START 9613402.2022 9303L887-WES-1066 '51 9 0043049

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: WESTINGHOUSE HANFORD
RFW #: 9303L887

W.O. #: 06168-002-001-9999-00
Date Received: 03-12-93

GC/MS VOLATILE

One (1) water sample was collected on 03-10-93.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 03-19-93.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Non-target compounds were not detected in these samples.

2. All system monitoring compound (surrogate) recoveries were within EPA QC limits.

3. All matrix spike recoveries were within EPA QC limits.

4. The laboratory blank contained the common contaminants Methylene Chloride and Acetone at levels less than the CRQL.

5. All internal standard area and retention time criteria were met.

FEB 1996
RECEIVED
EDMC

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

04-07-93
Date

sma/voa/03-887v.cn

WESTON Analytics Use Only

9303L887

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse-Hanford
Est. Final Proj. Sampling Date:
Work Order #: 0016B-002-001-999900
Project Contact/Phone #:
AD Project Manager: JOSIE EDWARDS
QC: CLP Del: CLP TAT: 35DAY
Date Rec'd: 3/12/93 Date Due: 4/16/93
Account #: WS-HANFORD

Refrigerator #		1				SUB	1												
#/Type Container	Liquid	36				1P	1P												
	Solid																		
Volume	Liquid	40ml				1L	125												
	Solid																		
Preservatives		HCL				HNO3	HNO3												
ANALYSES REQUESTED →		ORGANIC							INORG										
		VOA	BNA	Pest/PCB	Herb	Gross Alpha/Beta	TOT Uran.		Metal	CN									
		WESTON Analytics Use Only																	
		0024H				ISUB	ISUB												

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	Gross Alpha/Beta	TOT Uran.		Metal	CN						
001	B08L51			W	3/10/93		✓				✓	✓									

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Radiochem: Gross Alpha/Beta, Uranium

ORIGINAL RE-WRITTEN

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
EMERY	SRestka	3/12/93	
	SP	3/12/93	

Relinquished by	Received by	Date	Time
	SP 3/12/93		

WESTON Analytics Use Only

Samples were:
1) Shipped X or Hand Delivered
Airbill # EMERY
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

9613402.2023

9613402.2024

95036 887 8.8°

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator KD LEE/GG HAMILTON

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations

Collection Date 3/10/93

Ice Chest No. WHC-20

Field Logbook No. EHL-1019

Bill of Lading/Airbill No. 2536453914

Offsite Property No. W93-0-0321-10

Method of Shipment EMERY

Shipped to ~~TMA~~ Weston KT 2/24/93

Possible Sample Hazards/Remarks

Sample Identification

B08651

3, 40ml, Gs, CLP-VOA
1, 1L, G/P, GROSS ALPHA/BETA(HNO3)
1, 125ml, G/P, TOTAL URANIUM(HNO3)

[] Field Transfer of Custody

Chain of Possession

(Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
Kelly D. Lee K.D. Lee	3/10/93	1208	K Trapp/K. Trapp	3/11/93	0845
K. Trapp/K. Trapp	3/11/93	0846			
EMERY	3/10/93	1220	Susan Olson	3/10/93	1220

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

FRIGIDAIRE

A-6000-407 (12/92) WEF061

0003

9613402.2025

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, G. Hamilton, C. Celiberti, B Whitten Date Sampled 3/10/93 Time 0942 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B08651	3; 40mL; Gs	WATER	CLP-VOA
	1; 2L; aG	WATER	GROSS ALPHA/BETA(HNO3)
	1; 125ml; G/P	WATER	TOTAL URANIUM(HNO3)
			OPC #: W93-0-0321-10
			BOL #: 2536953914
			TASK #: 93-033

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

0004

A-6000-406(05/90)

0006

FORM OF PAYMENT

Check ☐ GBL ☐ FCCOD ☐

Bill to Shipper ☒ Bill to Consignee ☐ Third Party Billing ☐

Shipper's Account Number: B50281585

EMERY WORLDWIDE — A CF Company

SERVICES **

UNITED STATES / CANADA: Same Day (Extra Charges) ☐ AM ☒ PM ☐ Second Day ☐ Saturday Delivery ☐

INTERNATIONAL: Express ☐ Standard Plus ☐ Preferred ☐ Standard ☐ Business Documents ☐ Customs Clearance ☐ Delivery ☐

Date	Origin	Shipment Number
03-11-93	PBC	253695391 4

From:
WESTINGHOUSE SHIPPING DEPT. (509) 376-6665
U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD
BLDG 1163
2355 STEVENS DRIVE
RICHLAND WA
Canada ☐

To:
JOSIE KING
RF WESTON INC
256 WELSH POOL ROAD
LIONVILLE PA
Hold for Pick Up ☐
Canada ☐

Tariff Dest. | Gateway

Check to Shipper $

EMERY WORLDWIDE will accept Consignee's check with all risks being assumed by Shipper, including but not limited to non-payment, fraud and misrepresentation.

Customer's Reference Numbers: W81232 P25CA W93-0-0321#10
Zip: 99352
E
Consignee's Account Number
Zip: 19341

Description	Pcs.	L	W	H	Total Pieces	Total Weight (in lbs)
1 COOLER ID: WHC-20 WATER SAMPLES	1	21	16	17	1	29

FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379)

Declared Value $

253695391 4

Remarks: OVERNIGHT DELIVERY SIGNATURE SECURITY SERVICE

Shipper's Signature X

Zip Ship ☐
For shipments within the 50 United States Shipper has the option to check this box and, by checking, agrees that the Zip Ship conditions, described in the area to the right, apply.

Mark if Emery Packaging is used
Urgent Letter 9X12 ☒ Urgent Pack 12X15 ☒

International Shipments: Free Circle ☐ Commodity Code

Third Party Account Number mandatory for Third Party Billing. E Third Party Account Number

International Customs Value | International Insurance

Base Charge

Total Transportation Charges | Other Charges/Advance at Origin ☐ OC/AO $

3-PhL-A

Terms and Conditions on Back

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List

RFW Batch Number: 9303L887 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Report Date: 04/02/93 11:08 Page: 1a

	Cust ID:	B086S1		B086S1		B086S1		VBLK	
Sample Information	RFW#:	001		001 MS		001 MSD		93LVB066-MB1	
	Matrix:	WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	107	%	100	%	99	%	100	%
	Bromofluorobenzene	89	%	89	%	87	%	89	%
	1,2-Dichloroethane-d4	104	%	113	%	114	%	109	%
Chloromethane		10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U
Methylene Chloride		3	JB	5	JB	5	JB	3	J
Acetone		10	U	10	U	10	U	5	J
Carbon Disulfide		10	U	10	U	10	U	10	U
1,1-Dichloroethene		10	U	125	%	132	%	10	U
1,1-Dichloroethane		10	U	10	U	10	U	10	U
1,2-Dichloroethene (total)		10	U	10	U	10	U	10	U
Chloroform		10	U	10	U	10	U	10	U
1,2-Dichloroethane		10	U	10	U	10	U	10	U
2-Butanone		10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		10	U	10	U	10	U	10	U
Carbon Tetrachloride		10	U	10	U	10	U	10	U
Bromodichloromethane		10	U	10	U	10	U	10	U
1,2-Dichloropropane		10	U	10	U	10	U	10	U
cis-1,3-Dichloropropene		10	U	10	U	10	U	10	U
Trichloroethene		10	U	109	%	114	%	10	U
Dibromochloromethane		10	U	10	U	10	U	10	U
1,1,2-Trichloroethane		10	U	10	U	10	U	10	U
Benzene		10	U	113	%	117	%	10	U
trans-1,3-Dichloropropene		10	U	10	U	10	U	10	U
Bromoform		10	U	10	U	10	U	10	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U
Tetrachloroethene		10	U	10	U	10	U	10	U
1,1,2,2-Tetrachloroethane		10	U	10	U	10	U	10	U
Toluene		10	U	105	%	113	%	10	U

*= Outside of EPA CLP QC limits.

9613402.2027

0008

RFW Batch Number: 9303L887 Client: WESTINGHOUSE HANFORD , Work Order: 6168-02-0 Page: 1b

Cust ID:	B086S1	B086S1	B086S1	VBLK
RFW#:	001	001 MS	001 MSD	93LVB066-MB1
Chlorobenzene	10 U	106 %	114 %	10 U
Ethylbenzene	10 U	10 U	10 U	10 U
Styrene	10 U	10 U	10 U	10 U
Xylene (total)	10 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

9613402.2028

9613402.2029

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B086S1

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9303L887-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B031907

Level: (low/med) LOW

Date Received: 03/12/93

% Moisture: not dec.

Date Analyzed: 03/19/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	JB
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

9613402.2030

1B

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B086S1

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9303L887-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B031907

Level: (low/med) LOW

Date Received: 03/12/93

% Moisture: not dec.

Date Analyzed: 03/19/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 3/90

9613402.2031

VALIDATION SUMMARY

93032887-WES-1066

9613402.2032

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 300-FF-5 GW-5	REVIEWER: AS	DATE: 5/18/93
LABORATORY: Weston	CASE: ~~03-15~~ AS 93032887	SDG:
SAMPLES/MATRIX:		
B086S1 Level 4		

1. DATA PACKAGE COMPLETENESS

See attached verification sheet

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	—	—	—
Data Summary	—	—	—
Chain-of-Custody	—	—	—
QC Summary			
Surrogate report	—	—	—
MS/MSD report	—	—	—
Blank summary report	—	—	—
GC/MS tuning report	—	—	—
Internal standard summary report	—	—	—
Sample Data			
Sample reports	—	—	—
TIC reports for each sample	—	—	—
RIC reports for all samples	—	—	—
Raw and corrected spectra for all detected results	—	—	—
Raw and corrected library search data for all reported TIC	—	—	—
Quantitation and calculation data for all TIC	—	—	—
Standards Data			
Initial calibration report	—	—	—
RIC and quantitation reports for initial calibration	—	—	—
Continuing calibration reports	—	—	—
RIC and quantitation reports for cont. calibrations	—	—	—
Internal standard summary report	—	—	—
Raw QC Data			
Tuning report, spectra and mass lists	—	—	—
Blank analysis reports	—	—	—
TIC reports for all blanks	—	—	—
RIC and quantitation reports for blanks	—	—	—
Raw and corrected spectra for all detected results in blanks	—	—	—
Raw and corrected library search data for all reported TIC	—	—	—

Data Package Item	Present?: Yes	No	N/A
Quantitation and calculation data for all TIC	—	—	—
MS/MSD report forms	—	—	—
RIC and quantitation reports for MS/MSD	—	—	—
Additional Data			
Moisture/% solids data sheets	—	—	—
Reduction formulae	—	—	—
Instrument time logs	—	—	—
Chemist notebook pages	—	—	—
Sample preparation sheets	—	—	—

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? Yes No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? Yes No N/A

Do all tunes on all instruments meet the tuning criteria? Yes No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No N/A

Has the laboratory made any calculation or transciption errors? Yes No N/A

Have the proper significant figures been reported? Yes No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? Yes No N/A

Are all RSD values ≤30% (2/88 SOW)? Yes No N/A

Are all RRF values ≥0.05 (2/88 SOW)? Yes No N/A

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed?	Yes	No	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	Yes	No AS	N/A
Are all %D values ≤25% (2/88 or 3/90 SOW)?	Yes	No	N/A
Are all %D values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	Yes	No	N/A
Are TCL compounds present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all sample results ≤10 time the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is <CRQL. Qualify all remaining sample results ≤5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks? Yes No N/A

ACTION: Qualify all detected sample results ≤ 5 times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogate recoveries < 10%? Yes No N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for nondetects) for surrogates out of specification but > 10%. Qualify all associated positive sample results as estimated (J) and all nondetect results as unusable (R) for all surrogates below 10%. If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7,1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? AS Yes No N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? Yes No N/A

Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra? Yes No N/A

Do the relative intensities between the standard and sample spectra agree within 20%? Yes No N/A

Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination? Yes No N/A

Are molecular ions present in the reference specrum present in the sample spectrum? Yes No N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation? Yes No N/A

Are results and quantitation limits calculated properly? Yes No N/A

Has the laboratory reported the sample quantitation limits within 5xCRQL values? Yes No N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW? Yes No N/A

Has the laboratory properly identified and coded all TIC? Yes No N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

HOLDING TIME SUMMARY - FORM B-1

SDG: 9303L887	REVIEWER: AS	DATE: 5/18/93	PAGE 1 OF 3
COMMENTS: Water			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B08651	UOA	3/10/93	—	3/19/93	—	9	—
—							
			✓ amc 5/20/93				

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 9303 2887	REVIEWER: AS	DATE: 5/18/93	PAGE 2 OF 7		
COMMENTS: VOA			Cap DB 624		
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT: 5100 B			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
GC/MS Tuning	3/4/93, 3/19/93				
	All tuning criteria acceptable		—	—	—
Ical					
3/4/93	Vinyl Chloride		25.6 %	None, two compounds allowed.	
	Acetone		37.1 %	↓	↓
Ccal					
3/19/93	Acetone		-59.5 %	—	—
	2-Butanone		-49.4 %	—	—
	2-Hexanone		-46.2 %	—	—

✓ cmc 5/20/93

9613402.2041
WAC-SD-EN-SPP-002, Rev. 1

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 9303L887	REVIEWER: AS	DATE: 5/18/93	PAGE 3 OF 8
COMMENTS: VOA			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
VBLK	Methylene Chloride	3					30	B08651	U at CRQL
	Acetone	5					50	B08651	—
	✓ CMC	5/20/93							

9613402.2042

WHC-SD-EN-SPP-002, Rev. 1

ACCURACY DATA SUMMARY - FORM B-4

SDG: 93031887	REVIEWER: AS	DATE: 5/18/93	PAGE 4 OF 7	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B08651	All surrogates acceptable		—	—
	= 87-114%			—
	All MS/MSD recoveries acceptable		—	—
	105-132%		—	—
	All I.S. area recoveries + R.T.		—	—
	are acceptable.			
	✓ CMK 5/20/93			

9613402.2043
WHC-SD-EN-SPP-002, Rev. 1

PRECISION DATA SUMMARY - FORM B-5

SDG: 9303L885	REVIEWER AS	DATE: 5/18/93	PAGE 5 OF 7

COMMENTS:

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
All RPDs acceptable	3 - 7 %		—	—	—
Field splits					
See Case 03-043			—	—	—
	AMC 5/20/93				

9613402.2044
WHC-SD-EN-SPP-002, Rev. 1

CALCULATION SUMMARY - FORM B-6

SDG: 93036889	REVIEWER: JAS	DATE: 5/18/93	PAGE 6 OF 7
COMMENTS: See Calc Sheets			

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 93032887	REVIEWER: AS	DATE: 5/18/93	PAGE 2 OF 2
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
✓ Methylene Chloride	U at CRQL	B08651	Blank contamination
	✓ amc 5/20/93		

9613402.2047

Calculations

Case 93036887

HARTCROWSER

Page 1 of 2

Job No. 2978-50

Project WHC 300-FF-5 GW5

Date 5/18/93

Calculations for ICal / CCal

Made by KRolla

	Chloromethane 7	Acetone 15	Chloroform 24	Bromodichloromethane 31
RRF 10	$\frac{10360 \cdot 50}{17133 \cdot 10} = 3.023$	$\frac{6361 \cdot 50}{17133 \cdot 10} = 1.856$	$\frac{12550 \cdot 50}{17133 \cdot 10} = 3.663$	$\frac{8878 \cdot 50}{94197 \cdot 10}$ 0.471
RRF 20	$\frac{19998 \cdot 50}{16778 \cdot 20} = 2.980$	$\frac{9307 \cdot 50}{16778 \cdot 20} = 1.387$	$\frac{24638 \cdot 50}{16778 \cdot 20} = 3.671$	$\frac{17337 \cdot 50}{94933 \cdot 20} = 0.457$
RRF 50	$\frac{40802 \cdot 50}{17416 \cdot 50} = 2.343$	$\frac{19086 \cdot 50}{17416 \cdot 50} = 1.096$	$\frac{63284 \cdot 50}{17416 \cdot 50} = 3.634$	$\frac{46037 \cdot 50}{96843 \cdot 50} = 0.475$
RRF 100	$\frac{81057 \cdot 50}{19322 \cdot 100} = 2.098$	$\frac{33987 \cdot 50}{19322 \cdot 100} = 0.879$	$\frac{134599 \cdot 50}{19322 \cdot 100} = 3.483$	$\frac{100940 \cdot 50}{106959 \cdot 100} = 0.472$
RRF 200	$\cancel{\frac{81057 \cdot 50}{\frac{176990 \cdot 50}{24096 \cdot 200}}}$ $= 1.836$	$\frac{71947 \cdot 50}{24096 \cdot 200} = 0.746$	$\frac{326782 \cdot 50}{24096 \cdot 200} = 3.390$	$\frac{237658 \cdot 50}{130095 \cdot 200} = 0.457$
$\overline{RRF}$	2.456	1.193	3.568	0.466
% RSD	21.6	37.1	3.5	1.9

CONTINUING CAL

RRF 50	$\frac{90284}{38924} = 2.319$	$\frac{74071}{38924} = 1.903$	$\frac{145532}{38924} = 3.739$	$\frac{103655}{221102} = 0.469$
% D	$\frac{2.456 - 2.319}{2.456} \times 100 = 5.6$	$\frac{1.193 - 1.903}{1.193} \times 100 = -59.54$	$\frac{3.568 - 3.739}{3.568} \times 100 = -4.8$	$\frac{0.466 - 0.469}{0.466} \times 10 = -0.64$

Recycled Paper

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Calculations

Case 93032887

HARTCROWSER

Page 2 of 2

Job No. 2978-50

Project WHC 300-FF-5 GW5

Date 5/18/93

Calculations for I Cal / C Cal

Made by Keolla

	1,1,2-trichloroethane 37	2-hexanone 40	Ethylbenzene 42
RRF 10	$\frac{4515.50}{73091.10} = 0.309$	$\frac{5472.50}{73091.10} = 0.374$	$\frac{6074.50}{73091.10} = 0.416$
RRF 20	$\frac{8735.50}{76447.20} = 0.286$	$\frac{10775.50}{76447.20} = 0.352$	$\frac{13074.50}{76447.20} = 0.428$
RRF 50	$\frac{25331.50}{81556.50} = 0.311$	$\frac{31107.50}{81556.50}$ 0.381	$\frac{37325.50}{81556.50} = 0.458$
RRF 100	$\frac{57557.50}{92559.100} = 0.311$	$\frac{68154.50}{92559.100} = 0.368$	$\frac{91695.50}{92559.100} = 0.495$
RRF 200	$\frac{159795.50}{119498.200} = 0.334$	$\frac{184004.50}{119498.200} = 0.385$	$\frac{256259.50}{119498.200} = 0.536$
$\overline{RRF}$	~~0.309~~ KR 0.310	0.372	0.467
% RSD	~~5.7~~ KR 5.5	3.5	10.6

Continuing Calibration

RRF 50	$\frac{55188}{190400} = 0.290$	$\frac{103655}{190400} = 0.544$	$\frac{89908}{190400} = 0.472$
% D	$\frac{.310 - .290}{.310} \times 100 = 6.5$	$\frac{0.372 - 0.544}{0.372} = -46.2$	$\frac{0.467 - 0.472}{0.467} = 1.1$

Recycled Paper

9613402.2049

Calculations

HARTCROWSER

Case 93032887

Page 1 of 2

Job No. 2978-50

Project WHC

Date 5/18/93

Calculations for GC/MS Tuning

Made by AS

3/4/93

m/z 50 = 7743/22783 = 33.9% ✓

174 = 18847/22783 = 82.7% ✓

175 = 1633/18847 = 8.7%

3/11/93

m/z = 50 = 22303/~~95.0~~ 72831 = 30.6% ✓

96 = 4984/72831 = 6.8% ✓

174 = 57791/72831 = 79.4% ✓

Recycled Paper

9613402.2050

Calculations

Case 9303L997

HARTCROWSER

Page 2 of 2

Job No. 2978-50

Project WHC 300-FF-5 GW-5

Date 5/18/93

Calculations for Surrogates

Made by AS

B08651

Toluene = 53.302/50 = 106%

BFB = 44.338/50 = 89%

DCE = 51.787/50 = 104%

RRT

B08651

.712 $\frac{\text{cal}}{.713}$ methylene chloride

B08651

(3) Methylene chloride = $\frac{2455(50)}{23346(1.975)}$ = 3.20 ok

Recycled Paper

9613402.2051

RECORD COPY

APR 1993
RECEIVED
OSM DMO

Roy F. Weston, Inc. - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 03/12/93 RFW LOT # :9303L887

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BO86S1	001	W	93LVB066	03/10/93	N/A	03/19/93
BO86S1	001 MS	W	93LVB066	03/10/93	N/A	03/19/93
BO86S1	001 MSD	W	93LVB066	03/10/93	N/A	03/19/93

LAB QC:

VBLK	MB1	W	93LVB066	N/A	N/A	03/19/93

INTRO: 9613402.2052 PAGE

Chain Of Custody..... 1
Data Summary..... 7.

I. Case Narrative..... 10

II. QC Summary..... 14
- A. Surrogate % Recovery Summary (Form 2)
- B. Matrix Spike (Form 3)
- C. Reagent Blank Summary (Form 4)
- D. GC/MS Tuning and Calibration Standard (Form 5)
- E. Internal Standard Summary (Form 8) (if applicable)

III. Sample Data Package..... 21
- A. Sample Data in order of RFW sample number
  - 1. Tabulated Results (Form 1)
  - 2. Tentatively identified compound (form 1E)
  - 3. Raw Data in order:
    - a. Reconstructed Ion Chromatogram(s)
    - b. Quantitation Report(s)
    - c. HSL Mass Spectra
    - d. TIC Mass Spectra
    - e. GC/MS Library Search for TIC

IV. Standards Data Package..... 29
- A. Initial Calibration Data:
  - 1. Form 6
  - 2. Reconstructed Ion Chromatogram(s) and Quantitation Report(s)
- B. Continuing Calibration Data
  - 1. Form 7
  - 2. Reconstructed Ion Chromatogram(s) and Quantitation Report(s)
- C. Internal Standard Summary (Form 8) (if applicable)

V. Raw QC Data Package..... 57
- A. GC/MS Tuning and Calibration Standard: DFTPP
  - 1. Bar Graph
  - 2. Mass Listing
- B. Blank Data
  - 1. Tabulated Results (Form 1)
  - 2. TIC Results (Form 1B)
  - 3. Raw Data
    - a. Reconstructed Ion Chromatogram(s) and Quantitation Report(s)
    - b. HSL Spectra
    - c. TIC Spectra
    - d. GC/MS Library Search for TIC
- C. Matrix Spike Data (if applicable)
  - 1. Tabulated Results (Form 1)
  - 2. Raw Data
    - a. Reconstructed Ion Chromatogram(s)
    - b. Quantitation Report(s)

VI. Additional Documentation..... 78
- A. Extraction Record

9613402.2053

CHAIN OF CUSTODY

WESTON Analytics Use Only

93031887

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse-Hanford
Est. Final Proj. Sampling Date:
Work Order #: 0e1U08-002-001-9999000
Project Contact/Phone #:
AD Project Manager: JOSIE EDWARDS
QC: CLP Del: CLP TAT: 35 DAY
Date Rec'd: 3/12/93 Date Due: 4/16/93
Account #: WS-HANFORD

Refrigerator #		1				SUB	1											
#/Type Container	Liquid	36				1P	1P											
	Solid																	
Volume	Liquid	40ml				1L	125											
	Solid																	
Preservatives		HCL				HNO3	HNO3											
ANALYSES REQUESTED		ORGANIC							INORG									
		VOA	BNA	Pest/PCB	Herb	Gross Alpha/Beta	TOT Uran.		Metal	CN								
WESTON Analytics Use Only		CLP24H				ISUB	ISUB											

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	Gross Alpha/Beta	TOT Uran.		Metal	CN						
001	B08651			W	3/10/93		✓				✓	✓									

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Radiochem: Gross Alpha/Beta, Uranium

ORIGINAL RE-WRITTEN

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
EMERY	SRESKA	3/12/93	
	SP	3/12/93	

Relinquished by	Received by	Date	Time
	SP 3/12/93		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:

WESTON Analytics Use Only

Samples were:
1) Shipped X or Hand Delivered
Airbill # EMERY
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

9613402.2054

95056 887 8.8°

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator KD LEE/GG HAMILTON

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations

Collection Date 3/10/93

Ice Chest No. WHC-20

Field Logbook No. EHL-1019

Bill of Lading/Airbill No. 2536453914

Offsite Property No. W93-0-0321-10

Method of Shipment EMERY

Shipped to ~~THA~~ Weston KT 2/24/93

Possible Sample Hazards/Remarks

Sample Identification

B08651
3, 40ml, Gs, CLP-VOA
1, 1L, G/P, GROSS ALPHA/BETA(HNO3)
1, 125ml, G/P, TOTAL URANIUM(HNO3)

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible]	3/10/93	1298	K. Trapp/K. Trapp	3/11/93	0945
K. Trapp/K. Trapp	3/11/93	0846			
EMERY	3/10/93	[illegible] 1280	[illegible]	3/10/93	[illegible] 1280

Final Sample Disposition

Disposal Method: Disposed by: Date/Time:

Comments: FREIGHT

A-6000-407 (12/92) WEF061

0003

9613402.2056

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, G. Hamilton, C. Celiberti, B Whitten Date Sampled 3/10/93 Time 0942 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B08651	3; 40mL; Gs	WATER	CLP-VOA
	1; 2L; aG	WATER	GROSS ALPHA/BETA(HNO3)
	1; 125ml; G/P	WATER	TOTAL URANIUM(HNO3)
			OPC #: W93-0-0321-10
			BOL #: 2536953914
			TASK #: 93-033

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by Title Date

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

0002

A-6000-406(05/90)

9613402.2057

SAMPLE STATUS REPORT FOR E 7580. E-BLANK 399-1-5 TIME: 3/11/93 6:55
DISPATCHED: 2/16/93 13:12 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/11/93 6:51

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	PD3BA

END OF REPORT

B086P9

kr 3/11/93

B08651

0005

0006

FORM OF PAYMENT

Check ☐ Cash ☐ FCCOD ☐

Bill to Shipper ☒ Bill to Consignee ☐ Third Party Billing ☐

Shipper's Account Number: B50281585

EMERY WORLDWIDE — A CF Company

SERVICES **

UNITED STATES / CANADA: Same Day (Extra Charges) ☐ AM ☒ PM ☐ Second Day ☐ Saturday Delivery ☐

INTERNATIONAL: Express ☐ Standard Plus ☐ Preferred ☐ Standard ☐ Business Documents ☐ Customs Clearance ☐ Delivery ☐

Date: 03-11-93 | Origin: PBC | Shipment Number: 253695391 4

From:
WESTINGHOUSE SHIPPING DEPT. (509) 376-6666
U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD
BLDG 1163
2355 STEVENS DRIVE
RICHLAND WA
Canada ☐

To:
JOSIE KING
RF WESTON INC
256 WELSH POOL ROAD
LIONVILLE PA
Hold for Pick Up ☐
Canada ☐

Tariff Dest. | Gateway

Check to Shipper $

EMERY WORLDWIDE will accept Consignee's check with all risks being assumed by Shipper, including but not limited to non-payment, fraud and misrepresentation.

Customer's Reference Numbers: W81232 P25CA W98-0-0321#10
Zip: 99352

E Consignee's Account Number
Zip: 19341

Description	Pcs.	L	W	H	Total Pieces	Total Weight (in lbs)
1 COOLER ID: WHC-20 WATER SAMPLES	1	21	16	17	1	29

FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379)

Declared Value $

253695391 4

Remarks: OVERNIGHT DELIVERY SIGNATURE SECURITY SERVICE

Shipper's Signature X

Zip Ship ☐ For shipments within the 50 United States Shipper has the option to check this box and, by checking, agrees that the Zip Ship conditions, described in the area to the right, apply.

Mark if Emery Packaging is used: Urgent Letter 9X12 ☐ Urgent Pack 12X15 ☐

Optional Shipments: Free Domicile ☐ Commodity Code

Third Party Account Number mandatory for Third Party Billing. E Third Party Account Number

International Customs Value | International Insurance

Base Charge

Total Transportation Charges | Other Charges/Advance at Origin ☐ OC/AO $

3-PhL-A

Terms and Conditions on Back

9613402.2059

DATA SUMMARY

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List

RFW Batch Number: 9303L887 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Report Date: 04/02/93 11:08 Page: 1a

	Cust ID:	B086S1		B086S1		B086S1		VBLK	
Sample Information	RFW#:	001		001 MS		001 MSD		93LVB066-MB1	
	Matrix:	WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	107	%	100	%	99	%	100	%
	Bromofluorobenzene	89	%	89	%	87	%	89	%
	1,2-Dichloroethane-d4	104	%	113	%	114	%	109	%
Chloromethane		10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U
Methylene Chloride		3	JB	5	JB	5	JB	3	J
Acetone		10	U	10	U	10	U	5	J
Carbon Disulfide		10	U	10	U	10	U	10	U
1,1-Dichloroethene		10	U	125	%	132	%	10	U
1,1-Dichloroethane		10	U	10	U	10	U	10	U
1,2-Dichloroethene (total)		10	U	10	U	10	U	10	U
Chloroform		10	U	10	U	10	U	10	U
1,2-Dichloroethane		10	U	10	U	10	U	10	U
2-Butanone		10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		10	U	10	U	10	U	10	U
Carbon Tetrachloride		10	U	10	U	10	U	10	U
Bromodichloromethane		10	U	10	U	10	U	10	U
1,2-Dichloropropane		10	U	10	U	10	U	10	U
cis-1,3-Dichloropropene		10	U	10	U	10	U	10	U
Trichloroethene		10	U	109	%	114	%	10	U
Dibromochloromethane		10	U	10	U	10	U	10	U
1,1,2-Trichloroethane		10	U	10	U	10	U	10	U
Benzene		10	U	113	%	117	%	10	U
trans-1,3-Dichloropropene		10	U	10	U	10	U	10	U
Bromoform		10	U	10	U	10	U	10	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U
Tetrachloroethene		10	U	10	U	10	U	10	U
1,1,2,2-Tetrachloroethane		10	U	10	U	10	U	10	U
Toluene		10	U	105	%	113	%	10	U

*= Outside of EPA CLP QC limits.

