VOLATILE ORGANIC DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09340-TMA-623 (923-E418, Filename B09340.VOA)

9413225.1282

MEMORANDUM

MAR 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record

March 22, 1994

FR: Susan Winter, Golder Associates Inc.

RE: VOLATILE ORGANIC DATA VALIDATION SUMMARY FOR DATA PACKAGE: B09340-TMA-623 (923-E418, Filename B09340.VOA)

INTRODUCTION

This memo presents the results of data validation on data package B09340-TMA-623 prepared by the Thermo Analytical (TMA) 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
B09337	09/15/93	SOIL	SEE NOTE 1
B09339	09/13/93	SOIL	
B09340	09/15/93	SOIL	
B09341	09/13/93	SOIL	
B09344	09/15/93	SOIL	
B09347	09/16/93	SOIL	

Note 1. All samples were analyzed for CLP TCL volatiles.

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 with the exception of acetone which was detected in samples B09340, B09341, B09344, and B09347. Attachments 2 and 5 provide summaries of the corrected results and supporting documentation. Tentatively identified compounds (TICs) deemed valid during data validation have been qualified as estimated and presumptive (JN) as shown in Attachment 2.

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 198 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

Sample B09347 was identified as a solid trip blank in which all results were verified as undetected with the exception of four tentatively identified compounds (TIC) as reported on the laboratory report form included in Attachment 3.

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.

Compound Identification

- Acetone results have been corrected on the laboratory results forms and qualified as estimated (J) since the respective sample retention times differences are unacceptable in comparison to the continuing calibration retention time. All other spectra data provided by the laboratory supports the presence of acetone.

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.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9413225.1287

DATA QUALIFICATION SUMMARY

SDG: B09340-TMA-623	VALIDATOR:	DATE: March 22, 1994	PAGE 1 OF 1
COMMENTS: VOLATILE ORGANICS			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
UNKNOWN HYDROCARBONS @ RT 24.87, 25.03, AND 26.42 MINUTES	JN	B09337	IDENTIFIED AS VALID RESULTS USING DATA VALIDATION PROCEDURES
UNKNOWN HYDROCARBON @ RT 26.33 MINUTES	JN	B09340	IDENTIFIED AS A VALID RESULT USING DATA VALIDATION PROCEDURES
UNKNOWN HYDROCARBON @ RT 24.87 AND 26.33 MINUTES	JN	B09341	IDENTIFIED AS VALID RESULTS USING DATA VALIDATION PROCEDURES
UNKNOWN HYDROCARBON @ RT 21.37 AND 24.95 MINUTES	JN	B09344	IDENTIFIED AS VALID RESULTS USING DATA VALIDATION PROCEDURES
HEXANAL @ RT 18.25 MINUTES	JN	B09347	IDENTIFIED AS A VALID RESULT USING DATA VALIDATION PROCEDURES
UNKNOWN HYDROCARBONS @ RT 21.87, 24.95, AND 26.33 MINUTES	JN	B09347	IDENTIFIED AS VALID RESULTS USING DATA VALIDATION PROCEDURES
ACETONE	J	B09337 B09339 B09340 B09341 B09344 B09347	RETENTION TIME DIFFERENCE UNACCEPTABLE, HOWEVER, THE SPECTRA AND QUANTITATION IONS SUPPORT THE PRESENCE OF ACETONE

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ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9413225.1289

Validated Data Summary, Data Package: B09340-TMA-623

	Samp#	B09337		B09339		B09340		B09341		B09344		B09347	
	Date	9-15-93		9-13-93		9-15-93		9-13-93		9-15-93		9-16-93	
	Location	299-W19-95		299-W19-97		299-W19-95		299-W19-97		299-W19-95		299-W19-97	
	Depth	90.25 - 92.25		70.00 - 72.50		105.00 - 107.50		101.00 - 103.30		120.00 - 122.50		---	
	Type	---		---		---		---		---		TRIP	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
BROMOMETHANE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
VINYL CHLORIDE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
CHLOROETHANE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
METHYLENE CHLORIDE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
ACETONE	UG/KG	13.000	J	16.000	J	13.000	J	14.000	J	12.000	J	7.000	J
CARBON DISULFIDE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
1,1-DICHLOROETHENE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
1,1-DICHLOROETHANE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
CHLOROFORM	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
1,2-DICHLOROETHANE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
2-BUTANONE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
1,1,1-TRICHLOROETHANE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
CARBON TETRACHLORIDE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
BROMODICHLOROMETHANE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
1,2-DICHLOROPROPANE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
TRICHLOROETHENE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
DIBROMOCHLOROMETHANE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
1,1,2-TRICHLOROETHANE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
BENZENE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
BROMOFORM	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
4-METHYL-2-PENTANONE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
2-HEXANONE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
TETRACHLOROETHENE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
TOLUENE	UG/KG	11.000	U	11.000	U	3.000	J	11.000	U	11.000	U	10.000	U
CHLOROBENZENE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
ETHYLBENZENE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
STYRENE	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U
XYLENES (TOTAL)	UG/KG	11.000	U	11.000	U	10.000	U	11.000	U	11.000	U	10.000	U

