START 9613440.2722 0044049 9112L637-WES-250 059 2

Westinghouse Hanford Company

Hanford Operations and Engineering Contractor for the US Department of Energy
P.O. Box 1970 Richland, Wa. 99352

NONCONFORMANCE REPORT

Page 1 of 1

No. B 06901

1. MFR/ORG: WHC

ITEM/MATERIAL NAME: Emission Samples
PART NO.: N/A
DRAWING/SPEC. NO.: N/A
REV.: N/A
PROGRAM/PROJECT: 300-FF-1
P.O./W.O. NO.: N/A
UNUSUAL OCCURRENCE REPORT REQUIRED: ☐ YES ☒ NO
SYSTEM/END USE: N/A
DATE: 4/30/92

2. DESCRIPTION OF NONCONFORMANCE

Package

Ion Chrom. - no numbered pages, no chain-of custody
Pest - unnumbered pages between p41/42, p5/6, p18/19, p 20/21. Also has pages 8 & 8A. No Chain-of-Cust.
VOC - Extra pages between p65/66, p68/69
No Chain of custody.
ICP - Extra page between p83/84, p97/98, p26/27, p27/28 p30/31, Two unnumbered between p71/72.
Also has p4, 4A, 10A, 10B, 10C, 10, 106, 106A, 106B, p108, 108A, 114, 114A, 114B, 123A, 123B, 123C, 123D, 123
See Data Package 9112L637 transmitted to EDMC on X00269

3. REQUIREMENT VIOLATED

Requirement	Document	Rev	Zone/Para
Data Package Completeness	WHC-SD-EN SPP-002	Rev. 1	Para 2.2

James C. Langford — ORIGINATOR
38610 — ORGANIZATION
4/30/92 — DATE

4. ASME CODE ITEM(s): ☒ NO ☐ YES. NOTIFY AUTHORIZED INSPECTOR.

WHC QAR

5. CAUSE OF NONCONFORMANCE
☐ PROCEDURES ☒ PERSONNEL ☐ MATERIALS
☐ EQUIPMENT ☐ OTHERS

REMARKS:

SW-01 PN-002 P/S = D3

6. CORRECTIVE ACTION TO ELIMINATE CAUSE

OSM to supply all required C-of-C's in data pkgs.

INITIATION DATE
SERIAL NO.
Dan Kessner — RESPONSIBLE ORG. REP.
TITLE
DATE

7. RECOMMENDED DISPOSITION: ☒ ACCEPT ☐ REJECT ☐ REPAIR ☐ REWORK ☐ OTHER

8A. DISPOSITION JUSTIFICATION AND INSTRUCTIONS

Fragration is not a problem.
OSM to obtain chain-of custody.

8. ADDITIONAL REVIEWS REQUIRED (WHC ONLY) ☐ YES ☐ NO
IF YES, IDENTIFY:

FEB 1996 RECEIVED EDMC

8B. SUPPLIER ENG.
SUPPLIER QA

10. DISPOSITION APPROVAL (WHC ONLY)
☒ APPROVED ☐ DISAPPROVED
☐ OTHER (SEE CONTINUATION SHEET)

George Henckel — COGNIZANT ENGINEER — DATE 5/11/92
J.R. McCallum — COGNIZANT QA ENGINEER — DATE 5/15/92
AUTHORIZED INSPECTOR REVIEW — DATE

11. ADDITIONAL APPROVALS

NAME	TITLE	DATE	NAME	TITLE	DATE

12. DISPOSITION ACTION COMPLETE

N/A — NAME — DATE
QTY. ACCEPT
QTY. REJ.
FOLLOW ON NCR

QA LOG NO. EDA-92-061

The issuance and acceptance of this request in no way limits or affects the warranty provisions of the order. This request shall not establish a precedent or obligation to accept similar conditions in the future.

FOLLOW-UP LEVEL A ☐ B ☐ C ☐

WESTON Analytics Use Only
9112L637

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse Hanford
Est. Final Proj. Sampling Date:
Work Order #: 6168-02-01-0000
Project Contact/Phone #: Jonathan Lucas
AD Project Manager: Jack King
QC: CLP Del: CLP TAT: 35
Date Rec'd: 12-6-91 Date Due: 1-10-92
Account #: WS-HANFORD

Refrigerator #		1		6			1	SUB	3							
#/Type Container	Liquid															
	Solid	1G		1G			1	1G	1G							
Volume	Liquid															
	Solid	125		500m			1	500m	250							
Preservatives		-		-				-	-							
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	Anions	Anions	Radiochem	Metal	CN						
WESTON Analytics Use Only																
		624H		PCB		IANS3H	IANS		ISUB	MISA70						

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	624H		PCB		IANS3H	IANS		ISUB	MISA70						
001	B00H61			S	12-2-91		✓		✓		✓	✓		✓	✓						
	RAD info to Follow																				
	RadioChem = Gross Alpha/Beta, Co-60, Sr-90, Cs-137, U-235, 238																				

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
MS/MSD Required on Each Batch & Each Matrix
TASK 300-FF-1
ANIONS = ICCL, ICFL, ICPO4, ICSO4, ICNO2, ICNO3
Original Rewritten

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

Relinquished by	Received by	Date	Time
Emery	[signature]	12-6-91	13:15
	[signature] 12-6-91		

Relinquished by	Received by	Date	Time
	[signature] 12-6-91		

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # 247425 2770
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

9613440.2723

000002

FORM OF PAYMENT

9613440.2248 0000003

GBL CBL ☐ FOCOD ☐

COL ☐ OTH ☐ COMAT ☐

Shipper's Account Number
60281585

EMERY WORLDWIDE

A CF Company

SERVICES

UNITED STATES / CANADA: Same Day ☐ AM ☒ PM ☐ Second Day ☐ Saturc Deliver ☐

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

Date	Origin	Shipment No.
12-05-91	PSC	247425277 0

Tariff Dest. | Gateway

Charges to Shipper $

EMERY WORLDWIDE will collect consignee's check made payable only to the shipper for the value of the goods in the amount shown above.

Hold for Pick Up ☐ Canada ☐

Declared Value $

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

From:
:INGHOUSE SHIPPING DEPT (509) 376-6665
US DEPARTMENT OF ENERGY C/B
NGHOUSE HANFORD
BLDG 1163
STEVENS DRIVE
.AND WA

To:
PEG BEATT
RF WESTON INC
208 WELSH POOL ROAD
LIONVILLE PA 19341-1313

Customer's Reference Numbers
23 PC3B4 W92-0-012383 99352

Consignee's Account Number E

Description	Pcs.	Dimensions L	W	H	Total Pieces	Total Weight (in Lbs)
E CHEST RM#39 SAMPLES 61	1		6	7	1	27

0-012383

RE SECURITY SERVICE
HT DELIVERY

A B C D E F G H I J K

1 2 3 4 5 6 7 8 9 0 1 2

Envelope 9X12 ☐ Pack 12X15 ☒

Dangerous Goods: Commodity Code

Third Party Account Number (necessary for third party billing)

International Guarantee Value

International Insurance

Total Transportation Charges

Other Charges/Advance at Origin: ☐ OC/AO- $

3-PAL-A

Terms and Conditions on Back

CONSIGNEE COPY

SPECIAL HANDLING INSTRUCTIONS

	Name of Person/Company	Transship Point/Destination	Signature of Person Accepting Custody	Time/D
1.				
2.				
3.				
4.				
5.				
6.				1100
7.	U.S. SUPPLIER	PHL		1145
8.	Rick Fitzgerald			13:15

EACH PERSON HANDLING OR TAKING CUSTODY OF THIS SHIPMENT MUST SIGN AND COMPLETE THE INFORMATION BELOW

Pieces	Weight	Description/Marks	Emery Authorization No.
1	27 LBS	ICE CHEST RM#39 SOIL SAMPLES W92-0-012383	

SHIPPER NAME AND ADDRESS
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
C2-06 US DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD COMPANY
2355 STEVENS DRIVE 1163 BUILDING
PO BOX 1970
RICHLAND WA 99352

CONSIGNEE NAME AND ADDRESS
PEG BEATT
RF WESTON INC
208 WELSH POOL ROAD
LIONVILLE PA 19341-1313

6002B-46 (8/89) Litho USA

REFERENCE NO.: W92-0-012383

Custody Transfer Record/Lab Work Request

WESTON

WESTON Analytics Use Only
9112L637

Client: Westinghouse Hanford Co.
Work Order:
Date Rec'd.: Date Due:
RFW Contact:
Client Contact/Phone: Jon G. Lucas (509) 376-2789

Refrigerator#										
#/Type Container										
Volume										
Preservative										
ANALYSES REQUESTED	Please see attached sheet for analysis requirements.									

WA Use Only Lab ID	Client ID/Description	Matrix	Date Collected								
	B00H61	Soil	12-2-91	(1) 120 ml,	(1) 250 ml,	(2) 500 ml					

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

Special Instructions:

Item/Reason	Relinquished by	Received by	Date	Time	Item/Reason	Relinquished by	Received by	Date	Time
Shipping	Emery	Jim Hilliger	12-6-91	15:15					

WESTON Analytics Use Only

Samples Were:
1 Shipped or Hand-Delivered
NOTES:

2 Ambient or Chilled
NOTES:

3 Received Broken/Leaking (Improperly Sealed)
Y N
NOTES:

4 Properly Preserved
Y N
NOTES:

5 Received Within Holding Times
Y N
NOTES:

COC Tape Was:
1 Present on Outer Package Y N
2 Unbroken on Outer Package Y N
3 Present on Sample Y N
4 Unbroken on Sample Y N
NOTES:

COC Record Was:
1 Present Upon Receipt of Samples Y N

Discrepancies Between Sample Labels and COC Record? Y N
NOTES:

9613440.2725

0000034

RFW 21-21-001/A-12/88

7-115

Westinghouse Hanford Company 9613440.2226 0000003B

CHAIN OF CUSTODY

RW 9112L637

Custody Form Initiator: C.E. Heiden

Company Contact: Jonathan G. Lucas

Telephone: 376-3789

Project Designation/Sampling Locations: 300-FF-1 South Process Pond Pit #2

Collection Date: 12-3-91

Ice Chest No.: RM # 39

Field Logbook No.: EFL-1162

Bill of Lading/Airbill No.: 247475277 0

Offsite Property No.: W92T-0123 #3

Method of Shipment: Emery

Shipped to: Weston Lionville, PA

Possible Sample Hazards/Remarks: —

Sample Identification

BCOH101 — SOIL (1-120ml, 1-250ml, 2-500ml)

☐ Field Transfer of Custody	CHAIN OF POSSESSION	(Sign and Print Names)
Relinquished by: C.E. Heiden C.E. Heiden	Received by:	Date/Time:
Relinquished by: Emery	Received by: [signature]	Date/Time: 12-6-91 13:15
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90)

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

RFW Batch Number: 9112L637 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Report Date: 01/02/92 14:34 Page: 1a

	Cust ID:	BOOH61		BOOH61		BOOH61		VBLK	
Sample Information	RFW#:	001		001 MS		001 MSD		91LVX206-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	102	%	107	%	110	%	105	%
	Bromofluorobenzene	96	%	97	%	104	%	103	%
	1,2-Dichloroethane-d4	109	%	103	%	116	%	99	%
Chloromethane		11	U	11	U	11	U	10	U
Bromomethane		11	U	11	U	11	U	10	U
Vinyl Chloride		11	U	11	U	11	U	10	U
Chloroethane		11	U	11	U	11	U	10	U
Methylene Chloride		7		8		6	U	5	U
Acetone		31	B	23	B	11	U	14	
Carbon Disulfide		6	U	6	U	6	U	5	U
1,1-Dichloroethene		6	U	162	%	154	%	5	U
1,1-Dichloroethane		6	U	6	U	6	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	5	U
Chloroform		6	U	6	U	6	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	5	U
2-Butanone		11	U	11	U	11	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	5	U
Vinyl Acetate		11	U	11	U	11	U	10	U
Bromodichloromethane		6	U	6	U	6	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	5	U
Trichloroethene		6	U	125	%	122	%	5	U
Dibromochloromethane		6	U	6	U	6	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	5	U
Benzene		6	U	116	%	116	%	5	U
Trans-1,3-Dichloropropene		6	U	6	U	6	U	5	U
Bromoform		6	U	6	U	6	U	5	U
4-Methyl-2-pentanone		11	U	11	U	11	U	10	U
2-Hexanone		11	U	11	U	11	U	10	U
Tetrachloroethene		6	U	6	U	6	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	5	U

*= Outside of EPA CLP QC limits.

9613440.2727 000005

Cust ID:	BOOH61		BOOH61		BOOH61		VBLK	
RFW#:	001		001 MS		001 MSD		91LVX206-MB1	
Toluene	6	U	123	%	122	%	5	U
Chlorobenzene	6	U	118	%	122	%	5	U
Ethylbenzene	6	U	6	U	6	U	5	U
Styrene	6	U	6	U	6	U	5	U
Xylene (total)	6	U	6	U	6	U	5	U

*= Outside of EPA CLP QC limits.

9613440.2728 0000006

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 12-06-91
RFW #: 9112L637, GC/MS VOLATILE
W.O. #: 6168-02-01

NARRATIVE

One (1) soil sample was collected on 12-02-91.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 02-88 (Rev. 05-89) for TCL Volatile target compounds on 12-10-91.

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 surrogate recoveries were within EPA QC limits.

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

4. The laboratory blank contained the common contaminant acetone at a level less than 2x the CRQL.

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

1.09.92.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOH61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L637-001

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

Lab File ID: AXCA07

Level: (low/med) LOW

Date Received: 12/06/91

% Moisture: not dec. 7

Date Analyzed: 12/10/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	7	
67-64-1	Acetone	31	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

CLIENT SAMPLE NO.

BOOH61

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L637-001

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

Lab File ID: AXCA07

Level: (low/med) LOW

Date Received: 12/06/91

% Moisture: not dec. 7

Date Analyzed: 12/10/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

Roy F. Weston, Inc. - Lionville Laboratory
PCBs by GC

RFW Batch Number: 9112L637 | Client: WESTINGHOUSE HANFORD | Work Order: 6168-02-01-0000 | Report Date: 12/31/91 14:51 | Page: 1

	Cust ID:	BOOH61	BOOH61	BOOH61	PBLK	PBLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	91LE1653-MB1	91LE1653-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	2.00	4.00	4.00	1.00	2.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg

Surrogate: Di-n-butylchlorendate	I	%	I	%	I	%	I	%	I	%
		fl		fl		fl		fl		fl
Aroclor-1016	170	U	340	U	340	U	80	U	160	U
Aroclor-1221	170	U	340	U	340	U	80	U	160	U
Aroclor-1232	170	U	340	U	340	U	80	U	160	U
Aroclor-1242	170	U	340	U	340	U	80	U	160	U
Aroclor-1248	170	U	340	U	340	U	80	U	160	U
Aroclor-1254	220	J	155 *	%	159 *	%	160	U	149	%
Aroclor-1260	340	U	680	U	670	U	160	U	320	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

9613440.2232 000007

9613440.2733 8A

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 12-06-91
RFW #: 9112L637, PCB
W.O. #: 6168-02-01

NARRATIVE

One (1) soil sample was collected on 12-02-91.

The sample and its associated QC samples were extracted on 12-10-91 and analyzed according to criteria set forth in the Contract Laboratory Program for PCB target compounds on 12-27-91.

