VOLATILES DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09904-TMA-644 (923-E418 TMA644V.UP2)

9413225.0547

MEMORANDUM

MAR 1994
RECEIVED
TQO

TO: 200-UP-2 Project QA Record March 22, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: VOLATILES DATA VALIDATION SUMMARY FOR DATA PACKAGE B09904-TMA-644 (923-E418 TMA644V.UP2)

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INTRODUCTION

This memo presents the results of data validation on data package B09904-TMA-644 prepared by the Thermo Analytical laboratory. The sample validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09DP0	11/05/93	SOIL	SEE NOTE 1

Notes:

1. The sample was analyzed for CLP volatile target compound list (TCL) 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

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 all sample results as specified in the reference analytical method.

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 33 determinations reported, all of

which were deemed valid. This results in a completeness of 100 percent which meets 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

- Methylene chloride and toluene were detected in the laboratory blank. Attachment 2 provides a summary of the samples and data qualifications applied.

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.

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Attachment 1

Glossary of Data Reporting Qualifiers

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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.

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.

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Attachment 2

Summary of Data Qualifications

9413225.0552

DATA QUALIFICATION SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 3/14/94	PAGE 1 OF 1
COMMENTS: VOA pkg B09904-TM1A-644			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene Chloride	U	B09DP0	Blank Contam
Toluene	U	B09DP0	Blank Contam

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Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

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Validated Data Summary, Data Package: B09904-TMA-644

	Samp#	B09DP0	
	Date	11-5-93	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
CHLOROMETHANE	UG/KG	10.000	U
BROMOMETHANE	UG/KG	10.000	U
VINYL CHLORIDE	UG/KG	10.000	U
CHLOROETHANE	UG/KG	10.000	U
METHYLENE CHLORIDE	UG/KG	10.000	U
ACETONE	UG/KG	6.000	J
CARBON DISULFIDE	UG/KG	10.000	U
1,1-DICHLOROETHENE	UG/KG	10.000	U
1,1-DICHLOROETHANE	UG/KG	10.000	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	10.000	U
CHLOROFORM	UG/KG	10.000	U
1,2-DICHLOROETHANE	UG/KG	10.000	U
2-BUTANONE	UG/KG	10.000	U
1,1,1-TRICHLOROETHANE	UG/KG	10.000	U
CARBON TETRACHLORIDE	UG/KG	10.000	U
BROMODICHLOROMETHANE	UG/KG	10.000	U
1,2-DICHLOROPROPANE	UG/KG	10.000	U
CIS-1,3-DICHLOROPROPENE	UG/KG	10.000	U
TRICHLOROETHENE	UG/KG	10.000	U
DIBROMOCHLOROMETHANE	UG/KG	10.000	U
1,1,2-TRICHLOROETHANE	UG/KG	10.000	U
BENZENE	UG/KG	10.000	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	10.000	U
BROMOFORM	UG/KG	10.000	U
4-METHYL-2-PENTANONE	UG/KG	10.000	U
2-HEXANONE	UG/KG	10.000	U
TETRACHLOROETHENE	UG/KG	10.000	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	10.000	U
TOLUENE	UG/KG	10.000	U
CHLOROBENZENE	UG/KG	10.000	U
ETHYLBENZENE	UG/KG	10.000	U
STYRENE	UG/KG	10.000	U
XYLENES (TOTAL)	UG/KG	10.000	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
~~000034~~
B09DP0

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 11043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A311043-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31116R03

Level: (low/med) LOW Date Received: 11/10/93

% Moisture: not dec. 4 Date Analyzed: 11/16/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

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CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	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 ~~3~~	~~BJ~~	U
67-64-1	Acetone	6	J	
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 ~~2~~	~~J~~	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 3/90

03/14/94

~~000085~~
EPA SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B09DP0

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 11043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A311043-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31116R03

Level: (low/med) LOW Date Received: 11/10/93

% Moisture: not dec. 4 Date Analyzed: 11/16/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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3/14/94

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

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CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 11-043

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : November 10, 1993

1.0 DESCRIPTION OF CASE :

One soil sample was analyzed for TCL Organics- Volatiles and Semivolatiles according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision OLM01.8. The Extractable Hydrocarbons in the Kerosene Range (K) were analyzed according to the SW-846 Method 8015M.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B09DP0	A3-11-043-01A	V	SOIL
B09DP0 MS	A3-11-043-01B	V	SOIL
B09DP0 MSD	A3-11-043-01C	V	SOIL
B09DP0	A3-11-043-01D	SV	SOIL
B09DP0 MS	A3-11-043-01E	SV	SOIL
B09DP0 MSD	A3-11-043-01F	SV	SOIL
B09DP0	A3-11-043-01J	K	SOIL
B09DP0 MS	A3-11-043-01K	K	SOIL
B09DP0 MSD	A3-11-043-01L	K	SOIL

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

All of the samples were received intact and properly documented.

3.2 ANALYSIS

3.2.1 VOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were analyzed by heated purge within the CLP SOW holding times.

All of the QC results were within the limits specified by the EPA CLP SOW.

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TUNES :

All BFB tunes were injected directly into the GC/MS instrument.

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the contract required holding times.

Di-n-butylphthalate was detected in all of the samples and the blank at concentrations that were below the CRQL. The compound bis(2-Ethylhexyl)phthalate was also found in the sample B09DP0 and B09DP0MS at concentrations less than the CRQL.

In sample B09DP0MS, 4-Nitrophenol was detected at a concentration that exceeded the calibration range, and was therefore "E" qualified. In addition, the matrix spike recovery of 4-Nitrophenol in sample B09DP0MS was above the advisory QC limit. In accordance with CLP protocol, no further action was required.

All of the other QC results were within the limits specified by the EPA CLP SOW.

3.2.3 EXTRACTABLE HYDROCARBONS "KEROSENE RANGE" COMMENTS :

SEQUENCE NOTES :

The sequence was started on 11/18/93 and was analyzed according to the SW-846 Method 8015M. The initial calibration consisted of 5 different levels of the Kerosene standard that ranged from approximately 200ppm to 2000ppm. The continuing calibration at the 1000ppm level was injected amongst a series of samples, in order to verify the instrument stability. The %RSD in the initial calibration and the %D in the continuing calibration were below their 20% and 15% limits, respectively.