0008

9613402.2060

RFW Batch Number: 9303L887 Client: WESTINGHOUSE HANFORD , Work Order: 6168-02-0 Page: 1b

Cust ID:	B086S1		B086S1		B086S1		VBLK	
RFW#:	001		001 MS		001 MSD		93LVB066-MB1	
Chlorobenzene	10	U	106	%	114	%	10	U
Ethylbenzene	10	U	10	U	10	U	10	U
Styrene	10	U	10	U	10	U	10	U
Xylene (total)	10	U	10	U	10	U	10	U

*= Outside of EPA CLP QC limits.

9613402.2061

9613402.2062

CASE NARRATIVE

9613402.2063

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: WESTINGHOUSE HANFORD
RFW #: 9303L887

W.O. #: 06168-002-001-9999-00
Date Received: 03-12-93

GC/MS VOLATILE

One (1) water sample was collected on 03-10-93.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 03-19-93.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Non-target compounds were not detected in these samples.

2. All system monitoring compound (surrogate) recoveries were within EPA QC limits.

3. All matrix spike recoveries were within EPA QC limits.

4. The laboratory blank contained the common contaminants Methylene Chloride and Acetone at levels less than the CRQL.

5. All internal standard area and retention time criteria were met.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

04-07-93
Date

sma/voa/03-887v.cn

9613402.2064

WESTON

ADDENDUM

I certify that this data package is in compliance with the terms and conditions of this contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [illegible] Name: SOM N. BASUTHAKUR

Date: 04.07.93 Title: UNIT-LEADER

pas\4-92\addendum

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero; for example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

X = Additional qualifiers used as required are explained in the case narrative.

NQ = Result qualitatively confirmed but not able to quantify.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that surrogate recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

II. QC SUMMARY

A. SURROGATE % RECOVERY SUMMARY
(FORM 2)

B. MATRIX SPIKE
(FORM 3)

C. REAGENT BLANK SUMMARY
(FORM 4)

D. GC/MS TUNING AND CALIBRATION STANDARD
(FORM 5)

E. INTERNAL STANDARD SUMMARY
(FORM 8) (IF APPLICABLE)

9613402.2067

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD

RFW Lot No.: 9303L887

	CLIENT SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	BO86S1	107	89	104		0
02	BO86S1MS	100	89	113		0
03	BO86S1MSD	99	87	114		0
04	VBLKLVB066-MB1	100	89	109		0

	QC LIMITS
SMC1 (TOL) = Toluene-d8	(88-110)
SMC2 (BFB) = Bromofluorobenzene	(86-115)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of QC limits

D System Monitoring Compound diluted out

AS 5/12/93

9613402.2068

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9303L887-001

MATRIX Spike - Sample No.: B086S1

COMPOUND	SPIKE ADDED UG/L	SAMPLE CONCENTRATION UG/L	MS CONCENTRATION UG/L	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.0	0	62.4	125	61 -145
Trichloroethene	50.0	0	54.3	109	71 -120
Benzene	50.0	0	56.4	113	76 -127
Toluene	50.0	0	52.6	105	76 -125
Chlorobenzene	50.0	0	53.2	106	75 -130

COMPOUND	SPIKE ADDED UG/L	MSD CONCENTRATION UG/L	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
1,1-Dichloroethene	50.0	65.9	132	5	14	61 -145
Trichloroethene	50.0	57.2	114	4	14	71 -120
Benzene	50.0	58.6	117	3	11	76 -127
Toluene	50.0	56.4	113	7	13	76 -125
Chlorobenzene	50.0	56.8	114	7	13	75 -130

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

* Values outside of QC limits

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

MS 5/18/93

COMMENTS:

FORM III VOA-1 3/90

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD

Lab File ID: B031906 Lab Sample ID: 93LVB066-MB1

Date Analyzed: 03/19/93 Time Analyzed: 1157

GC Column: DB624 ID: .53(mm) Heated Purge: (Y/N) N

Instrument ID: 5100B

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

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	B086S1	9303L887-001	B031907	1301
02	B086S1MS	9303L887-001S	B031908	1341
03	B086S1MSD	9303L887-001T	B031909	1417

COMMENTS:

MS 5/18/93

9613402.2070

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Roy F. Weston, Inc. Contract: 06168-002-001-9

Case No.: WESTINGHOUSE HANFORD

Lab File ID: B030401 BFB Injection Date: 03/04/93

Instrument ID: 5100B BFB Injection Time: 858

GC Column: DB624 ID: .53(mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	34.0
75	30.0 - 66.0% of mass 95	52.7
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.0(0.0)1
174	50.0 - 120.0% of mass 95	82.7
175	4.0 - 9.0% of mass 174	7.2(8.7)1
176	93.0 - 101.0% of mass 174	79.4(95.9)1
177	5.0 - 9.0% of mass 176	5.5(7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD10	VSTD10	B030403	03/04/93	1048
02	VSTD50	VSTD50	B030405	03/04/93	1212
03	VSTD100	VSTD100	B030407	03/04/93	1334
04	VSTD200	VSTD200	B030409	03/04/93	1448
05	VSTD20	VSTD20	B030412	03/04/93	1804
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

AS 5/18/93

9613402.2071

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Roy F. Weston, Inc. Contract: 06168-002-001-9

Case No.: WESTINGHOUSE HANFORD

Lab File ID: B031902 BFB Injection Date: 03/19/93

Instrument ID: 5100B BFB Injection Time: 925

GC Column: DB624 ID: .53(mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	30.6
75	30.0 - 66.0% of mass 95	47.9
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0(0.0)1
174	50.0 - 120.0% of mass 95	79.4
175	4.0 - 9.0% of mass 174	6.2(7.8)1
176	93.0 - 101.0% of mass 174	75.5(95.1)1
177	5.0 - 9.0% of mass 176	5.1(6.8)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	VSTD50	B031904	03/19/93	1039
02	VBLKLVB066-MB1	93LVB066-MB1	B031906	03/19/93	1157
03	BO86S1	9303L887-001	B031907	03/19/93	1301
04	BO86S1MS	9303L887-001S	B031908	03/19/93	1341
05	BO86S1MSD	9303L887-001T	B031909	03/19/93	1417
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

MS 5/18/93

9613402.2072

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9303L887

Lab File ID (Standard): B031904 Date Analyzed: 03/19/93

Instrument ID: 5100B Time Analyzed: 1039

GC Column: DB624 ID: .53(mm) Heated Purge: (Y/N) N

	IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
12 HOUR STD	38924	13.88	221102	16.30	190400	21.93
UPPER LIMIT	77848	14.38	442204	16.80	380800	22.43
LOWER LIMIT	19462	13.38	110551	15.80	95200	21.43
CLIENT SAMPLE NO.						
01 B086S1	23346	13.88	146130	16.30	113331	21.93
02 B086S1MS	25680	13.90	150762	16.32	125651	21.93
03 B086S1MSD	25727	13.87	151425	16.30	123907	21.93
04 VBLKLVB066-MB1	29910	13.87	170536	16.28	135676	21.92

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AS 5/18/93

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

III. SAMPLE DATA PACKAGE

A. SAMPLE DATA IN ORDER OF RFW SAMPLE NUMBER

1. TABULATED RESULTS
   (FORM 1)

2. TENTATIVELY IDENTIFIED COMPOUND
   (FORM 1E)

3. RAW DATA IN ORDER:

   a. RECONSTRUCTED ION CHROMATOGRAM(S)
   b. QUANTITATION REPORT(S)
   c. HSL MASS SPECTRA
   d. TIC MASS SPECTRA
   e. GC/MS LIBRARY SEARCH FOR TIC

9613402.2074

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B086S1

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9303L887-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B031907

Level: (low/med) LOW

Date Received: 03/12/93

% Moisture: not dec.

Date Analyzed: 03/19/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	JB
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

9413402.2075

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B086S1

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9303L887-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B031907

Level: (low/med) LOW

Date Received: 03/12/93

% Moisture: not dec.

Date Analyzed: 03/19/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

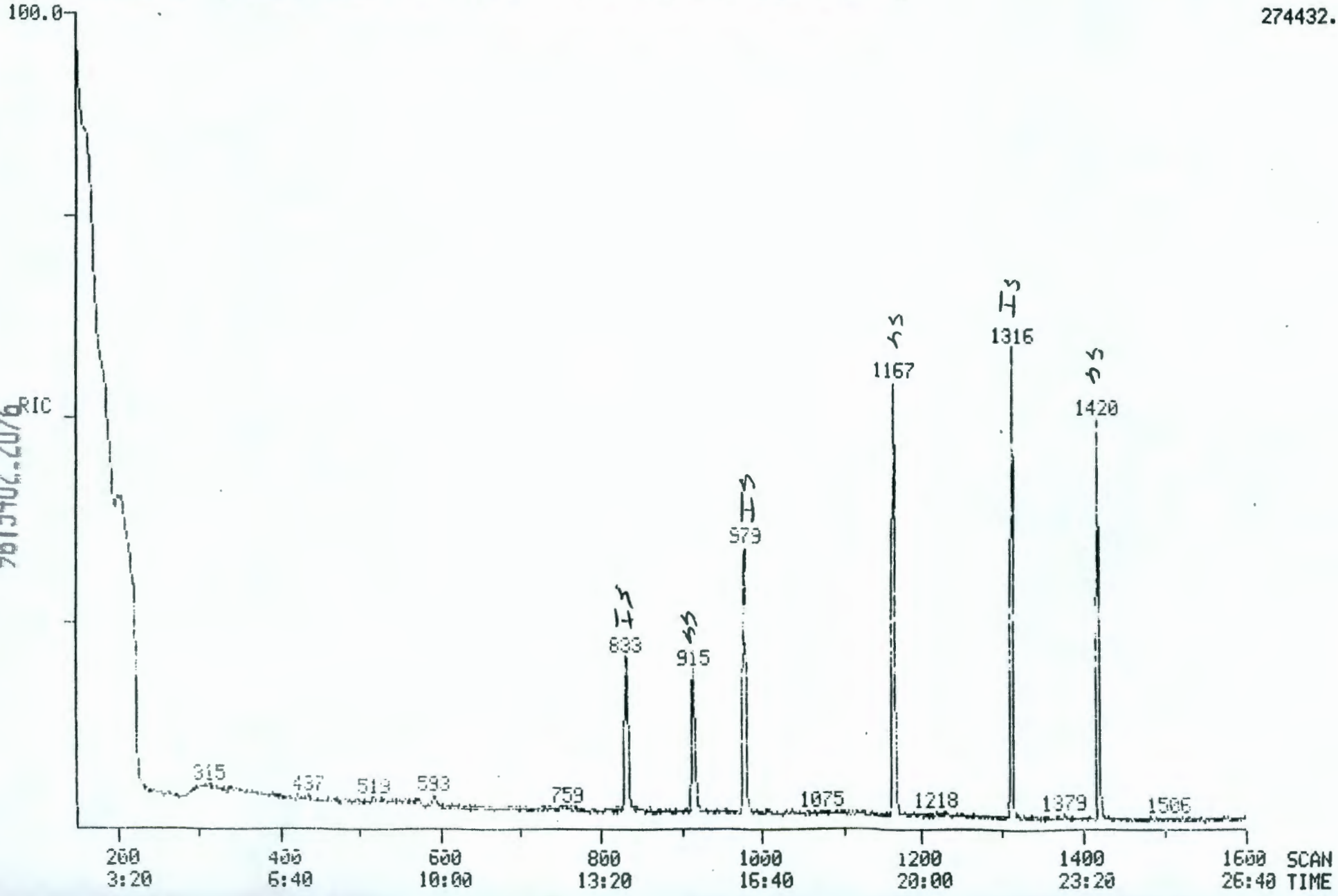
FORM 1 VOA-TIC 3/90

RIC
03/19/93 13:01:00
SAMPLE: 9303L887-001 WESTINGHOUSE 5.0ML
CONDS.: 5100B VO COLUMN:DB624
RANGE: G 1,1600 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: B031907 #1
CALI: B031907 #2

SCANS 150 TO 1600

0024



9613402.2076

Quantitation Report File: B031907 9613402.2077

Data: B031907.TI
03/19/93 13:01:00
Sample: 9303L887-001 WESTINGHOUSE 5.0ML
Conds.: 5100B VO COLUMN: DB624
Formula: B031902 Instrument: 5100B Weight: 0.213
Submitted by: Analyst: JBS Acct. No.:

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
Resp. fac. from Library Entry

No	Name		
1	IS1	BROMOCHLOROMETHANE	***INTERNAL STANDARD #1***
2	IS2	1,4-DIFLUOROBENZENE	***INTERNAL STANDARD #2***
3	IS3	CHLOROBENZENE D5	***INTERNAL STANDARD #3***
4	SS1	1,2-DICHLOROETHANE D4	***SURROGATE STANDARD #1***
5	SS2	TOLUENE D8	***SURROGATE STANDARD #2***
6	SS3	4-BROMOFLUOROBENZENE	***SURROGATE STANDARD #3***
7	45V	CHLOROMETHANE	
8	88V	VINYL CHLORIDE	
9	46V	BROMOMETHANE	
10	16V	CHLOROETHANE	
11	24H	TRICHLOROFLUOROMETHANE	
12	21H	ACROLEIN	
13	29V	1,1-DICHLOROETHYLENE	
14	15H	CARBON DISULFIDE	
15	13H	ACETONE	
16	44V	METHYLENE CHLORIDE	
17		1,2-DICHLOROETHENE (TOTAL)	
18	22H	ACRYLONITRILE	
19		METHYL-T-BUTYLETHER	
20	13V	1,1-DICHLOROETHANE	
21	19H	VINYL ACETATE	
22		CIS-1,2-DICHLOROETHENE	
23	14H	2-BUTANONE	
24	23V	CHLOROFORM	
25	11V	1,1,1-TRICHLOROETHANE	
26	6V	CARBON TETRACHLORIDE	
27	4V	BENZENE	
28	10V	1,2-DICHLOROETHANE	
29		TRICHLOROETHYLENE	
30	32V	1,2-DICHLOROPROPANE	
31	48V	BROMODICHLOROMETHANE	
32		2-CHLOROETHYLVINYLETHER	
33		CIS-1,3-DICHLOROPROPENE	
34		4-METHYL-2-PENTANONE	
35	86V	TOLUENE	
36		TRANS-1,3-DICHLOROPROPENE	
37	14V	1,1,2-TRICHLOROETHANE	
38	85V	TETRACHLOROETHYLENE	
39	51V	DIBROMOCHLOROMETHANE	
40		2-HEXANONE	
41	7V	CHLOROBENZENE	
42	38V	ETHYLBENZENE	
43		M-XYLENE / P-XYLENE	
44		XYLENES (TOTAL)	
45	18H	STYRENE	
46	47V	BROMOFORM	
47	15V	1,1,2,2-TETRACHLOROETHANE	

9613402.2078

No	Name
48	26B 1,3-DICHLOROBENZENE
49	27B 1,4-DICHLOROBENZENE
50	25B 1,2-DICHLOROBENZENE

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	833	13:53	1	1.000	A BB	23346.	50.000 UG/L	16.37
2	114	978	16:18	2	1.000	A BB	146130.	50.000 UG/L	16.37
3	117	1316	21:56	3	1.000	A BB	113331.	50.000 UG/L	16.37
4	65	915	15:15	2	0.936	A BB	77728.	51.787 UG/L	16.95
5	98	1167	19:27	3	0.887	A BV	162965.	53.302 UG/L	17.45
6	95	1420	23:40	3	1.079	A BB	57363.	44.338 UG/L	14.52
7	NOT FOUND								
8	62	226	3:46	1	0.271	A BB	227.	0.235 UG/L	0.08
9	NOT FOUND								
10	NOT FOUND								
11	NOT FOUND								
12	NOT FOUND								
13	NOT FOUND								
14	NOT FOUND								
15	NOT FOUND								
16	84	593	9:53	1	0.712	A BB	2955.	3.205 UG/L	1.05
17	NOT FOUND								
18	NOT FOUND								
19	NOT FOUND								
20	NOT FOUND								
21	NOT FOUND								
22	NOT FOUND								
23	NOT FOUND								
24	83	850	14:10	1	1.020	A BB	1148.	0.658 UG/L	0.22
25	NOT FOUND								
26	NOT FOUND								
27	NOT FOUND								
28	NOT FOUND								
29	130	1010	16:50	2	1.033	A BB	731.	0.819 UG/L	0.27
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	164	1232	20:32	3	0.936	A BB	462.	0.675 UG/L	0.22
39	NOT FOUND								
40	NOT FOUND								
41	NOT FOUND								
42	NOT FOUND								
43	NOT FOUND								
44	NOT FOUND								
45	NOT FOUND								
46	NOT FOUND								
47	NOT FOUND								
48	146	1507	25:07	3	1.145	A BB	349.	0.211 UG/L	0.07
49	146	1513	25:13	3	1.150	A BB	207.	0.123 UG/L	0.04
50	146	1546	25:46	3	1.175	A BB	229.	0.156 UG/L	0.05

Quantitation Report File: B031907 9613402.2070

Data: B031907.TI
03/19/93 13:01:00
Sample: 9303L887-001 WESTINGHOUSE 5.0ML
Conds.: 5100B VO COLUMN: DB624
Formula: B031902 Instrument: 5100B Weight: 0.213
Submitted by: Analyst: JBS Acct. No.:

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
Resp. fac. from Library Entry

No	Name
51	DIETHYLETHER

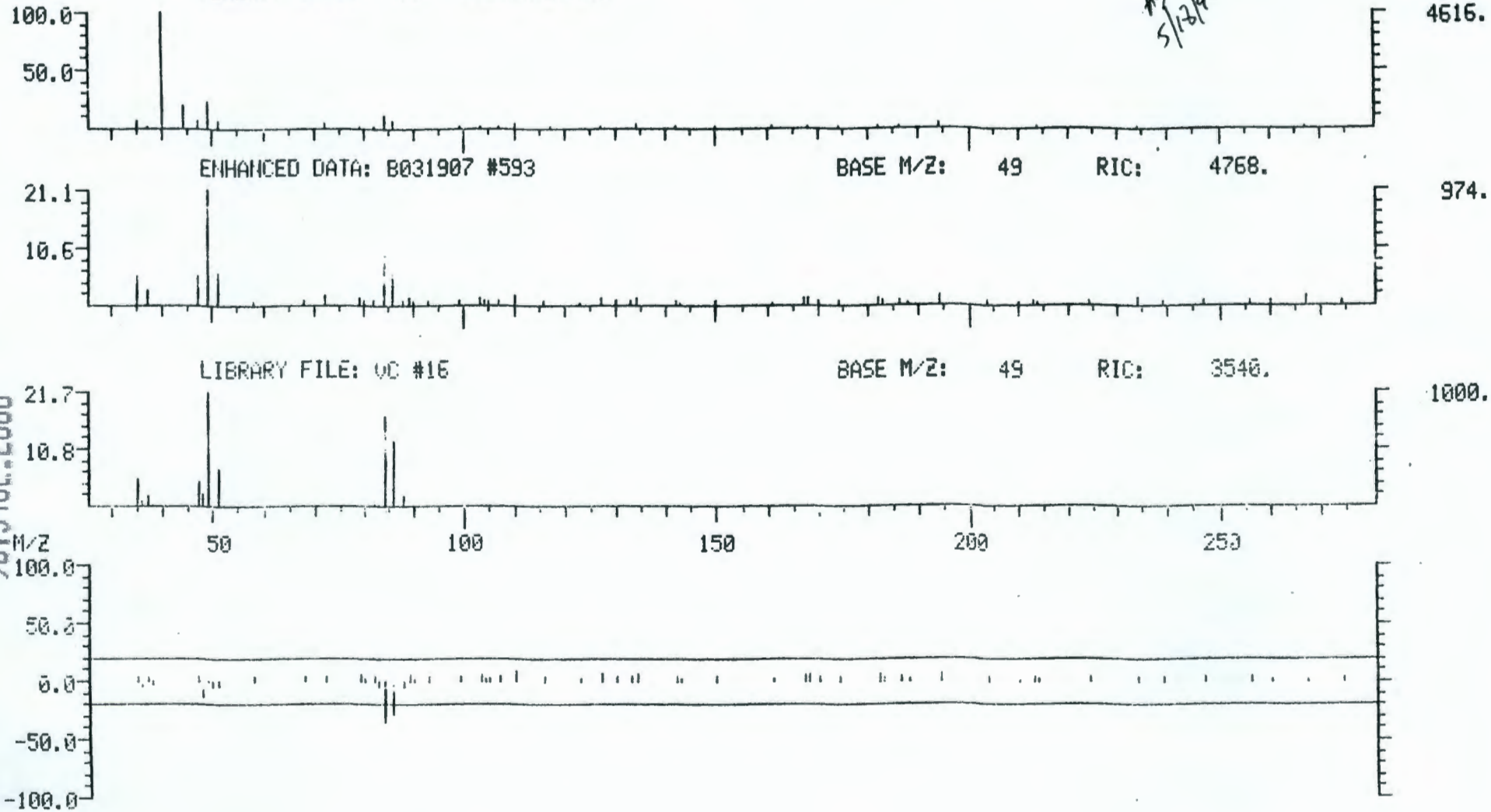
No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
51	NOT FOUND								

TARGET COMPOUND COMPARISON

COMPOUND: 44V METHYLENE CHLORIDE

RAW DATA: B031907 #593 BASE M/Z: 40 RIC: 10992.
03/19/93 13:01
SAMPLE: 9303L887-001 WESTINGHOUSE 5.0ML
CONDS.: 5100B VO COLUMN:DB624

MS 5/12/92



9613402.2080

IV. Standards Data Package

A. Initial Calibration Data:

1. Form 6
2. Reconstructed Ion Chromatogram(s) and Quantitation Report(s)

B. Continuing Calibration Data

1. Form 7
2. Reconstructed Ion Chromatogram(s) and Quantitation Report(s)

C. Internal Standard Summary (Form 8) (if applicable)

9613402.2082

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9303L887

Instrument ID: 5100B Calibration Date(s): 03/04/93 03/04/93

Heated Purge: (Y/N) N Calibration Time(s): 1048 1448

GC Column: DB624 ID: .53(mm)

LAB FILE ID: RRF10 = B030403 RRF20 = B030412
RRF50 = B030405 RRF100= B030407 RRF200= B030409

COMPOUND	RRF10	RRF20	RRF50	RRF100	RRF200	RRF	% RSD	MIN RRF
Chloromethane	3.023	2.980	2.343	2.098	1.836	2.456	21.6	
Bromomethane *	1.949	1.842	1.504	1.345	1.214	1.571	20.1*	0.100
Vinyl Chloride *	2.814	2.669	2.035	1.742	1.566	2.165	25.6*	0.100
Chloroethane	1.522	1.437	1.357	1.065	0.875	1.251	21.7	
Methylene Chloride	2.586	2.364	2.240	1.988	1.793	2.194	14.2	
Acetone	1.856	1.387	1.096	0.879	0.746	1.193	37.1	
Carbon Disulfide	8.100	8.049	7.467	7.099	6.578	7.459	8.6	
1,1-Dichloroethene *	1.984	1.968	1.903	1.745	1.619	1.844	8.5*	0.100
1,1-Dichloroethane *	4.127	4.143	4.111	3.808	3.773	3.992	4.6*	0.200
1,2-Dichloroethene (total)	1.969	1.806	1.817	1.694	1.664	1.790	6.7	
Chloroform *	3.663	3.671	3.634	3.483	3.390	3.568	3.5*	0.200
1,2-Dichloroethane *	0.593	0.601	0.609	0.568	0.546	0.583	4.4*	0.100
2-Butanone	0.163	0.202	0.173	0.150	0.151	0.168	12.7	
1,1,1-Trichloroethane *	2.869	2.849	2.771	2.594	2.536	2.724	5.5*	0.100
Carbon Tetrachloride *	2.697	2.678	2.559	2.413	2.246	2.519	7.5*	0.100
Bromodichloromethane *	0.471	0.457	0.475	0.472	0.457	0.466	1.9*	0.200
1,2-Dichloropropane	0.371	0.364	0.383	0.382	0.409	0.382	4.5	
cis-1,3-Dichloropropene *	0.642	0.637	0.669	0.662	0.677	0.657	2.6*	0.200
Trichloroethene *	0.316	0.306	0.306	0.305	0.316	0.310	1.8*	0.300
Dibromochloromethane *	0.437	0.431	0.447	0.458	0.464	0.447	3.1*	0.100
1,1,2-Trichloroethane *	0.309	0.286	0.311	0.311	0.334	0.310	5.5*	0.100
Benzene *	1.156	1.170	1.211	1.223	1.289	1.210	4.3*	0.500
trans-1,3-Dichloropropene *	0.591	0.557	0.581	0.569	0.586	0.577	2.4*	0.100
Bromoform *	0.336	0.338	0.370	0.385	0.402	0.366	7.9*	0.100
4-Methyl-2-pentanone	0.533	0.498	0.537	0.502	0.518	0.518	3.4	
2-Hexanone	0.374	0.352	0.381	0.368	0.385	0.372	3.5	
Tetrachloroethene *	0.361	0.341	0.341	0.342	0.341	0.345	2.6*	0.200
1,1,2,2-Tetrachloroethane *	0.409	0.380	0.413	0.439	0.516	0.431	12.0*	0.500
Toluene *	0.810	0.819	0.880	0.930	0.946	0.877	7.1*	0.400
Chlorobenzene *	0.909	0.911	0.956	0.986	1.007	0.954	4.6*	0.500
Ethylbenzene *	0.416	0.428	0.458	0.495	0.536	0.467	10.6*	0.100
Styrene *	0.900	0.998	1.158	1.329	1.248	1.127	15.7*	0.300
Xylene (total) *	0.522	0.559	0.641	0.733	0.759	0.643	16.2*	0.300
Toluene-d8	1.449	1.374	1.430	1.427	1.406	1.417	2.0	
Bromofluorobenzene *	0.561	0.535	0.579	0.619	0.732	0.605	12.8*	0.200
1,2-Dichloroethane-d4	0.599	0.556	0.540	0.500	0.493	0.538	8.1	

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

FORM VI VOA 3/90

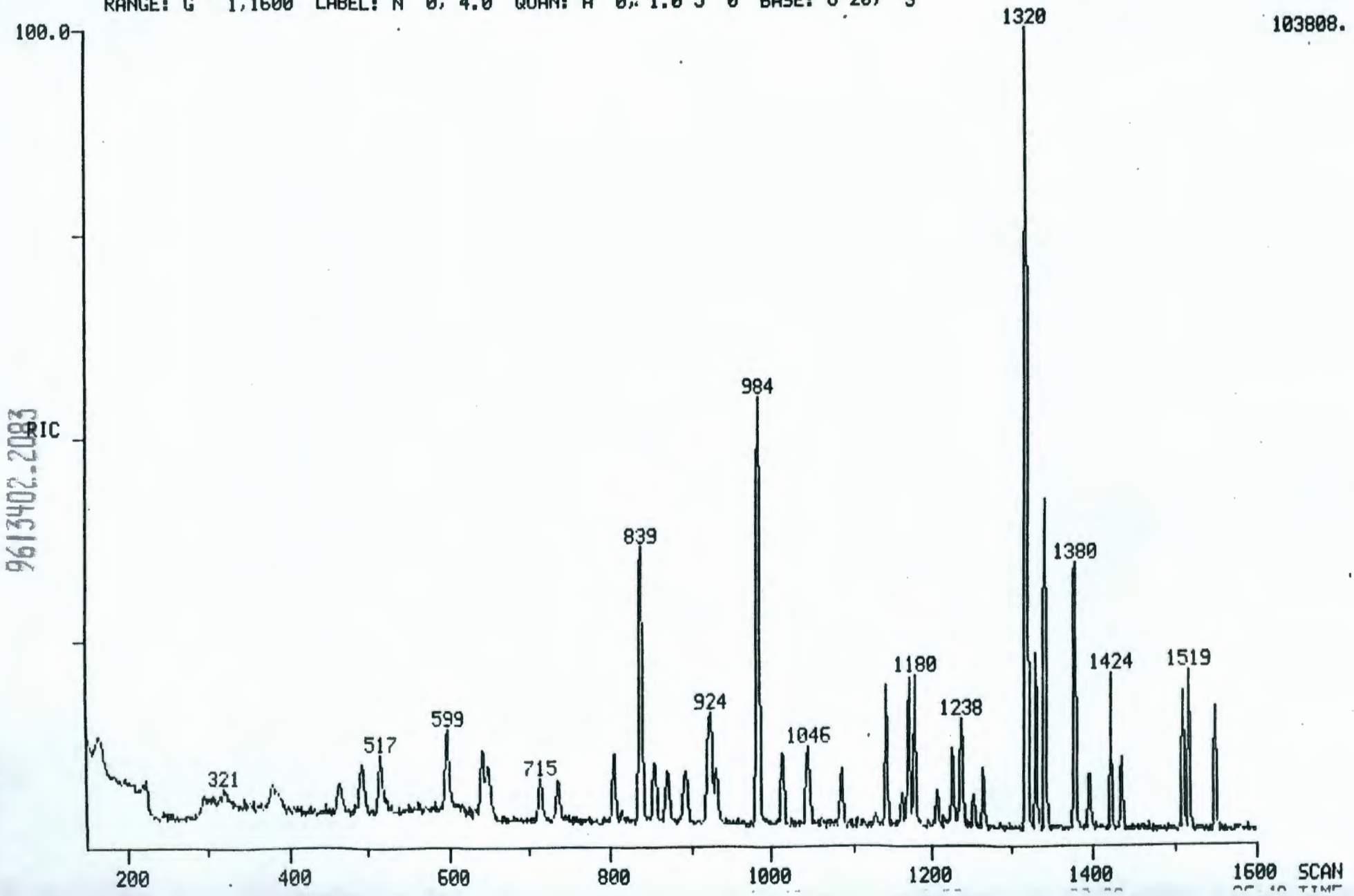
KR 5/18/93

RIC
03/04/93 10:48:00
SAMPLE: VSTD10 LOW WATER ICAL
CONDS.: 5100B VO COLUMN:DB624
RANGE: G 1,1600 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: B030403 #1
CALI: B030403 #2