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

1. Linearity and breakdown criteria were met on the primary column.

2. Continuing calibration criteria were exceeded for several compounds; however, this occurred in standards analyzed after the sample extracts so there were no re-analysis requirements.

3. Retention time criteria were exceeded for aldrin and endosulfan sulfate on the SP2100 column on 12-27-91 at 15:03; however this occurred after the sample extracts so there were no re-analysis requirements.

4. All surrogate recoveries were unobtainable due to possible phthalate contamination.

5. The blank spike recovery was within the laboratory control limits.

6. Two (2) of two (2) matrix spike recoveries were outside laboratory control limits. The matrix spike recoveries for arochlor 1254 (155% and 159%) were outside the laboratory control limit of 150%.

7. Sample BOOH61 required a two-fold dilution because it contained high levels of both target and non-target compounds.

1.27.92

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

9613440.2734 0000016

ID

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOH61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L637-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 12269103.22

Level: (low/med) LOW Date Received: 12/06/91

% Moisture: not dec. 7 dec. Date Extracted: 12/10/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/27/91

GPC Cleanup: (Y/N) Y pH: 7.5 Dilution Factor: 2.00

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

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	170	U
11104-28-2	Aroclor-1221	170	U
11141-16-5	Aroclor-1232	170	U
53469-21-9	Aroclor-1242	170	U
12672-29-6	Aroclor-1248	170	U
11097-69-1	Aroclor-1254	220	J
11096-82-5	Aroclor-1260	340	U

JeB 1/6/92

FORM 1 PEST 12/88 Rev.

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 12-06-91
RFW #: 9112L637
W.O. #: 6168-02-01

INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards (blank spikes) were within the control limits of 80-120%.

4. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

5. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limit. All %RPD were within the 20% guidance limit.

6. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

7. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

FEB 1992
RECEIVED
OSM DMO

Margaret M Leady for 1-8-92
Jack R. Tuschall, Ph.D Date
Laboratory Manager
Lionville Analytical Laboratory

9613440.2736

3

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/23/91

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9112L637

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	BOOH61	% Solids	92.8		%	0.10
		Chloride by IC	1.3	u	MG/KG	1.3
		Fluoride by IC	7.3		MG/KG	0.50
		Nitrite by IC	1.3	u	MG/KG	1.3
		Nitrate by IC	2.1		MG/KG	1.3
		Phosphate by IC	7.8		MG/KG	1.3
		Sulfate by IC	3.0		MG/KG	1.3
		Ammonia, as N	1.3	u	MG/KG	1.3

9613440.2737 4A

Roy F. Weston, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 12/06/91
RFW #: 9112L637
W.O. #: 6168-02-01

METALS NARRATIVE

The set of samples consisted of one (1) soil sample collected on 12/02/91.

The samples were analyzed according to criteria set forth in CLP SOW 3/90.

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

1. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory.

2. All ICV and CCV values were within control limits.

3. All ICB and CCB values were within control limits.

4. All preparation blank values were within control limits.

5. All LCS results were within the 80-120% control limits.

6. All matrix spike recoveries were within the 75-125% control limits with the exception of Sb, Cr, Ni, Se and Ag. All corresponding samples were flagged with an "N" according to CLP protocol.

7. All duplicate analyses were within the 20% RPD control limit with the exception of Ni. All corresponding samples were flagged with an "*" according to CLP protocol.

8. Pb sample results were calculated by the method of standard addition (MSA). All corresponding samples were flagged with an "S" according to CLP protocol.

9. For MSA, results reported on Form 8 are calculated from absorbance values. Results reported on other forms are based on concentration. As indicated in the SOW1LJM01.0, page B-32, differences due to rounding may be found between the MSA values on Form 8 and the results reported on the other forms.

WESTON

10. The code CV is currently in use by the laboratory for both mercury instruments in operation (HG1 and HG2). HG1 is complete with autosampler and software, but still requires manual digestion; HG2 is operated by the analyst, produces a strip chart and also requires manual digestion.

11. HG1 requires less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionally scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 ml. For soils, 0.1 gram of sample is taken to a final volume of 50 ml (including all reagents).

12. Quarterly Detection Limits for IC2 are included in this package.

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratories

1.28.92.
Date

mlj\ clp-met.nar

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 01/27/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9112L637

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	BOOH61	Silver, Total	16.1		MG/KG	2.1
		Aluminum, Total	10800		MG/KG	43.0
		Arsenic, Total	2.8		MG/KG	2.1
		Barium, Total	117		MG/KG	43.0
		Beryllium, Total	1.1	u	MG/KG	1.1
		Calcium, Total	8640		MG/KG	1080
		Cadmium, Total	1.1	u	MG/KG	1.1
		Cobalt, Total	11.5		MG/KG	10.7
		Chromium, Total	107		MG/KG	2.1
		Copper, Total	1340		MG/KG	5.4
		Iron, Total	18800		MG/KG	21.5
		Mercury, Total	0.76		MG/KG	0.11
		Potassium, Total	1080	u	MG/KG	1080
		Magnesium, Total	5180		MG/KG	1080
		Manganese, Total	335		MG/KG	3.2
		Sodium, Total	1080	u	MG/KG	1080
		Nickel, Total	93.3		MG/KG	8.6
		Lead, Total	20.2		MG/KG	3.1
		Antimony, Total	12.9	u	MG/KG	12.9
		Selenium, Total	1.0	u	MG/KG	1.0
		Thallium, Total	2.1	u	MG/KG	2.1
		Vanadium, Total	30.3		MG/KG	10.7
		Zinc, Total	56.3		MG/KG	4.3

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOH61

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Matrix (soil/water): SOIL Lab Sample ID: 911263701

Level (low/med): LOW Date Received: 12/06/91

% Solids: 92.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10800.00			P
7440-36-0	Antimony	4.30	U	N	P
7440-38-2	Arsenic	2.80			F
7440-39-3	Barium	117.00			P
7440-41-7	Beryllium	.41	B		P
7440-43-9	Cadmium	.64	U		P
7440-70-2	Calcium	8640.00			P
7440-47-3	Chromium	107.00		N	P
7440-48-4	Cobalt	11.50			P
7440-50-8	Copper	1340.00			P
7439-89-6	Iron	18800.00			P
7439-92-1	Lead	20.20		S	F
7439-95-4	Magnesium	5180.00			P
7439-96-5	Manganese	335.00			P
7439-97-6	Mercury	.76			CV
7440-02-0	Nickel	93.30		N*	P
7440-09-7	Potassium	784.00	B		P
7782-49-2	Selenium	.41	U	NW	F
7440-22-4	Silver	16.10		N	P
7440-23-5	Sodium	178.00	B		P
7440-28-0	Thallium	.41	U		F
7440-62-2	Vanadium	30.30			P
7440-66-6	Zinc	56.30			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9613440.2741

VALIDATION SUMMARY

9613440.2742

91126637-WES-250

300-FF-1 OPERABLE UNIT DATA VALIDATION
WESTINGHOUSE HANFORD COMPANY
DISTRIBUTION & FILE RECORD FORM

Task E-92-15 / 2978-40
2/3/92
Rev. 0

Document Title: 91126637 General Chemistry
Document Number:

Date: 10/20/92
Originator: CMR

HCS - WHC/E - 92 15/T ~~I-084~~

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PROJECT FILES		
MANAGEMENT		Comments
M-1 Correspondence		
M-2 Meeting Minutes		
M-3 Telecons		
M-4 Statements of Work, Task Orders		
M-5 Purchase Requisitions and Receipt documentation		
M-6 Other Management Documents Generated		
M-7 Financial Data		
SOURCE DATA		
S-1 Original Data Packages		
S-2 Memos Transmitting Original Source Packages to WHC		
S-3 Other Original Data Documentation		
TASK TECHNICAL		
T-1 Validation Calculations and Notated Packages	X	
T-2 Progress Memos		
T-3 Completeness Checklists		
T-4 Draft Summary Report(s)		
T-5 Final Summary Report(s)		
T-6 Draft Summary Report Review Comments		
T-7 Other Technical Documentation		

FORM

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT:	REVIEWER: SS	DATE: 5-20-92
LABORATORY: Weston	CASE: 91L637	SDG:
SAMPLES/MATRIX: B00 H61 (Soil)		

1. DATA PACKAGE COMPLETENESS

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

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓		
Cover Page		✓	
Traffic Reports/Chain-of-Custody	✓		
Sample Analysis Data Report Forms	✓		
Standards Data	✓		
QC Summary			
Blanks Summary Report Forms	✓		
Spike Sample Recovery Report Forms	✓		
Duplicate Sample Analysis Report Forms	✓		
Laboratory Control Sample Report Forms		✓	
Raw Data			
Ion Chromatograph Chromatograms	✓		
TOC and TOX Instrument Printouts			
Laboratory Bench Sheets			
Additional Data			
Laboratory Sample Preparation Logs		✓	
Instrument Run Logs	✓		
Internal Laboratory Chain-of-Custory		✓	
Percent Solids Analysis Records	✓		
Reduction Formulae		✓	
Chemist Notebook Pages		✓	

2. HOLDING TIMES

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

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used?	Yes	No	N/A
Are the correlation coefficients ≥0.995?	Yes	No	N/A
Was a balance check conducted prior to the TDS analysis?	Yes	No	N/A
Was the titrant normality checked?	Yes	No	N/A

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Have ICV and CCV been analyzed at the proper frequency?	Yes	No	N/A
Are ICV and CCV percent recoveries within control?	Yes	No	N/A
Are there calculation errors?	Yes	No	N/A

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks?	Yes	No	N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits?	Yes	No	N/A

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are >CRQL, qualify the data as estimated (J). If the spike recovery is <30% and the sample results are less then the IDL qualify the data as unusable (R).

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

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

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

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? Yes No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

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

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

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

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	Yes	No	N/A
Are instrument detection limits below the CRDL?	Yes	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

14. 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 and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

9613440.2745

APPENDIX R
DATA VALIDATION DOCUMENTATION

Roy F. Weston Laboratories

Data Package 9112L637

Conventional Wet Chemistry Analyses

THIS APPENDIX CONSISTS OF FIVE 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.

ATTACHMENT 1

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.

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ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

9613440.2749

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/23/91

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9112L637

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	BOOH61	% Solids	92.8		%	0.10
		Chloride by IC	1.3	u	MG/KG	1.3
		Fluoride by IC	7.3		MG/KG	0.50
		Nitrite by IC	1.3	u	MG/KG	1.3
		Nitrate by IC	2.1		MG/KG	1.3
		Phosphate by IC	7.8		MG/KG	1.3
		Sulfate by IC	3.0		MG/KG	1.3
		Ammonia, as N	1.3	u	MG/KG	1.3

9613440.2750

ATTACHMENT 3

Summary of Data Qualifications

Report #6
Appendix (R)

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9112L637	REVIEWER: AS	DATE: 7/2/92	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
No data qualifiers were required			
pH	NR (not reported)	B00H61	no data

9613440.2752

ATTACHMENT 4

As Qualified Data Summary

9613440.2753

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/23/91

Report # 6
Appendix (R)

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9112L637

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BOOH61	NA ~~% Solids~~	~~92.8~~	~~%~~	0.10
		NA ~~Chloride by IC~~	~~1.3 u~~	~~MG/KG~~	1.3
		Fluoride by IC	7.3	MG/KG	0.50
		Nitrite by IC	1.3 u	MG/KG	1.3
		Nitrate by IC	2.1	MG/KG	1.3
		NA ~~Phosphate by IC~~	~~7.8~~	~~MG/KG~~	1.3
		Sulfate by IC	3.0	MG/KG	1.3
		Ammonia, as N	1.3 u	MG/KG	1.3
		pH	NR		

NA = not applicable to project request
NR = not reported

9613440.2754

ATTACHMENT 5

Data Review Supporting Documentation

COMMENTS (attach additional sheets as necessary):

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	Yes	No	N/A
Are instrument detection limits below the CRDL?	Yes	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

14. 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 and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

Ammonia ok cautions blank spike d.c.

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A Level 2

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

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

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

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? Yes No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

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

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

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

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used?	Yes	No	N/A
Are the correlation coefficients ≥0.995?	Yes	No	N/A
Was a balance check conducted prior to the TDS analysis?	Yes	No	N/A
Was the titrant normality checked?	Yes	No	N/A

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Have ICV and CCV been analyzed at the proper frequency?	Yes	No	N/A
Are ICV and CCV percent recoveries within control?	Yes	No	N/A
Are there calculation errors?	Yes	No	N/A

Level 2

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks?	Yes	No	N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits?	Yes	No	N/A

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are >CRQL, qualify the data as estimated (J). If the spike recovery is <30% and the sample results are less then the IDL qualify the data as unusable (R).

Report #6
Appendix (R)

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 300FF1	REVIEWER: SS	DATE: 5-20-92
LABORATORY: Weston	CASE: 9112L637	SDG:
SAMPLES/MATRIX: B00 H61 (Soil)		

1. DATA PACKAGE COMPLETENESS

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

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓		
Cover Page		✓	
Traffic Reports/Chain-of-Custody	✓		
Sample Analysis Data Report Forms	✓		
Standards Data	✓		
QC Summary			
Blanks Summary Report Forms	✓		
Spike Sample Recovery Report Forms	✓		
Duplicate Sample Analysis Report Forms	✓	✓	
Laboratory Control Sample Report Forms		✓	
Raw Data			
Ion Chromatograph Chromatograms	✓		
TOC and TOX Instrument Printouts			
Laboratory Bench Sheets			
Additional Data			
Laboratory Sample Preparation Logs		✓	
Instrument Run Logs	✓		
Internal Laboratory Chain-of-Custory		✓	
Percent Solids Analysis Records	✓		
Reduction Formulae		✓	
Chemist Notebook Pages		✓	

2. HOLDING TIMES

Were all samples analyzed within holding times? (Yes) No N/A

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

Report #6
Appendix (R)

HOLDING TIME SUMMARY - FORM B-1

SDG: 91/2163	REVIEWER: AS	DATE: 7/2/92	PAGE 1 OF 1
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B00H61	Anions	12/2/91		12/12/91	—	10	—
	% Solid	↓		12/9/91		7	—
No pH	~~pH~~	↓		—	—		
	Ammonia	↓		12/9/91		7	—
—							

9615440.2768

Report #6
Appendix (R)

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 9112L637	REVIEWER: AS	DATE: 7/2/92	PAGE 1 OF 1		
COMMENTS:					
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT:			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
Anions	correlation coefficient = 1.00 ✓				
The	laboratory noted that the IC SO_4 from Autocal #6 was reprocessed				
	due to an incorrect concentration.				
% solid -	no calibration ✓				
Ammonia -	calibration ok ✓ AS 7/6/92				
No pH analysis performed.					