Verified [signature] 3/21/94

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

~~000094~~

EPA SAMPLE NO.

299-W19-95

B09337

90.25-92.25'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-03A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30923R15

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: not dec. 6 Date Analyzed: 09/23/93

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

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

9413225.129

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	U
67-64-1	Acetone	13	—
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	11	U
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

FORM I VOA

Verified 3/21/94

3/90

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

~~000095~~

EPA SAMPLE NO.
299-W19-95

B09337
90.25-92.25

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-03A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30923R15

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: not dec. 6 Date Analyzed: 09/23/93

GC Column: PACK ID: 2.00 (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 HYDROCARBON	24.87	9	~~J~~
2.	UNKNOWN HYDROCARBON	25.03	6	~~J~~
3.	UNKNOWN HYDROCARBON	26.42	9	~~J~~

Total Unknown Hydrocarbon 24 JN

Verified 3/07/94

FORM I VOA-TIC

3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET ~~000107~~

EPA SAMPLE NO.
299-W19-97
B09339
70-72.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-04A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30923R16

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: not dec. 8 Date Analyzed: 09/23/93

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	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	U
67-64-1	Acetone	16	—
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	11	U
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

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FORM I VOA 3/90

Verified
3/21/94

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS ~~000103~~

EPA SAMPLE NO.

299-W19-97

B09339

70-72.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-04A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30923R16

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: not dec. 8 Date Analyzed: 09/23/93

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

Verified 3/27/94

FORM I VOA-TIC

3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

~~000117~~

EPA SAMPLE NO.
299-W19-95
B09340
105-107.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30923R14

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: not dec. 4 Date Analyzed: 09/23/93

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

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

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

CAS NO.	COMPOUND		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	U	
67-64-1	Acetone	13 ~~10~~	~~U~~	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	3	J	
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	

Verified
3/07/94

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS ~~000118~~

EPA SAMPLE NO.
299-W19-95

B09340
105-107.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30923R14

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: not dec. 4 Date Analyzed: 09/23/93

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

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

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

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	26.33	8	~~J~~

Q

Verified
3/07/94

014

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

~~000128~~

EPA SAMPLE NO.
299-W19-97
B09341
101-103.3'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-05A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30923R17

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: not dec. 6 Date Analyzed: 09/23/93

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

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

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

CAS NO.	COMPOUND		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	U
67-64-1	Acetone	14 ~~11~~	~~U~~ J
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	11	U
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

Verified 3/07/94

FORM I VOA

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS ~~000129~~

EPA SAMPLE NO.
299-W19-97
B09341
101-103.3'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-05A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30923R17

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: not dec. 6 Date Analyzed: 09/23/93

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

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1.	UNKNOWN HYDROCARBON	26.33	6	J	JN
2.	UNKNOWN HYDROCARBON	24.87	9	J	JN

Total Unknown Hydrocarbon 15 JN

Verified
3/07/94

FORM I VOA-TIC

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

~~000138~~

EPA SAMPLE NO.

299-W19-95

B09344

120-122.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30923R19

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: not dec. 6 Date Analyzed: 09/23/93

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

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

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

CAS NO.	COMPOUND		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	U
67-64-1	Acetone	12 ~~11~~	~~U~~ J
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	11	U
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

Verified 3/07/94

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

~~000139~~

EPA SAMPLE NO.
299-W-19-95
B09344
120-122.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30923R19

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: not dec. 6 Date Analyzed: 09/23/93

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

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1.	UNKNOWN HYDROCARBON	21.37	5	~~J~~	JN
2.	UNKNOWN HYDROCARBON	24.95	50	~~J~~	JN