SCANS 150 TO 1600

0031



9613402.2083

antitation Report File: B030403

ta: B030403.TI
/04/93 10:48:00
mple: VSTD10 LOW WATER ICAL
nds.: 5100B VO COLUMN: DB624
rmula: B030401 Instrument: 5100B Weight: 0.197
bmitted by: Analyst: JBS Acct. No.:

OUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
sp. fac. from Library Entry

o	Name		
1	IS1	BROMOCHLOROMETHANE	***INTERNAL STANDARD #1***
2	IS2	1,4-DIFLUOROBENZENE	***INTERNAL STANDARD #2***
3	IS3	CHLOROBENZENE D5	***INTERNAL STANDARD #3***
4	SS1	1,2-DICHLOROETHANE D4	***SURROGATE STANDARD #1***
5	SS2	TOLUENE D8	***SURROGATE STANDARD #2***
6	SS3	4-BROMOFLUOROBENZENE	***SURROGATE STANDARD #3***
7	45V	CHLOROMETHANE	
8	88V	VINYL CHLORIDE	
9	46V	BROMOMETHANE	
0	16V	CHLOROETHANE	
1	24H	TRICHLOROFLUOROMETHANE	
2	21H	ACROLEIN	
3	29V	1,1-DICHLOROETHYLENE	
4	15H	CARBON DISULFIDE	
5	13H	ACETONE	
6	44V	METHYLENE CHLORIDE	
7		1,2-DICHLOROETHENE (TOTAL)	
8	22H	ACRYLONITRILE	
9		METHYL-T-BUTYLETHER	
0	13V	1,1-DICHLOROETHANE	
1	19H	VINYL ACETATE	
2		CIS-1,2-DICHLOROETHENE	
3	14H	2-BUTANONE	
4	23V	CHLOROFORM	
5	11V	1,1,1-TRICHLOROETHANE	
6	6V	CARBON TETRACHLORIDE	
7	4V	BENZENE	
8	10V	1,2-DICHLOROETHANE	
9		TRICHLOROETHYLENE	
0	32V	1,2-DICHLOROPROPANE	
1	48V	BROMODICHLOROMETHANE	
2		2-CHLOROETHYLVINYLETHER	
3		CIS-1,3-DICHLOROPROPENE	
4		4-METHYL-2-PENTANONE	
5	86V	TOLUENE	
6		TRANS-1,3-DICHLOROPROPENE	
7	14V	1,1,2-TRICHLOROETHANE	
8	85V	TETRACHLOROETHYLENE	
9	51V	DIBROMOCHLOROMETHANE	
0		2-HEXANONE	
1	7V	CHLOROBENZENE	
2	38V	ETHYLBENZENE	
3		M-XYLENE / P-XYLENE	
4		XYLENES (TOTAL)	
5	18H	STYRENE	
6	47V	BROMOFORM	
7	15V	1,1,2,2-TETRACHLOROETHANE	

9613402.2085

	Name	
3	26B	1,3-DICHLOROBENZENE
7	27B	1,4-DICHLOROBENZENE
0	25B	1,2-DICHLOROBENZENE

	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount		%Tot
1	128	839	13:59	1	1.000	A BB	17133.	50.000	UG/L	7.81
2	114	984	16:24	2	1.000	A BB	94197.	50.000	UG/L	7.81
3	117	1320	22:00	3	1.000	A BB	73091.	50.000	UG/L	7.81
4	65	921	15:21	2	0.936	A BB	11286.	10.000	UG/L	1.56
5	98	1172	19:32	3	0.888	A BB	21182.	10.000	UG/L	1.56
6	95	1424	23:44	3	1.079	A BB	8199.	10.000	UG/L	1.56
7	50	200	3:20	1	0.238	A BB	10360.	10.000	UG/L	1.56
8	62	224	3:44	1	0.267	A BB	9641.	10.000	UG/L	1.56
9	94	295	4:55	1	0.352	A BB	6679.	10.000	UG/L	1.56
0	64	322	5:22	1	0.384	A BB	5214.	10.000	UG/L	1.56
1	101	382	6:22	1	0.455	A BB	13699.	10.000	UG/L	1.56
2	56	487	8:07	1	0.580	A BB	1613.	10.000	UG/L	1.56
3	96	494	8:14	1	0.589	A BB	6797.	10.000	UG/L	1.56
4	76	517	8:37	1	0.616	A BB	27756.	10.000	UG/L	1.56
5	43	525	8:45	1	0.626	A BB	6361.	10.000	UG/L	1.56
6	84	599	9:59	1	0.714	A BB	8860.	10.000	UG/L	1.56
7	96	644	10:44	1	0.768	A BB	6747.	10.000	UG/L	1.56
8	53	651	10:51	1	0.776	A BB	3094.	10.000	UG/L	1.56
9	73	652	10:52	1	0.777	A BB	14869.	10.000	UG/L	1.56
0	63	715	11:55	1	0.852	A BB	14140.	10.000	UG/L	1.56
1	43	736	12:16	1	0.877	A BB	19894.	10.000	UG/L	1.56
2	96	806	13:26	1	0.961	A BB	7135.	10.000	UG/L	1.56
3	72	814	13:34	1	0.970	A BB	559.	10.000	UG/L	1.56
4	83	856	14:16	1	1.020	A BB	12550.	10.000	UG/L	1.56
5	97	872	14:32	1	1.039	A BB	9832.	10.000	UG/L	1.56
6	117	894	14:54	1	1.066	A BB	9242.	10.000	UG/L	1.56
7	78	924	15:24	2	0.939	A BB	21777.	10.000	UG/L	1.56
8	62	931	15:31	2	0.946	A BB	11163.	10.000	UG/L	1.56
9	130	1015	16:55	2	1.032	A BB	5950.	10.000	UG/L	1.56
0	63	1046	17:26	2	1.063	A BB	6996.	10.000	UG/L	1.56
1	83	1087	18:07	2	1.105	A BB	8878.	10.000	UG/L	1.56
2	63	1129	18:49	2	1.147	A BB	1161.	10.000	UG/L	1.56
3	75	1143	19:03	3	0.866	A BB	15201.	16.200	UG/L	2.53
4	43	1164	19:24	3	0.882	A BV	7786.	10.000	UG/L	1.56
5	92	1180	19:40	3	0.894	A BB	11846.	10.000	UG/L	1.56
6	75	1208	20:08	3	0.915	A BB	3285.	3.800	UG/L	0.59
7	97	1227	20:27	3	0.930	A BB	4515.	10.000	UG/L	1.56
8	164	1237	20:37	3	0.937	A BB	5270.	10.000	UG/L	1.56
9	129	1266	21:06	3	0.959	A BB	6391.	10.000	UG/L	1.56
0	43	1253	20:53	3	0.949	A BB	5472.	10.000	UG/L	1.56
1	112	1323	22:03	3	1.002	A BB	13292.	10.000	UG/L	1.56
2	106	1333	22:13	3	1.010	A BB	6074.	10.000	UG/L	1.56
3	106	1343	22:23	3	1.017	A BB	16337.	20.000	UG/L	3.13
4	106	1379	22:59	3	1.045	A BB	7636.	10.000	UG/L	1.56
5	104	1380	23:00	3	1.045	A BB	13155.	10.000	UG/L	1.56
6	173	1397	23:17	3	1.058	A BB	4910.	10.000	UG/L	1.56
7	83	1437	23:57	3	1.089	A BB	5979.	10.000	UG/L	1.56
8	146	1511	25:11	3	1.145	A BV	10615.	10.000	UG/L	1.56
9	146	1519	25:19	3	1.151	A VB	10738.	10.000	UG/L	1.56
0	146	1550	25:50	3	1.174	A BB	9606.	10.000	UG/L	1.56

9613402.2086

	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
1	13:59	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:24	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	22:00	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	15:21	1.00	0.936	1.00	10.00	10.00	0.599	0.599	1.00
5	19:32	1.00	0.888	1.00	10.00	10.00	1.449	1.449	1.00
6	23:44	1.00	1.079	1.00	10.00	10.00	0.561	0.561	1.00
7	3:20	1.00	0.238	1.00	10.00	10.00	3.023	3.023	1.00
8	3:44	1.00	0.267	1.00	10.00	10.00	2.814	2.814	1.00
9	4:55	1.00	0.352	1.00	10.00	10.00	1.949	1.949	1.00
0	5:22	1.00	0.384	1.00	10.00	10.00	1.522	1.522	1.00
1	6:22	1.00	0.455	1.00	10.00	10.00	3.998	3.998	1.00
2	8:07	1.00	0.580	1.00	10.00	10.00	0.471	0.471	1.00
3	8:14	1.00	0.589	1.00	10.00	10.00	1.984	1.984	1.00
4	8:37	1.00	0.616	1.00	10.00	10.00	8.100	8.100	1.00
5	8:45	1.00	0.626	1.00	10.00	10.00	1.856	1.856	1.00
6	9:59	1.00	0.714	1.00	10.00	10.00	2.586	2.586	1.00
7	10:44	1.00	0.768	1.00	10.00	10.00	1.969	1.969	1.00
8	10:51	1.00	0.776	1.00	10.00	10.00	0.903	0.903	1.00
9	10:52	1.00	0.777	1.00	10.00	10.00	4.339	4.339	1.00
0	11:55	1.00	0.852	1.00	10.00	10.00	4.127	4.127	1.00
.	12:16	1.00	0.877	1.00	10.00	10.00	5.806	5.806	1.00
2	13:26	1.00	0.961	1.00	10.00	10.00	2.082	2.082	1.00
3	13:34	1.00	0.970	1.00	10.00	10.00	0.163	0.163	1.00
4	14:16	1.00	1.020	1.00	10.00	10.00	3.663	3.663	1.00
5	14:32	1.00	1.039	1.00	10.00	10.00	2.869	2.869	1.00
6	14:54	1.00	1.066	1.00	10.00	10.00	2.697	2.697	1.00
7	15:24	1.00	0.939	1.00	10.00	10.00	1.156	1.156	1.00
8	15:31	1.00	0.946	1.00	10.00	10.00	0.593	0.593	1.00
9	16:55	1.00	1.032	1.00	10.00	10.00	0.316	0.316	1.00
0	17:26	1.00	1.063	1.00	10.00	10.00	0.371	0.371	1.00
1	18:07	1.00	1.105	1.00	10.00	10.00	0.471	0.471	1.00
2	18:49	1.00	1.147	1.00	10.00	10.00	0.062	0.062	1.00
3	19:03	1.00	0.866	1.00	16.20	16.20	0.642	0.642	1.00
4	19:24	1.00	0.882	1.00	10.00	10.00	0.533	0.533	1.00
5	19:40	1.00	0.894	1.00	10.00	10.00	0.810	0.810	1.00
6	20:08	1.00	0.915	1.00	3.80	3.80	0.591	0.591	1.00
7	20:27	1.00	0.930	1.00	10.00	10.00	0.309	0.309	1.00
8	20:37	1.00	0.937	1.00	10.00	10.00	0.361	0.361	1.00
9	21:06	1.00	0.959	1.00	10.00	10.00	0.437	0.437	1.00
0	20:53	1.00	0.949	1.00	10.00	10.00	0.374	0.374	1.00
1	22:03	1.00	1.002	1.00	10.00	10.00	0.909	0.909	1.00
2	22:13	1.00	1.010	1.00	10.00	10.00	0.416	0.416	1.00
3	22:23	1.00	1.017	1.00	20.00	20.00	0.559	0.559	1.00
4	22:59	1.00	1.045	1.00	10.00	10.00	0.522	0.522	1.00
5	23:00	1.00	1.045	1.00	10.00	10.00	0.900	0.900	1.00
6	23:17	1.00	1.058	1.00	10.00	10.00	0.336	0.336	1.00
7	23:57	1.00	1.089	1.00	10.00	10.00	0.409	0.409	1.00
8	25:11	1.00	1.145	1.00	10.00	10.00	0.726	0.726	1.00
9	25:19	1.00	1.151	1.00	10.00	10.00	0.735	0.735	1.00
0	25:50	1.00	1.174	1.00	10.00	10.00	0.657	0.657	1.00

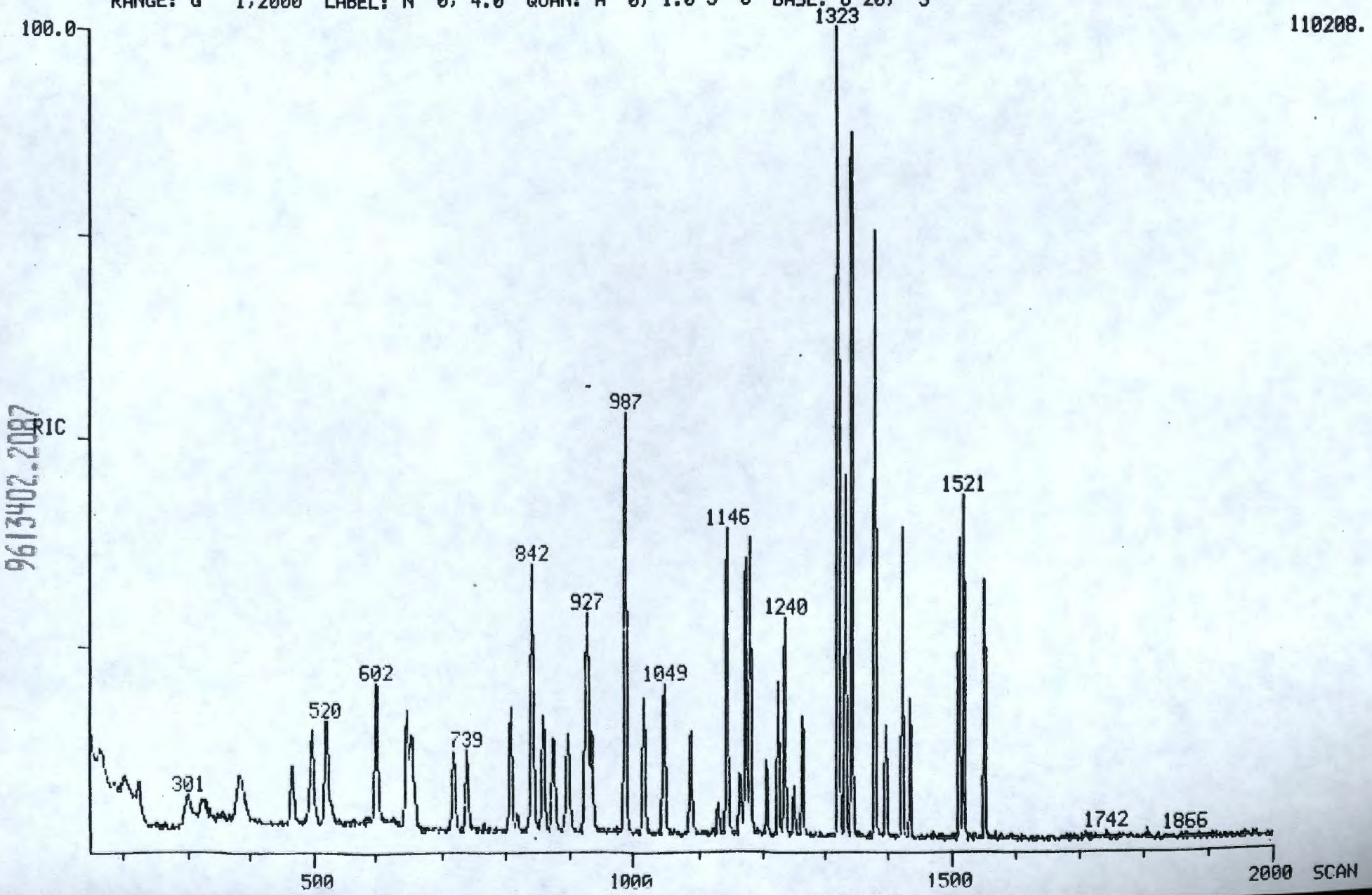
500
1000
1500
2000 SCAN

RIC
03/04/93 18:04:00
SAMPLE: VSTD20 LOW WATER ICAL
CONDS.: 5100B VO COLUMN:DB624
RANGE: G 1,2000 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: B030412 #1
CALI: B030412 #2

SCANS 150 TO 2000

0035



9613402.2087

9613402.2088

antitation Report File: B030412

ta: B030412.TI
/04/93 18:04:00
nple: VSTD20 LOW WATER ICAL
nds.: 5100B VO COLUMN: DB624
rmula: B030401 Instrument: 5100B Weight: 0.198
omitted by: Analyst: JBS Acct. No.:

OUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
sp. fac. from Library Entry

o	Name		
1	IS1	BROMOCHLOROMETHANE	***INTERNAL STANDARD #1***
2	IS2	1,4-DIFLUOROBENZENE	***INTERNAL STANDARD #2***
3	IS3	CHLOROBENZENE D5	***INTERNAL STANDARD #3***
4	SS1	1,2-DICHLOROETHANE D4	***SURROGATE STANDARD #1***
5	SS2	TOLUENE D8	***SURROGATE STANDARD #2***
6	SS3	4-BROMOFLUOROBENZENE	***SURROGATE STANDARD #3***
7	45V	CHLOROMETHANE	
8	88V	VINYL CHLORIDE	
9	46V	BROMOMETHANE	
0	16V	CHLOROETHANE	
1	24H	TRICHLOROFLUOROMETHANE	
2	21H	ACROLEIN	
3	29V	1,1-DICHLOROETHYLENE	
4	15H	CARBON DISULFIDE	
5	13H	ACETONE	
6	44V	METHYLENE CHLORIDE	
7		1,2-DICHLOROETHENE (TOTAL)	
8	22H	ACRYLONITRILE	
9		METHYL-T-BUTYLETHER	
0	13V	1,1-DICHLOROETHANE	
1	19H	VINYL ACETATE	
2		CIS-1,2-DICHLOROETHENE	
3	14H	2-BUTANONE	
4	23V	CHLOROFORM	
5	11V	1,1,1-TRICHLOROETHANE	
6	6V	CARBON TETRACHLORIDE	
7	4V	BENZENE	
8	10V	1,2-DICHLOROETHANE	
9		TRICHLOROETHYLENE	
0	32V	1,2-DICHLOROPROPANE	
1	48V	BROMODICHLOROMETHANE	
2		2-CHLOROETHYLVINYLETHER	
3		CIS-1,3-DICHLOROPROPENE	
4		4-METHYL-2-PENTANONE	
5	86V	TOLUENE	
6		TRANS-1,3-DICHLOROPROPENE	
7	14V	1,1,2-TRICHLOROETHANE	
8	85V	TETRACHLOROETHYLENE	
9	51V	DIBROMOCHLOROMETHANE	
0		2-HEXANONE	
1	7V	CHLOROBENZENE	
2	38V	ETHYLBENZENE	
3		M-XYLENE / P-XYLENE	
4		XYLENES (TOTAL)	
5	18H	STYRENE	
6	47V	BROMOFORM	
7	15V	1,1,2,2-TETRACHLOROETHANE	

9613402.2089

No	Name	
48	26B	1,3-DICHLOROBENZENE
49	27B	1,4-DICHLOROBENZENE
50	25B	1,2-DICHLOROBENZENE

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	842	14:02	1	1.000	A BV	16778.	50.000 UG/L	4.42
2	114	987	16:27	2	1.000	A BB	94933.	50.000 UG/L	4.42
3	117	1322	22:02	3	1.000	A BB	76447.	50.000 UG/L	4.42
4	65	924	15:24	2	0.936	A BV	21116.	20.000 UG/L	1.77
5	98	1175	19:35	3	0.889	A BB	42002.	20.000 UG/L	1.77
6	95	1426	23:46	3	1.079	A BB	16360.	20.000 UG/L	1.77
7	50	203	3:23	1	0.241	A BB	19998.	20.000 UG/L	1.77
8	62	227	3:47	1	0.270	A BB	17909.	20.000 UG/L	1.77
9	94	298	4:58	1	0.354	A BV	12359.	20.000 UG/L	1.77
10	64	326	5:26	1	0.387	A BB	9642.	20.000 UG/L	1.77
11	101	385	6:25	1	0.457	A BB	25607.	20.000 UG/L	1.77
12	56	491	8:11	1	0.583	A BB	2880.	20.000 UG/L	1.77
13	96	497	8:17	1	0.590	A BB	13210.	20.000 UG/L	1.77
14	76	520	8:40	1	0.618	A BB	54019.	20.000 UG/L	1.77
15	43	528	8:48	1	0.627	A BB	9307.	20.000 UG/L	1.77
16	84	602	10:02	1	0.715	A BB	15864.	20.000 UG/L	1.77
17	96	647	10:47	1	0.768	A BB	12118.	20.000 UG/L	1.77
18	53	654	10:54	1	0.777	A BB	5731.	20.000 UG/L	1.77
19	73	655	10:55	1	0.778	A BB	27712.	20.000 UG/L	1.77
20	63	718	11:58	1	0.853	A BB	27805.	20.000 UG/L	1.77
21	43	740	12:20	1	0.879	A BB	43131.	20.000 UG/L	1.77
22	96	808	13:28	1	0.960	A BB	13749.	20.000 UG/L	1.77
23	72	818	13:38	1	0.971	A BB	1357.	20.000 UG/L	1.77
24	83	859	14:19	1	1.020	A BB	24638.	20.000 UG/L	1.77
25	97	875	14:35	1	1.039	A BB	19123.	20.000 UG/L	1.77
26	117	897	14:57	1	1.065	A BB	17975.	20.000 UG/L	1.77
27	78	927	15:27	2	0.939	A BB	44413.	20.000 UG/L	1.77
28	62	934	15:34	2	0.946	A BB	22829.	20.000 UG/L	1.77
29	130	1018	16:58	2	1.031	A BB	11618.	20.000 UG/L	1.77
30	63	1049	17:29	2	1.063	A BB	13835.	20.000 UG/L	1.77
31	83	1090	18:10	2	1.104	A BB	17337.	20.000 UG/L	1.77
32	63	1131	18:51	2	1.146	A BB	3083.	20.000 UG/L	1.77
33	75	1146	19:06	3	0.867	A BB	31577.	32.400 UG/L	2.87
34	43	1166	19:26	3	0.882	A BV	15234.	20.000 UG/L	1.77
35	92	1182	19:42	3	0.894	A BB	25058.	20.000 UG/L	1.77
36	75	1210	20:10	3	0.915	A BB	6476.	7.600 UG/L	0.67
37	97	1229	20:29	3	0.930	A BB	8735.	20.000 UG/L	1.77
38	164	1240	20:40	3	0.938	A BB	10435.	20.000 UG/L	1.77
39	129	1268	21:08	3	0.959	A BB	13177.	20.000 UG/L	1.77
40	43	1255	20:55	3	0.949	A BB	10775.	20.000 UG/L	1.77
41	112	1325	22:05	3	1.002	A BB	27867.	20.000 UG/L	1.77
42	106	1335	22:15	3	1.010	A BB	13074.	20.000 UG/L	1.77
43	106	1346	22:26	3	1.018	A BB	36992.	40.000 UG/L	3.54
44	106	1381	23:01	3	1.045	A BB	17089.	20.000 UG/L	1.77
45	104	1382	23:02	3	1.045	A BB	30520.	20.000 UG/L	1.77
46	173	1399	23:19	3	1.058	A BB	10339.	20.000 UG/L	1.77
47	83	1439	23:59	3	1.089	A BB	11620.	20.000 UG/L	1.77
48	146	1513	25:13	3	1.144	A BV	23239.	20.000 UG/L	1.77
49	146	1521	25:21	3	1.151	A VB	24153.	20.000 UG/L	1.77
50	146	1552	25:52	3	1.174	A BB	21107.	20.000 UG/L	1.77

9613402.2090

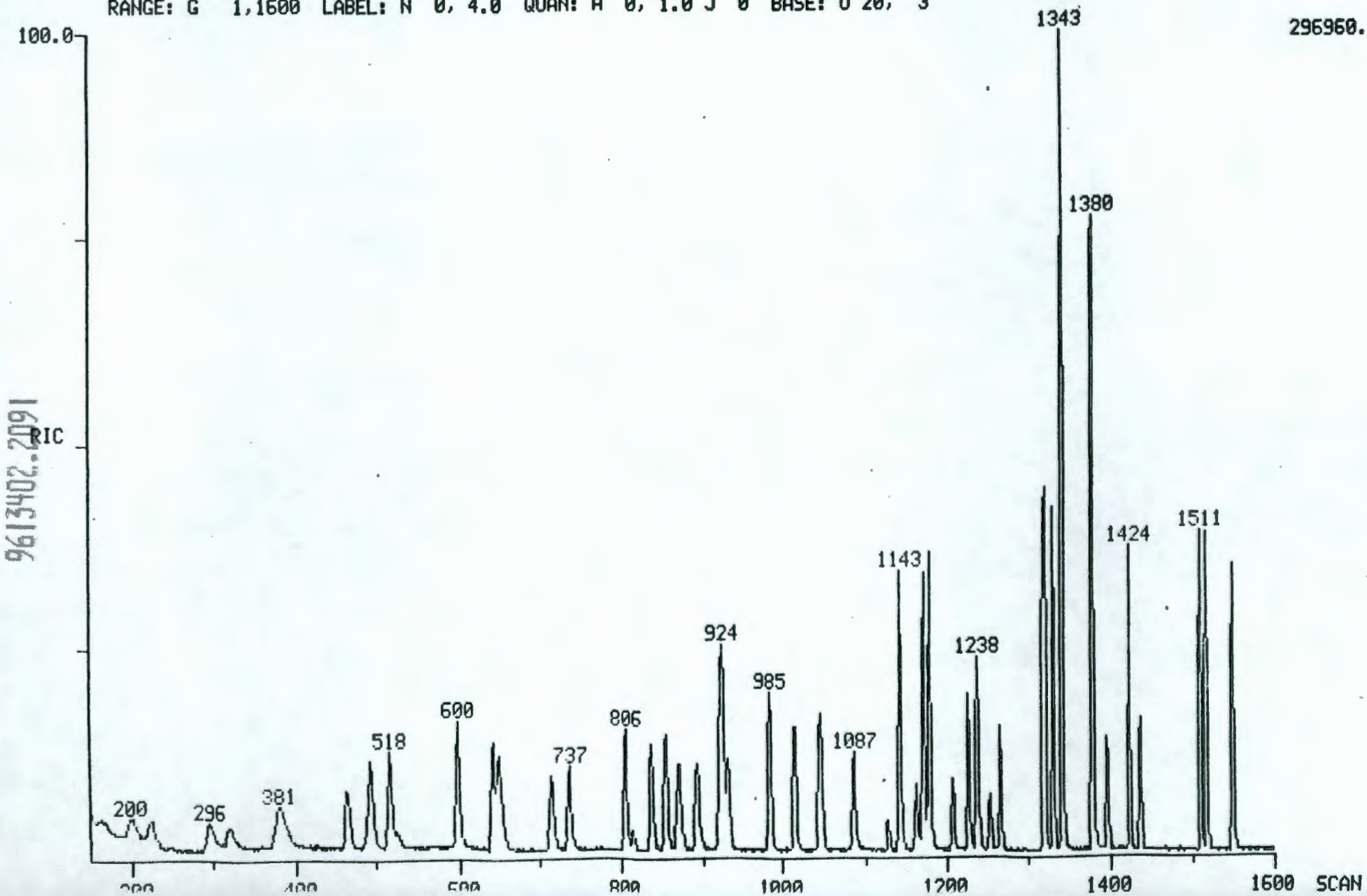
o	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
1	14:02	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:27	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	22:02	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	15:24	1.00	0.936	1.00	20.00	20.00	0.556	0.556	1.00
5	19:35	1.00	0.889	1.00	20.00	20.00	1.374	1.374	1.00
6	23:46	1.00	1.079	1.00	20.00	20.00	0.535	0.535	1.00
7	3:23	1.00	0.241	1.00	20.00	20.00	2.980	2.980	1.00
8	3:47	1.00	0.270	1.00	20.00	20.00	2.669	2.669	1.00
9	4:58	1.00	0.354	1.00	20.00	20.00	1.842	1.842	1.00
0	5:26	1.00	0.387	1.00	20.00	20.00	1.437	1.437	1.00
1	6:25	1.00	0.457	1.00	20.00	20.00	3.816	3.816	1.00
2	8:11	1.00	0.583	1.00	20.00	20.00	0.429	0.429	1.00
3	8:17	1.00	0.590	1.00	20.00	20.00	1.968	1.968	1.00
4	8:40	1.00	0.618	1.00	20.00	20.00	8.049	8.049	1.00
5	8:48	1.00	0.627	1.00	20.00	20.00	1.387	1.387	1.00
6	10:02	1.00	0.715	1.00	20.00	20.00	2.364	2.364	1.00
7	10:47	1.00	0.768	1.00	20.00	20.00	1.806	1.806	1.00
8	10:54	1.00	0.777	1.00	20.00	20.00	0.854	0.854	1.00
9	10:55	1.00	0.778	1.00	20.00	20.00	4.129	4.129	1.00
0	11:58	1.00	0.853	1.00	20.00	20.00	4.143	4.143	1.00
1	12:20	1.00	0.879	1.00	20.00	20.00	6.427	6.427	1.00
2	13:28	1.00	0.960	1.00	20.00	20.00	2.049	2.049	1.00
3	13:38	1.00	0.971	1.00	20.00	20.00	0.202	0.202	1.00
4	14:19	1.00	1.020	1.00	20.00	20.00	3.671	3.671	1.00
5	14:35	1.00	1.039	1.00	20.00	20.00	2.849	2.849	1.00
6	14:57	1.00	1.065	1.00	20.00	20.00	2.678	2.678	1.00
7	15:27	1.00	0.939	1.00	20.00	20.00	1.170	1.170	1.00
8	15:34	1.00	0.946	1.00	20.00	20.00	0.601	0.601	1.00
9	16:58	1.00	1.031	1.00	20.00	20.00	0.306	0.306	1.00
30	17:29	1.00	1.063	1.00	20.00	20.00	0.364	0.364	1.00
31	18:10	1.00	1.104	1.00	20.00	20.00	0.457	0.457	1.00
32	18:51	1.00	1.146	1.00	20.00	20.00	0.081	0.081	1.00
33	19:06	1.00	0.867	1.00	32.40	32.40	0.637	0.637	1.00
34	19:26	1.00	0.882	1.00	20.00	20.00	0.498	0.498	1.00
35	19:42	1.00	0.894	1.00	20.00	20.00	0.819	0.819	1.00
36	20:10	1.00	0.915	1.00	7.60	7.60	0.557	0.557	1.00
37	20:29	1.00	0.930	1.00	20.00	20.00	0.286	0.286	1.00
38	20:40	1.00	0.938	1.00	20.00	20.00	0.341	0.341	1.00
39	21:08	1.00	0.959	1.00	20.00	20.00	0.431	0.431	1.00
40	20:55	1.00	0.949	1.00	20.00	20.00	0.352	0.352	1.00
41	22:05	1.00	1.002	1.00	20.00	20.00	0.911	0.911	1.00
42	22:15	1.00	1.010	1.00	20.00	20.00	0.428	0.428	1.00
43	22:26	1.00	1.018	1.00	40.00	40.00	0.605	0.605	1.00
44	23:01	1.00	1.045	1.00	20.00	20.00	0.559	0.559	1.00
45	23:02	1.00	1.045	1.00	20.00	20.00	0.998	0.998	1.00
46	23:19	1.00	1.058	1.00	20.00	20.00	0.338	0.338	1.00
47	23:59	1.00	1.089	1.00	20.00	20.00	0.380	0.380	1.00
48	25:13	1.00	1.144	1.00	20.00	20.00	0.760	0.760	1.00
49	25:21	1.00	1.151	1.00	20.00	20.00	0.790	0.790	1.00
50	25:52	1.00	1.174	1.00	20.00	20.00	0.690	0.690	1.00