96134002769
WHC-SD-EN-SPP-002, Rev. 1

Report #6
Appendix (R)

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 9112637	REVIEWER: AS	DATE: 7/2/92	PAGE 1 OF 1
COMMENTS:			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
Blank 10	Anions - ND	—				—	—	—	—
	No ~~compounds~~ anions detected								
No % solid	blank (not necessary)	—				—	—	—	—
No ammonia	blank (not necessary)	—				—	—	—	—

9613440.2760

Report #6
Appendix (R)

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9112L637	REVIEWER: AG	DATE: 7/2/92	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B00H61 MS/MSD range for anions	= 92 - 100 %	—	—	—
Ammonia =	96 - 98 % All acceptable	—	—	—
pH = NA				
LCSSO for	Ammonia = 96.3 %	—	—	—
Blank spike Blank/0 =	96.8 - 103 %	—	—	—

9613140.2761
WHC-SD-EN-SPP-002, Rev. 1

Report #6
Appendix (B)

PRECISION DATA SUMMARY - FORM B-5

SDG: 9112L63	REVIEWER AS	DATE: 7/2/92	PAGE 1 OF 1

COMMENTS:

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
Anions %D range	= 0.3 - 3.2%		—	—	—
& ammonia					
(MS/MSD)					
Blank/10 Ammonia %D = 1.1%			—	—	—
Duplicates: B00H61					
Fluoride	7.3	7.1	2.8	—	—
Nitrate	2.1	2.0	3.9	—	—
Phosphate	7.8	8.0	3.0	—	—
Sulfate	3.0	2.9	3.3	—	—

9613440.2262

Report #6
Appendix (R)

CALCULATION SUMMARY - FORM B-6

SDG: 9124637	REVIEWER: AS	DATE: 7/2/92	PAGE 1 OF 1

COMMENTS:

- Level 2 review -

All results calculated, according to method.
Percent of QC checked.

Field Split Sample Comparison and Review

Analyte	TMA SAMPLE B00H60		WESTON SAMPLE B00H61		5XCRDL MG/KG	CRDL MG/KG	<5XCRDL?	TMA FIELD SPLIT %RPD	2XCRDL MG/KG	ABS DIFF	ABS DIFF< 2XCRDL?
Fluoride	8.54	J	7.30		0.005	0.001	0	45.8%	0.002	~~1.24~~	~~0~~ CWR
Nitrite	0.50	UJ	1.30	U	5.000	1.000			2.000	NA	
Nitrate	4.70	J	2.10		5.000	1.000	Y		2.000	2.6	0
Sulfate	28.70	J	3.00		5.000	1.000	Y		2.000	25.7	0
Ammonia, N	14.50	J	1.30	U	0.005	0.001			0.002	EXPLAIN	
pH	8.9	J		NR	NA	NA					

0 = ND

Circled exceedences.
CWR

9615140-2764

Field Split Sample Comparison and Review

Analyte	TMA SAMPLE B00H59		WESTON SAMPLE B00H61		5XCRDL MG/KG	CRDL MG/KG	<5XCRDL?	TMA FIELD SPLIT %RPD	2XCRDL MG/KG	ABS DIFF	ABS DIFF< 2XCRDL?
Fluoride	10.93	J	7.30		0.005	0.001	0	39.8%	0.002	~~3.63~~	~~0~~ ok
Nitrite	0.50	UJ	1.30	U	5.000	1.000			2.000	NA	
Nitrate	5.50	J	2.10		5.000	1.000	Y		2.000	3.4	0
Sulfate	29.20	J	3.00		5.000	1.000	Y		2.000	26.2	0
Ammonia, N	11.00	J	1.30	U	0.005	0.001			0.002	EXPLAIN	
pH	8.9			NR	NA	NA					

0 = no

Circled exceedances.
ank

96130440.2765

9613440.2766

Report #6
Appendix (R)

Calculations

HARTCROWSER

Page 1 of 1

Job No. 2978-40

Project WHC 300FFI Senior Review

Date

Calculations for Wet Chem. 9112L637

Made by Clare Russell

Narrative – no comments.

Samples 1 (B00H61) [split of B00H59, B00H60]

IC (F, NO_2, NO_3, SO_4)

HT - OK
cal - OK
ICV, CCV - OK
blank - OK
(blank spike) LCS - OK
dup - OK

Ammonia

HT - OK
cal - OK
ICV, CCV - OK
blank - OK
LCS - OK

pH ~~WAN OK~~ no pH data ∴ NR

Field Split Precision → all Failed

Recycled Paper

9613440.2767

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 12-06-91
RFW #: 9112L637
W.O. #: 6168-02-01

INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards (blank spikes) were within the control limits of 80-120%.

4. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

5. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limit. All %RPD were within the 20% guidance limit.

6. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

7. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

FEB 1992
RECEIVED
OSM DMO

Margaret M Leahy for 1-8-92
Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

pas.21\i12-637

9613440.2768

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 12/23/91

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9112L637

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	BOOH61	Chloride by IC	52.2	1.3 u	53.9	96.9
		Chloride by IC MSD	51.7	1.3 u	53.9	96.0
		Fluoride by IC	114	7.3	108	99.0
		Fluoride by IC MSD	113	7.3	108	97.6
		Nitrite by IC	54.2	1.3 u	53.9	100
		Nitrite by IC MSD	52.5	1.3 u	53.9	97.3
		Nitrate by IC	54.4	2.1	53.9	96.9
		Nitrate by IC MSD	55.1	2.1	53.9	98.3
		Phosphate by IC	61.0	7.8	53.9	98.9
		Phosphate by IC MSD	60.9	7.8	53.9	98.6
		Sulfate by IC	52.8	3.0	53.9	92.5
		Sulfate by IC MSD	52.6	3.0	53.9	92.1
		Ammonia, as N	52.8	1.3 u	53.9	98.0
		Ammonia, as N MSD	51.3	1.3 u	53.3	96.3
BLANK10	91LICA82-MB1	Chloride by IC	51.2	1.2 u	50.0	102
		Fluoride by IC	102	0.50u	100	102
		Nitrite by IC	51.1	1.2 u	50.0	102
		Nitrate by IC	51.2	1.2 u	50.0	102
		Phosphate by IC	51.4	1.2 u	50.0	103
		Sulfate by IC	48.4	1.2 u	50.0	96.9
LCSS0	91LAM160-LCS	Ammonia, as N	48.4	1.2 u	50.0	96.8
BLANK10	91LAM160-MB1	Ammonia, as N	50.8	1.2 u	50.0	102
		Ammonia, as N MSD	100	1.2 u	100	100

9613440.2769

DIONEX SCHEDULE - C:\DX\SCHEDULE\121291.SCH

Inj#	Sample Name		Method	Data File	Vol.	Dil.	Int.Std.
1	40PPM		..\AS4A7B.m	..\RAWDATC1	1	1	1
2	TEST		..\AS4A7B.m	..\RAWDATC1	1	1	1
3	BLANK		..\AS4A7B.m	..\RAWDATC1	1	1	1
4	AUTOCAL1		..\AS4A7B.m	..\RAWDATC1	1	1	1
5	AUTOCAL2		..\AS4A7B.m	..\RAWDATC1	1	1	1
6	AUTOCAL3		..\AS4A7B.m	..\RAWDATC1	1	1	1
7	AUTOCAL4		..\AS4A7B.m	..\RAWDATC1	1	1	1
8	AUTOCAL5		..\AS4A7B.m	..\RAWDATC1	1	1	1
9	AUTOCAL6		..\AS4A7B.m	..\RAWDATC1	1	1	1
10	40 PPM		..\AS4A7B.m	..\RAWDATC1	1	1	1
11	ICV	5PPM	..\AS4A7B.m	..\RAWDATC1	1	1	1
12	CCV	5PPM	..\AS4A7B.m	..\RAWDATC1	1	1	1
13	BLANK		..\AS4A7B.m	..\RAWDATC1	1	1	1
14	91LIC182-MB1		..\AS4A7B.m	..\RAWDATC1	1	1	1
15	91LIC182-MB1S	10PPM	..\AS4A7B.m	..\RAWDATC1	1	1	1
16	9112L619-001		..\AS4A7B.m	..\RAWDATC1	1	100	1
17	9112L619-001		..\AS4A7B.m	..\RAWDATC1	1	10	1
18	9112L619-001		..\AS4A7B.m	..\RAWDATC1	1	1	1
19	9112L619-001R		..\AS4A7B.m	..\RAWDATC1	1	100	1
20	9112L619-001R		..\AS4A7B.m	..\RAWDATC1	1	10	1
21	9112L619-001R		..\AS4A7B.m	..\RAWDATC1	1	1	1
22	9112L619-001S	10PPM	..\AS4A7B.m	..\RAWDATC1	1	100	1
23	9112L619-001S	10PPM	..\AS4A7B.m	..\RAWDATC1	1	1	1
24	9112L619-001T	10PPM	..\AS4A7B.m	..\RAWDATC1	1	1	1
25	9112L619-002		..\AS4A7B.m	..\RAWDATC1	1	100	1
26	9112L619-002		..\AS4A7B.m	..\RAWDATC1	1	10	1
27	9112L619-002		..\AS4A7B.m	..\RAWDATC1	1	1	1
28	9112L619-003		..\AS4A7B.m	..\RAWDATC1	1	100	1
29	9112L619-003		..\AS4A7B.m	..\RAWDATC1	1	10	1
30	9112L619-003		..\AS4A7B.m	..\RAWDATC1	1	1	1
31	9112L619-004		..\AS4A7B.m	..\RAWDATC1	1	100	1
32	9112L619-004		..\AS4A7B.m	..\RAWDATC1	1	10	1
33	BLANK		..\AS4A7B.m	..\RAWDATC1	1	1	1
34	CCV		..\AS4A7B.m	..\RAWDATC1	1	1	1
35	9112L619-004		..\AS4A7B.m	..\RAWDATC1	1	1	1
36	9112L637-001		..\AS4A7B.m	..\RAWDATC1	1	100	1
37	9112L637-001		..\AS4A7B.m	..\RAWDATC1	1	10	1
38	9112L637-001		..\AS4A7B.m	..\RAWDATC1	1	1	1
39	9112L637-001R		..\AS4A7B.m	..\RAWDATC1	1	100	1
40	9112L637-001R		..\AS4A7B.m	..\RAWDATC1	1	10	1
41	9112L637-001R		..\AS4A7B.m	..\RAWDATC1	1	1	1
42	9112L637-001S	10PPM	..\AS4A7B.m	..\RAWDATC1	1	100	1
43	9112L637-001S	10PPM	..\AS4A7B.m	..\RAWDATC1	1	10	1
44	9112L637-001S	10PPM	..\AS4A7B.m	..\RAWDATC1	1	1	1
45	9112L637-001T	10PPM	..\AS4A7B.m	..\RAWDATC1	1	100	1
46	9112L637-001T	10PPM	..\AS4A7B.m	..\RAWDATC1	1	10	1
47	9112L637-001T	10PPM	..\AS4A7B.m	..\RAWDATC1	1	1	1
48	9112L693-001		..\AS4A7B.m	..\RAWDATC1	1	100	1
49	9112L693-001		..\AS4A7B.m	..\RAWDATC1	1	10	1
50	9112L693-001		..\AS4A7B.m	..\RAWDATC1	1	1	1
51	9112L693-001R		..\AS4A7B.m	..\RAWDATC1	1	100	1
52	9112L693-001R		..\AS4A7B.m	..\RAWDATC1	1	10	1
53	9112L693-001R		..\AS4A7B.m	..\RAWDATC1	1	1	1
54	BLANK		..\AS4A7B.m	..\RAWDATC1	1	1	1
55	CCV		..\AS4A7B.m	..\RAWDATC1	1	1	1

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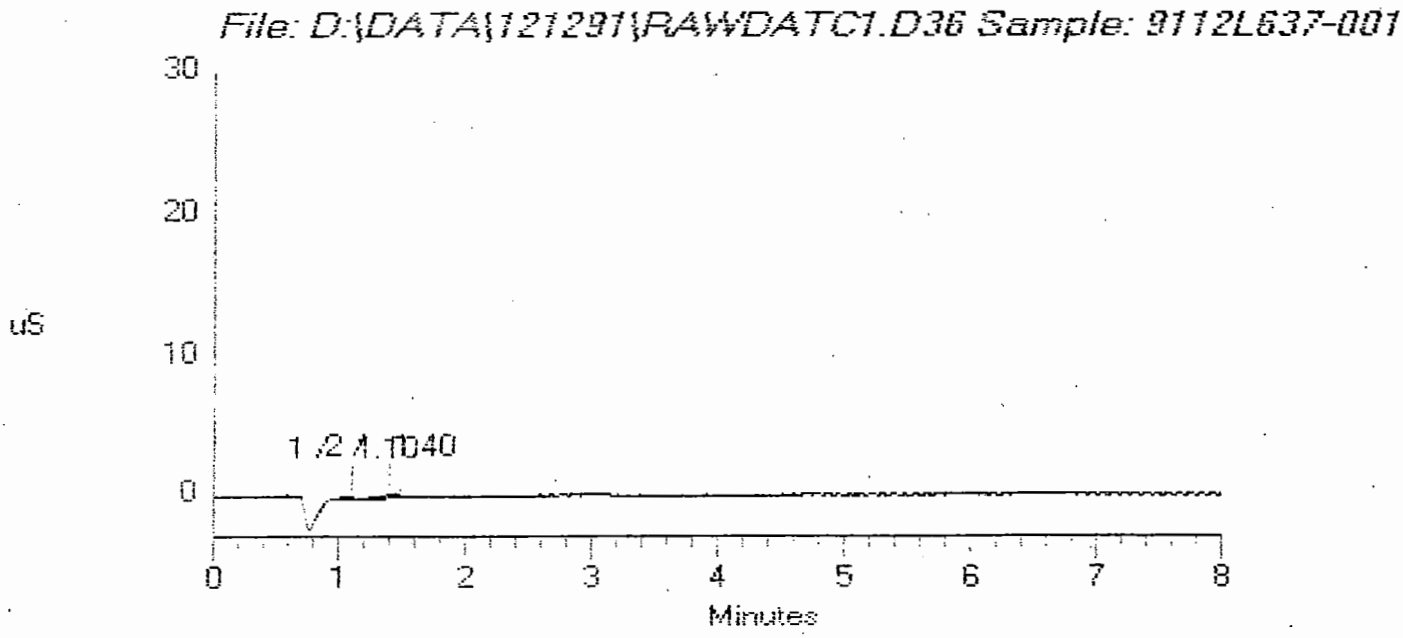
Inj#	Sample Name		Method	Data File	Vol.	Dil.	Int.Std.
56	9112L693-001S	10PPM	..\AS4A7B.m	..\RAWDATC1	1	100	1
57	9112L693-001S	10PPM	..\AS4A7B.m	..\RAWDATC1	1	10	1
58	9112L693-001S	10PPM	..\AS4A7B.m	..\RAWDATC1	1	1	1
59	9112L693-001T	10PPM	..\AS4A7B.m	..\RAWDATC1	1	100	1
60	9112L693-001T	10PPM	..\AS4A7B.m	..\RAWDATC1	1	10	1
61	9112L693-001T	10PPM	..\AS4A7B.m	..\RAWDATC1	1	1	1
62	9112L693-002		..\AS4A7B.m	..\RAWDATC1	1	100	1
63	9112L693-002		..\AS4A7B.m	..\RAWDATC1	1	10	1
64	9112L693-002		..\AS4A7B.m	..\RAWDATC1	1	1	1
65	9112L693-003		..\AS4A7B.m	..\RAWDATC1	1	100	1
66	9112L693-003		..\AS4A7B.m	..\RAWDATC1	1	10	1
67	9112L693-003		..\AS4A7B.m	..\RAWDATC1	1	1	1
68	BLANK		..\AS4A7B.m	..\RAWDATC1	1	1	1
69	CCV		..\AS4A7B.m	..\RAWDATC1	1	1	1
70	HALT		..\HALT.met	..\RAWDATC1	1	1	1
71			..\AS4A7B.m	..\RAWDATC1	1	1	1
72			..\AS4A7B.m	..\RAWDATC1	1	1	1
73			..\AS4A7B.m	..\RAWDATC1	1	1	1
74			..\AS4A7B.m	..\RAWDATC1	1	1	1
75			..\AS4A7B.m	..\RAWDATC1	1	1	1
76			..\AS4A7B.m	..\RAWDATC1	1	1	1
77			..\AS4A7B.m	..\RAWDATC1	1	1	1
78			..\AS4A7B.m	..\RAWDATC1	1	1	1
79			..\AS4A7B.m	..\RAWDATC1	1	1	1
80			..\AS4A7B.m	..\RAWDATC1	1	1	1
81			..\AS4A7B.m	..\RAWDATC1	1	1	1
82			..\AS4A7B.m	..\RAWDATC1	1	1	1
83			..\AS4A7B.m	..\RAWDATC1	1	1	1
84			..\HALT.met	..\RAWDATC1	1	1	1