Total Unknown Hydrocarbon 55 JN

Verified
[illegible] 3/27/94

FORM I VOA-TIC

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

~~000148~~

EPA SAMPLE NO.
299-W19-97

B09347
Solid Tsq Blank

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-06A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30923R18

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: not dec. 0 Date Analyzed: 09/23/93

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

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

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

CAS NO.	COMPOUND	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	U
67-64-1	Acetone	7 ~~10~~	~~U~~ 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	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

Q

Verified 3/07/94

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS ~~000149~~

EPA SAMPLE NO.
299-W19-97
B09347
Solid Trip Blank

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-06A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30923R18

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: not dec. 0 Date Analyzed: 09/23/93

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

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

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1. 66-25-1	HEXANAL	18.25	10	JN	
2.	UNKNOWN HYDROCARBON	21.87	5	~~J~~	JN
3.	UNKNOWN HYDROCARBON	26.33	11	~~J~~	JN
4.	UNKNOWN HYDROCARBON	24.95	12	~~J~~	JN

Total Unknown Hydrocarbon 28 JN

Verified
3/07/94

-020

FORM I VOA-TIC 3/90

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9413225.1303

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 09-045

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : September 17, 1993

1.0 DESCRIPTION OF CASE :

Six soil samples were 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 for Kerosene (K) were analyzed according to the SW-846 Method 8015M.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B09340	A3-09-045-01A	V	SOIL
B09340	A3-09-045-01B	SV	SOIL
B09340 MS	A3-09-045-01C	SV	SOIL
B09340 MSD	A3-09-045-01D	SV	SOIL
B09340	A3-09-045-01G	K	SOIL
B09344	A3-09-045-02A	V	SOIL
B09344 MS	A3-09-045-02B	V	SOIL
B09344 MSD	A3-09-045-02C	V	SOIL
B09344	A3-09-045-02D	SV	SOIL
B09344	A3-09-045-02G	K	SOIL
B09337	A3-09-045-03A	V	SOIL
B09337	A3-09-045-03B	SV	SOIL
B09337	A3-09-045-03D	K	SOIL
B09337 MS	A3-09-045-03E	K	SOIL
B09337 MSD	A3-09-045-03F	K	SOIL
B09339	A3-09-045-04A	V	SOIL
B09339	A3-09-045-04B	SV	SOIL
B09339	A3-09-045-04D	K	SOIL
B09341	A3-09-045-05A	V	SOIL
B09341	A3-09-045-05B	SV	SOIL
B09341	A3-09-045-05D	K	SOIL
B09347	A3-09-045-06A	V	SOIL

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

All of the samples were received intact and properly documented.

9413225.1304

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 CLP SOW holding times.

Sample B09340 had low surrogate recoveries. However, the following surrogate recoveries were below the QC limits: Nitrobenzene-d5 and 2-Fluorophenol, as well as the advisory surrogate, 1,2-Dichlorobenzene-d4. In accordance with CLP protocol, no reanaylsis was required if one base/neutral surrogate recovery and one acid surrogate recovery was outside of the QC limits. Sample B09340 was also spiked with the matrix spike compounds and analyzed accordingly. The MS and the MSD samples exhibited very good surrogate recoveries, and in accordance with the protocol, were treated as the reextract of sample B09340.

The matrix spike recoveries of 2,4-Dinitrotoluene for samples B09340MS and B09340MSD were slightly above the QC limits. Sample B09340MS also had a matrix spike recovery of Phenol that was slightly above the QC limit. Although the MS and MSD samples had 4-Nitrophenol spike recoveries within the QC limits, the actual concentration detected in the samples exceeded the calibration of the instrument. Hence, the results for 4-Nitrophenol have been "E" qualified. In accordance with CLP protocol, no further action was required for any of the aforementioned occurrences.

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

94 7225 1305

3.2.3 EXTRACTABLE HYDROCARBONS "KEROSENE RANGE" COMMENTS :

SEQUENCE NOTES :

The sequence was started on 10/05/93 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 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 20 g of each sample was extracted and concentrated to 5 mL.

There were no hydrocarbons in the Kerosene range detected in any of the samples. Sample B09337 was spiked with Kerosene and the matrix spike recoveries were between 90% and 101%. The blank spike was prepared at the same time, and had a 92% recovery.

All of the QC results were within the limits specified by the SW-846 Method 8015M.

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.