RIC
03/04/93 12:12:00
SAMPLE: VSTD50 LOW WATER ICAL
CONDS.: 5100B VO COLUMN:DB624
RANGE: G 1,1600 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: B030405 #1
CALI: B030405 #2

SCANS 150 TO 1600

0039



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9613402.2092

antitation Report File: B030405

ta: B030405.TI
/04/93 12:12:00
mple: VSTD50 LOW WATER ICAL
nds.: 5100B VO COLUMN: DB624
rmula: B030401 Instrument: 5100B Weight: 0.197
omitted by: Analyst: JBS Acct. No.:

OUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
sp. fac. from Library Entry

o	Name		
1	IS1	BROMOCHLOROMETHANE	***INTERNAL STANDARD #1***
2	IS2	1,4-DIFLUOROBENZENE	***INTERNAL STANDARD #2***
3	IS3	CHLOROBENZENE D5	***INTERNAL STANDARD #3***
4	SS1	1,2-DICHLOROETHANE D4	***SURROGATE STANDARD #1***
5	SS2	TOLUENE D8	***SURROGATE STANDARD #2***
6	SS3	4-BROMOFLUOROBENZENE	***SURROGATE STANDARD #3***
7	45V	CHLOROMETHANE	
8	88V	VINYL CHLORIDE	
9	46V	BROMOMETHANE	
0	16V	CHLOROETHANE	
1	24H	TRICHLOROFLUOROMETHANE	
2	21H	ACROLEIN	
3	29V	1,1-DICHLOROETHYLENE	
4	15H	CARBON DISULFIDE	
5	13H	ACETONE	
6	44V	METHYLENE CHLORIDE	
7		1,2-DICHLOROETHENE (TOTAL)	
8	22H	ACRYLONITRILE	
9		METHYL-T-BUTYLETHER	
0	13V	1,1-DICHLOROETHANE	
1	19H	VINYL ACETATE	
2		CIS-1,2-DICHLOROETHENE	
3	14H	2-BUTANONE	
4	23V	CHLOROFORM	
5	11V	1,1,1-TRICHLOROETHANE	
6	6V	CARBON TETRACHLORIDE	
7	4V	BENZENE	
8	10V	1,2-DICHLOROETHANE	
9		TRICHLOROETHYLENE	
0	32V	1,2-DICHLOROPROPANE	
1	48V	BROMODICHLOROMETHANE	
2		2-CHLOROETHYLVINYLETHER	
3		CIS-1,3-DICHLOROPROPENE	
4		4-METHYL-2-PENTANONE	
5	86V	TOLUENE	
6		TRANS-1,3-DICHLOROPROPENE	
7	14V	1,1,2-TRICHLOROETHANE	
8	85V	TETRACHLOROETHYLENE	
9	51V	DIBROMOCHLOROMETHANE	
0		2-HEXANONE	
1	7V	CHLOROBENZENE	
2	38V	ETHYLBENZENE	
3		M-XYLENE / P-XYLENE	
4		XYLENES (TOTAL)	
5	18H	STYRENE	
6	47V	BROMOFORM	
7	15V	1,1,2,2-TETRACHLOROETHANE	

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	Name	
3	26B	1,3-DICHLOROBENZENE
7	27B	1,4-DICHLOROBENZENE
0	25B	1,2-DICHLOROBENZENE

	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	839	13:59	1	1.000	A BB	17416.	50.000 UG/L	1.92
2	114	985	16:25	2	1.000	A BB	96843.	50.000 UG/L	1.92
3	117	1320	22:00	3	1.000	A BB	81556.	50.000 UG/L	1.92
4	65	921	15:21	2	0.935	A BV	52272.	50.000 UG/L	1.92
5	98	1172	19:32	3	0.888	A BB	116639.	50.000 UG/L	1.92
6	95	1424	23:44	3	1.079	A BB	47209.	50.000 UG/L	1.92
7	50	201	3:21	1	0.240	A BB	40802.	50.000 UG/L	1.92
8	62	225	3:45	1	0.268	A BB	35448.	50.000 UG/L	1.92
9	94	297	4:57	1	0.354	A BB	26195.	50.000 UG/L	1.92
0	64	322	5:22	1	0.384	A BB	23641.	50.000 UG/L	1.92
1	101	382	6:22	1	0.455	A BB	61513.	50.000 UG/L	1.92
2	56	489	8:09	1	0.583	A BB	7574.	50.000 UG/L	1.92
3	96	494	8:14	1	0.589	A BB	33148.	50.000 UG/L	1.92
4	76	517	8:37	1	0.616	A BB	130051.	50.000 UG/L	1.92
5	43	527	8:47	1	0.628	A BB	19086.	50.000 UG/L	1.92
6	84	600	10:00	1	0.715	A BB	39012.	50.000 UG/L	1.92
7	96	645	10:45	1	0.769	A BB	31650.	50.000 UG/L	1.92
8	53	652	10:52	1	0.777	A BB	16156.	50.000 UG/L	1.92
9	73	653	10:53	1	0.778	A BB	68855.	50.000 UG/L	1.92
0	63	715	11:55	1	0.852	A BB	71604.	50.000 UG/L	1.92
1	43	737	12:17	1	0.878	A BB	117748.	50.000 UG/L	1.92
2	96	806	13:26	1	0.961	A BB	35974.	50.000 UG/L	1.92
3	72	816	13:36	1	0.973	A BB	3017.	50.000 UG/L	1.92
4	83	857	14:17	1	1.021	A BB	63284.	50.000 UG/L	1.92
5	97	872	14:32	1	1.039	A BB	48260.	50.000 UG/L	1.92
6	117	894	14:54	1	1.066	A BB	44568.	50.000 UG/L	1.92
7	78	925	15:25	2	0.939	A BB	117322.	50.000 UG/L	1.92
8	62	932	15:32	2	0.946	A BB	58942.	50.000 UG/L	1.92
9	130	1015	16:55	2	1.030	A BB	29673.	50.000 UG/L	1.92
0	63	1046	17:26	2	1.062	A BB	37099.	50.000 UG/L	1.92
1	83	1087	18:07	2	1.104	A BB	46037.	50.000 UG/L	1.92
2	63	1129	18:49	2	1.146	A BB	7962.	50.000 UG/L	1.92
3	75	1143	19:03	3	0.866	A BB	88452.	81.000 UG/L	3.12
4	43	1164	19:24	3	0.882	A BV	43758.	50.000 UG/L	1.92
5	92	1180	19:40	3	0.894	A BB	71747.	50.000 UG/L	1.92
6	75	1208	20:08	3	0.915	A BB	17993.	19.000 UG/L	0.73
7	97	1227	20:27	3	0.930	A BB	25331.	50.000 UG/L	1.92
8	164	1237	20:37	3	0.937	A BB	27848.	50.000 UG/L	1.92
9	129	1266	21:06	3	0.959	A BB	36418.	50.000 UG/L	1.92
0	43	1253	20:53	3	0.949	A BB	31107.	50.000 UG/L	1.92
1	112	1323	22:03	3	1.002	A BB	77983.	50.000 UG/L	1.92
2	106	1333	22:13	3	1.010	A BB	37325.	50.000 UG/L	1.92
3	106	1343	22:23	3	1.017	A BB	114649.	100.000 UG/L	3.85
4	106	1379	22:59	3	1.045	A BB	52291.	50.000 UG/L	1.92
5	104	1380	23:00	3	1.045	A BB	94408.	50.000 UG/L	1.92
6	173	1397	23:17	3	1.058	A BB	30214.	50.000 UG/L	1.92
7	83	1437	23:57	3	1.089	A BB	33679.	50.000 UG/L	1.92
8	146	1511	25:11	3	1.145	A BV	67138.	50.000 UG/L	1.92
9	146	1518	25:18	3	1.150	A VB	70169.	50.000 UG/L	1.92
0	146	1550	25:50	3	1.174	A BB	59640.	50.000 UG/L	1.92

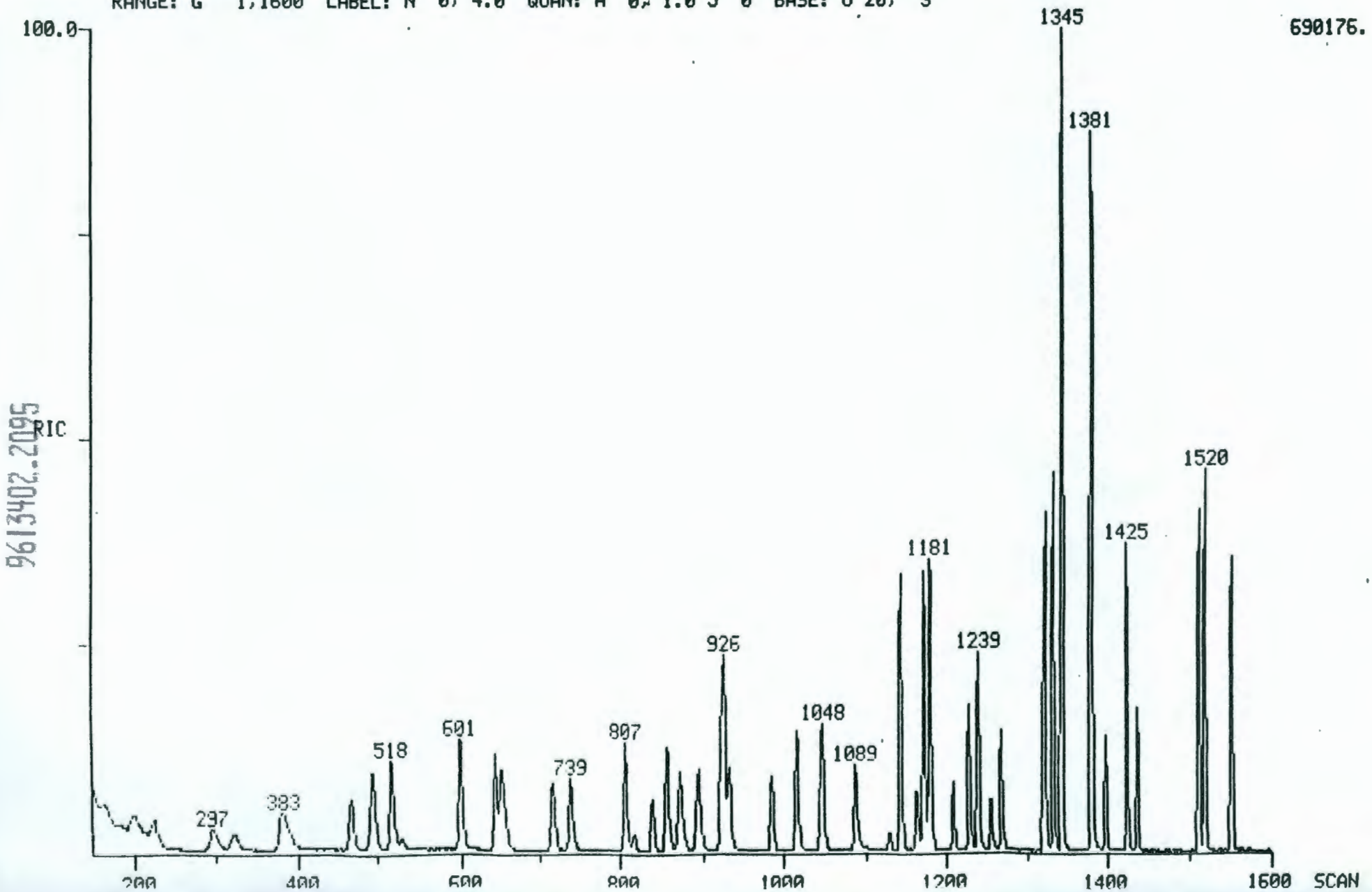
9613402.2094

lo	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
1	13:59	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:25	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	22:00	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	15:21	1.00	0.935	1.00	50.00	50.00	0.540	0.540	1.00
5	19:32	1.00	0.888	1.00	50.00	50.00	1.430	1.430	1.00
6	23:44	1.00	1.079	1.00	50.00	50.00	0.579	0.579	1.00
7	3:21	1.00	0.240	1.00	50.00	50.00	2.343	2.343	1.00
8	3:45	1.00	0.268	1.00	50.00	50.00	2.035	2.035	1.00
9	4:57	1.00	0.354	1.00	50.00	50.00	1.504	1.504	1.00
.0	5:22	1.00	0.384	1.00	50.00	50.00	1.357	1.357	1.00
.1	6:22	1.00	0.455	1.00	50.00	50.00	3.532	3.532	1.00
.2	8:09	1.00	0.583	1.00	50.00	50.00	0.435	0.435	1.00
.3	8:14	1.00	0.589	1.00	50.00	50.00	1.903	1.903	1.00
4	8:37	1.00	0.616	1.00	50.00	50.00	7.467	7.467	1.00
5	8:47	1.00	0.628	1.00	50.00	50.00	1.096	1.096	1.00
6	10:00	1.00	0.715	1.00	50.00	50.00	2.240	2.240	1.00
.7	10:45	1.00	0.769	1.00	50.00	50.00	1.817	1.817	1.00
8	10:52	1.00	0.777	1.00	50.00	50.00	0.928	0.928	1.00
9	10:53	1.00	0.778	1.00	50.00	50.00	3.954	3.954	1.00
0	11:55	1.00	0.852	1.00	50.00	50.00	4.111	4.111	1.00
1	12:17	1.00	0.878	1.00	50.00	50.00	6.761	6.761	1.00
2	13:26	1.00	0.961	1.00	50.00	50.00	2.066	2.066	1.00
3	13:36	1.00	0.973	1.00	50.00	50.00	0.173	0.173	1.00
4	14:17	1.00	1.021	1.00	50.00	50.00	3.634	3.634	1.00
5	14:32	1.00	1.039	1.00	50.00	50.00	2.771	2.771	1.00
6	14:54	1.00	1.066	1.00	50.00	50.00	2.559	2.559	1.00
7	15:25	1.00	0.939	1.00	50.00	50.00	1.211	1.211	1.00
8	15:32	1.00	0.946	1.00	50.00	50.00	0.609	0.609	1.00
9	16:55	1.00	1.030	1.00	50.00	50.00	0.306	0.306	1.00
0	17:26	1.00	1.062	1.00	50.00	50.00	0.383	0.383	1.00
1	18:07	1.00	1.104	1.00	50.00	50.00	0.475	0.475	1.00
2	18:49	1.00	1.146	1.00	50.00	50.00	0.082	0.082	1.00
3	19:03	1.00	0.866	1.00	81.00	81.00	0.669	0.669	1.00
4	19:24	1.00	0.882	1.00	50.00	50.00	0.537	0.537	1.00
5	19:40	1.00	0.894	1.00	50.00	50.00	0.880	0.880	1.00
6	20:08	1.00	0.915	1.00	19.00	19.00	0.581	0.581	1.00
7	20:27	1.00	0.930	1.00	50.00	50.00	0.311	0.311	1.00
8	20:37	1.00	0.937	1.00	50.00	50.00	0.341	0.341	1.00
9	21:06	1.00	0.959	1.00	50.00	50.00	0.447	0.447	1.00
0	20:53	1.00	0.949	1.00	50.00	50.00	0.381	0.381	1.00
1	22:03	1.00	1.002	1.00	50.00	50.00	0.956	0.956	1.00
2	22:13	1.00	1.010	1.00	50.00	50.00	0.458	0.458	1.00
3	22:23	1.00	1.017	1.00	100.00	100.00	0.703	0.703	1.00
4	22:59	1.00	1.045	1.00	50.00	50.00	0.641	0.641	1.00
5	23:00	1.00	1.045	1.00	50.00	50.00	1.158	1.158	1.00
6	23:17	1.00	1.058	1.00	50.00	50.00	0.370	0.370	1.00
7	23:57	1.00	1.089	1.00	50.00	50.00	0.413	0.413	1.00
8	25:11	1.00	1.145	1.00	50.00	50.00	0.823	0.823	1.00
9	25:18	1.00	1.150	1.00	50.00	50.00	0.860	0.860	1.00
0	25:50	1.00	1.174	1.00	50.00	50.00	0.731	0.731	1.00

RIC
03/04/93 13:34:00
SAMPLE: VSTD100 LOW WATER ICAL
CONDS.: 5100B VO COLUMN:DB624
RANGE: G 1,1600 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: B030407 #1
CALI: B030407 #2

SCANS 150 TO 1600



9613402.2095

9613402.2096

antitation Report File: B030407

ta: B030407.TI
/04/93 13:34:00
nple: VSTD100 LOW WATER ICAL
nds.: 5100B VO COLUMN: DB624
rmula: B030401 Instrument: 5100B Weight: 0.197
omitted by: Analyst: JBS Acct. No.:

OUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
sp. fac. from Library Entry

o	Name		
1	IS1	BROMOCHLOROMETHANE	***INTERNAL STANDARD #1***
2	IS2	1,4-DIFLUOROBENZENE	***INTERNAL STANDARD #2***
3	IS3	CHLOROBENZENE D5	***INTERNAL STANDARD #3***
4	SS1	1,2-DICHLOROETHANE D4	***SURROGATE STANDARD #1***
5	SS2	TOLUENE D8	***SURROGATE STANDARD #2***
6	SS3	4-BROMOFLUOROBENZENE	***SURROGATE STANDARD #3***
7	45V	CHLOROMETHANE	
8	88V	VINYL CHLORIDE	
9	46V	BROMOMETHANE	
0	16V	CHLOROETHANE	
1	24H	TRICHLOROFLUOROMETHANE	
2	21H	ACROLEIN	
3	29V	1,1-DICHLOROETHYLENE	
4	15H	CARBON DISULFIDE	
5	13H	ACETONE	
6	44V	METHYLENE CHLORIDE	
7		1,2-DICHLOROETHENE (TOTAL)	
8	22H	ACRYLONITRILE	
9		METHYL-T-BUTYLETHER	
0	13V	1,1-DICHLOROETHANE	
1	19H	VINYL ACETATE	
2		CIS-1,2-DICHLOROETHENE	
3	14H	2-BUTANONE	
4	23V	CHLOROFORM	
5	11V	1,1,1-TRICHLOROETHANE	
6	6V	CARBON TETRACHLORIDE	
7	4V	BENZENE	
8	10V	1,2-DICHLOROETHANE	
9		TRICHLOROETHYLENE	
0	32V	1,2-DICHLOROPROPANE	
1	48V	BROMODICHLOROMETHANE	
2		2-CHLOROETHYLVINYLETHER	
3		CIS-1,3-DICHLOROPROPENE	
4		4-METHYL-2-PENTANONE	
5	86V	TOLUENE	
6		TRANS-1,3-DICHLOROPROPENE	
7	14V	1,1,2-TRICHLOROETHANE	
8	85V	TETRACHLOROETHYLENE	
9	51V	DIBROMOCHLOROMETHANE	
0		2-HEXANONE	
1	7V	CHLOROBENZENE	
2	38V	ETHYLBENZENE	
3		M-XYLENE / P-XYLENE	
4		XYLENES (TOTAL)	
5	18H	STYRENE	
6	47V	BROMOFORM	
7	15V	1,1,2,2-TETRACHLOROETHANE	

9613402.2097

lo	Name	
8	26B	1,3-DICHLOROBENZENE
9	27B	1,4-DICHLOROBENZENE
0	25B	1,2-DICHLOROBENZENE

lo	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	841	14:01	1	1.000	A BB	19322.	50.000 UG/L	0.99
2	114	986	16:26	2	1.000	A BB	106959.	50.000 UG/L	0.99
3	117	1321	22:01	3	1.000	A BB	92559.	50.000 UG/L	0.99
4	65	923	15:23	2	0.936	A BV	106949.	100.000 UG/L	1.98
5	98	1174	19:34	3	0.889	A BB	264128.	100.000 UG/L	1.98
6	95	1425	23:45	3	1.079	A BV	114550.	100.000 UG/L	1.98
7	50	201	3:21	1	0.239	A BB	81057.	100.000 UG/L	1.98
8	62	226	3:46	1	0.269	A BB	67319.	100.000 UG/L	1.98
9	94	297	4:57	1	0.353	A BB	51972.	100.000 UG/L	1.98
0	64	323	5:23	1	0.384	A BB	41140.	100.000 UG/L	1.98
1	101	383	6:23	1	0.455	A BB	125379.	100.000 UG/L	1.98
2	56	491	8:11	1	0.584	A BB	15874.	100.000 UG/L	1.98
3	96	495	8:15	1	0.589	A BB	67428.	100.000 UG/L	1.98
4	76	518	8:38	1	0.616	A BB	274346.	100.000 UG/L	1.98
5	43	530	8:50	1	0.630	A BB	33987.	100.000 UG/L	1.98
6	84	601	10:01	1	0.715	A BB	76823.	100.000 UG/L	1.98
7	96	646	10:46	1	0.768	A BB	65474.	100.000 UG/L	1.98
8	53	654	10:54	1	0.778	A BV	32839.	100.000 UG/L	1.98
9	73	655	10:55	1	0.779	A BB	138952.	100.000 UG/L	1.98
0	63	717	11:57	1	0.853	A BB	147161.	100.000 UG/L	1.98
1	43	739	12:19	1	0.879	A BB	252045.	100.000 UG/L	1.98
2	96	807	13:27	1	0.960	A BB	77773.	100.000 UG/L	1.98
3	72	818	13:38	1	0.973	A BB	5798.	100.000 UG/L	1.98
4	83	858	14:18	1	1.020	A BB	134599.	100.000 UG/L	1.98
5	97	874	14:34	1	1.039	A BB	100246.	100.000 UG/L	1.98
6	117	896	14:56	1	1.065	A BB	93242.	100.000 UG/L	1.98
7	78	926	15:26	2	0.939	A BB	261609.	100.000 UG/L	1.98
8	62	933	15:33	2	0.946	A BB	121540.	100.000 UG/L	1.98
9	130	1017	16:57	2	1.031	A BB	65149.	100.000 UG/L	1.98
0	63	1048	17:28	2	1.063	A BB	81654.	100.000 UG/L	1.98
1	83	1089	18:09	2	1.104	A BB	100940.	100.000 UG/L	1.98
2	63	1131	18:51	2	1.147	A BB	10502.	100.000 UG/L	1.98
3	75	1145	19:05	3	0.867	A BB	198387.	162.000 UG/L	3.21
4	43	1166	19:26	3	0.883	A BV	92906.	100.000 UG/L	1.98
5	92	1181	19:41	3	0.894	A BB	172129.	100.000 UG/L	1.98
6	75	1209	20:09	3	0.915	A BB	40014.	38.000 UG/L	0.75
7	97	1228	20:28	3	0.930	A BB	57557.	100.000 UG/L	1.98
8	164	1239	20:39	3	0.938	A BB	63314.	100.000 UG/L	1.98
9	129	1267	21:07	3	0.959	A BB	84847.	100.000 UG/L	1.98
0	43	1255	20:55	3	0.950	A BV	68154.	100.000 UG/L	1.98
1	112	1324	22:04	3	1.002	A BV	182590.	100.000 UG/L	1.98
2	106	1334	22:14	3	1.010	A BV	91695.	100.000 UG/L	1.98
3	106	1345	22:25	3	1.018	A VB	282599.	200.000 UG/L	3.96
4	106	1380	23:00	3	1.045	A BB	135635.	100.000 UG/L	1.98
5	104	1382	23:02	3	1.046	A BB	246114.	100.000 UG/L	1.98
6	173	1399	23:19	3	1.059	A BB	71301.	100.000 UG/L	1.98
7	83	1438	23:58	3	1.089	A BB	81290.	100.000 UG/L	1.98
8	146	1513	25:13	3	1.145	A BV	165088.	100.000 UG/L	1.98
9	146	1520	25:20	3	1.151	A VB	174504.	100.000 UG/L	1.98
0	146	1552	25:52	3	1.175	A BV	149154.	100.000 UG/L	1.98

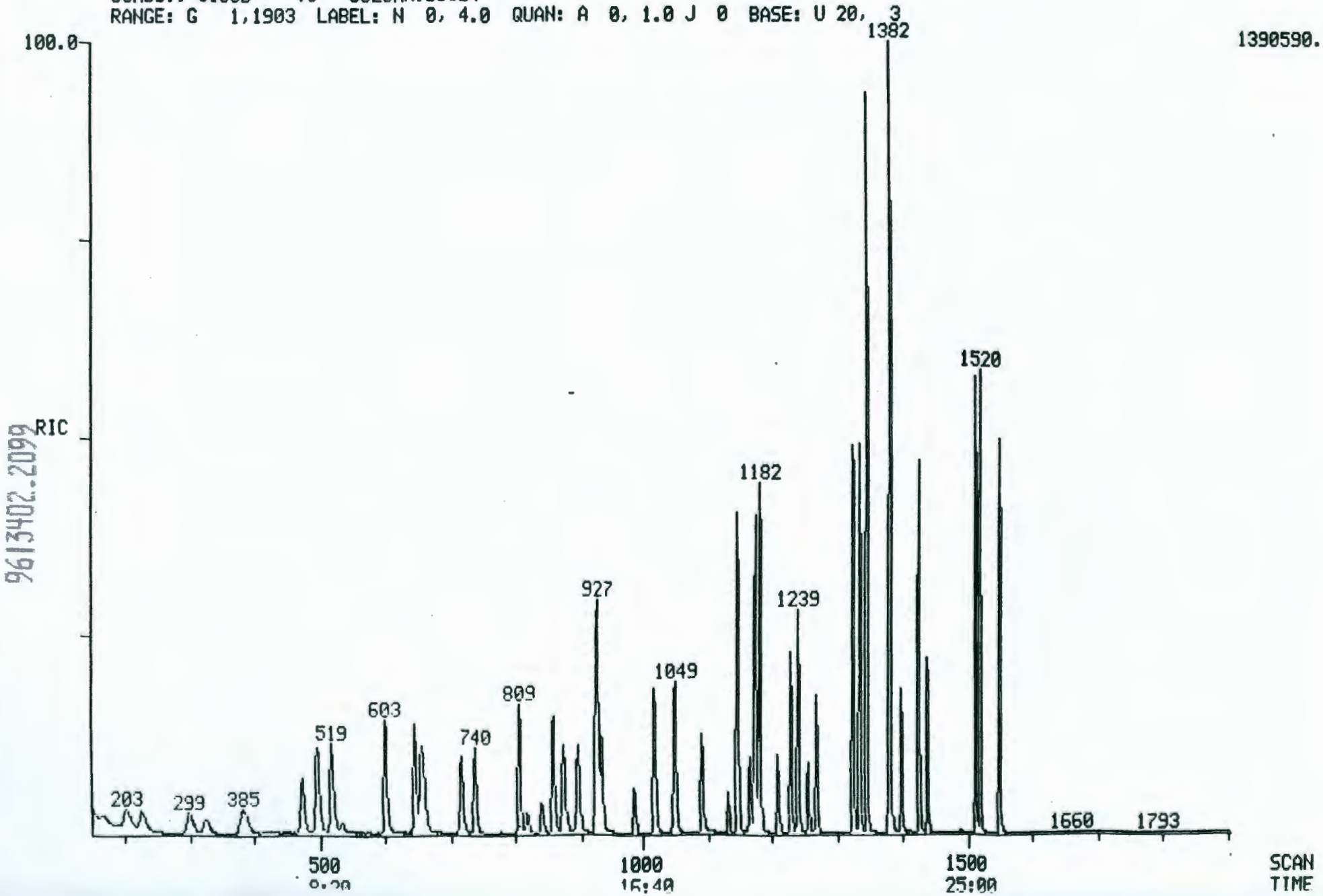
9613402.2098

et(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
4:01	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
5:26	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2:01	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
5:23	1.00	0.936	1.00	100.00	100.00	0.500	0.500	1.00
7:34	1.00	0.889	1.00	100.00	100.00	1.427	1.427	1.00
3:45	1.00	1.079	1.00	100.00	100.00	0.619	0.619	1.00
3:21	1.00	0.239	1.00	100.00	100.00	2.098	2.098	1.00
3:46	1.00	0.269	1.00	100.00	100.00	1.742	1.742	1.00
4:57	1.00	0.353	1.00	100.00	100.00	1.345	1.345	1.00
5:23	1.00	0.384	1.00	100.00	100.00	1.065	1.065	1.00
6:23	1.00	0.455	1.00	100.00	100.00	3.244	3.244	1.00
8:11	1.00	0.584	1.00	100.00	100.00	0.411	0.411	1.00
8:15	1.00	0.589	1.00	100.00	100.00	1.745	1.745	1.00
8:38	1.00	0.616	1.00	100.00	100.00	7.099	7.099	1.00
8:50	1.00	0.630	1.00	100.00	100.00	0.879	0.879	1.00
0:01	1.00	0.715	1.00	100.00	100.00	1.988	1.988	1.00
0:46	1.00	0.768	1.00	100.00	100.00	1.694	1.694	1.00
0:54	1.00	0.778	1.00	100.00	100.00	0.850	0.850	1.00
0:55	1.00	0.779	1.00	100.00	100.00	3.596	3.596	1.00
1:57	1.00	0.853	1.00	100.00	100.00	3.808	3.808	1.00
2:19	1.00	0.879	1.00	100.00	100.00	6.522	6.522	1.00
3:27	1.00	0.960	1.00	100.00	100.00	2.013	2.013	1.00
3:38	1.00	0.973	1.00	100.00	100.00	0.150	0.150	1.00
4:18	1.00	1.020	1.00	100.00	100.00	3.483	3.483	1.00
4:34	1.00	1.039	1.00	100.00	100.00	2.594	2.594	1.00
4:56	1.00	1.065	1.00	100.00	100.00	2.413	2.413	1.00
5:26	1.00	0.939	1.00	100.00	100.00	1.223	1.223	1.00
5:33	1.00	0.946	1.00	100.00	100.00	0.568	0.568	1.00
6:57	1.00	1.031	1.00	100.00	100.00	0.305	0.305	1.00
7:28	1.00	1.063	1.00	100.00	100.00	0.382	0.382	1.00
8:09	1.00	1.104	1.00	100.00	100.00	0.472	0.472	1.00
8:51	1.00	1.147	1.00	100.00	100.00	0.049	0.049	1.00
9:05	1.00	0.867	1.00	162.00	162.00	0.662	0.662	1.00
9:26	1.00	0.883	1.00	100.00	100.00	0.502	0.502	1.00
9:41	1.00	0.894	1.00	100.00	100.00	0.930	0.930	1.00
0:09	1.00	0.915	1.00	38.00	38.00	0.569	0.569	1.00
0:28	1.00	0.930	1.00	100.00	100.00	0.311	0.311	1.00
0:39	1.00	0.938	1.00	100.00	100.00	0.342	0.342	1.00
1:07	1.00	0.959	1.00	100.00	100.00	0.458	0.458	1.00
0:55	1.00	0.950	1.00	100.00	100.00	0.368	0.368	1.00
2:04	1.00	1.002	1.00	100.00	100.00	0.986	0.986	1.00
2:14	1.00	1.010	1.00	100.00	100.00	0.495	0.495	1.00
2:25	1.00	1.018	1.00	200.00	200.00	0.763	0.763	1.00
3:00	1.00	1.045	1.00	100.00	100.00	0.733	0.733	1.00
3:02	1.00	1.046	1.00	100.00	100.00	1.329	1.329	1.00
3:19	1.00	1.059	1.00	100.00	100.00	0.385	0.385	1.00
3:58	1.00	1.089	1.00	100.00	100.00	0.439	0.439	1.00
5:13	1.00	1.145	1.00	100.00	100.00	0.892	0.892	1.00
5:20	1.00	1.151	1.00	100.00	100.00	0.943	0.943	1.00
5:52	1.00	1.175	1.00	100.00	100.00	0.806	0.806	1.00