SAMPLE NOTES :

LOW LEVEL SOIL :

The samples were extracted and analyzed for extractable hydrocarbons in the Kerosene range within the required holding times. Approximately 20g of the sample was extracted and concentrated to 5 mL.

There were no hydrocarbons detected in any of the samples. Sample B09DP0 was spiked with Kerosene and the matrix spike

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recoveries were 55% for both the MS and the MSD. A blank spike was prepared at the same time, and had a 73% recovery.

All of the QC results were within the limits specified by the EPA CLP SOW.

We certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data in this hardcopy data package and in the computer-readable data submitted on diskette is authorized by the Laboratory Manager or his designee, as verified by the following signatures.

Maureen Parrish 1/12/94
Maureen Parrish
Project Manager

9413225.0561

~~000002A~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS / JG HOGAN

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 11-5-93

Ice Chest No.: SML 55A

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: HMSR 17891

Offsite Property No.:

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE

Sample Identification

1) B09DP0

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)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2)

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)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

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)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

SER 11-5-93

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

Relinquished by:	Received by:	Date/Time:
JG HOGAN / JG Hogan	W.U. Setzer / W.U. SETZER	11-9-93 1115
W.U. Setzer	H. Narciso / H. NARCISO	11-10-93 10:22

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

Attachment 5

Data Validation Supporting Documentation

9413225.0563

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200UP2	DATA PACKAGE: 609904-TMA-644	
VALIDATOR: C Jensen	LAB: TMA	DATE: 3/14/94
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 / B09DP0

9413225.0564

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:

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: Information not available to identify if this sample is a QC sample. Will be evaluated in the final summary report. [illegible]

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: _____

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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:

9413225.0566

HOLDING TIME SUMMARY

SDG:	VALIDATOR: C. Jensen	DATE: 5/14/94	PAGE 1 OF 1
COMMENTS: VOA pkg B09904-TMA-644			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09DP0	VOA	11/5/93	—	11/16/93	—	11	none

BLANK AND SAMPLE DATA SUMMARY

SDG:	VALIDATOR: CJensen	DATE: 3/17/94	PAGE 1 OF 1
COMMENTS: VOA pkg B09904-TMA-644			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
VBLKHNER	Methylene Chloride	2	J		ug/kg		20	B09DP0	U
VBLKHNER	Toluene	.5			ug/kg		5	B09DP0	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1116R

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 11043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: SBLK1116

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31116R02

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Date Analyzed: 11/16/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

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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	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 = 2

FORM I VOA 3/90

Blank Contamination

VOLKIller Quant sheet associated with sample 309DPO

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No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	201	8:22✓	1	1.000	A BB	23673.✓	50.000 PPB	16.18
2	114	397	16:32✓	2	1.000	A BB	111331.✓	50.000 PPB	16.18
3	117	492	20:30✓	3	1.000	A BB	100303.✓	50.000 PPB	16.18
4	65	254	10:35	1	1.264	A BB	35075.	51.188 PPB ✓	16.56
5	98	468	19:30	3	0.951	A BB	100346.	51.774 PPB ✓	16.75
6	95	576	24:00	3	1.171	A BB	77705.	50.054 PPB	16.20
7	NOT FOUND								
8	NOT FOUND								
9	NOT FOUND								
10	NOT FOUND								
11	84	134	5:35	1	0.667	A BB	1705.	2.226 PPB	0.72
12	NOT FOUND								
13	NOT FOUND								
14	NOT FOUND								
15	NOT FOUND								
16	NOT FOUND								
17	NOT FOUND								
~~18~~	~~43~~	~~254~~	~~10:35~~	~~1~~	~~1.264~~	~~A BB~~	~~660.~~	~~0.965 PPB~~	~~0.31~~
19	NOT FOUND								
20	NOT FOUND								
21	NOT FOUND								
22	NOT FOUND								
23	NOT FOUND								
24	NOT FOUND								
25	NOT FOUND								
26	NOT FOUND								
27	NOT FOUND								
28	NOT FOUND								
29	NOT FOUND								
30	NOT FOUND								
31	NOT FOUND								
32	NOT FOUND								
~~33~~	~~43~~	~~412~~	~~17:10~~	~~3~~	~~0.837~~	~~A BB~~	~~1003.~~	~~0.562 PPB~~	~~0.18~~
~~34~~	~~43~~	~~442~~	~~18:25~~	~~3~~	~~0.898~~	~~A BB~~	~~921.~~	~~0.674 PPB~~	~~0.22~~
35	NOT FOUND								
36	NOT FOUND								
~~37~~	~~91~~	~~472~~	~~19:40~~	~~3~~	~~0.959~~	~~A BB~~	~~2066.~~	~~0.820 PPB~~	~~0.27~~
38	NOT FOUND								
39	NOT FOUND								
40	NOT FOUND								
41	NOT FOUND								
42	NOT FOUND								
43	NOT FOUND								

1/19/93

Bromine

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
1	8:32	0.98	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:50	0.98	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	20:45	0.99	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	10:50	0.98	1.268	1.00	51.19	50.00	1.482	1.447✓	1.02
5	19:47	0.99	0.954	1.00	51.77	50.00	1.000	0.966	1.04
6	24:22	0.98	1.175	1.00	50.05	50.00	0.775	0.774	1.00
7	1:10		0.137						
8	2:05		0.244						
9	2:40		0.312						
10	3:37		0.424						
11	5:42	0.98	0.668	1.00	2.23	50.00	0.072	1.618	0.04

12/03/92

02

BW 3225 0520

SEMIVOLATILE ORGANIC DATA VALIDATION SUMMARY FOR DATA PACKAGE:
BO9904-TMA-644 (923-E418 TMA644S.UP2)

9413225.0571

MEMORANDUM

TO: 200-UP-2 Project QA Record April 20, 1994

FR: Christina Jensen, Golder Associates Inc. CJ

RE: SEMIVOLATILE ORGANIC DATA VALIDATION SUMMARY FOR DATA PACKAGE: B09904-TMA-644 (923-E418 TMA644S.UP2)

INTRODUCTION

This memorandum presents the results of data validation on data package B09904-TMA-644 prepared by Thermo Analytical 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
B09DP0	11/05/93	SOIL	SEE NOTE 1

Notes:
1. All samples were analyzed for CLP 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.