Nicole Roth 12/10/93
CLP Program Manager

Maureen Parrish 12/10/93
Project Manager

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: 9-15-93

Ice Chest No.: SML 319

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 253695 6191

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09340

- 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) B09344

- 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) 9-16-93 B09337

- ~~1,250ml~~ P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP * 2,120ML
- 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:
1050 Helene Rogers 9-16-93	Gerald Jones TMA/NORCAL	9-17-93 11:30
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:

NOTE: TMA/NORCAL received the 1,250 ml TAL METALS, Hg Ti bottle also

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

~~0000000~~

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: 9-13-93

~~Ice Chest No.~~ SML 365

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 253 695 6191

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09339

- 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) B09341

- 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

EAR 9-16-93

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

Relinquished by:	Received by:	Date/Time:
1050 9-16-93	H. NARCISO TMA/NERCAL	9/17/93 11:30
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

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-16-93

Ice Chest No.: SML 319

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 2536956191

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09347

~~1,250ml P:CLP;TAL Metals,Hg,Ti~~
1,250ml ~~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~~

LER 9-16-93

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:
1050 9-16-93	H. Hanford Transportation	9-17-93 11:30
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

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9413225.310

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2		DATA PACKAGE: B09340-TMA-623
VALIDATOR: [illegible]	LAB: TMA	DATE: 03/03/94
CASE:		SDG: B09340-TMA-623

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

B09340 B09347

B09344

B09337

B09339

B09341

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: There is a discrepancy for samples B09337 and B09341 between the collection date on the chain of custody and the sample analysis request forms. The collection dates recorded on the chain of custody forms were used for validation.

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: See comments on last page of checklist.

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: All Sample results were supported by the raw data with the exception of acetone in samples B-9340, B-9341, B-9344 and B-9347. Supporting documentation and calculations follow this checklist.

GC/MS ORGANIC DATA VALIDATION CHECKLIST

Comments (attach additional sheets as necessary):

Blanks

Lab Blank: All TCL results were verified as undetected. It does contain 1 TIC identified as an unknown hydrocarbon, however, this was not detected in any of the associated samples. Therefore, no qualification was required.

Trip Blank: Sample B09347 was defined as a Solid Trip Blank. All results are undetected with the exception of acetone at a concentration of 7 ug/kg and the TICs hexanal and unknown hydrocarbons as listed on the lab report form.

Reported Results

All acetone results have been qualified as estimated (J) since the sample retention times are out of the control limits based on the associated CCV retention time. [illegible]

[illegible] 3/22/94

* For Samples B09340, B09341, B09344 and B09347.

3/22/94

3/21/94

HOLDING TIME SUMMARY

B09340-TMA-623

SDG:	VALIDATOR: [illegible]	DATE: 3/21/94	PAGE 1 OF 1
COMMENTS: Volatiles			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09337	VOA	09/15/93		09/23/93		8	None
B09339		09/13/93				10	
B09340		09/15/93				8	
B09341		09/13/93				10	
B09344		09/15/93				8	
B09347		09/16/93				7	