RIC
03/04/93 14:48:00
SAMPLE: VSTD200 LOW WATER ICAL
CONDS.: 5100B VO COLUMN:DB624
RANGE: G 1,1903 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: B030409 #1
CALI: B030409 #2

SCANS 150 TO 1903



9613402.2099

9613402.2100

No	Name	
48	26B	1,3-DICHLOROBENZENE
49	27B	1,4-DICHLOROBENZENE
50	25B	1,2-DICHLOROBENZENE

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount		%Tot
1	128	842	14:02	1	1.000	A BB	24096.	50.000	UG/L	0.50
2	114	987	16:27	2	1.000	A BB	130095.	50.000	UG/L	0.50
3	117	1322	22:02	3	1.000	A BB	119498.	50.000	UG/L	0.50
4	65	924	15:24	2	0.936	A BV	256350.	200.000	UG/L	2.01
5	98	1174	19:34	3	0.888	A BB	671843.	200.000	UG/L	2.01
6	95	1426	23:46	3	1.079	A BV	350018.	200.000	UG/L	2.01
7	50	204	3:24	1	0.242	A BB	176990.	200.000	UG/L	2.01
8	62	228	3:48	1	0.271	A BB	150928.	200.000	UG/L	2.01
9	94	299	4:59	1	0.355	A BB	117029.	200.000	UG/L	2.01
10	64	325	5:25	1	0.386	A BB	84378.	200.000	UG/L	2.01
11	101	385	6:25	1	0.457	A BB	189939.	200.000	UG/L	2.01
12	56	495	8:15	1	0.588	A BB	35207.	200.000	UG/L	2.01
13	96	497	8:17	1	0.590	A BB	156055.	200.000	UG/L	2.01
14	76	519	8:39	1	0.616	A BB	634051.	200.000	UG/L	2.01
15	43	535	8:55	1	0.635	A BB	71947.	200.000	UG/L	2.01
16	84	603	10:03	1	0.716	A BB	172862.	200.000	UG/L	2.01
17	96	648	10:48	1	0.770	A BB	160397.	200.000	UG/L	2.01
18	53	656	10:56	1	0.779	A BB	80324.	200.000	UG/L	2.01
19	73	659	10:59	1	0.783	A BB	341450.	200.000	UG/L	2.01
20	63	718	11:58	1	0.853	A BB	363655.	200.000	UG/L	2.01
21	43	740	12:20	1	0.879	A BB	614676.	200.000	UG/L	2.01
22	96	809	13:29	1	0.961	A BB	190969.	200.000	UG/L	2.01
23	72	820	13:40	1	0.974	A BB	14565.	200.000	UG/L	2.01
24	83	860	14:20	1	1.021	A BB	326782.	200.000	UG/L	2.01
25	97	875	14:35	1	1.039	A BB	244464.	200.000	UG/L	2.01
26	117	897	14:57	1	1.065	A BB	216498.	200.000	UG/L	2.01
27	78	927	15:27	2	0.939	A BB	670679.	200.000	UG/L	2.01
28	62	934	15:34	2	0.946	A BB	284166.	200.000	UG/L	2.01
29	130	1018	16:58	2	1.031	A BV	164280.	200.000	UG/L	2.01
30	63	1049	17:29	2	1.063	A BB	212958.	200.000	UG/L	2.01
31	83	1090	18:10	2	1.104	A BB	237658.	200.000	UG/L	2.01
32	63	1131	18:51	2	1.146	A BB	52489.	200.000	UG/L	2.01
33	75	1146	19:06	3	0.867	A BB	524047.	323.999	UG/L	3.26
34	43	1166	19:26	3	0.882	A BV	247636.	200.000	UG/L	2.01
35	92	1182	19:42	3	0.894	A BB	452085.	200.000	UG/L	2.01
36	75	1210	20:10	3	0.915	A BB	106431.	76.000	UG/L	0.76
37	97	1229	20:29	3	0.930	A BV	159795.	200.000	UG/L	2.01
38	164	1239	20:39	3	0.937	A BB	163064.	200.000	UG/L	2.01
39	129	1268	21:08	3	0.959	A BB	221698.	200.000	UG/L	2.01
40	43	1255	20:55	3	0.949	A VB	184004.	200.000	UG/L	2.01
41	112	1324	22:04	3	1.002	A BB	481217.	200.000	UG/L	2.01
42	106	1334	22:14	3	1.009	A BV	256259.	200.000	UG/L	2.01
43	106	1345	22:25	3	1.017	A VV	643330.	399.999	UG/L	4.02
44	106	1381	23:01	3	1.045	A VV	362728.	200.000	UG/L	2.01
45	104	1382	23:02	3	1.045	A BB	596433.	200.000	UG/L	2.01
46	173	1399	23:19	3	1.058	A BB	192035.	200.000	UG/L	2.01
47	83	1438	23:58	3	1.088	A BB	246877.	200.000	UG/L	2.01
48	146	1513	25:13	3	1.144	A BV	440752.	200.000	UG/L	2.01
49	146	1520	25:20	3	1.150	A VB	449250.	200.000	UG/L	2.01
50	146	1552	25:52	3	1.174	A BB	408768.	200.000	UG/L	2.01

Quantitation Report File: B030409

Data: B030409.TI
03/04/93 14:48:00
Sample: VSTD200 LOW WATER ICAL
Conds.: 5100B VO COLUMN: DB624
Formula: B030401 Instrument: 5100B Weight: 0.198
Submitted by: Analyst: JBS Acct. No.:

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
resp. fac. from Library Entry

No	Name		
1	IS1	BROMOCHLOROMETHANE	***INTERNAL STANDARD #1***
2	IS2	1,4-DIFLUOROBENZENE	***INTERNAL STANDARD #2***
3	IS3	CHLOROBENZENE D5	***INTERNAL STANDARD #3***
4	SS1	1,2-DICHLOROETHANE D4	***SURROGATE STANDARD #1***
5	SS2	TOLUENE D8	***SURROGATE STANDARD #2***
6	SS3	4-BROMOFLUOROBENZENE	***SURROGATE STANDARD #3***
7	45V	CHLOROMETHANE	
8	88V	VINYL CHLORIDE	
9	46V	BROMOMETHANE	
10	16V	CHLOROETHANE	
11	24H	TRICHLOROFLUOROMETHANE	
12	21H	ACROLEIN	
13	29V	1,1-DICHLOROETHYLENE	
14	15H	CARBON DISULFIDE	
15	13H	ACETONE	
16	44V	METHYLENE CHLORIDE	
17		1,2-DICHLOROETHENE (TOTAL)	
18	22H	ACRYLONITRILE	
19		METHYL-T-BUTYLETHER	
20	13V	1,1-DICHLOROETHANE	
21	19H	VINYL ACETATE	
22		CIS-1,2-DICHLOROETHENE	
23	14H	2-BUTANONE	
24	23V	CHLOROFORM	
25	11V	1,1,1-TRICHLOROETHANE	
26	6V	CARBON TETRACHLORIDE	
27	4V	BENZENE	
28	10V	1,2-DICHLOROETHANE	
29		TRICHLOROETHYLENE	
30	32V	1,2-DICHLOROPROPANE	
31	48V	BROMODICHLOROMETHANE	
32		2-CHLOROETHYLVINYLETHER	
33		CIS-1,3-DICHLOROPROPENE	
34		4-METHYL-2-PENTANONE	
35	86V	TOLUENE	
36		TRANS-1,3-DICHLOROPROPENE	
37	14V	1,1,2-TRICHLOROETHANE	
38	85V	TETRACHLOROETHYLENE	
39	51V	DIBROMOCHLOROMETHANE	
40		2-HEXANONE	
41	7V	CHLOROBENZENE	
42	38V	ETHYLBENZENE	
43		M-XYLENE / P-XYLENE	
44		XYLENES (TOTAL)	
45	18H	STYRENE	
46	47V	BROMOFORM	
47	15V	1,1,2,2-TETRACHLOROETHANE	

9613402.2102

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
1	14:02	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:27	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	22:02	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	15:24	1.00	0.936	1.00	200.00	200.00	0.493	0.493	1.00
5	19:34	1.00	0.888	1.00	200.00	200.00	1.406	1.406	1.00
6	23:46	1.00	1.079	1.00	200.00	200.00	0.732	0.732	1.00
7	3:24	1.00	0.242	1.00	200.00	200.00	1.836	1.836	1.00
8	3:48	1.00	0.271	1.00	200.00	200.00	1.566	1.566	1.00
9	4:59	1.00	0.355	1.00	200.00	200.00	1.214	1.214	1.00
10	5:25	1.00	0.386	1.00	200.00	200.00	0.875	0.875	1.00
11	6:25	1.00	0.457	1.00	200.00	200.00	1.971	1.971	1.00
12	8:15	1.00	0.588	1.00	200.00	200.00	0.365	0.365	1.00
13	8:17	1.00	0.590	1.00	200.00	200.00	1.619	1.619	1.00
14	8:39	1.00	0.616	1.00	200.00	200.00	6.578	6.578	1.00
15	8:55	1.00	0.635	1.00	200.00	200.00	0.746	0.746	1.00
16	10:03	1.00	0.716	1.00	200.00	200.00	1.793	1.793	1.00
17	10:48	1.00	0.770	1.00	200.00	200.00	1.664	1.664	1.00
18	10:56	1.00	0.779	1.00	200.00	200.00	0.833	0.833	1.00
19	10:59	1.00	0.783	1.00	200.00	200.00	3.543	3.543	1.00
20	11:58	1.00	0.853	1.00	200.00	200.00	3.773	3.773	1.00
21	12:20	1.00	0.879	1.00	200.00	200.00	6.377	6.377	1.00
22	13:29	1.00	0.961	1.00	200.00	200.00	1.981	1.981	1.00
23	13:40	1.00	0.974	1.00	200.00	200.00	0.151	0.151	1.00
24	14:20	1.00	1.021	1.00	200.00	200.00	3.390	3.390	1.00
25	14:35	1.00	1.039	1.00	200.00	200.00	2.536	2.536	1.00
26	14:57	1.00	1.065	1.00	200.00	200.00	2.246	2.246	1.00
27	15:27	1.00	0.939	1.00	200.00	200.00	1.289	1.289	1.00
28	15:34	1.00	0.946	1.00	200.00	200.00	0.546	0.546	1.00
29	16:58	1.00	1.031	1.00	200.00	200.00	0.316	0.316	1.00
30	17:29	1.00	1.063	1.00	200.00	200.00	0.409	0.409	1.00
31	18:10	1.00	1.104	1.00	200.00	200.00	0.457	0.457	1.00
32	18:51	1.00	1.146	1.00	200.00	200.00	0.101	0.101	1.00
33	19:06	1.00	0.867	1.00	324.00	324.00	0.677	0.677	1.00
34	19:26	1.00	0.882	1.00	200.00	200.00	0.518	0.518	1.00
35	19:42	1.00	0.894	1.00	200.00	200.00	0.946	0.946	1.00
36	20:10	1.00	0.915	1.00	76.00	76.00	0.586	0.586	1.00
37	20:29	1.00	0.930	1.00	200.00	200.00	0.334	0.334	1.00
38	20:39	1.00	0.937	1.00	200.00	200.00	0.341	0.341	1.00
39	21:08	1.00	0.959	1.00	200.00	200.00	0.464	0.464	1.00
40	20:55	1.00	0.949	1.00	200.00	200.00	0.385	0.385	1.00
41	22:04	1.00	1.002	1.00	200.00	200.00	1.007	1.007	1.00
42	22:14	1.00	1.009	1.00	200.00	200.00	0.536	0.536	1.00
43	22:25	1.00	1.017	1.00	400.00	400.00	0.673	0.673	1.00
44	23:01	1.00	1.045	1.00	200.00	200.00	0.759	0.759	1.00
45	23:02	1.00	1.045	1.00	200.00	200.00	1.248	1.248	1.00
46	23:19	1.00	1.058	1.00	200.00	200.00	0.402	0.402	1.00
47	23:58	1.00	1.088	1.00	200.00	200.00	0.516	0.516	1.00
48	25:13	1.00	1.144	1.00	200.00	200.00	0.922	0.922	1.00
49	25:20	1.00	1.150	1.00	200.00	200.00	0.940	0.940	1.00
50	25:52	1.00	1.174	1.00	200.00	200.00	0.855	0.855	1.00

9613402.2103

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9303L887

Instrument ID: 5100B Calibration Date: 03/19/93 Time: 1039

Lab File ID: B031904 Init. Calib. Date(s): 03/04/93 03/04/93

Heated Purge: (Y/N) N Init. Calib. Times: 1048 1448

GC Column: DB624 ID: .53(mm)

COMPOUND	RRF	RRF50	MIN RRF	%D	MAX %D
Chloromethane	2.456	2.320		5.5	
Bromomethane	1.571	1.510	0.100	3.9	25.0
Vinyl Chloride	2.165	2.066	0.100	4.6	25.0
Chloroethane	1.251	1.190		4.9	
Methylene Chloride	2.194	1.975		10.0	
Acetone	1.193	1.903		-59.5	
Carbon Disulfide	7.459	7.654		-2.6	
1,1-Dichloroethene	1.844	1.846	0.100	-0.1	25.0
1,1-Dichloroethane	3.992	4.148	0.200	-3.9	25.0
1,2-Dichloroethene (total)	1.790	1.837		-2.6	
Chloroform	3.568	3.739	0.200	-4.8	25.0
1,2-Dichloroethane	0.583	0.615	0.100	-5.5	25.0
2-Butanone	0.168	0.251		-49.4	
1,1,1-Trichloroethane	2.724	2.767	0.100	-1.6	25.0
Carbon Tetrachloride	2.519	2.491	0.100	1.1	25.0
Bromodichloromethane	0.466	0.469	0.200	-0.6	25.0
1,2-Dichloropropane	0.382	0.384		-0.5	
cis-1,3-Dichloropropene	0.657	0.646	0.200	1.7	25.0
Trichloroethene	0.310	0.305	0.300	1.6	25.0
Dibromochloromethane	0.447	0.402	0.100	10.1	25.0
1,1,2-Trichloroethane	0.310	0.290	0.100	6.5	25.0
Benzene	1.210	1.219	0.500	-0.7	25.0
trans-1,3-Dichloropropene	0.577	0.560	0.100	2.9	25.0
Bromoform	0.366	0.298	0.100	18.6	25.0
4-Methyl-2-pentanone	0.518	0.569		-9.8	
2-Hexanone	0.372	0.544		-46.2	
Tetrachloroethene	0.345	0.302	0.200	12.5	25.0
1,1,2,2-Tetrachloroethane	0.431	0.347	0.500	19.5	25.0
Toluene	0.877	0.883	0.400	-0.7	25.0
Chlorobenzene	0.954	0.935	0.500	2.0	25.0
Ethylbenzene	0.467	0.472	0.100	-1.1	25.0
Styrene	1.127	1.173	0.300	-4.1	25.0
Xylene (total)	0.643	0.657	0.300	-2.2	25.0
Toluene-d8	1.417	1.349		4.8	
Bromofluorobenzene	0.605	0.571	0.200	5.6	25.0
1,2-Dichloroethane-d4	0.538	0.514		4.5	

All other compounds must meet a minimum RRF of 0.010.

FORM VII VOA 3/90 Rev.

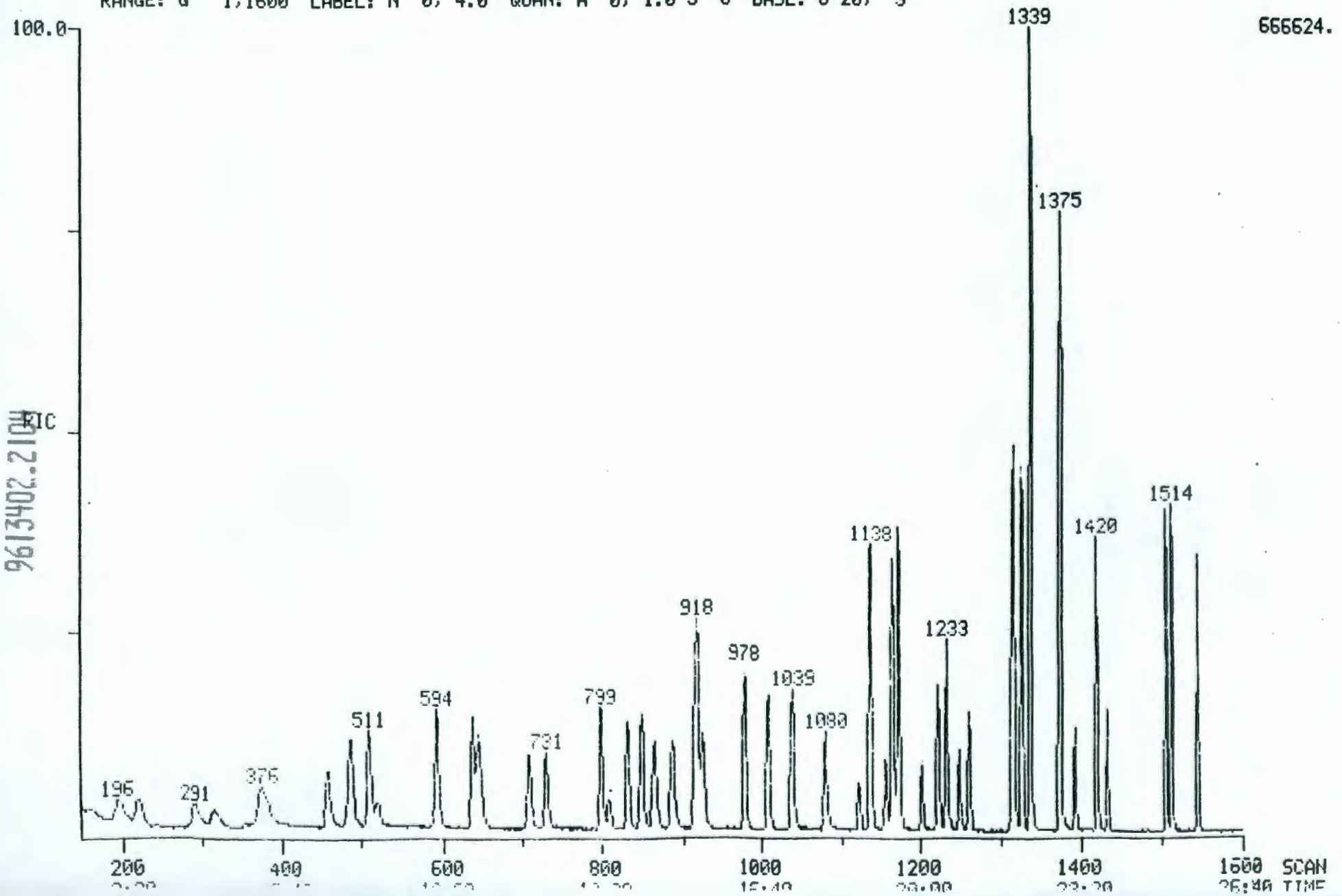
0051

RIC
03/19/93 10:39:00
SAMPLE: VSTD50 LOW WATER CCL
CONDS.: 5100B VO COLUMN:DB624
RANGE: G 1,1600 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: B031904 #1
CALI: B031904 #2

SCANS 150 TO 1600

0052



9613402.2104

Quantitation Report File: B031904

Data: B031904.TI
03/19/93 10:39:00
Sample: VSTD50 LOW WATER CCL
Conds.: 5100B VO COLUMN: DB624
Formula: B031902 Instrument: 5100B Weight: 0.212
Submitted by: Analyst: JBS Acct. No.:

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
Resp. fac. from Library Entry

No	Name		
1	IS1	BROMOCHLOROMETHANE	***INTERNAL STANDARD #1***
2	IS2	1,4-DIFLUOROBENZENE	***INTERNAL STANDARD #2***
3	IS3	CHLOROBENZENE D5	***INTERNAL STANDARD #3***
4	SS1	1,2-DICHLOROETHANE D4	***SURROGATE STANDARD #1***
5	SS2	TOLUENE D8	***SURROGATE STANDARD #2***
6	SS3	4-BROMOFLUOROBENZENE	***SURROGATE STANDARD #3***
7	45V	CHLOROMETHANE	
8	88V	VINYL CHLORIDE	
9	46V	BROMOMETHANE	
10	16V	CHLOROETHANE	
11	24H	TRICHLOROFLUOROMETHANE	
12	21H	ACROLEIN	
13	29V	1,1-DICHLOROETHYLENE	
14	15H	CARBON DISULFIDE	
15	13H	ACETONE	
16	44V	METHYLENE CHLORIDE	
17		1,2-DICHLOROETHENE (TOTAL)	
18	22H	ACRYLONITRILE	
19		METHYL-T-BUTYLETHER	
20	13V	1,1-DICHLOROETHANE	
21	19H	VINYL ACETATE	
22		CIS-1,2-DICHLOROETHENE	
23	14H	2-BUTANONE	
24	23V	CHLOROFORM	
25	11V	1,1,1-TRICHLOROETHANE	
26	6V	CARBON TETRACHLORIDE	
27	4V	BENZENE	
28	10V	1,2-DICHLOROETHANE	
29		TRICHLOROETHYLENE	
30	32V	1,2-DICHLOROPROPANE	
31	48V	BROMODICHLOROMETHANE	
32		2-CHLOROETHYLVINYLETHER	
33		CIS-1,3-DICHLOROPROPENE	
34		4-METHYL-2-PENTANONE	
35	86V	TOLUENE	
36		TRANS-1,3-DICHLOROPROPENE	
37	14V	1,1,2-TRICHLOROETHANE	
38	85V	TETRACHLOROETHYLENE	
39	51V	DIBROMOCHLOROMETHANE	
40		2-HEXANONE	
41	7V	CHLOROBENZENE	
42	38V	ETHYLBENZENE	
43		M-XYLENE / P-XYLENE	
44		XYLENES (TOTAL)	
45	18H	STYRENE	
46	47V	BROMOFORM	
47	15V	1,1,2,2-TETRACHLOROETHANE	

9613402.2106

No	Name	
48	26B	1,3-DICHLOROBENZENE
49	27B	1,4-DICHLOROBENZENE
50	25B	1,2-DICHLOROBENZENE

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	833	13:53	1	1.000	A BV	38924.	50.000 UG/L	1.92
2	114	978	16:18	2	1.000	A BB	221102.	50.000 UG/L	1.92
3	117	1316	21:56	3	1.000	A BV	190400.	50.000 UG/L	1.92
4	65	915	15:15	2	0.936	A BV	113549.	50.000 UG/L	1.92
5	98	1167	19:27	3	0.887	A BB	256828.	50.000 UG/L	1.92
6	95	1420	23:40	3	1.079	A BV	108678.	50.000 UG/L	1.92
7	50	197	3:17	1	0.236	A BB	90284.	50.000 UG/L	1.92
8	62	221	3:41	1	0.265	A BB	80409.	50.000 UG/L	1.92
9	94	291	4:51	1	0.349	A BB	58773.	50.000 UG/L	1.92
10	64	317	5:17	1	0.381	A BB	46307.	50.000 UG/L	1.92
11	101	376	6:16	1	0.451	A BB	128172.	50.000 UG/L	1.92
12	56	484	8:04	1	0.581	A BB	16518.	50.000 UG/L	1.92
13	96	488	8:08	1	0.586	A BB	71859.	50.000 UG/L	1.92
14	76	511	8:31	1	0.613	A BB	297936.	50.000 UG/L	1.92
15	43	521	8:41	1	0.625	A BB	74071.	50.000 UG/L	1.92
16	84	594	9:54	1	0.713	A BB	76868.	50.000 UG/L	1.92
17	96	638	10:38	1	0.766	A BB	71485.	50.000 UG/L	1.92
18	53	646	10:46	1	0.776	A BB	36204.	50.000 UG/L	1.92
19	73	647	10:47	1	0.777	A BB	144276.	50.000 UG/L	1.92
20	63	709	11:49	1	0.851	A BB	161472.	50.000 UG/L	1.92
21	43	731	12:11	1	0.878	A BB	243843.	50.000 UG/L	1.92
22	96	799	13:19	1	0.959	A BB	81839.	50.000 UG/L	1.92
23	72	810	13:30	1	0.972	A BB	9754.	50.000 UG/L	1.92
24	83	850	14:10	1	1.020	A BB	145532.	50.000 UG/L	1.92
25	97	866	14:26	1	1.040	A BB	107684.	50.000 UG/L	1.92
26	117	888	14:48	1	1.066	A BB	96951.	50.000 UG/L	1.92
27	78	918	15:18	2	0.939	A BB	269512.	50.000 UG/L	1.92
28	62	925	15:25	2	0.946	A BB	135957.	50.000 UG/L	1.92
29	130	1009	16:49	2	1.032	A BB	67487.	50.000 UG/L	1.92
30	63	1039	17:19	2	1.062	A BB	84914.	50.000 UG/L	1.92
31	83	1080	18:00	2	1.104	A BB	103655.	50.000 UG/L	1.92
32	63	1123	18:43	2	1.148	A BB	26274.	50.000 UG/L	1.92
33	75	1138	18:58	3	0.865	A BB	199363.	81.000 UG/L	3.12
34	43	1158	19:18	3	0.880	A BV	108291.	50.000 UG/L	1.92
35	92	1174	19:34	3	0.892	A BB	168128.	50.000 UG/L	1.92
36	75	1202	20:02	3	0.913	A BB	40486.	19.000 UG/L	0.73
37	97	1222	20:22	3	0.929	A BV	55188.	50.000 UG/L	1.92
38	164	1232	20:32	3	0.936	A BB	57500.	50.000 UG/L	1.92
39	129	1261	21:01	3	0.958	A BB	76620.	50.000 UG/L	1.92
40	43	1248	20:48	3	0.948	A BB	103655.	50.000 UG/L	1.92
41	112	1318	21:58	3	1.002	A BB	177939.	50.000 UG/L	1.92
42	106	1328	22:08	3	1.009	A BV	89908.	50.000 UG/L	1.92
43	106	1339	22:19	3	1.017	A VB	269444.	100.000 UG/L	3.85
44	106	1375	22:55	3	1.045	A BB	125114.	50.000 UG/L	1.92
45	104	1376	22:56	3	1.046	A BV	223406.	50.000 UG/L	1.92
46	173	1393	23:13	3	1.059	A BB	56661.	50.000 UG/L	1.92
47	83	1433	23:53	3	1.089	A BB	66114.	50.000 UG/L	1.92
48	146	1507	25:07	3	1.145	A BV	138750.	50.000 UG/L	1.92
49	146	1514	25:14	3	1.150	A VB	140845.	50.000 UG/L	1.92
50	146	1546	25:46	3	1.175	A BB	122961.	50.000 UG/L	1.92