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.

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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 64 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.

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Laboratory Blanks

- Di-n-butylphthalate was detected in the laboratory blank. 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:

- One TIC for sample B09DP0 was reported as an unknown hydrocarbon with spectra supporting identification as an aldol condensation product, resulting in qualification of the TIC as unusable (UR) as shown in Attachment 3.

- TICs were detected in the sample(s) and associated laboratory blank and have 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 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.

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Attachment 1

Glossary of Data Reporting Qualifiers

9413225.0574

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.

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Attachment 2

Summary of Data Qualifications

9413225.0576

DATA QUALIFICATION SUMMARY

SDG:	VALIDATOR: C Fuisler	DATE: 4/20/94	PAGE 1 OF 1
COMMENTS: Semivolatile			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Di-n-butylphthalate	U	B09DP0	detected in blank

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Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

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Validated Data Summary, Data Package: B09904-TMA-644

	Samp#	B09DP0	
	Date	11-5-93	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
PHENOL	UG/KG	340.000	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	340.000	U
2-CHLOROPHENOL	UG/KG	340.000	U
1,3-DICHLOROBENZENE	UG/KG	340.000	U
1,4-DICHLOROBENZENE	UG/KG	340.000	U
1,2-DICHLOROBENZENE	UG/KG	340.000	U
2-METHYLPHENOL	UG/KG	340.000	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	340.000	U
4-METHYLPHENOL	UG/KG	340.000	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	340.000	U
HEXACHLOROETHANE	UG/KG	340.000	U
NITROBENZENE	UG/KG	340.000	U
ISOPHORONE	UG/KG	340.000	U
2-NITROPHENOL	UG/KG	340.000	U
2,4-DIMETHYLPHENOL	UG/KG	340.000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	340.000	U
2,4-DICHLOROPHENOL	UG/KG	340.000	U
1,2,4-TRICHLOROBENZENE	UG/KG	340.000	U
NAPHTHALENE	UG/KG	340.000	U
4-CHLOROANILINE	UG/KG	340.000	U
HEXACHLOROBUTADIENE	UG/KG	340.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	340.000	U
2-METHYLNAPHTHALENE	UG/KG	340.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	340.000	U
2,4,6-TRICHLOROPHENOL	UG/KG	340.000	U
2,4,5-TRICHLOROPHENOL	UG/KG	830.000	U
2-CHLORONAPHTHALENE	UG/KG	340.000	U
2-NITROANILINE	UG/KG	830.000	U
DIMETHYLPHTHALATE	UG/KG	340.000	U
ACENAPHTHYLENE	UG/KG	340.000	U
3-NITROANILINE	UG/KG	830.000	U
ACENAPHTHENE	UG/KG	340.000	U

Validated Data Summary, Data Package: B09904-TMA-644

	Samp#	B09DP0	
	Date	11-5-93	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
2,4-DINITROPHENOL	UG/KG	830.000	U
4-NITROPHENOL	UG/KG	830.000	U
DIBENZOFURAN	UG/KG	340.000	U
2,4-DINITROTOLUENE	UG/KG	340.000	U
2,6-DINITROTOLUENE	UG/KG	340.000	U
DIETHYLPHTHALATE	UG/KG	340.000	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	340.000	U
FLUORENE	UG/KG	340.000	U
4-NITROANILINE	UG/KG	830.000	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	830.000	U
N-NITROSODIPHENYLAMINE	UG/KG	340.000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	340.000	U
HEXACHLOROBENZENE	UG/KG	340.000	U
PENTACHLOROPHENOL	UG/KG	830.000	U
PHENANTHRENE	UG/KG	340.000	U
ANTHRACENE	UG/KG	340.000	U
CARBAZOLE	UG/KG	340.000	U
DI-N-BUTYLPHTHALATE	UG/KG	340.000	U
FLUORANTHENE	UG/KG	340.000	U
PYRENE	UG/KG	340.000	U
BUTYLBENZYLPHTHALATE	UG/KG	340.000	U
3,3'-DICHLOROBENZIDINE	UG/KG	340.000	U
BENZO(A)ANTHRACENE	UG/KG	340.000	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	39.000	J
CHRYSENE	UG/KG	340.000	U
DI-N-OCTYLPHTHALATE	UG/KG	340.000	U
BENZO(B)FLUORANTHENE	UG/KG	340.000	U
BENZO(K)FLUORANTHENE	UG/KG	340.000	U
BENZO(A)PYRENE	UG/KG	340.000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	340.000	U
DIBENZ(A,H)ANTHRACENE	UG/KG	340.000	U
BENZO(G,H,I)PERYLENE	UG/KG	340.000	U

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09DP0

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 11043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A311043-01D

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 31202S08

Level: (low/med) LOW Date Received: 11/10/93

% Moisture: 4 decanted: (Y/N) N Date Extracted: 11/13/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/02/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

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

CAS NO.	COMPOUND		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	830	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	830	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
99-09-2	3-Nitroaniline	830	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	830	U

3/14/94

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EPA SAMPLE NO.

B09DP0

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 11043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A311043-01D

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 31202S08

Level: (low/med) LOW Date Received: 11/10/93

% Moisture: 4 decanted: (Y/N) N Date Extracted: 11/13/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/02/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

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CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	830	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
606-20-2	2,6-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	830	U
534-52-1	4,6-Dinitro-2-methylphenol	830	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	830	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 ~~65~~	~~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
117-81-7	bis(2-Ethylhexyl)Phthalate	39	J
218-01-9	Chrysene	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

G 3/14/94

11

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EPA SAMPLE NO.