9613440.2771

Sample Name: 9112L637-001 Date: Thu Dec 12 17:38:03 1991
Data File : D:\DATA\121291\RAWDATC1.D36
Method : C:\DX\METHOD\AS4A7B.met
ACI Address: 1 System : 1 Inject#: 36 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	100	2400	5Hz	0.00	8.00	300

Pk. Num	Ret Time	Component Name	Concentration ug/mL	Height	Area	Bl. Code	%Delta
1	1.10		0.000	200	1768	1	
2	1.40	CHLORIDE	-9.679	259	3181	1	-3.45
		Totals	-9.679	459	4949		



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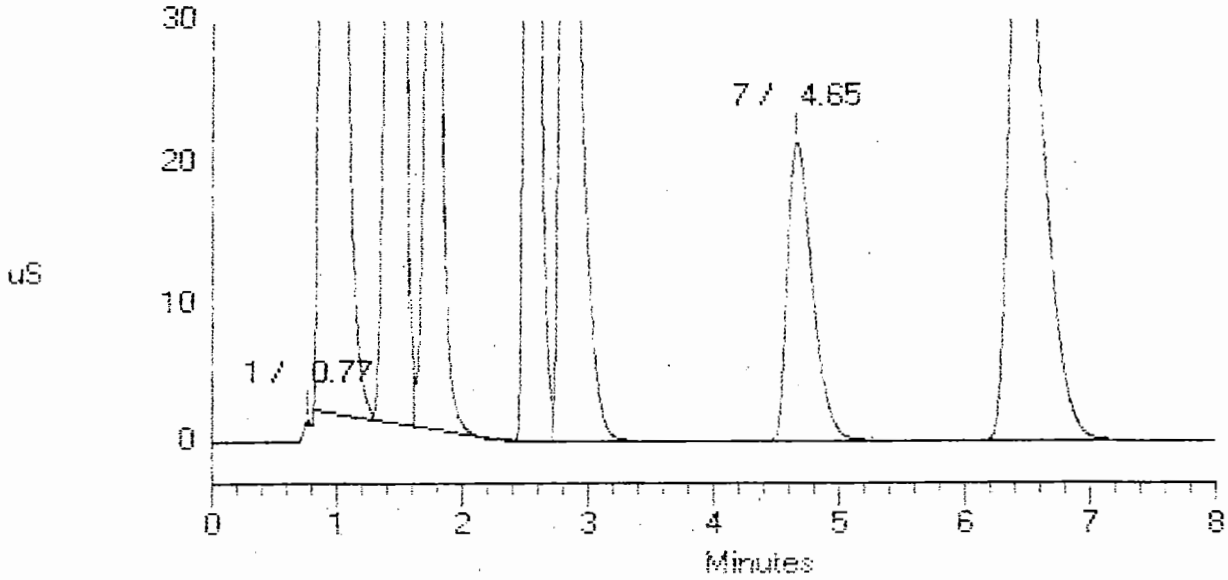
*ICS04 DATA WILL BE RE-PROCESSED DUE TO AN INCORRECT CONCENTRATION VALUE FOR AUTOCAL #6 ICS04. METHOD WILL BE CORRECTED, THEN DATA WILL BE RE-PROCESSED 12-19-91 MG

Sample Name: 40PPM Date: Thu Dec 12 12:00:47 1991
Data File : D:\DATA\121291\RAWDATC1.D01
Method : C:\DX\METHOD\AS4A7B.met
ACI Address: 1 System : 1 Inject#: 1 Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2400	5Hz	0.00	8.00	300

Pk. Num	Ret Time	Component Name	Concentration ug/mL	Height	Area	Bl. Code	%Delta
1	0.77		0.000	277	524	1	
2	0.95	FLUORIDE	-27011.281	268004	2210546	2	0.00
3	1.48	CHLORIDE	-47846.022	149743	1130776	2	1.16
4	1.77	NITRITE	-25619.549	74346	594018	2	0.64
5	2.52	BROMIDE	-62335.889	106016	720617	2	-5.17
6	2.80	NITRATE	-43252.535	59045	651241	2	-7.14
7	4.65	PHOSPHATE	-49600.157	21403	297854	1	-2.74
8	6.43	SULFATE	-43112.580	43099	791067	1	-1.58
		Totals	-298778.014	721932	6396643		

File: D:\DATA\121291\RAWDATC1.D01 Sample: 40PPM



9613440.2773

9112L637 - Page 14; Distillation Page 21

WESTON - Distilled NH_3-N/TKN BY ISE: ANALYSIS LOG

ANALYST: Antony Joseph Parayadath
DATE: 12/9/91
START TIME: 10:15
END TIME: —

CAL STD ID: NH_4Cl
ICV/CCV STD ID: $(NH_4)_2SO_4$
METHOD: (circle) EPA 350.2, NH_3 distilled / EPA 350.3, NH_3 not distilled / EPA 350.3, TKN

LOGBOOK #: 2522
WORKSHEET: NH_3 12095
PREP BATCH: 91LAM160 - NH_3 Solid; 161 - NH_3D Liquid; 162 - NH_3 Liquid

Refer to room temperature logs for daily temperatures and instrument maintenance log for temperature variations affecting this test.

RFW #	pH <2	DILUTION: START → END	RUN ORDER	TIME (T, in min) = CONC	mg/L mg/kg	% SOLIDS, SLOPE, COMMENTS, ETC.
.20		Non C	1	T=1, -18.3, T=2, -24.4		
↓			2	T=3 -26.3 T=4 -26.7 T=5 -27.1		
2.0			3	T=1 -81.8 T=2 -82.6 T=3 82.8		
2.0			4	T=1. -83.0 - Sat 2.00 T=2 2.00.		
10.0			5	T=1, 9.86 T=2, 10.0		
DI			6	T=1 0.192 T=2 0.094 T=3 0.064 T=5 0.048	<0.1	
.10 std			7	T=1 .116 T=2 0.127 T=3 .129 T=4 .129 T=5	.13	
0.20 ppm			8	T=1 .201 T=2 .212 T=3 .213 T=4 0.213 T=5 0.213	.213	
1.0			9	T=1 .967 T=2 .98 T=3 .980 T=4	.980	
2.0			10	T=1 1.92 T=2 1.93 T=3 1.93	1.93	
DI			11	T=1 .117 T=2 0.062 T=3 0.051	<0.1	
DI std (C) NH_3D	HBI LCS		12	T=1 0.051 T=2 0.053 T=3 0.053	<0.1	<1.25 mg/Kg
.20 NH_3 std	CV1		13	T=1 .200 T=2 0.204 T=3 0.207	0.207	2.6 mg/kg
4.0 µm $(NH_4)Cl$	HBI		14	T=1 3.96 T=2 4.03 T=3 4.06	4.06	50.8 mg/Kg
4.0 µm $(NH_4)_2SO_4$	LCS		15	T=1 3.84 T=2 3.87 T=3 3.87	3.87	48.4 mg/Kg
8.0 µm $(NH_4)_2Cl$	HBI		16	T=1 7.99 T=2 8.03 T=3 8.03	8.03	100.4 mg/Kg
10.0 NH_3 std	CV1		17	T=1 10.0 T=2 9.97	10.00	125 mg/Kg
DI	CV1		18	T=1 .097 T=2 0.082 T=3 0.082	<.1	<1.25 mg/Kg
9112L637-001			19	T=1 .094 T=2 0.098 T=3 0.098	<.1	<1.34 mg/Kg 92.75
-001R			20	T=1 0.081 T=2 0.081 T=3 0.081	<.1	<1.35 mg/Kg ↓
.20 NH_3 std	CV2		21	T=1 .199 T=2 0.201 T=3 .206	0.206	2.57 mg/Kg
9112L637-0015			22	T=1 3.80 T=2 3.92 T=3	3.92	52.8 mg/Kg 92.75
-0011			23	T=1 3.85 T=2 3.85 T=3 3.85	3.85	51.3 mg/Kg ↓
10.0 std	CV2		24	T=1 9.86 T=2 9.90 T=3 9.9	9.90	123.8 mg/Kg
DI	CV2	↓	25	T=1 .117 T=2 .067 T=3 0.04	<0.10	

REVIEWED BY/DATE: RD Brane 12/12/91

RFW 21-21-004/F-11/91

WESTON – NH_3-N/TKN BY ISE: ANALYSIS LOG

ANALYST: Antony Joseph Puvayadath
DATE: 12-09-91
START TIME:
END TIME: 1500

CAL STD ID: —
ICV/CCV STD ID: —
METHOD: EPA 350.2, NH_3 distilled
(circle) EPA 350.3, NH_3 not distilled
EPA 350.3, TKN

LOGBOOK #: 2522
WORKSHEET: NH3 1209
PREP BATCH: NH3 12095

Refer to room temperature logs for daily temperatures and instrument maintenance log for temperature variations affecting this test.

RFW #	pH <2	DILUTION: START → END	RUN ORDER	TIME (T, in min) = CONC	mg/L mg/kg	% SOLIDS, SLOPE, COMMENTS, ETC.
9112L623-001	Y		50	T=1 0.06 T=2 0.058 T=3 0.058	0.058 <0.10	
-002	Y		51	T=1 0.036 T=2 T=3	0.036 <0.10	
-004	Y		52	T=1 0.028 T=2 0.028 T=2	0.028 <0.10	
-005	Y		56	T=1 0.068 T2	0.068 <0.10	
-006	Y		53	T=1 .326 T=2 .324 T=3 .328	0.328	SEE RUN 29 PAGE 15 FOR DISTILLED NH3
-006R	Y		54	T=1 .330 T=2 0.331 T=3	0.331	
-006S	1.0 SPIKE		55	T=1 1.29 T=2 1.31 T=2 1.31	1.31	
-003			51.5	T=1 0.035	<0.10 0.035	
.20 std	CV		52.5	T=1 .178 T=2 .196 T=3 .194	.199	
9112L623-007	Y		57	T=1 .282 T=2 .325 T=3 .323	0.323	
9112L624-001	Y		58	T=1 0.074 T=2	<.10	
-002	Y		59	T=1 .035 T=2	<.10	
-003	Y		60	T=1 .038 T=2 T=3	<.10	
-004	Y		61	T=1 0.044	<.1	
-005	Y		62	T=1 0.034 T=2	<.1	
-006	Y		63	T=1 .101 T=2 .108 T=3 .112	0.112	
-007	Y		64	T=1 0.113 T=2 0.110 T=3 0.109	0.113	
-007R	Y		65	T=1 .112 T=2 .111 T=3	0.112	
-007S	1.0 SPIKE		66	T=1 .997 T=2 0.998 T=3 1.00	1.00	
9112L609-001	No pH #7	2mL → 100	67	T=1 5.5 T=2 5.48 T=3 5.47	~~5.5~~ 5.24 RAB 12/10/91	
10.0 std			68	T=1 10.00 T=2 9.94 T=3	~~10.00~~ 9.99 RAB 12/10/91	
DI			69	T=1 .116 T=2 .068	<.1	
.2 std			70	T=1 .194 T=2 .199 T=3 .203	.203	
				RAP 12-09-91		

REVIEWED BY/DATE: RD Brane 12/12/91

9613440.2775

300-FF-1 OPERABLE UNIT DATA VALIDATION
WESTINGHOUSE HANFORD COMPANY
DISTRIBUTION & FILE RECORD FORM

Task E-92-15 /2978-40
2/3/92
Rev. 0

Document Title: Pest/PCB 9112L637 (App. G Rpt. 6)
Document Number:

Date: 10/20/92
Originator: CMR

HCS - WHC/E - 92 15/T 1-056

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PROJECT FILES		
MANAGEMENT		Comments
M-1 Correspondence		
M-2 Meeting Minutes		
M-3 Telecons		
M-4 Statements of Work, Task Orders		
M-5 Purchase Requisitions and Receipt documentation		
M-6 Other Management Documents Generated		
M-7 Financial Data		
SOURCE DATA		
S-1 Original Data Packages		
S-2 Memos Transmitting Original Source Packages to WHC		
S-3 Other Original Data Documentation		
TASK TECHNICAL		
T-1 Validation Calculations and Notated Packages	X	
T-2 Progress Memos		
T-3 Completeness Checklists		
T-4 Draft Summary Report(s)		
T-5 Final Summary Report(s)		
T-6 Draft Summary Report Review Comments		
T-7 Other Technical Documentation		

FORM

ACTION: If positive results do not meet the retention time criteria qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no interferences are noted report the CRQL and if the misidentified peak interferes with a target peak then the report value is qualified as estimated and nondetected (UJ). If positive results were not confirmed on disimilar columns, reject affected results (R). If a 3% OV-1 was used to confirm dieldrin and DDE, reject the affected data (R). If PCB, chlordane or toxaphene identification is questionable qualify the results as presumptive and estimated (NJ). If GC/MS confirmation was not conducted contact the laboratory for explanation and note in the validation narrative.

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

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

8. 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 and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLES

Are the RPD values within specification? 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 RPD values are out of specification and sample results are >5xCRQL qualify positive results 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. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Do positive results meet the retention time window criteria? Yes No N/A

Were positive results analyzed on disimilar columns? Yes No N/A

If dieldrin and DDE were reported was a 3% OV-1 column used for confirmation (2/88 SOW data only)? Yes No N/A

Do retention times and relative peak height ratios match the expected patterns for multipeak compounds (PCB, toxaphene or chlordane)? Yes No N/A

Has GC/MS confirmation been conducted on sample extract concentrations >10 ppm? Yes No N/A

5. ACCURACY

5.1 SURROGATE RECOVERY

Are any surrogate recoveries out of specification?	Yes	No	N/A
Do any samples show nondetects for surrogates?	Yes	No	N/A
Are any method blank surrogates out of specification?	Yes	No	N/A

ACTION: Qualify all associated sample results as estimated (J for detects and UJ for nondetects) for surrogates out of specification. If the surrogate was not detected (0% recovery) in the sample qualify associated nondetects as unusable (R). If method blank surrogates are out of specification and sample surrogates are acceptable, no qualification is required however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has the laboratory analyzed a MS/MSD per matrix for the the sample group?	Yes	No	N/A
Are MS/MSD recoveries within specification?	Yes	No	N/A
Are there any calculation or transcription errors?	Yes	No	N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. 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 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 the 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 performance audit sample results within the acceptance limits?	Yes	No	N/A

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

ACTION: If the retention time criteria are not met and no peaks are present in the samples analyzed after the noncompliant standard within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the expanded windows rejected associated positive and nondetect results (R).