9613402.2107

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R. Fac	R. Fac(L)	Ratio
1	13:53	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:18	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	21:56	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	15:15	1.00	0.936	1.00	50.00	50.00	0.514	0.514	1.00
5	19:27	1.00	0.887	1.00	50.00	50.00	1.349	1.349	1.00
6	23:40	1.00	1.079	1.00	50.00	50.00	0.571	0.571	1.00
7	3:17	1.00	0.236	1.00	50.00	50.00	2.320	2.320	1.00
8	3:41	1.00	0.265	1.00	50.00	50.00	2.066	2.066	1.00
9	4:51	1.00	0.349	1.00	50.00	50.00	1.510	1.510	1.00
10	5:17	1.00	0.381	1.00	50.00	50.00	1.190	1.190	1.00
11	6:16	1.00	0.451	1.00	50.00	50.00	3.293	3.293	1.00
12	8:04	1.00	0.581	1.00	50.00	50.00	0.424	0.424	1.00
13	8:08	1.00	0.586	1.00	50.00	50.00	1.846	1.846	1.00
14	8:31	1.00	0.613	1.00	50.00	50.00	7.654	7.654	1.00
15	8:41	1.00	0.625	1.00	50.00	50.00	1.903	1.903	1.00
16	9:54	1.00	0.713	1.00	50.00	50.00	1.975	1.975	1.00
17	10:38	1.00	0.766	1.00	50.00	50.00	1.837	1.837	1.00
18	10:46	1.00	0.776	1.00	50.00	50.00	0.930	0.930	1.00
19	10:47	1.00	0.777	1.00	50.00	50.00	3.707	3.707	1.00
20	11:49	1.00	0.851	1.00	50.00	50.00	4.148	4.148	1.00
21	12:11	1.00	0.878	1.00	50.00	50.00	6.265	6.265	1.00
22	13:19	1.00	0.959	1.00	50.00	50.00	2.103	2.103	1.00
23	13:30	1.00	0.972	1.00	50.00	50.00	0.251	0.251	1.00
24	14:10	1.00	1.020	1.00	50.00	50.00	3.739	3.739	1.00
25	14:26	1.00	1.040	1.00	50.00	50.00	2.767	2.767	1.00
26	14:48	1.00	1.066	1.00	50.00	50.00	2.491	2.491	1.00
27	15:18	1.00	0.939	1.00	50.00	50.00	1.219	1.219	1.00
28	15:25	1.00	0.946	1.00	50.00	50.00	0.615	0.615	1.00
29	16:49	1.00	1.032	1.00	50.00	50.00	0.305	0.305	1.00
30	17:19	1.00	1.062	1.00	50.00	50.00	0.384	0.384	1.00
31	18:00	1.00	1.104	1.00	50.00	50.00	0.469	0.469	1.00
32	18:43	1.00	1.148	1.00	50.00	50.00	0.119	0.119	1.00
33	18:58	1.00	0.865	1.00	81.00	81.00	0.646	0.646	1.00
34	19:18	1.00	0.880	1.00	50.00	50.00	0.569	0.569	1.00
35	19:34	1.00	0.892	1.00	50.00	50.00	0.883	0.883	1.00
36	20:02	1.00	0.913	1.00	19.00	19.00	0.560	0.560	1.00
37	20:22	1.00	0.929	1.00	50.00	50.00	0.290	0.290	1.00
38	20:32	1.00	0.936	1.00	50.00	50.00	0.302	0.302	1.00
39	21:01	1.00	0.958	1.00	50.00	50.00	0.402	0.402	1.00
40	20:48	1.00	0.948	1.00	50.00	50.00	0.544	0.544	1.00
41	21:58	1.00	1.002	1.00	50.00	50.00	0.935	0.935	1.00
42	22:08	1.00	1.009	1.00	50.00	50.00	0.472	0.472	1.00
43	22:19	1.00	1.017	1.00	100.00	100.00	0.708	0.708	1.00
44	22:55	1.00	1.045	1.00	50.00	50.00	0.657	0.657	1.00
45	22:56	1.00	1.046	1.00	50.00	50.00	1.173	1.173	1.00
46	23:13	1.00	1.059	1.00	50.00	50.00	0.298	0.298	1.00
47	23:53	1.00	1.089	1.00	50.00	50.00	0.347	0.347	1.00
48	25:07	1.00	1.145	1.00	50.00	50.00	0.729	0.729	1.00
49	25:14	1.00	1.150	1.00	50.00	50.00	0.740	0.740	1.00
50	25:46	1.00	1.175	1.00	50.00	50.00	0.646	0.646	1.00

9613402.2108

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9303L887

Lab File ID (Standard): B031904 Date Analyzed: 03/19/93

Instrument ID: 5100B Time Analyzed: 1039

GC Column: DB624 ID: .53(mm) Heated Purge: (Y/N) N

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	38924	13.88	221102	16.30	190400	21.93
	UPPER LIMIT	77848	14.38	442204	16.80	380800	22.43
	LOWER LIMIT	19462	13.38	110551	15.80	95200	21.43
	CLIENT SAMPLE NO.						
01	B086S1	23346	13.88	146130	16.30	113331	21.93
02	B086S1MS	25680	13.90	150762	16.32	125651	21.93
03	B086S1MSD	25727	13.87	151425	16.30	123907	21.93
04	VBLKLVB066-MB1	29910	13.87	170536	16.28	135676	21.92

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

V. Raw QC Data Package

A. GC/MS Tuning and Calibration Standard: DFTPP

1. Bar Graph
2. Mass Listing

B. Blank Data

1. Tabulated Results (Form 1)
2. TIC Results (Form 1B)
3. Raw Data
   a. Reconstructed Ion Chromatogram(s) and Quantitation Report(s)
   b. HSL Spectra
   c. TIC Spectra
   d. GC/MS Library Search for TIC

C. Matrix Spike Data (if applicable)

1. Tabulated Results (Form 1)
2. Raw Data
   a. Reconstructed Ion Chromatogram(s)
   b. Quantitation Report(s)

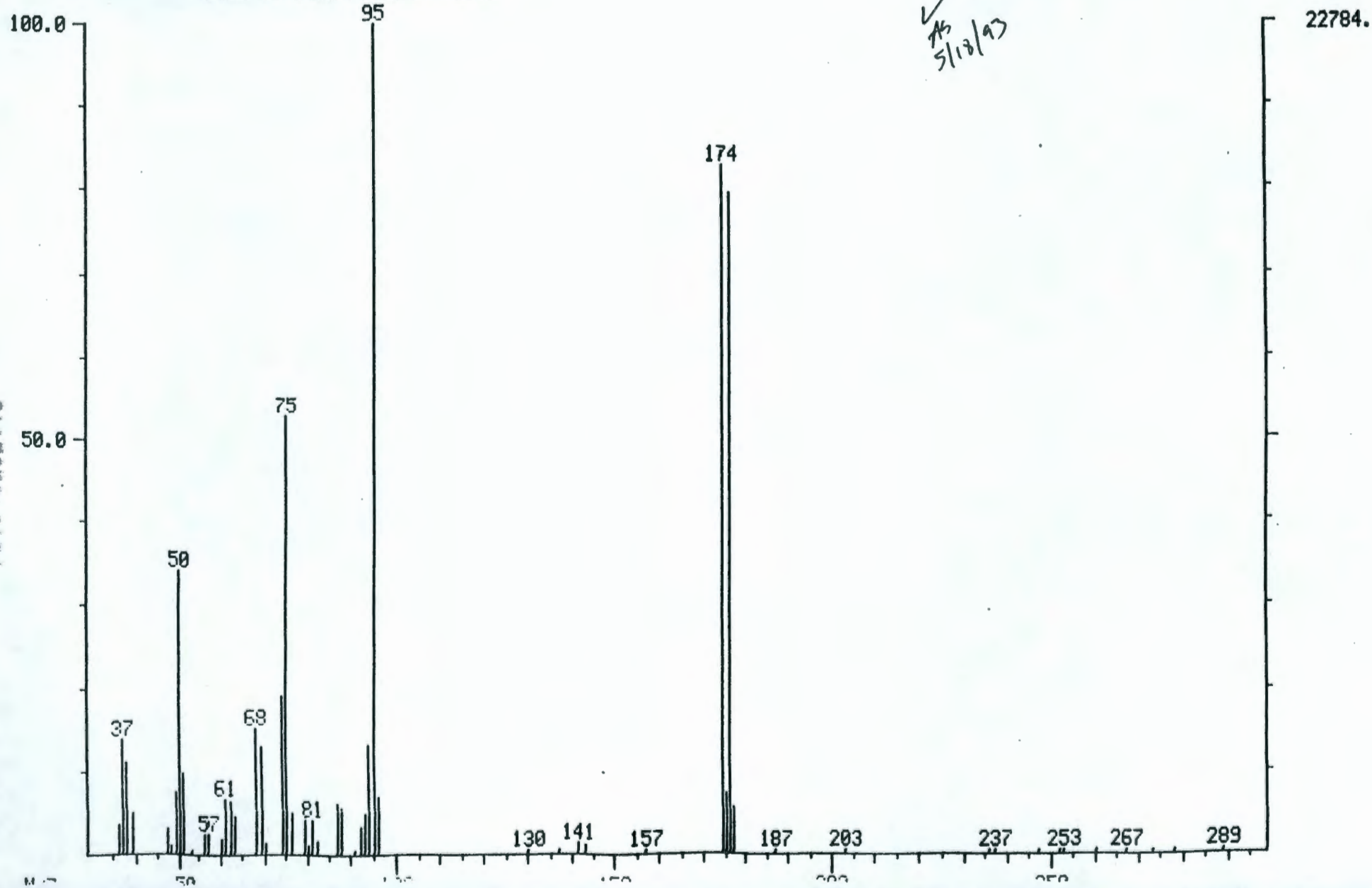
MASS SPECTRUM
03/04/93 8:58:00 + 6:54
SAMPLE: BFB 50 NG TUNE
CONDS.: 5100B BF COLUMN:DB624
GC TEMP: 195 DEG. C
#413 TO #415 SUMMED - #212

DATA: B030401 #414
CALI: B030401 #2

BASE M/Z: 95
RIC: 127104.

0058

✓ AS 5/13/93



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9613402.21H

Mass List Data: B030401 # 414 Base m/z: 95
03/04/93 8:58:00 + 6:54 Cali: B030401 # 2 RIC: 127104.
Sample: BFB 50 NG TUNE
Conds.: 5100B BF COLUMN: DB624
#413 to #415 summed - #212

36 0.00 0.00 0. Minima Min Inten: 103.
289 Maxima # 0

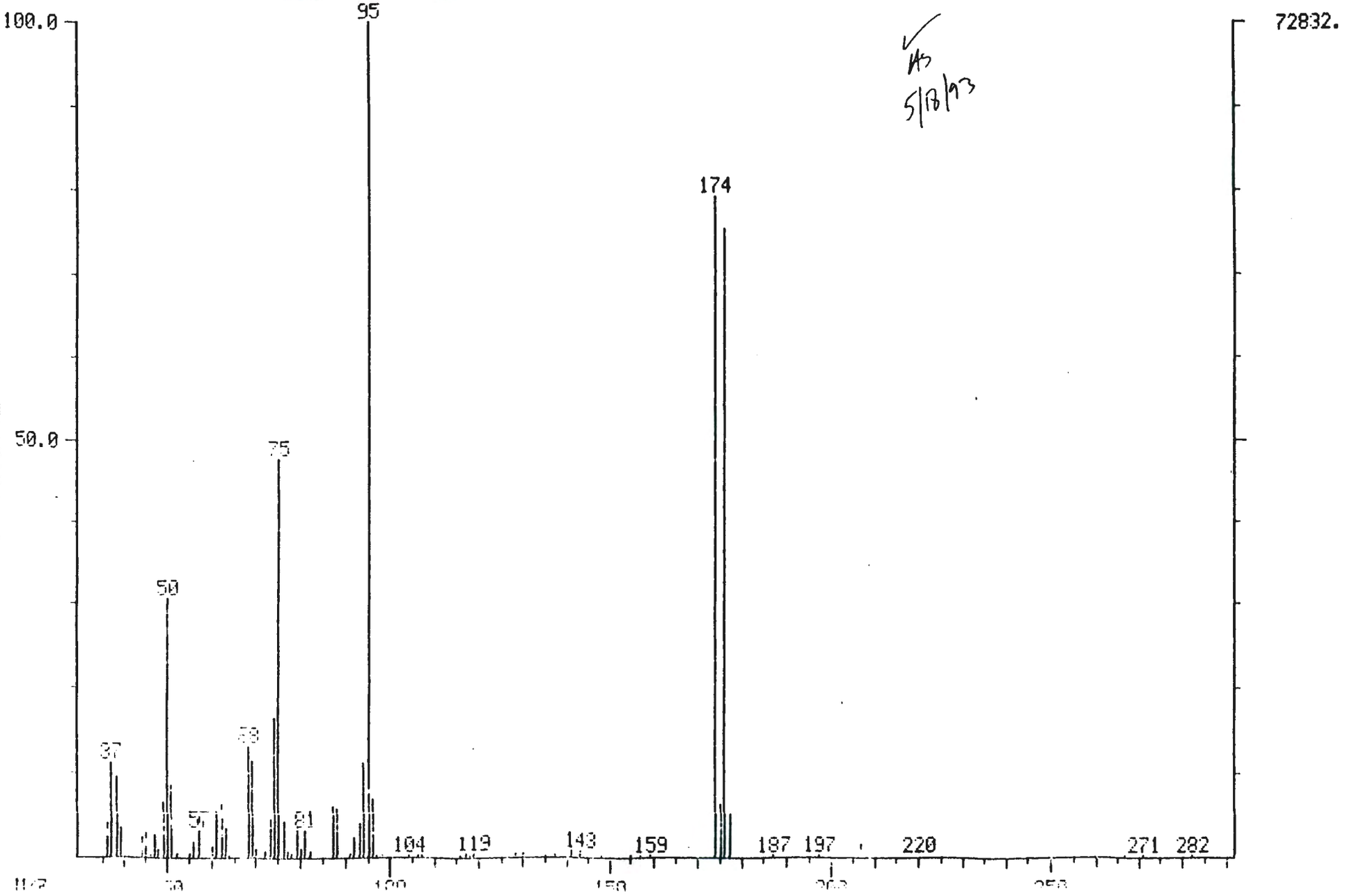
Mass		% RA	% RIC	Inten.
35.99?		3.45	0.62	787.
36.99?		13.74	2.46	3131.
37.99?		11.00	1.97	2507.
38.99?		5.10	0.91	1163.
46.99?		2.96	0.53	675.
47.99?		1.16	0.21	265.
48.99?		7.47	1.34	1701.
50.00?		33.98	6.09	7743.
50.99?		9.67	1.73	2203.
52.99?		0.63	0.11	144.
55.99?		2.52	0.45	573.
56.99?	S	2.55	0.45	580.
59.99?		1.84	0.33	420.
60.99?		6.68	1.19	1521.
61.99?		6.25	1.12	1425.
62.99?		4.67	0.83	1065.
67.99?		15.06	2.70	3431.
68.99		12.86	2.30	2931.
69.99		1.29	0.23	294.
73.99		19.17	3.43	4368.
75.00		52.66	9.44	11999.
75.99		4.93	0.88	1123.
78.99		4.15	0.74	947.
79.99		1.05	0.19	240.
80.99		4.27	0.76	973.
81.99		1.54	0.27	351.
86.99		5.98	1.07	1363.
87.99		5.58	1.00	1271.
90.99		0.45	0.08	103.
91.99		3.22	0.57	734.
92.99		4.86	0.87	1107.
93.99		13.39	2.40	3051.
94.99		100.00	17.92	22783.
95.99		7.04	1.26	1603.
129.99		0.50	0.09	114.
136.99		0.48	0.08	109.
140.99		1.24	0.22	284.
142.99		0.99	0.17	226.
156.99		0.48	0.08	109.
173.99	S	82.72	14.82	18847.
174.99		7.17	1.28	1633.
175.99		79.35	14.22	18079.
176.99		5.52	0.99	1257.
202.99		0.64	0.11	146.
235.99		0.46	0.08	105.
236.99		0.50	0.09	113.
252.99		0.48	0.08	110.
259.99		0.48	0.08	110.
272.99		0.46	0.08	105.
288.99		0.60	0.10	136.

✓ HS
5/18/93

MASS SPECTRUM
03/19/93 9:25:00 + 6:50
SAMPLE: BFB 50 NG TUNE
CONDS.: 5100B BF COLUMN:DB624
GC TEMP: 194 DEG. C
#409 TO #411 SUMMED - #400

DATA: B031902 #410
CALI: B031902 #2

BASE M/Z: 95
RIC: 379904.



✓ MS 5/18/93

96B402.2112

0060

9613402.2113

Mass List Data: B031902 # 410 Base m/z: 95
03/19/93 9:25:00 + 6:50 Cali: B031902 # 2 RIC: 379904.
Sample: BFB 50 NG TUNE
Conds.: 5100B BF COLUMN: DB624
#409 to #411 summed - #400

36 0.00 0.00 0. Minima Min Inten: 323.
282 Maxima # 0

Mass		% RA	% RIC	Inten.
35.99?	S	2.37	0.45	1725.
36.99?		11.06	2.12	8056.
37.99?		9.35	1.79	6816.
38.99?		3.53	0.67	2571.
43.99?	S	0.84	0.16	615.
44.99?	S	1.32	0.25	961.
46.99?		2.90	0.55	2111.
47.99?		1.18	0.22	858.
48.99?		6.54	1.25	4768.
50.00?		30.62	5.87	22303.
50.99?		8.50	1.63	6192.
54.99?		0.46	0.09	340.
55.99?		2.02	0.38	1473.
56.99?	S	3.21	0.61	2343.
59.99?		1.46	0.28	1067.
60.99?		5.55	1.06	4047.
61.99?	S	4.76	0.91	3467.
62.99?		3.96	0.76	2887.
67.99?		12.94	2.48	9424.
68.99		11.27	2.16	8208.
69.99		1.02	0.19	746.
71.99		0.77	0.14	565.
72.99		4.68	0.89	3407.
73.99		16.19	3.10	11791.
75.00		47.89	9.18	34879.
75.99		4.41	0.84	3215.
76.99		0.94	0.18	683.
77.99		0.57	0.11	416.
78.99		3.24	0.62	2363.
79.99		1.15	0.22	837.
80.99		3.27	0.62	2387.
81.99		0.92	0.17	672.
86.99		6.11	1.17	4456.
87.99		5.85	1.12	4264.
90.99		0.65	0.12	475.
91.99		2.60	0.50	1895.
92.99		4.15	0.79	3023.
93.99		11.13	2.13	8112.
94.99		100.00	19.17	72821.
95.99		6.84	1.31	4984.
116.99		0.52	0.10	385.
118.99		0.60	0.11	442.
127.99		0.57	0.11	417.
129.99		0.57	0.11	416.
140.99		0.87	0.16	637.
142.99		0.92	0.17	670.
173.99		79.35	15.21	57791.
174.99		6.22	1.19	4536.
175.99		75.48	14.47	54975.
176.99		5.12	0.98	3731.

HS
5/18/93

0061

9613402.2114

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 93LVB066-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B031906

Level: (low/med) LOW

Date Received: 03/19/93

% Moisture: not dec.

Date Analyzed: 03/19/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	J
67-64-1	Acetone	5	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

✓ AS 5/18/93

FORM 1 VOA 3/90

9613402.2115

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 93LVB066-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B031906

Level: (low/med) LOW

Date Received: 03/19/93

% Moisture: not dec.

Date Analyzed: 03/19/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

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

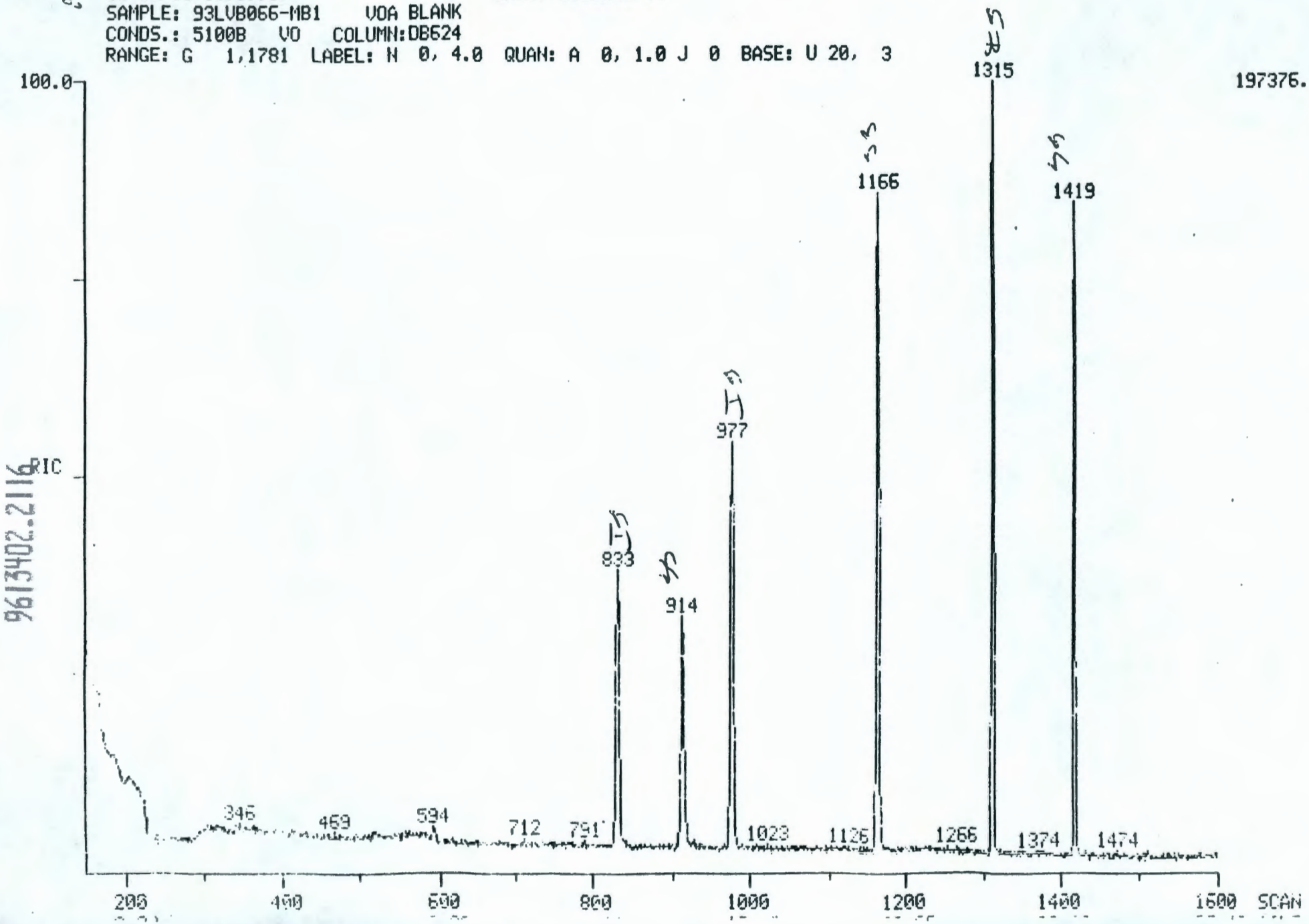
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 3/90

RIC
03/19/93 11:57:00
SAMPLE: 93LVB066-MB1 VOA BLANK
CONDS.: 5100B VO COLUMN:DB624
RANGE: G 1,1781 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: B031906 #1
CALI: B031906 #2

SCANS 150 TO 1600



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0064

9613402-2117

uantitation Report File: B031906

ata: B031906.TI
3/19/93 11:57:00
ample: 93LVB066-MB1 VOA BLANK
onds.: 5100B VO COLUMN: DB624
ormula: B031902 Instrument: 5100B Weight: 0.213
ubmitted by: Analyst: JBS Acct. No.:

MOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
esp. fac. from Library Entry

No	Name		
1	IS1	BROMOCHLOROMETHANE	***INTERNAL STANDARD #1***
2	IS2	1,4-DIFLUOROBENZENE	***INTERNAL STANDARD #2***
3	IS3	CHLOROBENZENE D5	***INTERNAL STANDARD #3***
4	SS1	1,2-DICHLOROETHANE D4	***SURROGATE STANDARD #1***
5	SS2	TOLUENE D8	***SURROGATE STANDARD #2***
6	SS3	4-BROMOFLUOROBENZENE	***SURROGATE STANDARD #3***
7	45V	CHLOROMETHANE	
8	88V	VINYL CHLORIDE	
9	46V	BROMOMETHANE	
10	16V	CHLOROETHANE	
11	24H	TRICHLOROFLUOROMETHANE	
12	21H	ACROLEIN	
13	29V	1,1-DICHLOROETHYLENE	
14	15H	CARBON DISULFIDE	
15	13H	ACETONE	
16	44V	METHYLENE CHLORIDE	
17		1,2-DICHLOROETHENE (TOTAL)	
18	22H	ACRYLONITRILE	
19		METHYL-T-BUTYLETHER	
20	13V	1,1-DICHLOROETHANE	
21	19H	VINYL ACETATE	
22		CIS-1,2-DICHLOROETHENE	
23	14H	2-BUTANONE	
24	23V	CHLOROFORM	
25	11V	1,1,1-TRICHLOROETHANE	
26	6V	CARBON TETRACHLORIDE	
27	4V	BENZENE	
28	10V	1,2-DICHLOROETHANE	
29		TRICHLOROETHYLENE	
30	32V	1,2-DICHLOROPROPANE	
31	48V	BROMODICHLOROMETHANE	
32		2-CHLOROETHYLVINYLETHER	
33		CIS-1,3-DICHLOROPROPENE	
34		4-METHYL-2-PENTANONE	
35	86V	TOLUENE	
36		TRANS-1,3-DICHLOROPROPENE	
37	14V	1,1,2-TRICHLOROETHANE	
38	85V	TETRACHLOROETHYLENE	
39	51V	DIBROMOCHLOROMETHANE	
40		2-HEXANONE	
41	7V	CHLOROBENZENE	
42	38V	ETHYLBENZENE	
43		M-XYLENE / P-XYLENE	
44		XYLENES (TOTAL)	
45	18H	STYRENE	
46	47V	BROMOFORM	
47	15V	1,1,2,2-TETRACHLOROETHANE	

9613402.2118

No	Name	
48	26B	1,3-DICHLOROBENZENE
49	27B	1,4-DICHLOROBENZENE
50	25B	1,2-DICHLOROBENZENE

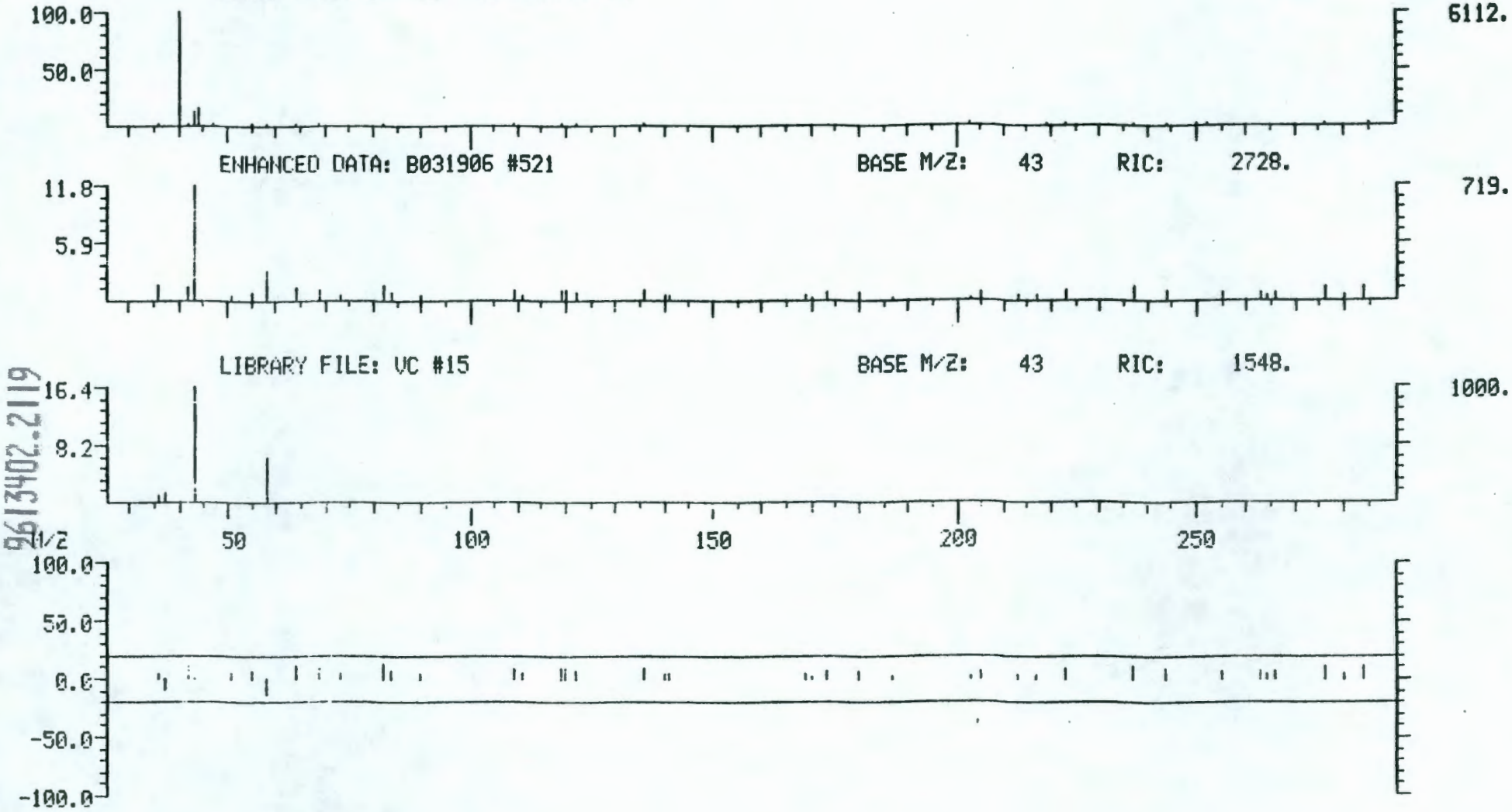
No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	832	13:52	1	1.000	A BB	29910.	50.000 UG/L	16.16
2	114	977	16:17	2	1.000	A BB	170536.	50.000 UG/L	16.16
3	117	1315	21:55	3	1.000	A BB	135676.	50.000 UG/L	16.16
4	65	914	15:14	2	0.936	A BB	95832.	54.711 UG/L	17.68
5	98	1166	19:26	3	0.887	A BB	183329.	50.087 UG/L	16.19
6	95	1419	23:39	3	1.079	A BB	68689.	44.348 UG/L	14.33
7	NOT FOUND								
8	NOT FOUND								
9	NOT FOUND								
10	NOT FOUND								
11	NOT FOUND								
12	NOT FOUND								
13	NOT FOUND								
14	NOT FOUND								
15	43	521	8:41	1	0.626	A BB	5943.	5.221 UG/L	1.69
16	84	594	9:54	1	0.714	A BB	3326.	2.815 UG/L	0.91
17	NOT FOUND								
18	NOT FOUND								
19	73	647	10:47	1	0.778	A*BB	1064.	0.480 UG/L	0.16
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	43	1248	20:48	3	0.949	A BB	217.	0.147 UG/L	0.05
41	112	1318	21:58	3	1.002	A BB	256.	0.101 UG/L	0.03
42	NOT FOUND								
43	NOT FOUND								
44	NOT FOUND								
45	104	1376	22:56	3	1.046	A BB	314.	0.099 UG/L	0.03
46	NOT FOUND								
47	83	1431	23:51	3	1.088	A BB	328.	0.348 UG/L	0.11
48	146	1506	25:06	3	1.145	A BB	530.	0.268 UG/L	0.09
49	146	1513	25:13	3	1.151	A BB	791.	0.394 UG/L	0.13
50	146	1545	25:45	3	1.175	A BB	722.	0.412 UG/L	0.13