B09DP0

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 11043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A311043-01D

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 31202S08

Level: (low/med) LOW Date Received: 11/10/93

% Moisture: 4 decanted: (Y/N) N Date Extracted: 11/13/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/02/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.	UNKNOWN HYDROCARBON	6.87	5700	~~J~~	UR
2.	UNKNOWN HYDROCARBON	7.17	380	~~BJ~~	UJN
3.	UNKNOWN HYDROCARBON	8.17	830	~~BJ~~	UJN
4.	UNKNOWN ALCOHOL	8.53	760	~~BJ~~	JN
5.	UNKNOWN HYDROCARBON	10.95	140	~~J~~	JN
6.	UNKNOWN HYDROCARBON	11.75	790	~~BJ~~	UJN
7.	UNKNOWN CARBOXYLIC ACID ESTE	20.73	1000	~~BJ~~	UJN
8.	HEXANEDIOIC ACID ESTER	25.63	240	~~BJ~~	UJN
9.	UNKNOWN ALKANE	28.37	100	~~J~~	JN
10.	UNKNOWN ALKANE	30.87	340	~~J~~	JN

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FORM I SV-TIC 3/90

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

9413225.0584

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 11-043

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : November 10, 1993

1.0 DESCRIPTION OF CASE :

One soil sample was analyzed for TCL Organics- Volatiles and Semivolatiles according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision OLM01.8. The Extractable Hydrocarbons in the Kerosene Range (K) were analyzed according to the SW-846 Method 8015M.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B09DP0	A3-11-043-01A	V	SOIL
B09DP0 MS	A3-11-043-01B	V	SOIL
B09DP0 MSD	A3-11-043-01C	V	SOIL
B09DP0	A3-11-043-01D	SV	SOIL
B09DP0 MS	A3-11-043-01E	SV	SOIL
B09DP0 MSD	A3-11-043-01F	SV	SOIL
B09DP0	A3-11-043-01J	K	SOIL
B09DP0 MS	A3-11-043-01K	K	SOIL
B09DP0 MSD	A3-11-043-01L	K	SOIL

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

All of the samples were received intact and properly documented.

3.2 ANALYSIS

3.2.1 VOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were analyzed by heated purge within the CLP SOW holding times.

All of the QC results were within the limits specified by the EPA CLP SOW.

TUNES :

All BFB tunes were injected directly into the GC/MS instrument.

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the contract required holding times.

Di-n-butylphthalate was detected in all of the samples and the blank at concentrations that were below the CRQL. The compound bis(2-Ethylhexyl)phthalate was also found in the sample B09DP0 and B09DP0MS at concentrations less than the CRQL.

In sample B09DP0MS, 4-Nitrophenol was detected at a concentration that exceeded the calibration range, and was therefore "E" qualified. In addition, the matrix spike recovery of 4-Nitrophenol in sample B09DP0MS was above the advisory QC limit. In accordance with CLP protocol, no further action was required.

All of the other QC results were within the limits specified by the EPA CLP SOW.

3.2.3 EXTRACTABLE HYDROCARBONS "KEROSENE RANGE" COMMENTS :

SEQUENCE NOTES :

The sequence was started on 11/18/93 and was analyzed according to the SW-846 Method 8015M. The initial calibration consisted of 5 different levels of the Kerosene standard that ranged from approximately 200ppm to 2000ppm. The continuing calibration at the 1000ppm level was injected amongst a series of samples, in order to verify the instrument stability. The %RSD in the initial calibration and the %D in the continuing calibration were below their 20% and 15% limits, respectively.

SAMPLE NOTES :

LOW LEVEL SOIL :

The samples were extracted and analyzed for extractable hydrocarbons in the Kerosene range within the required holding times. Approximately 20g of the sample was extracted and concentrated to 5 mL.

There were no hydrocarbons detected in any of the samples. Sample B09DP0 was spiked with Kerosene and the matrix spike

recoveries were 55% for both the MS and the MSD. A blank spike was prepared at the same time, and had a 73% recovery.

All of the QC results were within the limits specified by the EPA CLP SOW.

We certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data in this hardcopy data package and in the computer-readable data submitted on diskette is authorized by the Laboratory Manager or his designee, as verified by the following signatures.

Maureen Parrish 1/12/94
Maureen Parrish
Project Manager

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000002A

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS / JG HOGAN

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 11-5-93

Ice Chest No.: SML 55A

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: HMSR 17891

Offsite Property No.:

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE

Sample Identification

1) B09DP0

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)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2)

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)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

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)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
JG HOGAN / JG Hogan	W.U. Setzer / W.U. SETZER	11-9-93 1115
W.U. Setzer	H. Narciso / H. NARCISO	11-10-93 10:22

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9413225.0588

Attachment 5

Data Validation Supporting Documentation

9413225.0589

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200 UP 2		DATA PACKAGE: 609904-TMA-644	
VALIDATOR: C. Jensen	LAB: TMA		DATE: 3/14/94
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/ BOPO

9413225.0590

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:

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:

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: The % R for 2,4 Dinitrotoluene was 98% which was above the control limit of 28-89%. Since this recovery is near 100% no qualification of the data is required. The remaining recoveries were within limits.

9413225.0591

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: An aldol condensation product @ 10.87 min. was identified in the unknown search and labeled "Unknown hydrocarbon". This appears to be more similar to 4-hydroxy-4-methyl-2-pentanone, qualified as NR - common lab contam. This was also identified at the same retention time as the blank. 5/20/94

revised page 5/20/94

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9413225.0592

HOLDING TIME SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 3/14/94	PAGE 1 OF 1
COMMENTS: SVOA pkg B09904-TU09-644			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09DP0	SVOA	11/5/93	11/13/93	12/02/93	8	19	none

BLANK AND SAMPLE DATA SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 3/14/94	PAGE 1 OF 1
COMMENTS: SVOA pkg. B09904-TMA-644			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
SBLK113352	Di-n-butyl phthalate	56	J		ug/kg		560	B09DP0	U
	unknown hydrocarbon	360		7.17			3600		UJN
		750		8.17			7500		UJN
		360		11.75			3600		UJN
	unk. acid ester	920		20.73			9200		UJN
	hexanedioic acid ester	200		25.63			2000		UJN
								TICs requalified UJN for sample B09DP0 5/12/94	

revised page 23 5/12/94

000098

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK1113S2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 11043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A311043-BLK