Are RPDs between the calculated and true amounts in the PEMs, INDA and INDB mixes ≤25.0%? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are DDT and endrin breakdowns in the PEMs ≤20.0% (≤30.0% total combined)? Yes No N/A

ACTION: If the breakdown criteria are not met qualify associated positive sample results in accordance with the criteria specified in Section 5.3.1.

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed the method blanks at the required frequency? Yes No N/A

Has the laboratory analyzed a sulfur clean-up blank if required? Yes No N/A

Has the laboratory analyzed instrument blanks at the required frequency? Yes No N/A

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

ACTION: Qualify all associated positive results as nondetects (U) that are <5 times the highest concentration in any acceptable blank.

4.2 FIELD BLANKS

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

ACTION: If target compounds are present in the field blanks qualify all positive sample results <5 times the highest valid field blank concentrations as nondetects (U) and note the results in the validation narrative.

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Is peak resolution acceptable? Yes No N/A

ACTION: If the resolution criteria are not met, reject positive sample results generated after initial calibration (R).

Are DDT and endrin breakdowns ≤20.0% Yes No N/A

ACTION: If the breakdown criteria are not met qualify sample results as described in Section 5.3.1 of the validation requirements.

Are single component target compounds in the PEMs, INDA, INDB and the calibration standards within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the retention time window a review is made of the raw data to determine expanded retention time windows (see Section 5.3.1 of the validation requirements). If all standards and matrix spikes fall within the expanded windows then no qualification of sample results is necessary. If all standards and matrix spikes do not fall within the expanded windows then all affected sample results are qualified as unusable (R).

Are the RPDs acceptable for the PEMs? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are the RSDs for the calibration factors < 10.0% (< 15.0% for the BHC series, DDT, endrin, and methoxychlor)? Yes No N/A

ACTION: If the RSD criteria are not met qualify associated positive sample results as estimated (J).

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Have the analytical sequence requirements been met for the analysis of instrument blanks, PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the analytical sequence requirements are not followed and any of the resolution or retention time criteria listed below are exceeded, reject associated positive results (R).

Is peak resolution acceptable for PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the resolution criteria are not met reject positive sample results generated after a noncompliant standard analysis (R).

Are single component target compounds in the PEMs, INDA and INDB mixes within the retention time windows? Yes No N/A

ACTION: If the endrin breakdown exceeds 20%, qualify all detected results for endrin as estimated (J) and all nondetects as unusable (R) if endrin aldehyde or endrin ketone are detected. In addition, qualify all results for endrin ketone as presumptive and estimated (NJ).

Are DBC retention time differences within specification?	Yes	No	N/A

ACTION: If DBC %D values are outside the limits and the shift is ocurring repeatedly in samples and standards, qualify affected sample results as unusable (R).

3.2 CALIBRATIONS (2/88 SOW)

Are RSD values for aldrin, endrin, DDT and DBC ≤10%?	Yes	No	N/A
Have all standards been analyzed within 72 h of any sample?	Yes	No	N/A
Has a 3-point calibration been conducted for DDT or toxaphene?	Yes	No	N/A
Have all standards been analyzed at the start of each 72-h sequence?	Yes	No	N/A
Have evaluation standards A, B, and C been analyzed within 72 h of any sample?	Yes	No	N/A
Has the confirmation standard mix been analyzed after every five samples?	Yes	No	N/A
Has evaluation standard B analyzed every 10 samples?	Yes	No	N/A
Are %D values for initial and subsequent standards ≤15% for quantitation standards and ≤20% for confirmation standards?	Yes	No	N/A

ACTION: If the RSD criteria were exceeded or three point calibrations not conducted qualify associated detects as estimated (J). If all standards were not analyzed at the beginning of each 72-h sequence qualify associated data as unusable (R). If the confirmation standards were not analyzed properly qualify associated detects as estimated (J). If the continuing calibration criteria were not met qualify associated quantitation data as estimated (J).

Data Package Item	Present?: Yes	No	N/A
Additional Data			
Moisture/% solids data sheets		✓	
Reduction formulae		✓	
Instrument time logs		✓	
Chemist notebook pages		✓	
Sample preparation sheets	✓		

2. HOLDING TIMES

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

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 PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (2/88 SOW)

Are DDT retention times greater than 12 minutes? Yes No N/A

ACTION: If DDT retention time is $\leq$12 minutes and resolution is <25% qualify associated data as unusable (R).

Is resolution between DDT peaks acceptable? Yes No N/A

ACTION: If resolution between DDT peaks is unacceptable qualify associated data as unusable (R).

Do all pesticide standards elute within the established retention time windows? Yes No N/A

ACTION: If the standards do not meet the retention time criteria and peaks are not present near or within the retention time windows no sample qualification is necessary. If peaks are near or within the retention time windows and the standards and matrix spikes do not fall within the expanded retention time windows calculated according to the validation requirements, qualify all associated sample results from the last in-control point as unusable (R).

Are DDT breakdowns $\leq$20%? Yes No N/A

ACTION: If the DDT percent breakdown exceeds 20%, qualify all detected results for DDT as estimated (J) and all nondetects as unusable (R) if DDD and DDE are detected. In addition qualify all results for DDD or DDE as presumptive and estimated (NJ).

Are endrin breakdowns $\leq$20%? Yes No N/A

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT:	REVIEWER: SS	DATE: 5-20-92
LABORATORY: Weston	CASE: 9112L637	SDG:
SAMPLES/MATRIX: B00H61 (Soil)		

1. DATA PACKAGE COMPLETENESS

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

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	✓		
Sample Data			
Sample reports	✓		
Chromatograms	✓		
GC integration reports	✓		
Worksheets		✓	
UV traces from GPC		✓	
GC/MS confirmation spectra		✓	
Standards Data			
Pesticides Evaluation Standards Summary	✓		
Pesticides/PCB Standards Summary	✓		
Pesticides/PCB identification	✓		
Pesticides standard chromatograms	✓		
Raw QC Data			
Blank analysis report forms and chromatograms	✓		
MS/MSD report forms and chromatograms	✓		

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APPENDIX G
DATA VALIDATION DOCUMENTATION

Roy F. Weston Laboratories

Data Package 9112L637

Pesticide and PCB Analyses

THIS APPENDIX CONSISTS OF FIVE 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

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.

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ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

Roy F. Weston, Inc. - Lionville Laboratory

PCBs by GC

Report Date: 12/31/91 14:51

RFW Batch Number: 9112L637 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Page: 1

	Cust ID:	BOOH61	BOOH61	BOOH61	PBLK	PBLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	91LE1653-MB1	91LE1653-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	2.00	4.00	4.00	1.00	2.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg

Surrogate: Di-n-butylchlorendate	I	%	I	%	I	%	I	%	I	%
		fl		fl		fl		fl		fl
Aroclor-1016	170	U	340	U	340	U	80	U	160	U
Aroclor-1221	170	U	340	U	340	U	80	U	160	U
Aroclor-1232	170	U	340	U	340	U	80	U	160	U
Aroclor-1242	170	U	340	U	340	U	80	U	160	U
Aroclor-1248	170	U	340	U	340	U	80	U	160	U
Aroclor-1254	220	J	155 *	%	159 *	%	160	U	149	%
Aroclor-1260	340	U	680	U	670	U	160	U	320	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

00000007

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9613440.2785

ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

CASE NO: 91112L5767637

~~SDG:~~	REVIEWER: CDK	DATE: 7/4/92	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
all	R	B0MH61	matrix interference in slightly high
	J(+)/UA(A)		surrogate recovery;
	/UJ(-)		MS/MSD % recoveries
			out of specifications
			Compound identification
	—		Outside elution
			window;
	—	continuing	calibration % D ?
			out of specification;
			initial calibration
			non linear for
	—		one compound for confirmation column
	—		— DBC retention time shift —
Aroclor-1254	J	B00H61	less than CRQL

9613440.2787

ATTACHMENT 4

As Qualified Data Summary

9613440.2788

0000016

1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOH61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L637-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 12269103.22

Level: (low/med) LOW Date Received: 12/06/91

% Moisture: not dec. 7 dec. Date Extracted: 12/10/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/27/91

GPC Cleanup: (Y/N) Y pH: 7.5 Dilution Factor: 2.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg		
12674-11-2	Aroclor-1016	170	U	U
11104-28-2	Aroclor-1221	170	U	
11141-16-5	Aroclor-1232	170	U	
53469-21-9	Aroclor-1242	170	U	
12672-29-6	Aroclor-1248	170	U	
11097-69-1	Aroclor-1254	220	J	J
11096-82-5	Aroclor-1260	340	U	U

JeB 1/6/92

AS 7/24/92

FORM I PEST 12/88 Rev.

9613440.2789

ATTACHMENT 5

Data Review Supporting Documentation

ACTION: If positive results do not meet the retention time criteria qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no interferences are noted report the CRQL and if the misidentified peak interferes with a target peak then the report value is qualified as estimated and nondetected (UJ). If positive results were not confirmed on disimilar columns, reject affected results (R). If a 3% OV-1 was used to confirm dieldrin and DDE, reject the affected data (R). If PCB, chlordane or toxaphene identification is questionable qualify the results as presumptive and estimated (NJ). If GC/MS confirmation was not conducted contact the laboratory for explanation and note in the validation narrative.

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

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

8. 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 and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT:	REVIEWER: SS	DATE: 5-20-92
LABORATORY: Weston	CASE: 9112L637	SDG:
SAMPLES/MATRIX: B00H61 (Soil)		

1. DATA PACKAGE COMPLETENESS

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

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	✓		
Sample Data			
Sample reports	✓		
Chromatograms	✓		
GC integration reports	✓		
Worksheets		✓	
UV traces from GPC		✓	
GC/MS confirmation spectra		✓	
Standards Data			
Pesticides Evaluation Standards Summary	✓		
Pesticides/PCB Standards Summary	✓		
Pesticides/PCB identification	✓		
Pesticides standard chromatograms	✓		
Raw QC Data			
Blank analysis report forms and chromatograms	✓		
MS/MSD report forms and chromatograms	✓		

Data Package Item	Present?: Yes	No	N/A
Additional Data			
Moisture/% solids data sheets	—	✓	—
Reduction formulae	—	✓	—
Instrument time logs	—	✓	—
Chemist notebook pages	—	✓	—
Sample preparation sheets	✓	—	—

2. HOLDING TIMES

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

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 PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (2/88 SOW)

Are DDT retention times greater than 12 minutes? Yes No N/A

ACTION: If DDT retention time is $\leq$12 minutes and resolution is <25% qualify associated data as unusable (R).

Is resolution between DDT peaks acceptable? Yes No N/A

ACTION: If resolution between DDT peaks is unacceptable qualify associated data as unusable (R).

Do all pesticide standards elute within the established retention time windows? Yes No N/A

ACTION: If the standards do not meet the retention time criteria and peaks are not present near or within the retention time windows no sample qualification is necessary. If peaks are near or within the retention time windows and the standards and matrix spikes do not fall within the expanded retention time windows calculated according to the validation requirements, qualify all associated sample results from the last in-control point as unusable (R).

Are DDT breakdowns $\leq$20%? Yes No N/A

ACTION: If the DDT percent breakdown exceeds 20%, qualify all detected results for DDT as estimated (J) and all nondetects as unusable (R) if DDD and DDE are detected. In addition qualify all results for DDD or DDE as presumptive and estimated (NJ).

Are endrin breakdowns $\leq$20%? Yes No N/A

ACTION: If the endrin breakdown exceeds 20%, qualify all detected results for endrin as estimated (J) and all nondetects as unusable (R) if endrin aldehyde or endrin ketone are detected. In addition, qualify all results for endrin ketone as presumptive and estimated (NJ).

Are DBC retention time differences within specification? Yes No N/A

ACTION: If DBC %D values are outside the limits and the shift is ocurring repeatedly in samples and standards, qualify affected sample results as unusable (R).

3.2 CALIBRATIONS (2/88 SOW)

Are RSD values for aldrin, endrin, DDT and DBC ≤10%? Yes No N/A

Have all standards been analyzed within 72 h of any sample? Yes No N/A

Has a 3-point calibration been conducted for DDT or toxaphene? Yes No N/A

Have all standards been analyzed at the start of each 72-h sequence? Yes No N/A

Have evaluation standards A, B, and C been analyzed within 72 h of any sample? Yes No N/A

Has the confirmation standard mix been analyzed after every five samples? Yes No N/A

Has evaluation standard B analyzed every 10 samples? Yes No N/A

Are %D values for initial and subsequent standards ≤15% for quantitation standards and ≤20% for confirmation standards? Yes No N/A

ACTION: If the RSD criteria were exceeded or three point calibrations not conducted qualify associated detects as estimated (J). If all standards were not analyzed at the beginning of each 72-h sequence qualify associated data as unusable (R). If the confirmation standards were not analyzed properly qualify associated detects as estimated (J). If the continuing calibration criteria were not met qualify associated quantitation data as estimated (J).

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Is peak resolution acceptable? Yes No N/A

ACTION: If the resolution criteria are not met, reject positive sample results generated after initial calibration (R).

Are DDT and endrin breakdowns ≤20.0% Yes No N/A

ACTION: If the breakdown criteria are not met qualify sample results as described in Section 5.3.1 of the validation requirements.

Are single component target compounds in the PEMs, INDA, INDB and the calibration standards within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the retention time window a review is made of the raw data to determine expanded retention time windows (see Section 5.3.1 of the validation requirements). If all standards and matrix spikes fall within the expanded windows then no qualification of sample results is necessary. If all standards and matrix spikes do not fall within the expanded windows then all affected sample results are qualified as unusable (R).

Are the RPDs acceptable for the PEMs? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are the RSDs for the calibration factors < 10.0% (< 15.0% for the BHC series, DDT, endrin, and methoxychlor)? Yes No N/A

ACTION: If the RSD criteria are not met qualify associated positive sample results as estimated (J).

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Have the analytical sequence requirements been met for the analysis of instrument blanks, PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the analytical sequence requirements are not followed and any of the resolution or retention time criteria listed below are exceeded, reject associated positive results (R).

Is peak resolution acceptable for PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the resolution criteria are not met reject positive sample results generated after a noncompliant standard analysis (R).

Are single component target compounds in the PEMs, INDA and INDB mixes within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples analyzed after the noncompliant standard within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the expanded windows rejected associated positive and nondetect results (R).

Are RPDs between the calculated and true amounts in the PEMs, INDA and INDB mixes ≤25.0%? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are DDT and endrin breakdowns in the PEMs ≤20.0% (≤30.0% total combined)? Yes No N/A

ACTION: If the breakdown criteria are not met qualify associated positive sample results in accordance with the criteria specified in Section 5.3.1.

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed the method blanks at the required frequency? Yes No N/A

Has the laboratory analyzed a sulfur clean-up blank if required? Yes No N/A

Has the laboratory analyzed instrument blanks at the required frequency? Yes No N/A

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

ACTION: Qualify all associated positive results as nondetects (U) that are <5 times the highest concentration in any acceptable blank.