CALCULATION SUMMARY

B09340-TMA-623

SDG:	REVIEWER: [illegible]	DATE: 3/21/94	PAGE 1 OF 1

COMMENTS: Acetone Calculations

$$ug/kg = \frac{(A_x)(I_s)}{(A_{is})(RRF)(D)}$$ Acetone RRF = 0.487

B09340

$$ug/kg\ Acetone = \frac{(2163)(50)}{(18290)(0.487)(0.96)} = 12.6 = 13\ ug/kg$$

B09341

$$ug/kg\ Acetone = \frac{(2395)(50)}{(18120)(0.487)(0.94)} = 14.4 = 14\ ug/kg$$

B09344

$$ug/kg\ Acetone = \frac{(1981)(50)}{(17541)(0.487)(0.94)} = 12.3 = 12\ ug/kg$$

B09347

$$ug/kg\ Acetone = \frac{(1094)(50)}{(15967)(0.487)(1)} = 7.03 = 7\ ug/kg$$

9413225.1316

Sample 809340

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	189	7:52	1	1.000	A BB	18290.	50.000 PPB	15.10
2	114	388	16:10	2	1.000	A BB	71161.	50.000 PPB	15.10
3	117	481	20:02	3	1.000	A BB	64852.	50.000 PPB	15.10
4	65	245	10:12	1	1.296	A BB	18686.	49.676 PPB	15.01
5	98	457	19:02	3	0.950	A BB	57553.	52.529 PPB	15.87
6	95	558	23:15	3	1.160	A BV	44591.	55.446 PPB	16.75
7	NOT FOUND								
8	NOT FOUND								
9	NOT FOUND								
10	NOT FOUND								
11	NOT FOUND								
12	43	130	5:25	1	0.688	A BV	2163.	12.142 PPB	3.67
13	NOT FOUND								
14	NOT FOUND								
15	NOT FOUND								
16	NOT FOUND								
17	NOT FOUND								
18	43	245	10:12	1	1.296	A VV	1981.	4.814 PPB	1.45
19	NOT FOUND								
20	NOT FOUND								
21	NOT FOUND								
22	43	282	11:45	2	0.727	A VB	1490.	1.211 PPB	0.37
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	403	16:47	3	0.838	A VV	1180.	1.402 PPB	0.42
34	NOT FOUND								
35	NOT FOUND								
36	NOT FOUND								
37	91	461	19:12	3	0.958	A BB	3843.	2.832 PPB	0.86
38	NOT FOUND								
39	NOT FOUND								
40	NOT FOUND								
41	NOT FOUND								
42	NOT FOUND								

Acetone

~~000122~~

JOA 12/6/9

Cy 9/28/

X o.k

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
1	7:50	1.01	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:10	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	20:00	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	10:12	1.00	1.303	0.99	49.68	50.00	1.022	1.028	0.99
5	19:02	1.00	0.952	1.00	52.53	50.00	0.887	0.845	1.05
6	23:12	1.00	1.160	1.00	55.45	50.00	0.688	0.620	1.11
7	0:55		0.117						
8	1:40		0.213						
9	2:07		0.271						
10	2:52		0.367						
11	4:42		0.601						
12	5:25	1.00	0.691	0.99	12.14	50.00	0.118	0.487	0.24

035

3/21/94

9/29/92

Sample 829341

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	189	7:52	1	1.000	A BB	18120.	50.000 PPB	15.51
2	114	388	16:10	2	1.000	A BB	74859.	50.000 PPB	15.51
3	117	481	20:02	3	1.000	A BB	66734.	50.000 PPB	15.51
4	65	245	10:12	1	1.296	A BB	18846.	50.572 PPB	15.69
5	98	458	19:05	3	0.952	A BB	60046.	53.259 PPB	16.52
6	95	559	23:17	3	1.162	A BB	42794.	51.711 PPB	16.04
7	NOT FOUND								
8	NOT FOUND								
9	NOT FOUND								
10	NOT FOUND								
11	NOT FOUND								
~~12~~	~~43~~	~~130~~	~~5:25~~	~~1~~	~~0.688~~	~~A BV~~	~~2395.~~	~~13.571 PPB~~	~~4.21~~
13	NOT FOUND								
14	NOT FOUND								
15	NOT FOUND								
16	NOT FOUND								
17	NOT FOUND								
~~18~~	~~43~~	~~245~~	~~10:12~~	~~1~~	~~1.296~~	~~A BB~~	~~865.~~	~~2.123 PPB~~	~~0.66~~
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	NOT FOUND								
34	NOT FOUND								
35	NOT FOUND								
36	NOT FOUND								
37	NOT FOUND								
38	NOT FOUND								
39	NOT FOUND								
40	NOT FOUND								
41	NOT FOUND								
42	NOT FOUND								

~~000133~~

Acetone

9/28/93

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
1	7:50	1.01	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:10	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	20:00	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	10:12	1.00	1.303	0.99	50.57	50.00	1.040	1.028	1.01
5	19:02	1.00	0.952	1.00	53.26	50.00	0.900	0.845	1.07
6	23:12	1.00	1.160	1.00	51.71	50.00	0.641	0.620	1.03
7	0:55		0.117						
8	1:40		0.213						
9	2:07		0.271						
10	2:52		0.367						
11	4:42		0.601						
12	5:25	1.00	0.691	0.99	13.57	50.00	0.132	0.487	0.27