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 31202S07

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N) N Date Extracted: 11/13/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/02/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

9413225.0595

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	790	U
132-64-9	Dibenzofuran	320	U
121-14-2	2,4-Dinitrotoluene	320	U
606-20-2	2,6-Dinitrotoluene	320	U
84-66-2	Diethylphthalate	320	U
7005-72-3	4-Chlorophenyl-phenylether	320	U
86-73-7	Fluorene	320	U
100-01-6	4-Nitroaniline	790	U
534-52-1	4,6-Dinitro-2-methylphenol	790	U
86-30-6	N-Nitrosodiphenylamine (1)	320	U
101-55-3	4-Bromophenyl-phenylether	320	U
118-74-1	Hexachlorobenzene	320	U
87-86-5	Pentachlorophenol	790	U
85-01-8	Phenanthrene	320	U
120-12-7	Anthracene	320	U
86-74-8	Carbazole	320	U
84-74-2	Di-n-Butylphthalate	56	J
206-44-0	Fluoranthene	320	U
129-00-0	Pyrene	320	U
85-68-7	Butylbenzylphthalate	320	U
91-94-1	3,3'-Dichlorobenzidine	320	U
56-55-3	Benzo(a)Anthracene	320	U
117-81-7	bis(2-Ethylhexyl)Phthalate	320	U
218-01-9	Chrysene	320	U
117-84-0	Di-n-Octyl Phthalate	320	U
205-99-2	Benzo(b)Fluoranthene	320	U
207-08-9	Benzo(k)Fluoranthene	320	U
50-32-8	Benzo(a)Pyrene	320	U
193-39-5	Indeno(1,2,3-cd)Pyrene	320	U
53-70-3	Dibenz(a,h)Anthracene	320	U
191-24-2	Benzo(g,h,i)Perylene	320	U

(1) - Cannot be separated from Diphenylamine

9 3/14/94

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~~000039~~
EPA SAMPLE NO.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SBLK1113S2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 11043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A311043-BLK

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 31202S07

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N) N Date Extracted: 11/13/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/02/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	6.68	160	J
2.	UNKNOWN HYDROCARBON	6.87	5200	J
3.	UNKNOWN HYDROCARBON	7.17	360	J
4.	UNKNOWN HYDROCARBON	8.17	750	J
5.	UNKNOWN ALCOHOL	13.87	460	J
6.	UNKNOWN HYDROCARBON	9.77	98	J
7.	UNKNOWN HYDROCARBON	11.73	360	J
8.	PROPANOIC ACID ISOMER	17.52	66	J
9.	UNKNOWN CARBOXYLIC ACID ESTE	20.72	920	J
10.	HEXANEDIOIC ACID ESTER ISOME	25.62	200	J

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3/14/94

GENERAL GC DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09904-TMA-644 (923-E418 TMA644G.UP2)

9413225.0597

MEMORANDUM

MAR 1994
RECEIVED
TQO

TO: 200-UP-2 Project QA Record March 22, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: GENERAL GC DATA VALIDATION SUMMARY FOR DATA PACKAGE: B09904-TMA-644 (923-E418 TMA644G.UP2)

INTRODUCTION

This memorandum presents the results of data validation on data package B09904-TMA-644 prepared by Thermo Analytical 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
B09DP0	11/05/93	SOIL	SEE NOTE 1

Notes:

1. The sample was analyzed for extractable fuel hydrocarbons (kerosene range).

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

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 all sample results as specified in the reference analytical method.

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-001

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 one determination reported, which was deemed valid. This results in a completeness of 100 percent, which meets 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

There were no minor deficiencies 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.

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Attachment 1

Glossary of Data Reporting Qualifiers

9413225.0600

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.

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.

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Attachment 2

Summary of Data Qualifications

9413225.0602

DATA QUALIFICATION SUMMARY

SDG:	VALIDATOR: C. Jensen	DATE: 3/15/94	PAGE 1 OF 1
COMMENTS: General GC pkg 609904-TMA-1044			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
no qualification of the data is required			

9413225.0603

Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

9413225.0604

Validated Data Summary, Data Package: B09904-TMA-644

	Samp#	B09DP0	
	Date	11-5-93	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
KEROSENE	MG/KG	5.000	U

TMA Inc. REPORT Work Order # A3-11-043

Received: 11/10/93

Results by Sample

SAMPLE ID B09DP0 FRACTION 01J TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 11/05/93 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 12/01/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL
Kerosene Range	ND	5.0
C10 - C16 Jet Fuel Range	NA	NA
C9 - C22 Diesel Range	NA	NA
Hydraulic Range	NA	NA

ND = Not detected at the specified limits

Form I

9413225.0606

verified
CJ 3/17/94

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

94/3225.0607

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 11-043

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : November 10, 1993

1.0 DESCRIPTION OF CASE :

One soil sample was analyzed for TCL Organics- Volatiles and Semivolatiles according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision OLM01.8. The Extractable Hydrocarbons in the Kerosene Range (K) were analyzed according to the SW-846 Method 8015M.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B09DP0	A3-11-043-01A	V	SOIL
B09DP0 MS	A3-11-043-01B	V	SOIL
B09DP0 MSD	A3-11-043-01C	V	SOIL
B09DP0	A3-11-043-01D	SV	SOIL
B09DP0 MS	A3-11-043-01E	SV	SOIL
B09DP0 MSD	A3-11-043-01F	SV	SOIL
B09DP0	A3-11-043-01J	K	SOIL
B09DP0 MS	A3-11-043-01K	K	SOIL
B09DP0 MSD	A3-11-043-01L	K	SOIL

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

All of the samples were received intact and properly documented.

3.2 ANALYSIS

3.2.1 VOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were analyzed by heated purge within the CLP SOW holding times.

All of the QC results were within the limits specified by the EPA CLP SOW.

9413225.0608

TUNES :

All BFB tunes were injected directly into the GC/MS instrument.

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the contract required holding times.

Di-n-butylphthalate was detected in all of the samples and the blank at concentrations that were below the CRQL. The compound bis(2-Ethylhexyl)phthalate was also found in the sample B09DP0 and B09DP0MS at concentrations less than the CRQL.