4/2/93

TARGET COMPOUND COMPARISON

COMPOUND: 13H ACETONE

RAW DATA: B031906 #521 BASE M/Z: 40 RIC: 10432.
03/19/93 11:57
SAMPLE: 93LVB066-MB1 VOA BLANK
CONDS.: 5100B VO COLUMN:DB624



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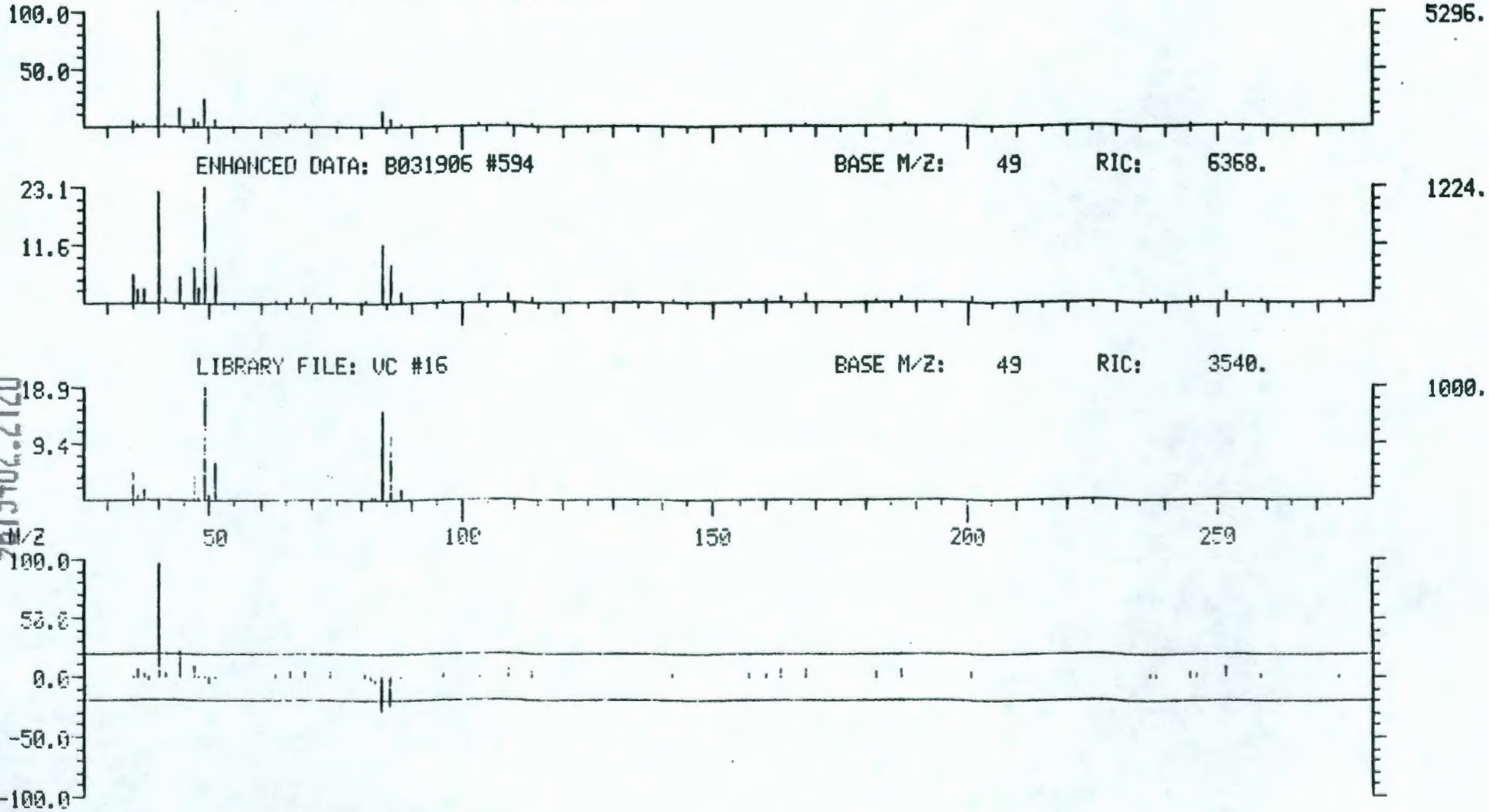
TARGET COMPOUND COMPARISON

COMPOUND: 44V METHYLENE CHLORIDE

RAW DATA: B031906 #594 BASE M/Z: 40 RIC: 11136.
03/19/93 11:57
SAMPLE: 93LVB066-MB1 VOA BLANK
CONDS.: 5100B VO COLUMN:DB624



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IA

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B086S1MS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9303L887-001 MS

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B031908

Level: (low/med) LOW

Date Received: 03/12/93

% Moisture: not dec.

Date Analyzed: 03/19/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	JB
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene		SP
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		SP
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene		SP
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		SP
108-90-7	Chlorobenzene		SP
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

SP: SPIKE COMPOUND

FORM 1 VOA

3/90

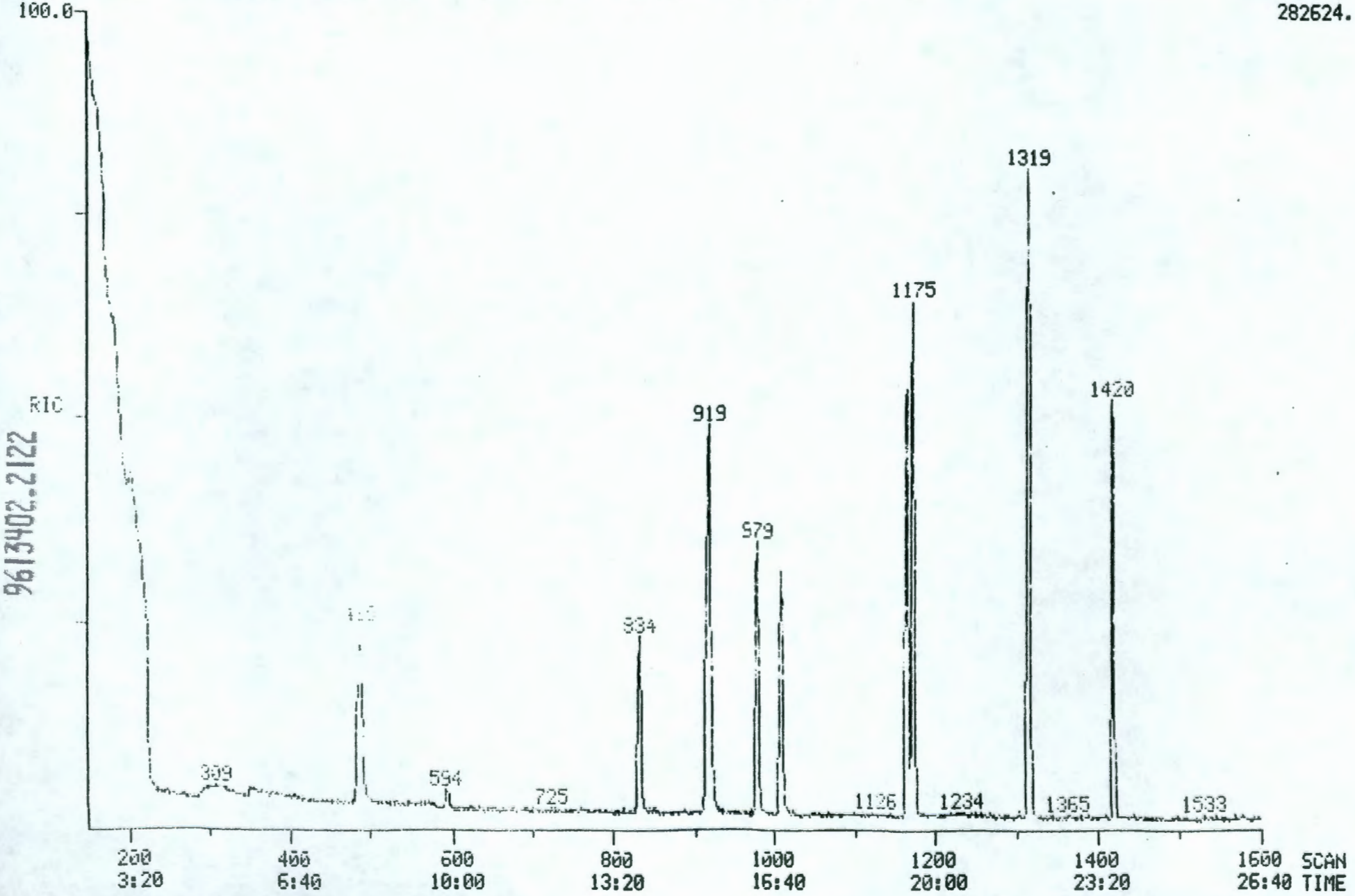
RIC
03/19/93 13:41:00
SAMPLE: 9303L887-001S WESTINGHOUSE 5.0ML
CONDS.: 5100B VO COLUMN:DB624
RANGE: G 1,1600 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: B031908 #1
CALI: B031908 #2

SCANS 150 TO 1600

007U

282624.



9613402.2122

Quantitation Report 9613402.2123 File B031908

Data: B031908.TI
03/19/93 13:41:00
Sample: 9303L887-001S WESTINGHOUSE 5.0ML
Conds.: 5100B VG COLUMN: DB624
Formula: B031902 Instrument: 5100B Weight: 0.213
Submitted by: Analyst: JBS Acct. No.:

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
Resp. fac. from Library Entry

No	Name		
1	IS1	BROMOCHLOROMETHANE	***INTERNAL STANDARD #1***
2	IS2	1,4-DIFLUOROBENZENE	***INTERNAL STANDARD #2***
3	IS3	CHLOROBENZENE D5	***INTERNAL STANDARD #3***
4	SS1	1,2-DICHLOROETHANE D4	***SURROGATE STANDARD #1***
5	SS2	TOLUENE D8	***SURROGATE STANDARD #2***
6	SS3	4-BROMOFLUOROBENZENE	***SURROGATE STANDARD #3***
7	45V	CHLOROMETHANE	
8	88V	VINYL CHLORIDE	
9	46V	BROMOMETHANE	
10	16V	CHLOROETHANE	
11	24H	TRICHLOROFLUOROMETHANE	
12	21H	ACROLEIN	
13	29V	1,1-DICHLOROETHYLENE	
14	15H	CARBON DISULFIDE	
15	13H	ACETONE	
16	44V	METHYLENE CHLORIDE	
17		1,2-DICHLOROETHENE (TOTAL)	
18	22H	ACRYLONITRILE	
19		METHYL-T-BUTYLETHER	
20	13V	1,1-DICHLOROETHANE	
21	19H	VINYL ACETATE	
22		CIS-1,2-DICHLOROETHENE	
23	14H	2-BUTANONE	
24	23V	CHLOROFORM	
25	11V	1,1,1-TRICHLOROETHANE	
26	6V	CARBON TETRACHLORIDE	
27	4V	BENZENE	
28	10V	1,2-DICHLOROETHANE	
29		TRICHLOROETHYLENE	
30	32V	1,2-DICHLOROPROPANE	
31	48V	BROMODICHLOROMETHANE	
32		2-CHLOROETHYLVINYLETHER	
33		CIS-1,3-DICHLOROPROPENE	
34		4-METHYL-2-PENTANONE	
35	86V	TOLUENE	
36		TRANS-1,3-DICHLOROPROPENE	
37	14V	1,1,2-TRICHLOROETHANE	
38	85V	TETRACHLOROETHYLENE	
39	51V	DIBROMOCHLOROMETHANE	
40		2-HEXANONE	
41	7V	CHLOROBENZENE	
42	38V	ETHYLBENZENE	
43		M-XYLENE / P-XYLENE	
44		XYLENES (TOTAL)	
45	18H	STYRENE	
46	47V	BROMOFORM	
47	15V	1,1,2,2-TETRACHLOROETHANE	

9613402.2124

No	Name
48	26B 1,3-DICHLOROBENZENE
49	27B 1,4-DICHLOROBENZENE
50	25B 1,2-DICHLOROBENZENE

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	834	13:54	1	1.000	A BB	25680.	50.000 UG/L	8.45
2	114	979	16:19	2	1.000	A BB	150762.	50.000 UG/L	8.45
3	117	1316	21:56	3	1.000	A BB	125651.	50.000 UG/L	8.45
4	65	916	15:16	2	0.936	M XX *	87673.	56.618 UG/L	9.56
5	98	1167	19:27	3	0.887	A BB	170149.	50.195 UG/L	8.48
6	95	1420	23:40	3	1.079	A BB	64102.	44.689 UG/L	7.55
7	NOT FOUND								
8	NOT FOUND								
9	NOT FOUND								
10	NOT FOUND								
11	NOT FOUND								
12	56	481	8:01	1	0.577	A BB	255.	1.170 UG/L	0.20 NT X
13	96	489	8:09	1	0.586	A BB	59190.	62.425 UG/L	10.54
14	NOT FOUND								
15	43	524	8:44	1	0.628	A BB	3293.	3.369 UG/L	0.57 X
16	84	595	9:55	1	0.713	A BB	5569.	5.491 UG/L	0.93
17	NOT FOUND								
18	NOT FOUND								
19	73	649	10:49	1	0.778	A VB	454.	0.238 UG/L	0.04
20	NOT FOUND								
21	NOT FOUND								
22	NOT FOUND								
23	NOT FOUND								
24	83	850	14:10	1	1.019	A BB	1384.	0.721 UG/L	0.12
25	NOT FOUND								
26	NOT FOUND								
27	78	919	15:19	2	0.939	A BB	207164.	56.365 UG/L	9.52
28	NOT FOUND								
29	130	1010	16:50	2	1.032	A BB	50005.	54.333 UG/L	9.18
30	NOT FOUND								
31	NOT FOUND								
32	NOT FOUND								
33	NOT FOUND								
34	NOT FOUND								
35	92	1175	19:35	3	0.893	A BB	116657.	52.570 UG/L	8.88
36	NOT FOUND								
37	NOT FOUND								
38	164	1232	20:32	3	0.936	A BB	522.	0.688 UG/L	0.12
39	NOT FOUND								
40	NOT FOUND								
41	112	1319	21:59	3	1.002	A BB	124955.	53.205 UG/L	8.99
42	NOT FOUND								
43	NOT FOUND								
44	NOT FOUND								
45	NOT FOUND								
46	NOT FOUND								
47	NOT FOUND								
48	NOT FOUND								
49	NOT FOUND								
50	NOT FOUND								

4/2/93

* Tailing cut in standard during TCA; Manually cut in sample. 3/19/93

9613402.2125

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B086S1MSD

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9303L887-001 MSD

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B031909

Level: (low/med) LOW

Date Received: 03/12/93

% Moisture: not dec.

Date Analyzed: 03/19/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	JB
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene		SP
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		SP
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene		SP
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		SP
108-90-7	Chlorobenzene		SP
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

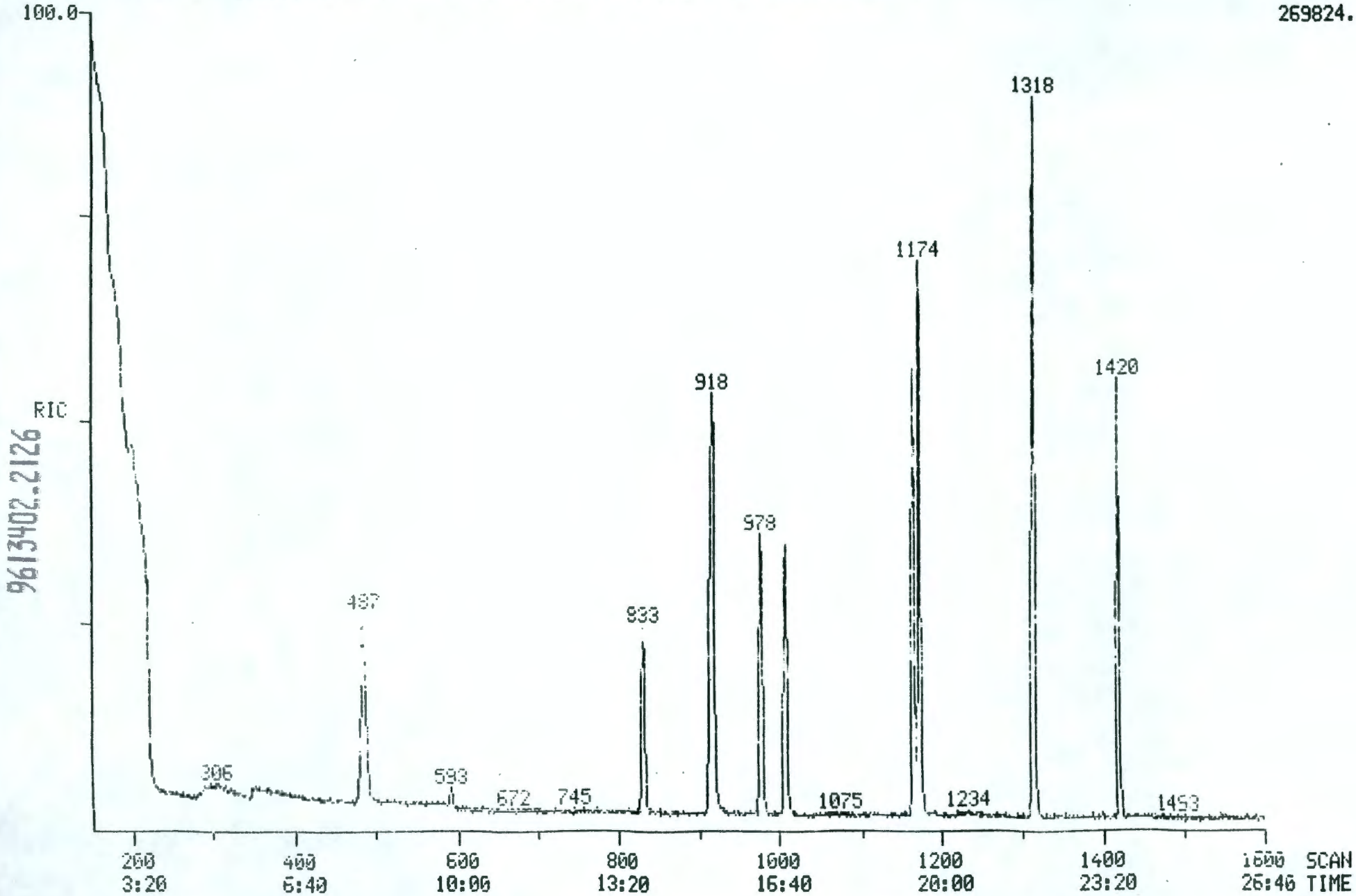
SP: SPIKE COMPOUND

FORM 1 VOA

3/90

0074

RIC DATA: B031909 #1 SCANS 150 TO 1600
03/19/93 14:17:00 CALI: B031909 #2
SAMPLE: 9303L887-001T WESTINGHOUSE 5.0ML
CONDS.: 5100B VO COLUMN:DB624
RANGE: G 1,1600 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



9613402.2126

Quantitation Report 9613402.2123 File: B031909

Data: B031909.TI
03/19/93 14:17:00
Sample: 9303L887-001T WESTINGHOUSE 5.0ML
Conds.. 5100B VU COLUMN: DB624
Formula: B031902 Instrument: 5100B Weight: 0.213
Submitted by: Analyst: JBS Acct. No.:

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
Resp. fac. from Library Entry

No	Name		
1	IS1	BROMOCHLOROMETHANE	***INTERNAL STANDARD #1***
2	IS2	1,4-DIFLUOROBENZENE	***INTERNAL STANDARD #2***
3	IS3	CHLOROBENZENE D5	***INTERNAL STANDARD #3***
4	SS1	1,2-DICHLOROETHANE D4	***SURROGATE STANDARD #1***
5	SS2	TOLUENE D8	***SURROGATE STANDARD #2***
6	SS3	4-BROMOFLUOROBENZENE	***SURROGATE STANDARD #3***
7	45V	CHLOROMETHANE	
8	88V	VINYL CHLORIDE	
9	46V	BROMOMETHANE	
10	16V	CHLOROETHANE	
11	24H	TRICHLOROFLUOROMETHANE	
12	21H	ACROLEIN	
13	29V	1,1-DICHLOROETHYLENE	
14	15H	CARBON DISULFIDE	
15	13H	ACETONE	
16	44V	METHYLENE CHLORIDE	
17		1,2-DICHLOROETHENE (TOTAL)	
18	22H	ACRYLONITRILE	
19		METHYL-T-BUTYLETHER	
20	13V	1,1-DICHLOROETHANE	
21	19H	VINYL ACETATE	
22		CIS-1,2-DICHLOROETHENE	
23	14H	2-BUTANONE	
24	23V	CHLOROFORM	
25	11V	1,1,1-TRICHLOROETHANE	
26	6V	CARBON TETRACHLORIDE	
27	4V	BENZENE	
28	10V	1,2-DICHLOROETHANE	
29		TRICHLOROETHYLENE	
30	32V	1,2-DICHLOROPROPANE	
31	48V	BROMODICHLOROMETHANE	
32		2-CHLOROETHYLVINYLETHER	
33		CIS-1,3-DICHLOROPROPENE	
34		4-METHYL-2-PENTANONE	
35	86V	TOLUENE	
36		TRANS-1,3-DICHLOROPROPENE	
37	14V	1,1,2-TRICHLOROETHANE	
38	85V	TETRACHLOROETHYLENE	
39	51V	DIBROMOCHLOROMETHANE	
40		2-HEXANONE	
41	7V	CHLOROBENZENE	
42	38V	ETHYLBENZENE	
43		M-XYLENE / P-XYLENE	
44		XYLENES (TOTAL)	
45	18H	STYRENE	
46	47V	BROMOFORM	
47	15V	1,1,2,2-TETRACHLOROETHANE	

9613402.2128

No	Name	
48	26B	1,3-DICHLOROBENZENE
49	27B	1,4-DICHLOROBENZENE
50	25B	1,2-DICHLOROBENZENE

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	832	13:52	1	1.000	A BB	25727.	50.000 UG/L	8.29
2	114	978	16:18	2	1.000	A BB	151425.	50.000 UG/L	8.29
3	117	1316	21:56	3	1.000	A BB	123907.	50.000 UG/L	8.29
4	65	914	15:14	2	0.935	A BB	88685.	57.021 UG/L	9.45
5	98	1167	19:27	3	0.887	A BB	164807.	49.303 UG/L	8.17
6	95	1420	23:40	3	1.079	A BB	61283.	43.325 UG/L	7.18
7	NOT FOUND								
8	NOT FOUND								
9	NOT FOUND								
10	NOT FOUND								
11	NOT FOUND								
12	NOT FOUND								
13	96	487	8:07	1	0.585	A BB	62557.	65.856 UG/L	10.92
14	NOT FOUND								
15	43	519	8:39	1	0.624	A BB	2501.	2.554 UG/L	0.42
16	84	592	9:52	1	0.712	A BB	5205.	5.122 UG/L	0.85
17	96	640	10:40	1	0.769	A BB	217.	0.230 UG/L	0.04
18	NOT FOUND								
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	78	918	15:18	2	0.939	A BB	216323.	58.599 UG/L	9.72
28	NOT FOUND								
29	130	1009	16:49	2	1.032	A BB	52912.	57.240 UG/L	9.49
30	NOT FOUND								
31	NOT FOUND								
32	NOT FOUND								
33	75	1140	19:00	3	0.866	A BB	240.	0.150 UG/L	0.02
34	NOT FOUND								
35	92	1174	19:34	3	0.892	A BB	123390.	56.387 UG/L	9.35
36	NOT FOUND								
37	NOT FOUND								
38	164	1232	20:32	3	0.936	A BB	271.	0.362 UG/L	0.06
39	NOT FOUND								
40	NOT FOUND								
41	112	1318	21:58	3	1.002	A BB	131501.	56.780 UG/L	9.41
42	NOT FOUND								
43	NOT FOUND								
44	NOT FOUND								
45	NOT FOUND								
46	NOT FOUND								
47	NOT FOUND								
48	146	1508	25:08	3	1.146	A BB	226.	0.125 UG/L	0.02
49	146	1514	25:14	3	1.150	A BB	224.	0.122 UG/L	0.02
50	NOT FOUND								

Quantitation Report 9613402.2129 File: B031909

Data: B031909.TI
03/19/93 14:17:00
Sample: 9303L887-001T WESTINGHOUSE 5.0ML
Conds.: 5100B VO COLUMN: DB624
Formula: B031902 Instrument: 5100B Weight: 0.213
Submitted by: Analyst: JBS Acct. No.:

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
Resp. fac. from Library Entry

No	Name
51	DIETHYLETHER

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
51	NOT FOUND								

9613402.2130

VI. Additional Documentation

A. Extraction Record

SAMPLE PREP RECORD

Sheet no.: 1

Extract. Date: 03/19/93 Extraction Batch No: 93LVB066 Analyst: JS Method: N/A

Test: O624 Cleanup Date: Analyst: Client: WESTINGHOUSE HANFORD

LIMS Report Date: 04/06/93 Solvent: Adsorbent:

Sample No:	Client Name / Client ID	pH	Initial WT/VOL	Surr. Mult.	Spike Mult.	Final VOL	Final VOL	Split Mult.	GPC Y/N	% Solids	C/D FACTOR
9303L887-	WESTINGHOUSE HANFORD										
001 H	BO86S1	7.00	5	1.0		5		1.0	N	0.0	1.0
001 HS	BO86S1	7.00	5	1.0	1.0	5		1.0	N	0.0	1.0
001 HT	BO86S1	7.00	5	1.0	1.0	5		1.0	N	0.0	1.0
9303L910-	MK FERGUSON-WSSRAP										
006 H	GW-FINW-Q193	2.00	5	1.0		5		1.0	N	0.0	1.0
006 HS	GW-FINW-Q193	2.00	5	1.0	1.0	5		1.0	N	0.0	1.0
006 HT	GW-FINW-Q193	2.00	5	1.0	1.0	5		1.0	N	0.0	1.0
007 H	QC-0000-031593-TB	2.00	5	1.0		5		1.0	N	0.0	1.0
93LVB066-MB1 H		7.00	5	1.0		5		1.0	N	0.0	1.0

Comments:
Surrogate:
Spike:

Extracts Transferred	Relinquished By	Date Time	Received By	Date Time	Reason for Transfer

9613402.2131

0079

HCRL-WHC/9306-T-93-204

9413102.2132

E-93-06/2978-50

Revised 5/12/93

WESTINGHOUSE HANFORD COMPANY
300-FF-5 RI DATA VALIDATION
DISTRIBUTION FORM

Document Title: Prelim. QA Rpt. - Weston 93031887 Vol. Org.