036

3/21/94

Sample BC9344

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	189	7:52	1	1.000	A BB	17541	50.000 PPB	15.35
2	114	389	16:12	2	1.000	A BB	69756	50.000 PPB	15.35
3	117	482	20:05	3	1.000	A BB	61984.	50.000 PPB	15.35
4	65	246	10:15	1	1.302	A BB	18561.	51.451 PPB	15.79
5	98	458	19:05	3	0.950	A BB	57008.	54.439 PPB	16.71
6	95	559	23:17	3	1.160	A BB	42020.	54.666 PPB	16.78
7	NOT FOUND								
8	NOT FOUND								
9	NOT FOUND								
10	NOT FOUND								
11	NOT FOUND								
12	43	130	5:25	1	0.688	A BB	1981.	11.595 PPB	3.56
13	NOT FOUND								
14	NOT FOUND								
15	NOT FOUND								
16	NOT FOUND								
17	NOT FOUND								
18	43	245	10:12	1	1.296	A BB	870.	2.204 PPB	0.68
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	NOT FOUND								
34	NOT FOUND								
35	NOT FOUND								
36	NOT FOUND								
37	NOT FOUND								
38	NOT FOUND								
39	NOT FOUND								
40	NOT FOUND								
41	NOT FOUND								
42	NOT FOUND								

Acetone

~~000143~~

9/28/93

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
1	7:50	1.01	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:10	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	20:00	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	10:12	1.00	1.303	1.00	51.45	50.00	1.058	1.028	1.03
5	19:02	1.00	0.952	1.00	54.44	50.00	0.920	0.845	1.09
6	23:12	1.00	1.160	1.00	54.67	50.00	0.678	0.620	1.09
7	0:55		0.117						
8	1:40		0.213						
9	2:07		0.271						
10	2:52		0.367						
11	4:42		0.601						
12	5:25	1.00	0.691	0.99	11.59	50.00	0.113	0.487	0.23

037

3/21/94

09/29/92

Sample 809347

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	189	7:52	1	1.000	A BB	15967.	50.000 PPB	15.32
2	114	389	16:12	2	1.000	A BB	67708.	50.000 PPB	15.32
3	117	482	20:05	3	1.000	A BB	59852.	50.000 PPB	15.32
4	65	246	10:15	1	1.302	A BB	17392.	52.963 PPB	16.23
5	98	458	19:05	3	0.950	A BB	56329.	55.707 PPB	17.07
6	95	559	23:17	3	1.160	A BB	41097.	55.371 PPB	16.96
7	NOT FOUND								
8	NOT FOUND								
9	NOT FOUND								
10	NOT FOUND								
11	NOT FOUND								
~~12~~	~~43~~	~~130~~	~~5:25~~	~~1~~	~~0.688~~	~~A BB~~	~~1094.~~	~~7.034 PPB~~	~~2.16~~
13	NOT FOUND								
14	NOT FOUND								
15	NOT FOUND								
16	NOT FOUND								
17	NOT FOUND								
~~18~~	~~43~~	~~245~~	~~10:12~~	~~1~~	~~1.296~~	~~A VV~~	~~1639.~~	~~4.562 PPB~~	~~1.40~~
19	NOT FOUND								
20	NOT FOUND								
21	NOT FOUND								
~~22~~	~~43~~	~~281~~	~~11:42~~	~~2~~	~~0.722~~	~~A BV~~	~~692.~~	~~0.591 PPB~~	~~0.18~~
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	NOT FOUND								
34	NOT FOUND								
35	NOT FOUND								
36	NOT FOUND								
37	NOT FOUND								
38	NOT FOUND								
39	NOT FOUND								
40	NOT FOUND								
41	NOT FOUND								
42	NOT FOUND								

Acetone ~~809347~~ 3/21/94

~~000153~~

9/28/93

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
1	7:50	1.01	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:10	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	20:00	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	10:12	1.00	1.303	1.00	52.96	50.00	1.089	1.028	1.06
5	19:02	1.00	0.952	1.00	55.71	50.00	0.941	0.845	1.11
6	23:12	1.00	1.160	1.00	55.37	50.00	0.687	0.620	1.11
7	0:55		0.117						
8	1:40		0.213						
9	2:07		0.271						
10	2:52		0.367						
11	4:42		0.601						
12	5:25	1.00	0.691	0.99	7.03	50.00	0.069	0.487	0.14