In sample B09DP0MS, 4-Nitrophenol was detected at a concentration that exceeded the calibration range, and was therefore "E" qualified. In addition, the matrix spike recovery of 4-Nitrophenol in sample B09DP0MS was above the advisory QC limit. In accordance with CLP protocol, no further action was required.

All of the other QC results were within the limits specified by the EPA CLP SOW.

3.2.3 EXTRACTABLE HYDROCARBONS "KEROSENE RANGE" COMMENTS :

SEQUENCE NOTES :

The sequence was started on 11/18/93 and was analyzed according to the SW-846 Method 8015M. The initial calibration consisted of 5 different levels of the Kerosene standard that ranged from approximately 200ppm to 2000ppm. The continuing calibration at the 1000ppm level was injected amongst a series of samples, in order to verify the instrument stability. The %RSD in the initial calibration and the %D in the continuing calibration were below their 20% and 15% limits, respectively.

SAMPLE NOTES :

LOW LEVEL SOIL :

The samples were extracted and analyzed for extractable hydrocarbons in the Kerosene range within the required holding times. Approximately 20g of the sample was extracted and concentrated to 5 mL.

There were no hydrocarbons detected in any of the samples. Sample B09DP0 was spiked with Kerosene and the matrix spike

9413225.0609

recoveries were 55% for both the MS and the MSD. A blank spike was prepared at the same time, and had a 73% recovery.

All of the QC results were within the limits specified by the EPA CLP SOW.

We certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data in this hardcopy data package and in the computer-readable data submitted on diskette is authorized by the Laboratory Manager or his designee, as verified by the following signatures.

Maureen Parrish 1/12/94
Maureen Parrish
Project Manager

0HF325.0610

000002A

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS / JG HOGAN

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 11-5-93

Ice Chest No.: SML 55A

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: HMSR 17891

Offsite Property No.:

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE

Sample Identification

1) B09DP0

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)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2)

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)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

1,250ml P:CLP;TAL Metals,Hg,Ti
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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)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

SER 11-5-93

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

Relinquished by:	Received by:	Date/Time:
JG Hogan	W.U. Setzer	11-9-93 1115
W.U. Setzer	H. Narciso	11-10-93 10:22

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9413225.0611

Attachment 5

Data Validation Supporting Documentation

9413225.0612

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT:		DATA PACKAGE: B0S904-TMA-644
VALIDATOR: C. Jensen	LAB: TMA	DATE: 3/15/94
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	☒ 8015M	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX Soil / B09DP0

9413225.0613

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 WTC

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . Yes No N/A

Comments:

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:

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: Initial spikes were analyzed. The %R were 55%, acceptable. The laboratory did not provide control limits. The calibration was also analyzed but not received a value of calibration. Since accuracy was considered acceptable (55%) because the laboratory did not provide control limits for calibration. LCS not analyzed

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

9413225.0614

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Comments: A laboratory duplicate was not analyzed - no qualification of the data is required (MS/MSD). QC analyzed in duplicate and the RPD for analytes detected were acceptable.

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:

There are no specific CRDLs for Kjeldahl. Reported detection limit of 5 mg/kg is acceptable.

9413225.0615

-018

HOLDING TIME SUMMARY

SDG:	VALIDATOR: [illegible]	DATE: 3/15/94	PAGE 1 OF 1
COMMENTS: General GC. pkg B09904-TMH-044			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09DP0	8015M	11/5/93	11/13/93	12/1/93	8	18	none

METALS ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09904-TMA-644 (923-E418 TMA644M.UP2)

9HM3225.0617

MEMORANDUM

RECEIVED TQO

TO: 200-UP-2 Project QA Record March 22, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: METALS DATA VALIDATION SUMMARY FOR DATA PACKAGE: B09904-TMA-644 (923-E418 TMA644M.UP2)

9413225.0618

INTRODUCTION

This memo presents the results of data validation on data package B09904-TMA-644 prepared by the Thermo Analytical 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
B09DP0	11/05/93	SOIL	SEE NOTE 1

Notes:

1. The sample was analyzed for CLP 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

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met with the exception of the deficiencies identified below.

Accuracy. Goals for accuracy were met with the exception of the deficiencies identified below.

Sample Result Verification. All sample results were supported in the raw data.

001

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 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 normal workplan 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.

Holding Time

- The holding time for cyanide was exceeded. Attachments 2 and 5 provide a summary of the sample affected, data qualification applied and supporting documentation.

Laboratory Blanks

- **Negative Blanks.** Thallium was detected at a negative concentration in the initial calibration blank. Attachments 2 and 5 provide a summary of the sample affected, data qualification applied and supporting documentation.

Spike Sample Recovery

- Spike sample recovery was unacceptable for antimony. Attachment 2 provides a summary of the samples and data qualifications applied.

Duplicate Analysis

- The duplicate relative percent difference for calcium was unacceptable. Attachments 2 and 5 provide a summary of the samples and data qualifications applied.

9413225.0619

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.

9413225.0620

Attachment 1

Glossary of Data Reporting Qualifiers

9413225.0621

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.

9413225.0622

Attachment 2

Summary of Data Qualifications

9413225.0623

Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

9413225.0624

Validated Data Summary, Data Package: B09904-TMA-644

	Samp#	B09DP0	
	Date	11-5-93	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
ALUMINUM	MG/KG	6940.000	
ANTIMONY	MG/KG	2.500	UJ
ARSENIC	MG/KG	4.500	
BARIUM	MG/KG	80.100	
BERYLLIUM	MG/KG	0.290	B
CADMIUM	MG/KG	0.250	U
CALCIUM	MG/KG	14100.000	J
CHROMIUM	MG/KG	7.500	
COBALT	MG/KG	9.600	B
COPPER	MG/KG	13.300	
IRON	MG/KG	18600.000	
LEAD	MG/KG	4.300	
MAGNESIUM	MG/KG	4530.000	
MANGANESE	MG/KG	316.000	
MERCURY	MG/KG	0.050	U
NICKEL	MG/KG	7.800	
POTASSIUM	MG/KG	1270.000	
SELENIUM	MG/KG	0.540	U
SILVER	MG/KG	0.500	U
SODIUM	MG/KG	226.000	B
THALLIUM	MG/KG	0.570	BJ
VANADIUM	MG/KG	46.300	
ZINC	MG/KG	40.700	
CYANIDE	MG/KG	0.520	UJ
TITANIUM	MG/KG	1430.000	