4.2 FIELD BLANKS

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

ACTION: If target compounds are present in the field blanks qualify all positive sample results <5 times the highest valid field blank concentrations as nondetects (U) and note the results in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY

All, interpreted

Are any surrogate recoveries out of specification?	Yes	No	N/A
Do any samples show nondetects for surrogates?	Yes	No	N/A
Are any method blank surrogates out of specification?	Yes	No	N/A

ACTION: Qualify all associated sample results as estimated (J for detects and UJ for nondetects) for surrogates out of specification. If the surrogate was not detected (0% recovery) in the sample qualify associated nondetects as unusable (R). If method blank surrogates are out of specification and sample surrogates are acceptable, no qualification is required however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

high recovery 155%

Has the laboratory analyzed a MS/MSD per matrix for the the sample group?	Yes	No	N/A
Are MS/MSD recoveries within specification?	Yes	No	N/A
Are there any calculation or transcription errors?	Yes	No	N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. 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 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 the 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 performance audit sample results within the acceptance limits?	Yes	No	N/A

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

HOLDING TIME SUMMARY - FORM B-1

CASE NO: 91126637

~~SDG:~~	REVIEWER: CDM	DATE: 7/4/92	PAGE 1 OF 1

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B00H61	pest/PCB	12/2/91	12/10	12/27	8	17	none

AS
7/14/92

CALIBRATION DATA SUMMARY - FORM B-2

Case no: 91726637

~~SDG~~:	REVIEWER:	DATE: 7/4/92	PAGE 1 OF 2	
COMMENTS:				
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT: 4		
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
12/26-12/27	4,4'-DDT confirmation		24%	B00H61	none, since
12/26/91	quantitation = 1 to 5%				quant. column is
					ok and no 4,4'-DDT
					was reported
Ccal 12/27/91	15:03 confirmation column				
	Aldrin	4.79 RT	outside retention time window		
	Endosulfan sulfate	11.59	however this IND ~~EVAL~~B is after the		
			sample analysis. No qualifiers		
			are required.		
Ccal 12/12/91	15:01 quantitation				
	Delta-BHC		49.2 %	exceedances occured on IND ~~EVAL~~B	
	Endosulfan sulfate		34.7 %	at the end of the sequence.	
				Does not affect the associated sample.	
12/27/91	15:03 confirmation			No qualifiers required.	
	Delta-BHC		62.9 %		
	Endosulfan sulfate		40.9 %		

96 1344 0 2703

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

CALIBRATION DATA SUMMARY - FORM B-2

CASNO: 91RL637

~~SDG:~~	REVIEWER: Cdm	DATE: 7/4/92	PAGE 2 OF 2		
COMMENTS:					
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT: 4			
CALIB. DATE	COMPOUND	~~RF~~ RT	~~RSD/%D/%R~~	SAMPLES AFFECTED	QUALIFIER
12/27/91	endosulfan sulfate	11.59	Out of window (11.61-11.75)		none since no
12/27/91	delta BHC	Y.D	49.2%	column 3	peaks in the
	endosulfan sulfate		34.7%		vicinity or within the
12/27/91	delta BHC	Y.D	62.9%		window
	aldrin		37.0%	column 4	BOOH col
	endosulfan sulfate		40.9%		Aroclor 1254

Time
1501
1503

B-2

96 1344 LWHCSD-EN-SPP-002, Rev. 1

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

Case no: 9112L637

~~SDG:~~	REVIEWER: CLW	DATE: 7/4/92	PAGE 1 OF 1

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
—	no target compounds detected in the blank samples								—
						AS 7/15/92			

Case No: 91/12L637

ACCURACY DATA SUMMARY - FORM B-4

~~SDG:~~	REVIEWER: CdM	DATE: 7/4/92	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
MS/MSD B00H61 MS/MSD	Aroclor 1254	155	B00H61	~~R~~ J
surrogate B00H61		159		
DBL	all surrogates out -	specification due	to matrix	J
	interference.			
PBLKLE1653-MB	Aroclor-1254	149 %	—	—

96134402 WHC-SD-EN-SPP-002, Rev. 1

PRECISION DATA SUMMARY - FORM B-5

case no: 91126637

~~SDG:~~	REVIEWER CAW	DATE: 7/4/92	PAGE 1 OF 1

COMMENTS:

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
— all precision parameters are within specification —					
B00H61			2%		

9613440.2804

Calculations

HARTCROWSER

Page 1 of 1

Job No. 2978-40

Project WHC

Date 7/22/92

Calculations for Case 9112L637

Made by AS

Case 9112L637 - B00H61

Aroclor-1254

$$= \frac{417806\,(20000)(2)(2)}{1166499\,(4)(.93)(30.4)} = 253.38 \text{ ug/kg}$$

Recycled Paper

CALCULATION SUMMARY - FORM B-6

CALC NO: 91/2L 967

~~SDG:~~	REVIEWER: CM	DATE: 7/4	PAGE 1 OF 1

COMMENTS:

Not applicable - Item 2

3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9112L637-001

MATRIX Spike - Sample No.: BOOH61 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC
Aroclor-1254	264	0	633	155 *	50-150

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Aroclor-1254	263	642	159 *	2	50	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 1 outside limits
Spike Recovery: 2 out of 2 outside limits

COMMENTS:

9613440.2807

0000018

Roy F. Weston, Inc. - Lionville Laboratory 12/27/91 11:47:56

EXTERNAL STANDARD

SAMPLE: 12269103 .22 INST:03 VIAL:F0 SEQ NUMBER:022
TEST : OPCB-T DATE-TIME INJECTED : 12/27/91 05:05:59
COLLECTION TIME : 29.98 DATE-TIME PROCESSED : 12/27/91 11:47:56
METHOD: 03 / 03 REV #: 00103 ANALYST: BARKER SAMP RATE: 0.78
CLIENT ID: BOOH61 SAMPLE VOL: 3.0 ul
CLIENT: WESTINGHOUSE HANFORD COLUMN TYPE: 2250/2401
LAB ID: 9112L637-001 * : CONFIRMED ON COLUMN
SAMPLE WT : % MOISTURE : DILUTION FACTOR : 2.0000

PK NO	PEAK AREA	PEAK HEIGHT	BL	RT MINUTES	GR #	COMPONENT NAME	HEIGHT CONC NG/UL
001	161395	14368	V	1.819			
				1.893	1	ALPHA-BHC	
				2.339	1	GAMMA-BHC	
002	42410	6536	V	2.523			
				2.605	1	BETA-BHC	
003	285741	40231	V	2.787			
				2.846	1	HEPTACHLOR	
004	891655	116307	V	3.025	1	DELTA-BHC	0.012
005	974552	100115	V	3.429	1	ALDRIN	0.011
006	70594	14678	V	3.655			
007	654595	43542	V	4.006			
				4.913	1	HEPT. EPOXIDE	
008	4325979	188076	V	4.989			
				5.433	1	G. CHLORDANE	
009	1941627	93883	V	5.757			
				5.899	1	A. CHLORDANE	
				6.120	1	ENDOSULFAN I	
010	1216249	87176	V	6.263			
011	2400753	95684	V	6.883	1	4,4'-DDE	0.020
				7.380	1	DIELDRIN	
012	1054575	59172	V	7.573			
013	2748173	119831	V	8.537			
				8.895	1	ENDRIN	
014	1458519	56804	V	9.526			
				10.278	1	4,4'-DDD	
				10.615	1	ENDOSULFAN II	
015	1722931	63399	V	10.777			
016	1477707	51751	V	12.117			
				12.321	1	4,4'-DDT	
017	247420	6707	V	13.007			
				13.526	1	ENDRIN ALDEHYDE	
018	64422	2200	V	14.563			
019	489612	13380	V	15.457			
				16.196	1	ENDO. SULFATE	
020	179422	4101	V	17.092			
021	820248	18128	V	18.532			
022	20311056	334706	V	20.768	1	DBC	0.287
				22.691	1	METHOXYCHLOR	
023	994099	11452	V	23.868			
024	67130	854		28.126			

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0000020

Roy F. Weston, Inc. - Lionville Laboratory 12/27/91 12:04:26

EXTERNAL STANDARD

SAMPLE: 12269104 .22 INST:04 VIAL:F0 SEQ NUMBER:022
TEST : OPCB-T DATE-TIME INJECTED : 12/27/91 05:08:25
COLLECTION TIME : 29.98 DATE-TIME PROCESSED : 12/27/91 12:04:26
METHOD: 04 / 04 REV #: 00102 ANALYST: BARKER SAMP RATE: 0.78
CLIENT ID: BOOH61 SAMPLE VOL: 3.0 ul
CLIENT: WESTINGHOUSE HANFORD COLUMN TYPE: SP2100
LAB ID: 9112L637-001 RAW FILE: RAW2:LR141747
SAMPLE WT : % MOISTURE : DILUTION FACTOR : 2.0000

PK NO	PEAK AREA	PEAK HEIGHT	BL	RT MINUTES	GR #	COMPONENT NAME	HEIGHT CONC NG/UL
001	1264859	328379	V	1.259			
002	515110	121023	V	1.378			
003	3408115	351284	V	1.631			
004	34622	7329	V	2.039			
				2.221	1	ALPHA-BHC	
005	127294	21183	V	2.256			
				2.387	1	BETA-BHC	
006	137824	10561	V	2.445			
				2.559	1	GAMMA-BHC	
				2.665	1	DELTA-BHC	
007	5204199	346345	V	2.866			
008	983923	97720	V	3.468			
				3.910	1	HEPTACHLOR	
009	7538011	490736	V	4.166			
010	1349537	132437	V	4.647			
				4.818	1	ALDRIN	
011	626225	81108	V	4.936			
012	355364	34759	V	5.244			
				5.764	1	HEPT. EPOXIDE	
013	11224179	586227	V	5.848			
014	541939	48160	V	6.459			
				6.528	1	G. CHLORDANE	
015	4393767	200019	V	6.948			
				7.071	1	ENDOSULFAN I	
				7.164	1	A. CHLORDANE	
016	1496743	70304	V	7.832			
				7.960	1	4,4'-DDE	
				8.154	1	DIELDRIN	
017	3003303	196391	V	8.244			
018	97585	8053	V	8.826			
				9.059	1	ENDRIN	
				9.254	1	ENDOSULFAN II	
019	6925313	255216	V	9.694			
				9.944	1	4,4'-DDD	
				10.179	1	ENDRIN ALDEHYDE	
020	6118797	212138	V	11.210			
				11.677	1	ENDO. SULFATE	
				12.713	1	4,4'-DDT	
021	7215143	139907	V	13.086			
022	2395291	47361	V	14.984	1	ENDRIN KETONE	0.010

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0000022

8D

PESTICIDE EVALUATION STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12269103

RFW Lot No.: 9112L637

Instrument ID: 03 GC Column ID: 2250/2401

Dates of Analyses: 12/26/91 to 12/27/91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (</= 10.0%)	
ALDRIN	5952015	5981701	6230805	2.5	
ENDRIN	1434001	1403579	1450945	1.7	
4,4'-DDT	1161429	1215873	1271125	4.5	(1)
DBC	875223	836054	850259	2.3	

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve.

Evaluation Check for 4,4'-DDT/Endrin Breakdown
(percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
01	INIT. EVAL MIX B	12/26/91	1744	9.9	4.4	
02	EVAL MIX B	12/27/91	0326	5.0	13.0	
03	EVAL MIX B	12/27/91	1109	9.3	12.8	

(2) See Form Instructions.

9613440.2810

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8D

PESTICIDE EVALUATION STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12269104

RFW Lot No.: 9112L637

Instrument ID: 04 GC Column ID: SP2100

Dates of Analyses: 12/26/91 to 12/27/91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (</= 10.0%)
ALDRIN	~~9371025~~ 10049	~~10635213~~ 11486	13314 0	~~87.1~~ 14.1 *
ENDRIN	2722513	3006703	3179945	7.8
4,4'-DDT	1133199	1631959	1856743	24.0 (1)
DBC	1824723	1879223	2038763	5.8

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve.

Evaluation Check for 4,4'-DDT/Endrin Breakdown
(percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
01	INIT. EVAL MIX B	12/26/91	1747			15.2
02	EVAL MIX B	12/27/91	0328			13.9
03	EVAL MIX B	12/27/91	1111			21.9

(2) See Form Instructions.

* Calculated manually from HP chromatograms
HP chromatograms ~~enclosure~~ are included in package
DS 1-14-92

9613440.2811

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8E

PESTICIDE EVALUATION STANDARD SUMMARY
Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12269103

Instrument ID: 03 GC Column ID: 2250/2401

Dates of Analyses: 12/26/91 to 12/27/91

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALA	21-60	12/26/91	1711	0.0	
02	EVALB	25-60	12/26/91	1744	0.0	
03	EVALC	22-60	12/26/91	1817	0.0	
04	INDA	19-67	12/26/91	1906	0.0	
05	INDB	19-68	12/26/91	1940	0.0	
06	TOXAPH	05-270	12/26/91	2013	0.0	
07	AR1660	04-52	12/26/91	2046	0.0	
08	AR1221	01-272	12/26/91	2120	0.0	
09	AR1232	00-307	12/26/91	2153	0.1	
10	AR1242	00-308	12/26/91	2227	0.4	
11	AR1248	00-309	12/26/91	2300	0.2	
12	AR1254	01-304	12/26/91	2334	0.1	
13	ZZZZZ	9112L612-028	12/27/91	0008	0.2	
14	ZZZZZ	91LE1657-MB1	12/27/91	0041	0.5	
15	ZZZZZ	91LE1657-MB1S	12/27/91	0113	0.6	
16	ZZZZZ	91LE1657-MB1T	12/27/91	0147	0.5	
17	ZZZZZ	9112L632-003	12/27/91	0220	0.5	
18	ZZZZZ	HEXANE	12/27/91	0253	-0.5	
19	EVALB	25-60	12/27/91	0326	0.4	
20	PBLKLE1653	91LE1653-MB1	12/27/91	0359	0.5	
21	PBLKLE1653 MS	91LE1653-MB1S	12/27/91	0432	0.5	
22	BOOH61	9112L637-001	12/27/91	0505	0.5	
23	BOOH61MS	9112L637-001S	12/27/91	0539	0.6	
24	BOOH61MSD	9112L637-001T	12/27/91	0612	0.5	
25	ZZZZZ	HEXANE	12/27/91	0645	-0.5	
26	INDA	19-67	12/27/91	0718	0.1	
27	ZZZZZ	91LE1678-MB1	12/27/91	0751	0.1	
28	ZZZZZ	91LE1678-MB1S	12/27/91	0824	0.1	
29	ZZZZZ	91LE1678-MB1T	12/27/91	0857	0.2	
30	ZZZZZ	9112L692-012	12/27/91	0930	0.2	
31	ZZZZZ	9111L568-004T	12/27/91	1003	0.4	
32	ZZZZZ	HEXANE	12/27/91	1037		
33	EVALB	25-60	12/27/91	1109	0.3	
34	ZZZZZ	9112L862-004	12/27/91	1142	0.2	
35	ZZZZZ	9112L862-004S	12/27/91	1215	0.2	
36	ZZZZZ	9112L862-004T	12/27/91	1249	0.6	
37	ZZZZZ	91LE1778-MB1	12/27/91	1322	0.1	
38	ZZZZZ	91LE1778-MB1S	12/27/91	1355	0.5	

* Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns)