038

3/21/94

09/29/93

94/3225.120

CCV

~~000184~~

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	193	8:02	1	1.000	A BB	21087.	50.000 PPB	2.27
2	114	389	16:12	2	1.000	A BB	89759.	50.000 PPB	2.27
3	117	481	20:02	3	1.000	A BB	80307.	50.000 PPB	2.27
4	65	247	10:17	1	1.280	A BB	21684.	50.000 PPB	2.27
5	98	458	19:05	3	0.952	A BB	67837.	50.000 PPB	2.27
6	95	559	23:17	3	1.162	A BB	49794.	50.000 PPB	2.27
7	50	23	0:57	1	0.119	A BB	20037.	50.000 PPB	2.27
8	94	42	1:45	1	0.218	A BB	15330.	50.000 PPB	2.27
9	62	55	2:17	1	0.285	A BB	18584.	50.000 PPB	2.27
10	64	75	3:07	1	0.389	A BB	10898.	50.000 PPB	2.27
11	84	122	5:05	1	0.632	A BB	24513.	50.000 PPB	2.27
12	43	139	5:47	1	0.720	A BB	10269.	50.000 PPB	2.27 - Acetone
13	76	152	6:20	1	0.788	A BB	76251.	50.000 PPB	2.27
14	96	180	7:30	1	0.933	A BB	25121.	50.000 PPB	2.27
15	63	208	8:40	1	1.078	A BB	53870.	50.000 PPB	2.27
16	96	222	9:15	1	1.150	A BB	64351.	100.000 PPB	4.55
17	83	235	9:47	1	1.218	A BB	56292.	50.000 PPB	2.27
18	43	247	10:17	1	1.280	A BB	23722.	50.000 PPB	2.27
19	62	249	10:22	1	1.290	A BB	28314.	50.000 PPB	2.27
20	97	273	11:22	2	0.702	A BB	38334.	50.000 PPB	2.27
21	117	280	11:40	2	0.720	A VB	33529.	50.000 PPB	2.27
22	43	283	11:47	2	0.728	A BB	77598.	50.000 PPB	2.27
23	83	293	12:12	2	0.753	A BB	54839.	50.000 PPB	2.27
24	63	317	13:12	2	0.815	A BB	37266.	50.000 PPB	2.27
25	75	322	13:25	2	0.828	A BB	49945.	50.000 PPB	2.27
26	130	332	13:50	2	0.853	A BB	38716.	50.000 PPB	2.27
27	129	347	14:27	2	0.892	A BB	51956.	50.000 PPB	2.27
28	78	340	14:10	2	0.874	A BB	83261.	50.000 PPB	2.27
29	97	348	14:30	2	0.895	A BB	34968.	50.000 PPB	2.27
30	75	347	14:27	2	0.892	A BB	41892.	50.000 PPB	2.27
31	63	366	15:15	2	0.941	A BB	22492.	50.000 PPB	2.27
32	173	398	16:35	2	1.023	A BB	45227.	50.000 PPB	2.27
33	43	403	16:47	3	0.838	A BB	52120.	50.000 PPB	2.27
34	43	432	18:00	3	0.898	A BB	39053.	50.000 PPB	2.27
35	83	441	18:22	3	0.917	A BB	74452.	50.000 PPB	2.27
36	164	439	18:17	3	0.913	A BB	36202.	50.000 PPB	2.27
37	91	461	19:12	3	0.958	A BV	84016.	50.000 PPB	2.27
38	112	484	20:10	3	1.006	A BB	76394.	50.000 PPB	2.27
39	106	517	21:32	3	1.075	A BB	34082.	50.000 PPB	2.27
40	104	580	24:10	3	1.206	A BB	70592.	50.000 PPB	2.27
41	106	584	24:20	3	1.214	A BB	39248.	50.000 PPB	2.27
42	106	600	25:00	3	1.247	A BB	80611.	100.000 PPB	4.55

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
1	7:50	1.03	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:10	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	20:00	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	10:12	1.01	1.303	0.98	50.00	50.00	1.028	1.028	1.00
5	19:02	1.00	0.952	1.00	50.00	50.00	0.845	0.845	1.00
6	23:12	1.00	1.160	1.00	50.00	50.00	0.620	0.620	1.00
7	0:55	1.05	0.117	1.02	50.00	50.00	0.950	0.950	1.00
8	1:40	1.05	0.213	1.02	50.00	50.00	0.727	0.727	1.00
9	2:07	1.08	0.271	1.05	50.00	50.00	0.881	0.881	1.00
10	2:52	1.09	0.367	1.06	50.00	50.00	0.517	0.517	1.00
11	4:42	1.08	0.601	1.05	50.00	50.00	1.162	1.162	1.00
12	5:25	1.07	0.691	1.04	50.00	50.00	0.487	0.487	1.00

[illegible] 3/21/94