Verified
5/31/94

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

809DP0

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D2-0039

Lab Code: SKINER Case No.: N3-11-0635AS No.: SDG No.: 809DP0

Matrix (soil/water): SOIL Lab Sample ID: 11125-015

Level (low/med): LOW Date Received: 11/11/93

% Solids: 95.4

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6940			P	
7440-36-0	Antimony	2.5	~~U~~	N	P	UJ
7440-38-2	Arsenic	4.5			P	
7440-39-3	Barium	80.1			P	
7440-41-7	Beryllium	0.29	B		P	
7440-43-9	Cadmium	0.25	U		P	
7440-70-2	Calcium	14100		*	P	J
7440-47-3	Chromium	7.5			P	
7440-48-4	Cobalt	9.6	B		P	
7440-50-8	Copper	13.3			P	
7439-89-6	Iron	18600			P	
7439-92-1	Lead	4.3			P	
7439-95-4	Magnesium	4530			P	
7439-96-5	Manganese	316			P	
7439-97-6	Mercury	0.05	~~U~~	N	CV	UR 3/22/94
7440-02-0	Nickel	7.8			P	
7440-09-7	Potassium	1270			P	
7782-49-2	Selenium	0.54	U		P	
7440-22-4	Silver	0.50	U		P	
7440-23-5	Sodium	226	B		P	
7440-28-0	Thallium	0.57	~~B~~		P	BJ
7440-62-2	Vanadium	46.3			P	
7440-66-6	Zinc	40.7			P	
	Cyanide	0.52	~~U~~		CA	UR UJ
7440-32-6	Titanium	1430			P	3/17/94

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

~~002~~

010

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

944 3225.0627

TMA
Thermo Analytical Inc.

Skinner & Sherman Labs., Inc.
300 Second Avenue
Post Office Box 521
Waltham, MA 02254-0521
(617) 890-7200
FAX (617) 890-3883

JAN 1994
RECEIVED
SDLA

January 4, 1994

TMA/NORCAL
2030 Wright Avenue
Richmond, CA 94804
Attention: Dan Stuermer

9413225.0628

Quality Control Narrative

Scope
One (1) soil sample was submitted to TMA/Skinner & Sherman Laboratories, Inc. on November 11, 1993 from TMA/Norcal. The sample was analyzed for the USEPA CLP Target Analyte List metals, titanium and cyanide. The analysis were performed under TMA/Skinner and Sherman work order S311125.

Methodology
The sample was prepared, analyzed and reported in accordance with the USEPA Contract Laboratory Program Statement of Work ILM02.

Discussion
All quality control requirements were met for the samples with the following exceptions:

The matrix spike recoveries for antimony and mercury exceeded the control limit requirements.

The laboratory duplicate for calcium exceeded the control limit requirement.

Please feel free to call if there are any questions concerning this package.

Respectfully submitted,

TMA/SKINNER & SHERMAN LABORATORIES, INC.

Steven R. Provencal
Lead Chemist

000002A

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS / JG HOGAN

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 11-5-93

Ice Chest No.: SML 55A

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: HMSR 17891

Offsite Property No.:

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE

Sample Identification

1) B09DP0

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)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

9413225.0629

2)

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)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

SER 11-5-93

3)

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)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

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

Relinquished by:	Received by:	Date/Time:
JG Hogan	W.U. Setzer / W.U. SETZER	11-9-93 1115
W.U. Setzer	H. Narciso / H. NARCISO	11-10-93 10:22

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

Attachment 5

Data Validation Supporting Documentation

94A3225.0630

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200 UP2			DATA PACKAGE: 104904-TMA-644		
VALIDATOR: O. Jensen		LAB: TMA		DATE: 3/17/94	
CASE:			SDG:		

ANALYSES PERFORMED					
☒ CLP/ICP	~~☒ CLP/GFAA~~	☒ CLP/Hg	☒ CLP/Cyanide	~~☐ UG~~	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☐	☐

SAMPLES/MATRIX Soil / B9DF2

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: OJ 3/17/94

The cyanide analysis was performed ~~54~~ 28 days after sample collection, result for sample B9DF2 qualified as UJ per WHC procedures.

OJ 3/17/94

9413225.0631

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:

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: Sb qualified due to MS <75%. Ha acceptable because result was <TDL. Ti acceptable because sample result is >4x spike result.

9413225.0632

-016

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? . . . . . 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: Information not available to determine if sample was a QC sample. Requested info will be evaluated in final validation summary.

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? . . . . . Yes No N/A

Was MSA performed as required? . . . . . Yes No N/A

Are MSA results acceptable? . . . . . Yes No N/A

Comments: Sample was run ICP instead of furnace.

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:

9413225.0633

HOLDING TIME SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 3/17/94	PAGE 1 OF 1
COMMENTS: Metals pkg. B09904 - TMA-644			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09DP0	ICP	11/5/93		12/16/93		41	none
	CN/Hg			12/3/94		28	none
	Cr/Cd			12/3/94		28	~~J~~ UJ
	ICP As, Tl, Pb			1/3/94		59	none

BLANK AND SAMPLE DATA SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 3/17/94	PAGE 1 OF 1
COMMENTS: Metals pkg. ED9904-THA-644			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
ICB	Thallium	-1.9966	B		ug/L	2X = 39	ug/L or [illegible]	[illegible]	BJ

