 calc:	1.93E-01
Pu239 rptd:	1.93E-01
Pu239 MDA calc:	2.49E-02
Pu239 MDA rptd:	2.49E-02
Uranium	
HEIS No.:	B0BFM8
Lab ID:	40354601
Aliquot:	2.01E+00
U-234 net cpm:	1.0842
U-234 bkg cpm:	0.0008
Spl count time:	200
Bkg count time:	2500
Eff d/c:	3.7
Decay:	1
Yield:	0.553
U-234 calc:	1.63E+00
U-234 rptd:	1.63E+00
U-234 MDA calc:	3.43E-02
U-234 MDA rptd:	3.43E-02
U-235 net cpm:	0.0334
U-235 bkg cpm:	0.0016
U-235 decay:	1
U-235 calc:	5.02E-02
U-235 rptd:	5.02E-02
U-235 MDA calc:	4.01E-02
U-235 MDA rptd:	4.01E-02
U-238 net cpm:	1.1738
U-238 bkg cpm:	0.0012
U-238 decay:	1
U-238 calc.:	1.76E+00
U-238 rptd:	1.76E+00
U-238 MDA calc:	3.75E-02
U-238 MDA rptd:	3.75E-02

cjl 6/23/94

W0014-ITC-025

Gross Alpha	
HEIS No.:	B0BFM8
Lab ID:	40354601
Aliquot:	5.01E-02
Net counts:	0.468
Bkg counts:	0.032
Spl count time:	100
Bkg count time:	500
d/c:	5.032
Calc.:	2.12E+01
Rptd:	2.12E+01
MDA calc:	4.16E+00
MDA rptd:	4.14E+00
Gross Beta	
HEIS No.:	B0BFM8
Lab ID:	40354601
Aliquot:	2.50E-01
Net counts:	5.208
Bkg counts:	0.992
Spl count time:	50
Bkg count time:	500
d/c:	2.898
Calc.:	2.72E+01
Rptd:	2.72E+01
MDA calc:	2.82E+00
MDA rptd:	2.82E+00
Strontium 90	
HEIS No.:	B0BFM8
Sample:	40354601
Sep date:	5/11/94
Sep time:	22:15
Count date:	5/13/94
Count time:	11:10
Hours:	36.916666
Sample amt:	6.10E+00
Net, cpm:	0.248
Count time:	50
Bkg, cpm:	0.932
Count time:	500
D/C 1:	2.241
D/C 2:	1.859
D/C 3:	2.011
Yield:	0.894
Calc:	3.36E-02
Rptd:	3.36E-02
MDA, Calc:	9.72E-02
MDA, rptd:	9.72E-02

6/23/94

W0014-ITC-025

Selenium 79		
HEIS No.:	B0BFM8	
Sample:	40354601	
Bkg cpm:	21.07	
Spl, amt:	1.00E+00	
Spl cpm:	23.21	
Count time:	100	
Spl dpm:	26	
d/c:	1.12	
Yield:	0.557	
Blk, dpm:	4.14E+01	
Calc:	2.38E+00	
Rptd:	2.39E+00	
MDA, calc:	1.96E+00	
MDA, rptd:	1.75E+00	
Technetium-99		
HEIS No.:	B0BFM8	
Sample:	40354601	
Bkg cpm:	25.71	
Spl, amt:	2.00E+00	
Spl cpm:	25.48	
Count time:	125	
Spl dpm:	27.26	
d/c:	1.07	
Yield:	0.691	
Blk, dpm:	3.91E+01	
Calc:	6.98E-02	J
Rptd:	6.84E-02	
MDA, calc:	7.43E-01	UJ
MDA, rptd:	7.30E-01	
Total Uranium		
HEIS No.:	B0BFM8	
Lab ID:	40354601	
ng, raw:	4.25E+03	
g, sample:	1.00E+00	
Dil. vol:	100.1	
Yield, corr:	0.952	
Calc.:	4.44E+00	
Rptd:	4.44E+00	

CJ 6/23/94