Document Number: HCRL-WHC/9306-L-93-113 Date 5/21/93

DISTRIBUTION

M. Baker (HCRL)		D. Mantooth (ERL)		B. Ulbricht (ERL)	
P. Bartley (ERL)		T. McDonald (HCRL)		D. Wiley (ERL)	
S. Callison (HCRL)		R. Potter (HCRL)		N. Wold (ERL)	
Y. Chun (HCSEA)		K. Rolla (HCSEA)		Project File (HCRL) C. Campbell	X
B. Downs (HCSEA)		C. Russel (HCSEA)		Dup. Project File (HCSEA) T. Trevino	X
M. Gerboth (HCRL) W/o Attach	X	C. Sater (ERL)		ERL File - J. Pawlowski	X
J. Grover (ERL) W/o Attach.	X	M. Schwartz (ERL)		Westinghouse EDMC	X
L. Hammerle (HCSEA)		A. Shen (HCSEA)			
L. Hulstrom (WHC)	X				

Project Files (1 = Admin.; 2 = Correspondence; 3 = Source Data; 4 = Technical Data)

1.1	File Index		4.1	Task Plan		4.5.3	Round 3 Groundwater
1.2	Distribution		4.2	Data Pkg. Completeness Verif.		4.5.3.1	Internal Drafts/Comments/Resol.
1.3	Project Procedures		4.2.1	Checklists - Round 1 GW		4.5.3.2	WHC Review Draft/Comments/Resol.
1.4	Project Modifications		4.2.2	Checklists - Round 2 GW		4.5.3.3	Final Report
1.5.1	Staff Resumes		4.2.3	Checklists - Round 3 GW		4.5.4	Round 4 Groundwater
1.5.2	Staff Training		4.2.4	Checklists - Round 4 GW		4.5.4.1	Internal Drafts/Comments/Resol.
1.5.3	Auth. Former Site Employee		4.2.5	Checklists - Biota/Small Mam.		4.5.4.2	WHC Review Draft/Comments/Resol.
1.6.1	QA Manual		4.2.6	Checklists - Surface Wtr./Sed.		4.5.4.3	Final Report
1.6.2	QA Implementation		4.2.7	Checklists - Round 5 GW		4.5.5	Biota/Small Mammals
1.6.3.1	QA Audits-Deliverables		4.2.8	Checklists - Round 6 GW		4.5.5.1	Internal Drafts/Comments/Resol.
1.6.3.2	QA Audits-Files		4.3	Data Val. Calcs./Annotated DP		4.5.5.2	WHC Review Draft/Comments/Resol.
1.6.4.1	Audit Resps-Deliverables		4.3.1	Round 1 Groundwater		4.5.5.3	Final Report
1.6.4.2	Audit Resps-Files		4.3.2	Round 2 Groundwater		4.5.6	Surface Water/Sediments
1.6.5	Training		4.3.3	Round 3 Groundwater		4.5.6.1	Internal Drafts/Comments/Resol.
1.6.6.1	QA Manual Doc Log		4.3.4	Round 4 Groundwater		4.5.6.2	WHC Review Draft/Comments/Resol.
1.6.6.2	Procedures Doc Log		4.3.5	Biota/Small Mammals		4.5.6.3	Final Report
1.6.6.3	Plans Document Log		4.3.6	Surface Water/Sediments		4.5.7	Round 5 Groundwater
1.6.6.4	Deliverables Doc Log		4.3.7	Round 5 Groundwater		4.5.7.1	Internal Drafts/Comments/Resol.
1.7.1	Downloads		4.3.8	Round 6 Groundwater		4.5.7.2	WHC Review Draft/Comments/Resol.
1.7.2	M-113s		4.4	Prelim. QA Records		4.5.7.3	Final Report
1.7.3	A-208s		4.4.1	Round 1 Groundwater		4.5.8	Round 6 Groundwater
1.7.4	Budget Status		4.4.2	Round 2 Groundwater		4.5.8.1	Internal Drafts/Comments/Resol.
1.7.5	Invoices		4.4.3	Round 3 Groundwater		4.5.8.2	WHC Review Draft/Comments/Resol.
1.8.1	Requisitions		4.4.4	Round 4 Groundwater		4.5.8.3	Final Report
1.9	Meeting Minutes		4.4.5	Biota Small Mammals		4.6	Weekly Status Reports
1.10	Record of Telecons		4.4.6	Surface Water Sediments		4.7	Weekly Management Reports
1.11	Progress Reports		4.4.7	Round 5 Groundwater	X	4.8	Electronic Data Qualifiers
1.12	Subcontractor (HC)		4.4.8	Round 6 Groundwater			
			4.5	Data Val. & Qual. Summary Rpts.			
2.1	Incoming Correspondence		4.5.1	Round 1 Groundwater			
2.2	Outgoing Correspondence	X	4.5.1.1	Internal Drafts/Comments/Resol.			
2.3	Internal Correspondence		4.5.1.2	WHC Review Draft/Comments/Resol.			
			4.5.1.3	Final Report			
3.1	Task Order		4.5.2	Round 2 Groundwater			
3.2	Sample Lists		4.5.2.1	Internal Drafts/Comments/Resol.			
3.3	Data Validation Procedures		4.5.2.2	WHC Review Draft/Comments/Resol.			
3.4	Original Chemical Data		4.5.2.3	Final Report			
3.5	Original Radiochem. Data						

9613402.2133

HARTCROWSER

Hart Crowser
1201 Jadwin Avenue, Suite [illegible]
Richland, Washington [illegible]
FAX 509 946 [illegible]
509 946 [illegible]

Earth and Environmental Technologies

J-2978-50

May 21, 1993

Mr. Larry Hulstrom
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-03
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-06
Preliminary Quality Assurance Record
Roy F. Weston Case 9303L887 - Volatile Organics

Dear Mr. Hulstrom:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the 300-FF-5 Groundwater Round 5. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated November 6, 1992. The subject data package consisted of one low level water sample submitted for analysis for volatile organics. A full validation was performed on this sample. In addition, a 100 percent validation of the supporting quality control data was performed.

The samples were analyzed by Roy F. Weston using the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) statement of work. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including GC/MS tuning, surrogates, matrix spike/matrix spike duplicates, continuing calibrations, compound identifications, and internal standards), and quantitation limit requirements were met for this case with the exception of the following: methylene chloride was detected in the method blank.

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following general trends resulted in data qualification. All qualified data are discussed in Attachments 3 and 5.

Methylene chloride was detected in the method blank. The methylene chloride concentration in the sample was less that 10 times the blank concentration. Therefore, the methylene chloride concentration for the samples was qualified as undetected (U) and the associated quantitation levels were raised to the CRQL.

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the 300-FF-5 Groundwater Round 5 data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
HC#135/RL1807.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9306-L-93-113

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

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ATTACHMENT 1

Glossary of Data Qualifiers

9613402.2137

Glossary of Data Qualifiers

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates the presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

9613402.2138

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

9613402.2139

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B086S1

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9303L887-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B031907

Level: (low/med) LOW

Date Received: 03/12/93

% Moisture: not dec.

Date Analyzed: 03/19/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	JB
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

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1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B086S1

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9303L887-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B031907

Level: (low/med) LOW

Date Received: 03/12/93

% Moisture: not dec.

Date Analyzed: 03/19/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

9613402.2141

ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9303L887	REVIEWER: AS	DATE: 5/18/93	PAGE 2 OF 7
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene Chloride	U at CRQL	B08651	Blank contamination

✓ amc 5/20/93

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ATTACHMENT 4

As Qualified Data Summary

9613402.2144

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B086S1

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9303L887-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B031907

Level: (low/med) LOW

Date Received: 03/12/93

% Moisture: not dec.

Date Analyzed: 03/19/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	JB
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

10 U

FORM 1 VOA 3/90

AS 5/20/93

0022

9613402.2145

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B086S1

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9303L887-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B031907

Level: (low/med) LOW

Date Received: 03/12/93

% Moisture: not dec.

Date Analyzed: 03/19/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

AS
5/20/93

FORM 1 VOA-TIC 3/90

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ATTACHMENT 5

Data Review Supporting Documentation

9613402.2147

Transmittal Number T00117

Transmittal Form to Validator

1 To Validator (BCA) Hart Crowser

Project/CU 300 FFS

2 Data Packages Attached (list and attach)

93031887-WES-1066

3 The attached data packages have been verified and (check one)

X All required checklist items are included

____ Checklist items circled on attached verification checklist forms cannot be provided and the decision has been made to proceed with validation anyway

NCR # _____

4 Certified by Verifier

Signature

4/26/93 9:00 am

Date

5 Received by Validator

HC

Signature

5/12/93

Date

MFAUM0012193AT

Verification No. T-00110-93 **CHEMICAL DATA PACKAGE VERIFICATION COVER SHEET** Page 1 of 1

Project: 300-FF-5	Reviewer: S. Lindberg	Date: 4/19/93
Laboratory: Weston	Case: 93031887	SDG: 93031887
Data Package ID: 93031887-WES-1066	Case Narrative Present? (Yes) No	

				Analyses Performed:						
HEIS No.	Matrix	WHC COC	WHC SAR	VOA	Semi-VOA	Pest/PCB	Inorganic	General	Dioxin/Furan	Special GC
B086S1		~~ND~~ X sec 4/26/93	X	X						

~~MISSING pg. 3 WHC COC~~ sec 4/26/93

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9613402.2149

Package ID: 9303L887-WES-1066

VOLATILE ORGANIC DATA VERIFICATION CHECKLIST - FORM A-1

Review the data package for completeness and check off the items below. If any data review elements are missing, contact the laboratory for submittal.

Data Package Item	Present?: Yes	No	N/A
Quality Control (QC) Summary			
Surrogate Summary report	X		
MS/MSD Summary report	X		
Blank summary report	X		
GC/MS tuning report	X		
Sample Data			
Sample reports	X		
TIC reports for each sample	X		
Chromatograms for all samples	X		
Raw and corrected spectra for all detected results	X		
Raw and corrected library search data for all reported TIC			X
Quantitation and calculation data for all TIC			X
Standards Data			
Initial calibration report	X		
RIC and quantitation reports for initial calibration	X		
Continuing calibration reports	X		
RIC and quantitation reports for cont. calibrations	X		
Internal standard summary report	X		
Raw QC Data			
Tuning, spectra and mass lists	X		
Blank Data			
Blank analysis reports	X		
TIC reports for all blanks	X		
RIC and quantitation reports for blanks	X		
Raw and corrected spectra for all detected results in blanks	X		
Raw and corrected library search data for all reported TIC			X
Quantitation and calculation data for all TIC			X
Matrix Spike/Matrix Spike Duplicate (MS/MSD) Data			
MS/MSD Analysis Reports	X		
RIC and quantitation reports for MS/MSD	X		
Additional Data			
Moisture/% solids data sheets			X
Sample preparation sheets	X		

Comments: ~~Missing the 1st page of the quantitation report for VST0200~~ 4/19/93
Complete

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 300-FF-5 GW-5	REVIEWER: AS	DATE: 5/18/93
LABORATORY: Weston	CASE: ~~03-15~~ AS 93031887	SDG:
SAMPLES/MATRIX:		
B086S1 Level 4		

1. DATA PACKAGE COMPLETENESS

See attached verification sheet

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	—	—	—
Data Summary	—	—	—
Chain-of-Custody	—	—	—
QC Summary			
Surrogate report	—	—	—
MS/MSD report	—	—	—
Blank summary report	—	—	—
GC/MS tuning report	—	—	—
Internal standard summary report	—	—	—
Sample Data			
Sample reports	—	—	—
TIC reports for each sample	—	—	—
RIC reports for all samples	—	—	—
Raw and corrected spectra for all detected results	—	—	—
Raw and corrected library search data for all reported TIC	—	—	—
Quantitation and calculation data for all TIC	—	—	—
Standards Data			
Initial calibration report	—	—	—
RIC and quantitation reports for initial calibration	—	—	—
Continuing calibration reports	—	—	—
RIC and quantitation reports for cont. calibrations	—	—	—
Internal standard summary report	—	—	—
Raw QC Data			
Tuning report, spectra and mass lists	—	—	—
Blank analysis reports	—	—	—
TIC reports for all blanks	—	—	—
RIC and quantitation reports for blanks	—	—	—
Raw and corrected spectra for all detected results in blanks	—	—	—
Raw and corrected library search data for all reported TIC	—	—	—

Data Package Item	Present?: Yes	No	N/A
Quantitation and calculation data for all TIC	—	—	—
MS/MSD report forms	—	—	—
RIC and quantitation reports for MS/MSD	—	—	—
Additional Data			
Moisture/% solids data sheets	—	—	—
Reduction formulae	—	—	—
Instrument time logs	—	—	—
Chemist notebook pages	—	—	—
Sample preparation sheets	—	—	—

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? Yes No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? Yes No N/A

Do all tunes on all instruments meet the tuning criteria? Yes No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No N/A

Has the laboratory made any calculation or transciption errors? Yes No N/A

Have the proper significant figures been reported? Yes No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? Yes No N/A

Are all RSD values ≤30% (2/88 SOW)? Yes No N/A

Are all RRF values ≥0.05 (2/88 SOW)? Yes No N/A

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed?	Yes	No	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	Yes	No AS	N/A
Are all %D values ≤25% (2/88 or 3/90 SOW)?	Yes	No	N/A
Are all %D values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	Yes	No	N/A
Are TCL compounds present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all sample results ≤10 time the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is <CRQL. Qualify all remaining sample results ≤5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks? Yes No N/A

ACTION: Qualify all detected sample results ≤ 5 times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogate recoveries < 10%? Yes No N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for nondetects) for surrogates out of specification but > 10%. Qualify all associated positive sample results as estimated (J) and all nondetect results as unusable (R) for all surrogates below 10%. If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are > 5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? AS Yes No N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard?	Yes	No	N/A
Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra?	Yes	No	N/A
Do the relative intensities between the standard and sample spectra agree within 20%?	Yes	No	N/A
Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?	Yes	No	N/A
Are molecular ions present in the reference spectrum present in the sample spectrum?	Yes	No	N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation?	Yes	No	N/A
Are results and quantitation limits calculated properly?	Yes	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	Yes	No	N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?	Yes	No	N/A
Has the laboratory properly identified and coded all TIC?	Yes	No	N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

HOLDING TIME SUMMARY - FORM B-1

SDG: 9303L887	REVIEWER: AS	DATE: 5/18/93	PAGE 1 OF 3
COMMENTS: Water			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B08651	UOA	3/10/93	—	3/19/93	—	9	—
—							
			✓ WMC 5/20/93				

9613402.2158
WHC-SD-EN-SPP-002, Rev. 1

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 9303887	REVIEWER: MS	DATE: 5/18/93		PAGE 2 OF 7	
COMMENTS: VOA			Cap DB 624		
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT: 5100 B			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
GC/MS Tuning	3/4/93, 3/19/93				
	All tuning criteria acceptable		—	—	—
Ical					
3/4/93	Vinyl Chloride		25.6 %	None, two compounds allowed.	
	Acetone		37.1 %	↓	↓
Ccal					
3/19/93	Acetone		-59.5 %	—	—
	2-Butanone		-49.4 %	—	—
	2-Hexanone		-46.2 %	—	—

✓ cmc 5/20/93

9613402.2159
WHC-SD-EN-SPP-002, Rev. 1

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 9303L887	REVIEWER: AS	DATE: 5/18/93	PAGE 3 OF 7
COMMENTS: VOA			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
VBLK	Methylene Chloride	3					30	B08651	U at CRQL
	Acetone	5					50	B08651	—
	✓ ac	5/20/93							

9613402.2160

WHC-SD-EN-SPP-002, Rev. 1

ACCURACY DATA SUMMARY - FORM B-4

SDG: 93032887	REVIEWER: AS	DATE: 5/18/93	PAGE 4 OF 7	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B08651	All surrogates acceptable = 87-114%		—	—
				—
	All MS/MSD recoveries acceptable 105-132%		—	—
			—	—
	All I.S. area recoveries & R.T. are acceptable.		—	—
	✓ CMK 5/20/93			

9613402.2161
WHC-SD-EN-SPP-002, Rev. 1

PRECISION DATA SUMMARY - FORM B-5

SDG: 9303L887	REVIEWER AS	DATE: 5/18/93	PAGE 5 OF 7

COMMENTS:

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
All RPDs acceptable	3 - 7 %		—	—	—
Field splits					
See Case 03-043			—	—	—
	AMC 5/20/93				

9613402.2162
WHC-SD-EN-SPP-002, Rev. 1

CALCULATION SUMMARY - FORM B-6

SDG: 93036489	REVIEWER: JAS	DATE: 5/18/93	PAGE 6 OF 7
COMMENTS: See Calc Sheets			

9613402.2164

Calculations

HARTCROWSER

Case 93036887

Page 1 of 2

Job No. 2978-50

Project WHC 300-FF-5 GW5

Date 5/18/93

Calculations for ICal / CCal

Made by KRolla

	Chloromethane 7	Acetone 15	Chloroform 24	Bromodichloromethane 31
RRF 10	$\frac{10360 \cdot 50}{17133 \cdot 10} = 3.023$	$\frac{6361 \cdot 50}{17133 \cdot 10} = 1.856$	$\frac{12550 \cdot 50}{17133 \cdot 10} = 3.663$	$\frac{8878 \cdot 50}{94197 \cdot 10}$ 0.471
RRF 20	$\frac{19998 \cdot 50}{16778 \cdot 20} = 2.980$	$\frac{9307 \cdot 50}{16778 \cdot 20} = 1.387$	$\frac{24638 \cdot 50}{16778 \cdot 20} = 3.671$	$\frac{17337 \cdot 50}{94933 \cdot 20} = 0.457$
RRF 50	$\frac{40802 \cdot 50}{17416 \cdot 50} = 2.343$	$\frac{190816 \cdot 50}{17416 \cdot 50} = 1.096$	$\frac{63284 \cdot 50}{17416 \cdot 50} = 3.634$	$\frac{46037 \cdot 50}{96843 \cdot 50} = 0.475$
RRF 100	$\frac{81057 \cdot 50}{19322 \cdot 100} = 2.098$	$\frac{33987 \cdot 50}{19322 \cdot 100} = 0.879$	$\frac{134599 \cdot 50}{19322 \cdot 100} = 3.483$	$\frac{100940 \cdot 50}{106959 \cdot 100} = 0.472$
RRF 200	$\frac{81057 \cdot 50}{24096 \cdot 200}$ $\frac{176990 \cdot 50}{24096 \cdot 200} = 1.836$	$\frac{71947 \cdot 50}{24096 \cdot 200} = 0.746$	$\frac{326782 \cdot 50}{24096 \cdot 200} = 3.370$	$\frac{237658 \cdot 50}{130095 \cdot 200} = 0.457$
$\overline{RRF}$	2.456	1.193	3.568	0.466
% RSD	21.6	37.1	3.5	1.9

CONTINUING CAL

RRF 50	$\frac{90284}{38924} = 2.319$	$\frac{74071}{38924} = 1.903$	$\frac{145532}{38924} = 3.739$	$\frac{103655}{221102} = 0.469$
% D	$\frac{2.456 - 2.319}{2.456} \times 100 = 5.6$	$\frac{1.193 - 1.903}{1.193} \times 100 = -59.54$	$\frac{3.568 - 3.739}{3.568} \times 100 = -4.8$	$\frac{0.466 - 0.469}{0.466} \times$ -0.64

Recycled Paper

9613402.2165

HARTCROWSER

Calculations

Case 9302857

Page 2 of 2

Job No. 2978-50

Project WHC 300-FF-5 GW5

Date 5/18/93

Calculations for I Cal / C Cal

Made by Keolla

	1,1,2-trichloroethane 37	2-hexanone 40	Ethylbenzene 42
RRF 10	$\frac{4515.50}{73091.10} = 0.309$	$\frac{5472.50}{73091.10} = 0.374$	$\frac{6074.50}{73091.10} = 0.416$
RRF 20	$\frac{8735.50}{76447.20} = 0.286$	$\frac{10775.50}{76447.20} = 0.352$	$\frac{13074.50}{76447.20} = 0.428$
RRF 50	$\frac{25331.50}{81556.50} = 0.311$	$\frac{31107.50}{81556.50}$ 0.381	$\frac{37325.50}{81556.50} = 0.458$
RRF 100	$\frac{57557.50}{92559.100} = 0.311$	$\frac{68154.50}{92559.100} = 0.368$	$\frac{91695.50}{92559.100} = 0.495$
RRF 200	$\frac{159795.50}{119498.200} = 0.334$	$\frac{184004.50}{119498.200} = 0.385$	$\frac{256259.50}{119498.200} = 0.536$
$\overline{RRF}$	~~0.309~~ KE 0.310	0.372	0.467
% RSD	~~5.7~~ KE 5.5	3.5	10.6

Continuing Calibration

RRF 50	$\frac{55188}{190400} = 0.290$	$\frac{103655}{190400} = 0.544$	$\frac{89908}{190400} = 0.472$
% D	$\frac{.310 - .290}{.310} \times 100 = 6.5$	$\frac{0.372 - 0.544}{0.372} = -46.2$	$\frac{0.467 - 0.472}{0.467} = 1.1$

Recycled Paper

9613402.2166

Calculations

Case 93032887

HARTCROWSER

Page 1 of 2

Job No. 2978-50

Project WHC

Date 5/18/93

Calculations for GC/MS Tuning

Made by AS

3/4/93

m/z 50 = 7743/22783 = 33.9% ✓

174 = 18847/22783 = 82.7% ✓

175 = 1633/18847 = 8.7%

3/11/93

m/z = 50 = 22303/~~95.0~~ 72831 = 30.6% ✓

96 = 4984/72831 = 6.8% ✓

174 = 57791/72831 = 79.4% ✓

Recycled Paper

9613402.2167

Calculations

Case 9303L997

HARTCROWSER

Page 2 of 2

Job No. 2978-50

Project WHC 300-FF-5 GW-5

Date 5/18/93

Calculations for Surrogates

Made by AS

B08651

Toluene = 53.302/50 = 106%

BFB = 44.338/50 = 89%

DCE = 51.787/50 = 104%

RRT

B08651

.712 coel / .713 methylene chloride

B08651

(3) Methylene chloride = $\frac{2955(50)}{23346(1.975)}$ = 3.20 ok

Recycled Paper

E-93-06/2978-50

96134082.2180

WESTINGHOUSE HANFORD COMPANY
300-FF-5 RI DATA VALIDATION
DISTRIBUTION FORM

Document Title: Weston Package 9303L887 (VOA) (GWS)

Document Number: HCRL-WHC/F306-SD-93-034 Date: 5/12/93

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Project Files (1=Adm; 2=Corres; 3=Source Information; 4=Technical Data & Products)

1.1 File Index	2.1 Incoming Correspondence	4.4.5 Biota/Small Mammals	
1.2 Distribution Lists	2.2 Outgoing Correspondence	4.4.6 Surface Water/Sediments	
1.3 Project Procedures	2.3 Internal Correspondence	4.5 Data Val. & Qual. Summary Rpts.	
1.4 Project Modifications		4.5.1 Round 1 Groundwater	
1.5.1 Staff Resumes	3.1 Task Order	4.5.1.1 Internal Drafts/Comments/Resol.	
1.5.2 Staff Training	3.2 Sample Lists	4.5.1.2 WHC Review Draft/Comments/Resol.	
1.5.3 Auth.-Former Site Employee	3.3 Data Validation Procedures	4.5.1.3 Final Report	
1.6.1 QA Manual	3.4 Original Chemical Data X	4.5.2 Round 2 Groundwater	
1.6.2 QA Implementation	3.5 Original Radiochem Data	4.5.2.1 Internal Drafts/Comments/Resol.	
1.6.3.1 QA Audits-Deliverables		4.5.2.2 WHC Review Draft/Comments/Resol.	
1.6.3.2 QA Audits-Files	4.1 Task Plan	4.5.2.3 Final Report	
1.6.4.1 Audit Resps-Deliverables	4.2 Data Pkg. Completeness Verif.	4.5.3 Round 3 Groundwater	
1.6.4.2 Audit Resps-Files	4.2.1 Checklists - Round 1 GW	4.5.3.1 Internal Drafts/Comments/Resol.	
1.6.5 Training	4.2.2 Checklists - Round 2 GW	4.5.3.2 WHC Review Draft/Comments/Resol.	
1.6.6.1 QA Manual Doc Log	4.2.3 Checklists - Round 3 GW	4.5.3.3 Final Report	
1.6.6.2 Procedures Doc Log	4.2.4 Checklists - Round 4 GW	4.5.4 Round 4 Groundwater	
1.6.6.3 Plans Document Log	4.2.5 Checklists - Biota/Small Mam.	4.5.4.1 Internal Drafts/Comments/Resol.	
1.6.6.4 Deliverables Doc Log	4.2.6 Checklists - Surface Wtr. Sed.	4.5.4.2 WHC Review Draft/Comments/Resol.	
1.7.1 Downloads	4.3 Data Val. Calcs./Annotated CP	4.5.4.3 Final Report	
1.7.2 M-113s	4.3.1 Round 1 Groundwater	4.5.5 Biota/Small Mammals	
1.7.3 A-208s	4.3.2 Round 2 Groundwater	4.5.5.1 Internal Drafts/Comments/Resol.	
1.7.4 Budget Status	4.3.3 Round 3 Groundwater	4.5.5.2 WHC Review Draft/Comments/Resol.	
1.7.5 Invoices	4.3.4 Round 4 Groundwater	4.5.5.3 Final Report	
1.8.1 Requisitions	4.3.5 Biota/Small Mammals	4.5.6 Surface Water/Sediments	
1.9 Meeting Minutes	4.3.6 Surface Water, Sediments	4.5.6.1 Internal Drafts/Comments/Resol.	
1.10 Record of Telecons	4.4 Preliminary QA Records	4.5.6.2 WHC Review Draft/Comments/Resol.	
1.11 Progress Reports	4.4.1 Round 1 Groundwater	4.5.6.3 Final Report	
1.12 Subcontractor (HC)	4.4.2 Round 2 Groundwater	4.6 Weekly Status Reports	
	4.4.3 Round 3 Groundwater	4.7 Weekly Management Reports	
	4.4.4 Round 4 Groundwater		

Verification No. T-00110-93 **CHEMICAL DATA PACKAGE VERIFICATION COVER SHEET** Page 1 of 1

Project: 300-FF-5	Reviewer: S. Lindberg	Date: 4/19/93
Laboratory: Weston	Case: 93031887	SDG: 93031887
Data Package ID: 93031887-WES-10166	Case Narrative Present? (Yes) No	

				Analyses Performed:						
HEIS No.	Matrix	WHC COC	WHC SAR	VOA	Semi-VOA	Pest/PCB	Inorganic	General	Dioxin/Furan	Special GC
B086S1		~~ND~~ X sec 4/26/93	X	X						

~~missing pg. 3 WHC COC~~ sec 4/26/93

9613402.2169

9613402.2170

Package ID: 93036887-WES-1066

VOLATILE ORGANIC DATA VERIFICATION CHECKLIST - FORM A-1

Review the data package for completeness and check off the items below. If any data review elements are missing, contact the laboratory for submittal.

Data Package Item	Present?: Yes	No	N/A
Quality Control (QC) Summary			
Surrogate Summary report	X		
MS/MSD Summary report	X		
Blank summary report	X		
GC/MS tuning report	X		
Sample Data			
Sample reports	X		
TIC reports for each sample	X		
Chromatograms for all samples	X		
Raw and corrected spectra for all detected results	X		
Raw and corrected library search data for all reported TIC			X
Quantitation and calculation data for all TIC			X
Standards Data			
Initial calibration report	X		
RIC and quantitation reports for initial calibration	X		
Continuing calibration reports	X		
RIC and quantitation reports for cont. calibrations	X		
Internal standard summary report	X		
Raw QC Data			
Tuning, spectra and mass lists	X		
Blank Data			
Blank analysis reports	X		
TIC reports for all blanks	X		
RIC and quantitation reports for blanks	X		
Raw and corrected spectra for all detected results in blanks	X		
Raw and corrected library search data for all reported TIC			X
Quantitation and calculation data for all TIC			X
Matrix Spike/Matrix Spike Duplicate (MS/MSD) Data			
MS/MSD Analysis Reports	X		
RIC and quantitation reports for MS/MSD	X		
Additional Data			
Moisture/% solids data sheets			X
Sample preparation sheets	X		

Comments: ~~Missing the 1st page of the quantitation report for VSTD200~~ ~~gc~~ 4/19/93
Complete

9613402.2171

WESTON
MANAGERS DESIGNERS/CONSULTANTS
208 WELSH POOL ROAD
PICKERING CREEK INDUSTRIAL PARK
LIONVILLE, PA 19341-1313
PHONE: (215) 524-7360
TELEX: 83-5348

April 13, 1993

Ms. Briana Colley
Westinghouse-Hanford
2355 Stevens Drive
345 Hills Street
Richland, WA 99352

APR 1993
RECEIVED
OSM DMO

Dear Briana:

Enclosed are the following data packages:

RFW Number	Parameters
9302L721	Wet Chemistry, Metals
9302L748	VOA
9303L783	Wet Chemistry
9303L790	Wet Chemistry
9303L827	Wet Chemistry, GC Scan
9303L887	VOA

The following Teledyne packages are enclosed:

RFW Number	Parameters
9303L830	Radiochemistry
9303L887	Radiochemistry
9303L831	Radiochemistry
9302L551	Radiochemistry
9303L828	Radiochemistry
9303L829	Radiochemistry

The following Metals diskettes are enclosed:

9303L867 M	9303L830 M	9303L831 M	9303L009 M
9303L937 M	9303L829 M		

WESTON

The following Organics diskettes are enclosed:

9302L483 V	9303L867 V	9303L937 V	9201L189 P
9303L879 V	9110L909 P	9112L782 P	9303L886 V
9303L887 V			

I am resending the diskette for the following because of a virus:

9201L925 V	9201L189 V	9112L828 P

Please give me a call if you have any questions.

Very Truly Yours,

ROY F. WESTON, INC.

Josie Edwards

Josie Edwards
Project Information Analyst

/clk

Enclosure:

9613402.2173

Transmittal Number T00117

Transmittal Form to Validator

1 To Validator (BCA) Hart Crowser

Project/OU 300 FF5

2 Data Packages Attached (list and attach)

9303L887-WES-1066

3 The attached data packages have been verified and (check one)

X All required checklist items are included

____ Checklist items circled on attached verification checklist forms cannot be provided and the decision has been made to proceed with validation anyway

NCR # _____

4 Certified by Verifier

Signature

4/26/93 9:00 am

Date

5 Received by Validator

HC

Signature

5/12/93

Date

MFA\M012193AT