WESTINGHOUSE/HANFORD

3
BLANKS

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D2-0039

Lab Code: SKINER Case No.: N3-11-063SAS No.: SDG No.: 809DP0

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	Preparation Blank	C	M
Aluminum	10.6	U	11.5	B	10.6	U	10.6	U	4.098	B	P
Antimony	12.9	U	12.9	U	12.9	U	12.9	U	2.580	U	P
Arsenic	2.4	B	2.1	U	2.1	U	2.1	U	0.420	U	P
Barium	1.2	U	1.2	U	1.2	U	1.2	U	0.240	U	P
Beryllium	0.2	U	0.2	U	0.2	U	0.2	U	0.040	U	P
Cadmium	1.3	U	1.3	U	1.3	U	1.3	U	0.260	U	P
Calcium	59.0	U	59.0	U	59.0	U	59.0	U	11.800	U	P
Chromium	2.1	U	2.1	U	-3.0	B	2.1	U	0.672	B	P
Cobalt	2.6	U	2.6	U	2.6	U	2.6	U	0.520	U	P
Copper	12.6	B	7.2	B	2.5	U	3.0	B	0.500	U	P
Iron	5.3	U	5.3	U	23.6	B	14.3	B	7.582	B	P
Lead	2.9	U	2.9	U	2.9	U	2.9	U	0.580	U	P
Magnesium	22.9	U	22.9	U	-36.3	B	22.9	U	4.580	U	P
Manganese	0.8	U	0.8	U	1.0	B	0.8	U	0.260	B	P
Mercury	0.1	U	0.1	U	0.1	U	0.1	U	0.050	U	CV
Nickel	3.4	U	3.4	U	3.4	U	3.4	U	0.680	U	P
Potassium	68.5	U	68.5	U	68.5	U	68.5	U	13.700	U	P
Selenium	2.8	U	2.8	U	2.8	U	2.8	U	0.560	U	P
Silver	2.6	U	2.6	U	2.6	U	2.6	U	0.520	U	P
Sodium	114.4	U	114.4	U	114.4	U	114.4	U	22.880	U	P
Thallium*	-2.0	B	-2.4	B	-1.8	B	-1.9	B	-0.422	B	P
Vanadium	5.5	U	5.5	U	5.5	U	5.5	U	1.100	U	P
Zinc	5.4	B	4.4	U	4.4	U	4.4	U	0.880	U	P
Cyanide	10.0	U	10.0	U	10.0	U	10.0	U	0.500	U	CA
Titanium	-1.3	B	1.1	U	-2.2	B	1.1	U	0.220	U	P

B09DP0

Thallium result qualified ☒ due to negative IC's

~~008~~
020

3/17/94

FORM III - IN

~~ILM02.1~~

WESTINGHOUSE/HANFORD

5A

SPIKE SAMPLE RECOVERY

SAMPLE NUMBER:

B09DP0S

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D2-0039

Lab Code: SKINER Case No.: N3-11-063SAS No.: SDG No.: B09DP0

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

% Solids for Sample: 95.4

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	58.3755		2.4811	U	102.77	56.8	N	P
Arsenic	75-125	379.4755		4.4700		411.07	91.2		P
Barium	75-125	485.8799		80.1396		411.07	98.7		P
Beryllium	75-125	9.9293		0.2885	B	10.28	93.8		P
Cadmium	75-125	9.5552		0.2500	U	10.28	92.9		P
Calcium									NR
Chromium	75-125	47.5172		7.4548		41.11	97.5		P
Cobalt	75-125	108.1782		9.5936	B	102.77	95.9		P
Copper	75-125	61.9456		13.2883		51.38	94.7		P
Iron									NR
Lead	75-125	95.7537		4.2640		102.77	89.0		P
Magnesium									NR
Manganese	75-125	418.4651		316.2541		102.77	99.5		P
Mercury	75-125	0.6277		0.0499	U	0.50	125.5	N	CV
Nickel	75-125	106.7065		7.7530		102.77	96.3		P
Potassium									NR
Selenium	75-125	375.8992		0.5385	U	411.07	91.4		P
Silver	75-125	10.4616		0.5001	U	10.28	101.8		P
Sodium									NR
Thallium	75-125	376.2897		0.5742	B	411.07	91.4		P
Vanadium	75-125	141.5916		46.3255		102.77	92.7		P
Zinc	75-125	134.2007		40.7112		102.77	91.0		P
Cyanide	75-125	20.4185		0.5189	U	24.04	84.9		CA
Titanium		1490.9771		1425.9035		102.77	63.3		P

Comments:

Titanium sample result >4x the spike concentration, no qualification of the data required.

013

021

FORM V (Part 1) - IN

~~FLM02.1~~

WESTINGHOUSE/HANFORD

6

DUPLICATES

SAMPLE NUMBER:

809DP0D

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D2-0039

Lab Code: SKINER Case No.: N3-11-063SAS No.: SDG No.: 809DP0

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

% Solids for Sample: 95.4 % Solids for Duplicate: 95.1

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

9413225.0630

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		6939.0110		6130.8660		12.4		P
Antimony		2.4811	U	2.6004	U			P
Arsenic	1.9	4.4700		3.1084		35.9		P
Barium	38.5	80.1396		82.5976		3.0		P
Beryllium		0.2885	B	0.2782	B	3.6		P
Cadmium		0.2500	U	0.2621	U			P
Calcium		14093.8203		7444.1622		61.7	*	P
Chromium	1.9	7.4548		7.1218		4.6		P
Cobalt	9.6	9.5936	B	9.6980	B	1.1		P
Copper	4.8	13.2883		12.9878		2.3		P
Iron		18618.2755		18882.4383		1.4		P
Lead		4.2640		4.0030		6.3		P
Magnesium	961.7	4534.2642		4351.7175		4.1		P
Manganese		316.2541		318.4567		0.7		P
Mercury		0.0499	U	0.0476	U			CV
Nickel	7.7	7.7530		7.7649	B	0.2		P
Potassium	961.7	1271.5943		1185.6555		7.0		P
Selenium		0.5385	U	0.5644	U			P
Silver		0.5001	U	0.8285	B	200.0		P
Sodium		226.0881	B	226.5965	B	0.2		P
Thallium		0.5742	B	0.4234	B	30.2		P
Vanadium	9.6	46.3255		42.6967		8.2		P
Zinc		40.7112		38.5019		5.6		P
Cyanide		0.5189	U	0.5138	U			CA
Titanium		1425.9035		1336.5586		6.5		P

~~015~~

022

FORM VI - IN

~~IL-M02.1~~