8E

PESTICIDE EVALUATION STANDARD SUMMARY
Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12269103

Instrument ID: 03 GC Column ID: 2250/2401

Dates of Analyses: 12/26/91 to 12/27/91

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
39	ZZZZZ	HEXANE	12/27/91	1428	0.2	
40	INDB	19-68	12/27/91	1501	0.6	

* Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns)

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8E

PESTICIDE EVALUATION STANDARD SUMMARY
Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12269104

Instrument ID: 04 GC Column ID: SP2100

Dates of Analyses: 12/26/91 to 12/27/91

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALA	21-60	12/26/91	1714	0.0	
02	EVALB	25-60	12/26/91	1747	0.0	
03	EVALC	22-60	12/26/91	1819	0.0	
04	INDA	19-67	12/26/91	1909	0.0	
05	INDB	19-68	12/26/91	1942	0.0	
06	TOXAPH	05-270	12/26/91	2015	-0.1	
07	AR1660	04-52	12/26/91	2049	0.1	
08	AR1221	01-272	12/26/91	2122	0.0	
09	AR1232	00-307	12/26/91	2156	0.1	
10	AR1242	00-308	12/26/91	2229	0.4	
11	AR1248	00-309	12/26/91	2303	0.1	
12	AR1254	01-304	12/26/91	2336	0.1	
13	ZZZZZ	9112L612-028	12/27/91	0010	0.3	
14	ZZZZZ	91LE1657-MB1	12/27/91	0043	0.5	
15	ZZZZZ	91LE1657-MB1S	12/27/91	0116	0.4	
16	ZZZZZ	91LE1657-MB1T	12/27/91	0149	0.3	
17	ZZZZZ	9112L632-003	12/27/91	0222	0.1	
18	ZZZZZ	HEXANE	12/27/91	0256	-0.2	
19	EVALB	25-60	12/27/91	0328	0.3	
20	PBLKLE1653	91LE1653-MB1	12/27/91	0401		*
21	PBLKLE1653 MS	91LE1653-MB1S	12/27/91	0435	0.3	
22	BOOH61	9112L637-001	12/27/91	0508		*
23	BOOH61MS	9112L637-001S	12/27/91	0541	0.2	
24	BOOH61MSD	9112L637-001T	12/27/91	0614	0.1	
25	ZZZZZ	HEXANE	12/27/91	0648	-0.5	
26	INDA	19-67	12/27/91	0720	0.1	
27	ZZZZZ	91LE1678-MB1	12/27/91	0753	0.1	
28	ZZZZZ	91LE1678-MB1S	12/27/91	0826	0.0	
29	ZZZZZ	91LE1678-MB1T	12/27/91	0859	0.0	
30	ZZZZZ	9112L692-012	12/27/91	0932	0.3	
31	ZZZZZ	9111L568-004T	12/27/91	1005	-0.4	
32	ZZZZZ	HEXANE	12/27/91	1039	-0.1	
33	EVALB	25-60	12/27/91	1111	0.2	
34	ZZZZZ	9112L862-004	12/27/91	1144	0.1	
35	ZZZZZ	9112L862-004S	12/27/91	1218	0.0	
36	ZZZZZ	9112L862-004T	12/27/91	1251	0.2	
37	ZZZZZ	91LE1778-MB1	12/27/91	1324	0.7	
38	ZZZZZ	91LE1778-MB1S	12/27/91	1357	0.6	

* Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns)

9613440.2814

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8E

PESTICIDE EVALUATION STANDARD SUMMARY
Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12269104

Instrument ID: 04 GC Column ID: SP2100

Dates of Analyses: 12/26/91 to 12/27/91

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
39	ZZZZZ	HEXANE	12/27/91	1430	-0.7	
40	INDB	19-68	12/27/91	1503	0.6	

* Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns)

PESTICIDE/PCB STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12269103.26

RFW Lot No.: 9112L637

Instrument ID: 03 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 12/26/91 TO: 12/26/91
TIME(S) OF ANALYSIS FROM: 1906 TO: 2334

DATE OF ANALYSIS 12/27/91
TIME OF ANALYSIS 0718
EPA SAMPLE NO. (STANDARD) INDA 19-67

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.89	1.87	1.91	10677191	1.89	10143535	Y	5.0
Beta-BHC	2.60	2.58	2.64	3127805				
Delta-BHC	3.02	3.00	3.06	6626893				
gamma-BHC (Lindane)	2.34	2.31	2.37	8946889	2.34	8526151	Y	4.7
Heptachlor	2.85	2.82	2.88	8121643	2.84	7781601	Y	4.2
Aldrin	3.41	3.38	3.44	6125289				
Heptachlor epoxide	4.91	4.87	4.95	4355029				
Endosulfan I	6.12	6.06	6.18	3605077	6.11	3425033	Y	5.0
Dieldrin	7.38	7.31	7.45	3047871	7.37	2809643	Y	7.8
4,4'-DDE	6.90	6.84	6.96	3257149				
Endrin	8.90	8.82	8.98	1562569	8.80	1514825	Y	3.1
Endosulfan II	10.62	10.50	10.72	1661799				
4,4'-DDD	10.28	10.18	10.38	1540799	10.27	1450701	Y	5.8
Endosulfan sulfate	16.20	16.06	16.34	1216453				
4,4'-DDT	12.32	12.18	12.46	1307861	12.31	1242009	Y	5.0
Methoxychlor	22.69	22.43	22.95	450008	22.68	436125	Y	3.1
Endrin ketone	******	******	******	COELUTES *				
alpha-Chlordane	5.90	5.85	5.95	3433661				
gamma-Chlordane	5.43	5.38	5.48	3468947				
Toxaphene	10.84	10.75	10.93	220837				
Aroclor-1016	2.79	2.76	2.82	1295273				
Aroclor-1221	1.76	1.74	1.78	330192				
Aroclor-1232	2.79	2.77	2.81	636710				
Aroclor-1242	2.78	2.75	2.81	1064111				
Aroclor-1248	2.78	2.75	2.81	1160681				
Aroclor-1254	8.57	8.48	8.66	1166499				
Aroclor-1260	9.58	9.51	9.65	1225169				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
%D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

PESTICIDE/PCB STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12269103.40

RFW Lot No.: 9112L637

Instrument ID: 03 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 12/26/91 TO: 12/26/91
TIME(S) OF ANALYSIS FROM: 1906 TO: 2334

DATE OF ANALYSIS 12/27/91
TIME OF ANALYSIS 1501
EPA SAMPLE NO. (STANDARD) INDB 19-68

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.89	1.87	1.91	10677191				
Beta-BHC	2.60	2.58	2.64	3127805	2.60	3013651	Y	3.6
Delta-BHC	3.02	3.00	3.06	6626893	3.01	3363233	Y	49.2
gamma-BHC (Lindane)	2.34	2.31	2.37	8946889				
Heptachlor	2.85	2.82	2.88	8121643				
Aldrin	3.41	3.38	3.44	6125289	3.39	5823951	Y	4.9
Heptachlor epoxide	4.91	4.87	4.95	4355029	4.89	4167351	Y	4.3
Endosulfan I	6.12	6.06	6.18	3605077				
Dieldrin	7.38	7.31	7.45	3047871				
4,4'-DDE	6.90	6.84	6.96	3257149	6.86	3137217	Y	3.7
Endrin	8.90	8.82	8.98	1562569				
Endosulfan II	10.62	10.50	10.72	1661799	10.56	1587143	Y	4.5
4,4'-DDD	10.28	10.18	10.38	1540799				
Endosulfan sulfate	16.20	16.06	16.34	1216453	16.09	794150	Y	34.7
4,4'-DDT	12.32	12.18	12.46	1307861				
Methoxychlor	22.69	22.43	22.95	450008				
Endrin ketone	******	******	******	COELUTES *				
alpha-Chlordane	5.90	5.85	5.95	3433661	5.87	3236133	Y	5.8
gamma-Chlordane	5.43	5.38	5.48	3468947	5.41	3267251	Y	5.8
Toxaphene	10.84	10.75	10.93	220837				
Aroclor-1016	2.79	2.76	2.82	1295273				
Aroclor-1221	1.76	1.74	1.78	330192				
Aroclor-1232	2.79	2.77	2.81	636710				
Aroclor-1242	2.78	2.75	2.81	1064111				
Aroclor-1248	2.78	2.75	2.81	1160681				
Aroclor-1254	8.57	8.48	8.66	1166499				
Aroclor-1260	9.58	9.51	9.65	1225169				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
%D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

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PESTICIDE/PCB STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12269104.26

RFW Lot No.: 9112L637

Instrument ID: 04 GC Column ID: SP2100

DATE(S) OF ANALYSIS FROM: 12/26/91 TO: 12/26/91
TIME(S) OF ANALYSIS FROM: 1909 TO: 2336

DATE OF ANALYSIS 12/27/91
TIME OF ANALYSIS 0720
EPA SAMPLE NO. (STANDARD) INDA 19-67

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	2.22	2.20	2.24	7174815	2.22	7314617	N	1.9
Beta-BHC	2.39	2.37	2.41	8445447				
Delta-BHC	2.66	2.64	2.68	9867419				
gamma-BHC (Lindane)	2.56	2.54	2.58	8505441	2.55	7838385	N	7.8
Heptachlor	3.91	3.89	3.93	3241471	3.90	3884383	N	19.8 dc
Aldrin	4.82	4.80	4.84	46936				
Heptachlor epoxide	5.76	5.73	5.79	10570805				
Endosulfan I	7.07	7.04	7.10	7952183	7.06	7626167	N	4.1
Dieldrin	8.15	8.10	8.20	7071045	8.15	6725425	N	4.9
4,4'-DDE	7.96	7.91	8.01	7170125				
Endrin	9.06	9.00	9.12	3358319	9.05	3349451	N	0.3
Endosulfan II	9.25	9.20	9.30	4750063				
4,4'-DDD	9.94	9.87	10.01	2961779	9.93	2880867	N	2.7
Endosulfan sulfate	11.68	11.61	11.75	2112045				
4,4'-DDT	12.71	12.61	12.81	1716789	12.70	1680475	N	2.1
Methoxychlor	18.15	18.04	18.26	1478675	18.14	1445793	N	2.2
Endrin ketone	14.84	14.74	14.94	3264357				
alpha-Chlordane	7.16	7.11	7.21	8505095				
gamma-Chlordane	6.53	6.48	6.58	8601131				
Toxaphene	9.88	9.58	10.18	672446				
Aroclor-1016	3.48	3.45	3.51	3145659				
Aroclor-1221	2.13	2.11	2.15	713754				
Aroclor-1232	2.21	2.19	2.23	1489355				
Aroclor-1242	3.47	3.45	3.49	2864227				
Aroclor-1248	5.82	5.79	5.85	3224807				
Aroclor-1254	6.81	6.76	6.86	3199325				
Aroclor-1260	11.31	11.22	11.40	2892315				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
%D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

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9

PESTICIDE/PCB STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12269104.40

RFW Lot No.: 9112L637

Instrument ID: 04 GC Column ID: SP2100

DATE(S) OF ANALYSIS FROM: 12/26/91 TO: 12/26/91	DATE OF ANALYSIS 12/27/91
TIME(S) OF ANALYSIS FROM: 1909 TO: 2336	TIME OF ANALYSIS 1503
	EPA SAMPLE NO. (STANDARD) INDB 19-68

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	2.22	2.20	2.24	7174815				
Beta-BHC	2.39	2.37	2.41	8445447	2.38	8174735	N	3.2
Delta-BHC	2.66	2.64	2.68	9867419	2.64	3663851	N	62.9
gamma-BHC (Lindane)	2.56	2.54	2.58	8505441				
Heptachlor	3.91	3.89	3.93	3241471				3.7
Aldrin	4.82	4.80	4.84	46936	4.79	10478451	N	~~22200~~ B.1
Heptachlor epoxide	5.76	5.73	5.79	10570805	5.73	10145185	N	4.0
Endosulfan I	7.07	7.04	7.10	7952183				
Dieldrin	8.15	8.10	8.20	7071045				
4,4'-DDE	7.96	7.91	8.01	7170125	7.91	6896551	N	3.8
Endrin	9.06	9.00	9.12	3358319				
Endosulfan II	9.25	9.20	9.30	4750063	9.20	4505941	N	5.1
4,4'-DDD	9.94	9.87	10.01	2961779				
Endosulfan sulfate	11.68	11.61	11.75	2112045	11.59	1249051	N	40.9
4,4'-DDT	12.71	12.61	12.81	1716789				
Methoxychlor	18.15	18.04	18.26	1478675				
Endrin ketone	14.84	14.74	14.94	3264357	14.74	3028575	N	7.2
alpha-Chlordane	7.16	7.11	7.21	8505095	7.12	8063567	N	5.2
gamma-Chlordane	6.53	6.48	6.58	8601131	6.49	8225501	N	4.4
Toxaphene	9.88	9.58	10.18	672446				
Aroclor-1016	3.48	3.45	3.51	3145659				
Aroclor-1221	2.13	2.11	2.15	713754				
Aroclor-1232	2.21	2.19	2.23	1489355				
Aroclor-1242	3.47	3.45	3.49	2864227				
Aroclor-1248	5.82	5.79	5.85	3224807				
Aroclor-1254	6.81	6.76	6.86	3199325				
Aroclor-1260	11.31	11.22	11.40	2892315				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
%D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

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10

PESTICIDE/PCB IDENTIFICATION

CLIENT SAMPLE NO.

BOOH61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

GC Column ID (1): 2250/2401 GC Column ID (2): SP2100

Instrument ID (1): 03 Instrument ID (2): 04

Lab Sample ID: 9112L637-001 GC Sample ID: 12269104.22

Lab File ID: _____ (only if confirmed by GCMS)

PESTICIDE/PCB	RETENTION TIME	RT WINDOW OF STANDARD FROM	TO	QUANT? (Y/N)	GC/MS? (Y/N)
01 Aroclor-1254	Column 1 8.54	8.48	8.66	Y	N
02	* Column 2 ~~9.69~~	6.76	6.86	N	N

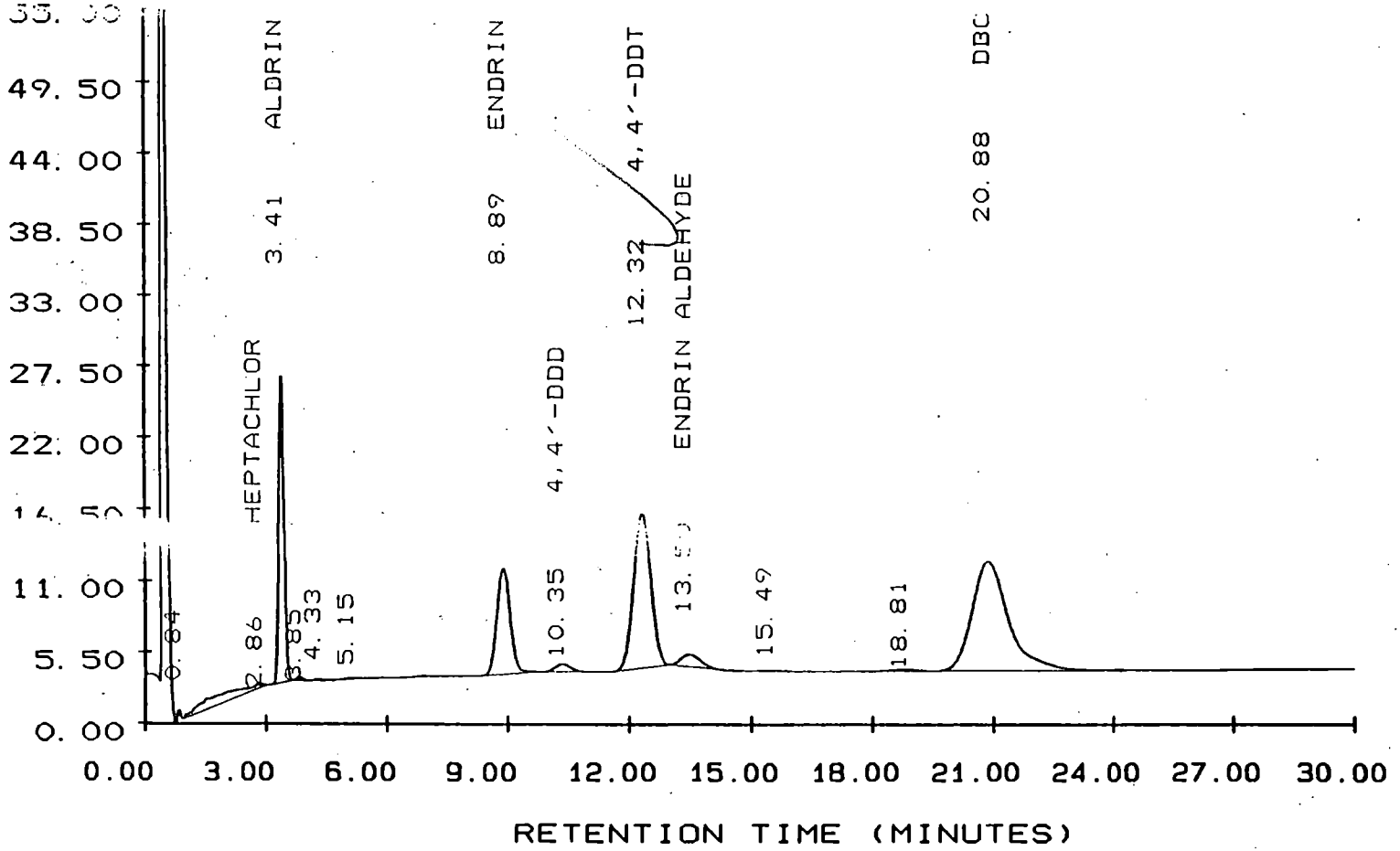
* Column 2 PCB are identified by peak pattern and are not dependent on Retention times.

Comments:

EVALA 21-60

SAMPLE NO. : 12269103 .01
TEST NO. :
METHOD NO. : 03 / 03

INSTRUMENT: 03
DATE TIME: 12/26/91 17:11:26
PAGE NO. : 01



Y MAXIMUM: 55284.
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START TIME: 0.00
END TIME: 30.00

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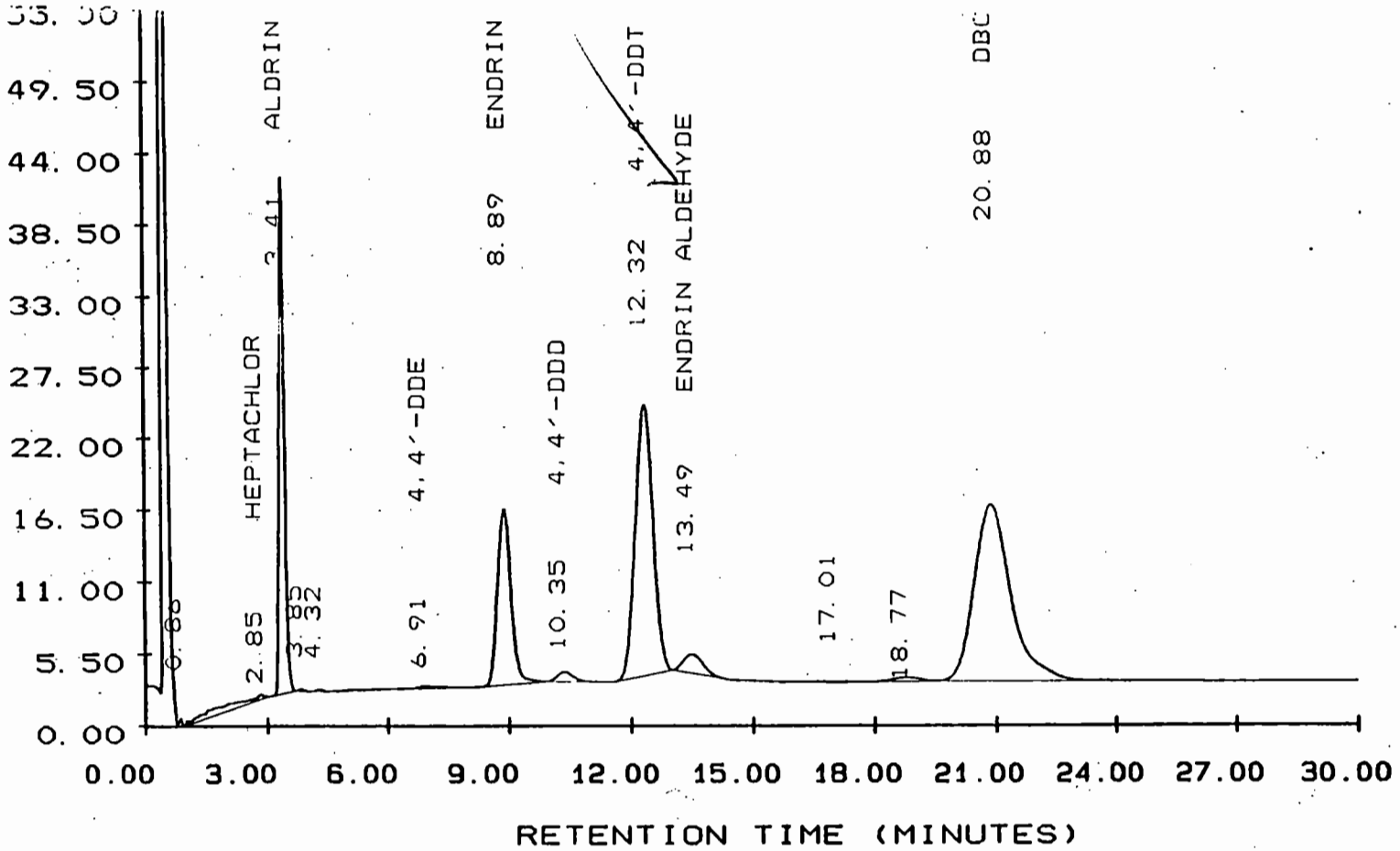
96134402820

EVALB 25-60

SAMPLE NO. : 12269103 .02
TEST NO. :
METHOD NO. : 03 / 03

INSTRUMENT: 03
DATE TIME: 12/26/91 17:44:37
PAGE NO. : 01



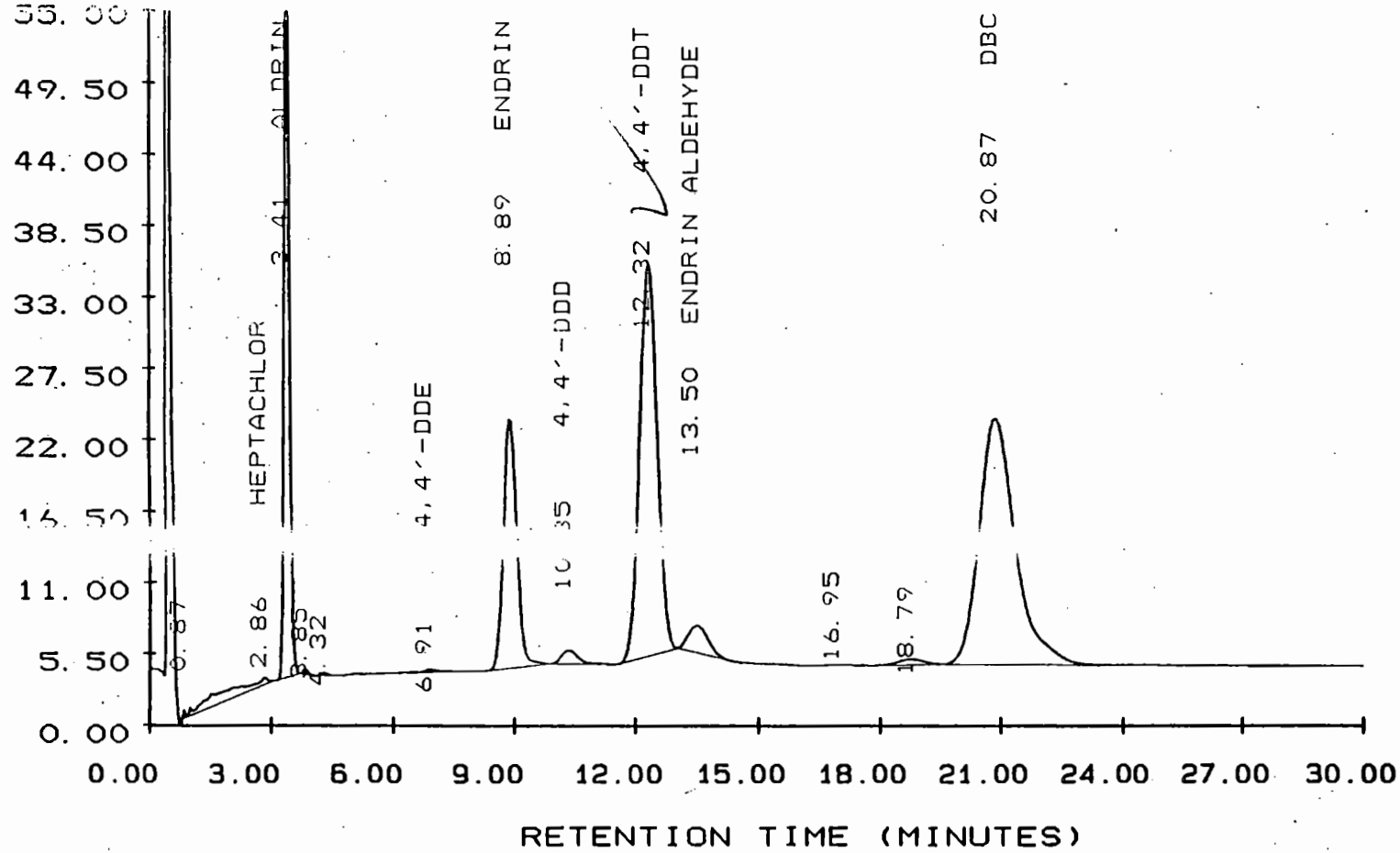
Y MAXIMUM: 55594.
Y MINIMUM: 3923.

START TIME: 0.00
END TIME: 30.00

0000035
1287-04946-96

EVALC 22-60

SAMPLE NO. : 12269103 . 03 INSTRUMENT: 03
TEST NO. : DATE TIME: 12/26/91 18:17:29
METHOD NO. : 03 / 03 PAGE NO. : 01

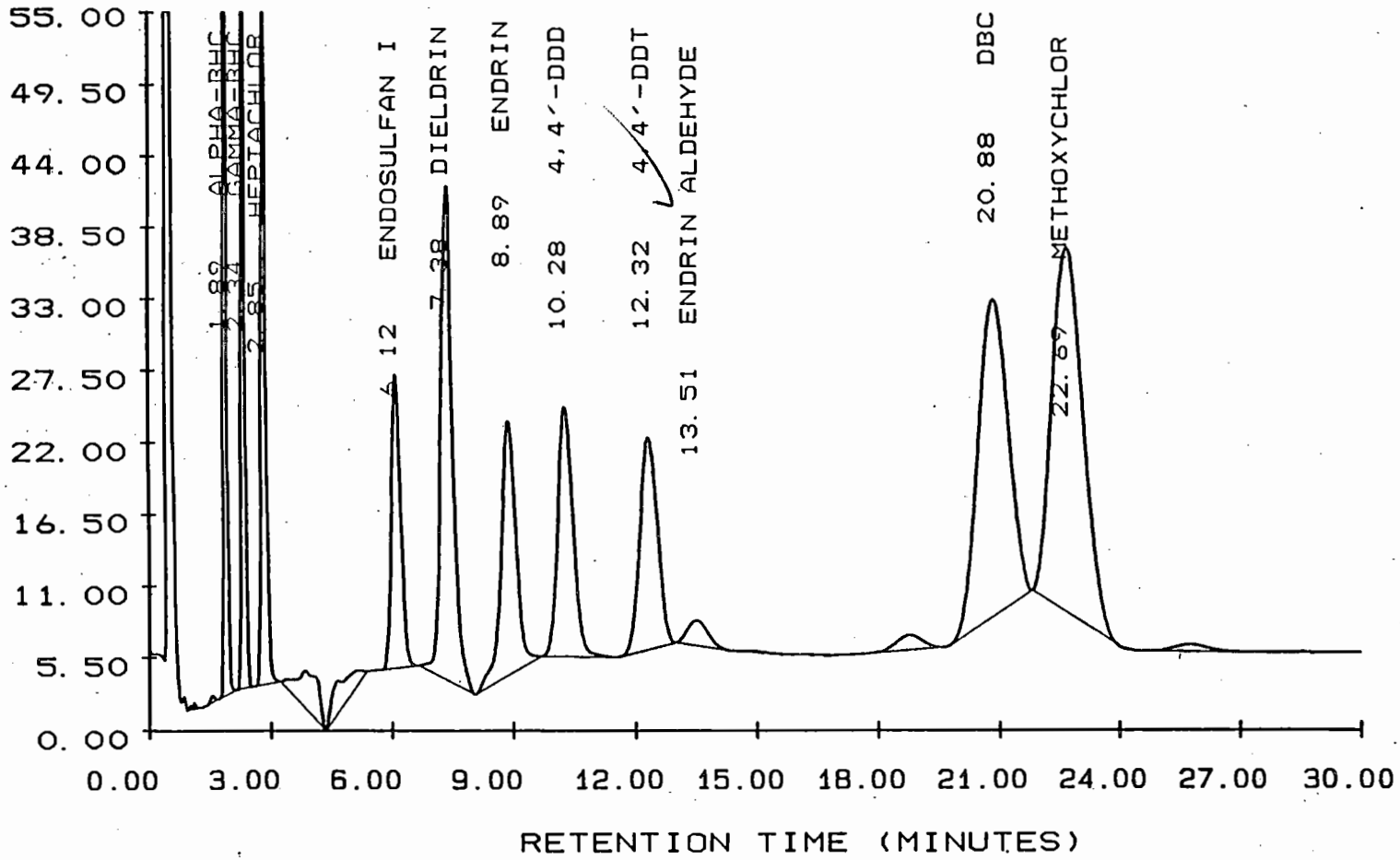


Y MAXIMUM: 55059. START TIME: 0.00
Y MINIMUM: 2730. END TIME: 30.00

000038
96130402822

INDA 19-67

SAMPLE NO. : 12269103 .04 INSTRUMENT: 03
TEST NO. : DATE TIME: 12/26/91 19:06:50
METHOD NO. : 03A / 03 PAGE NO. : 01



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Y MINIMUM: 1245. END TIME: 30.00

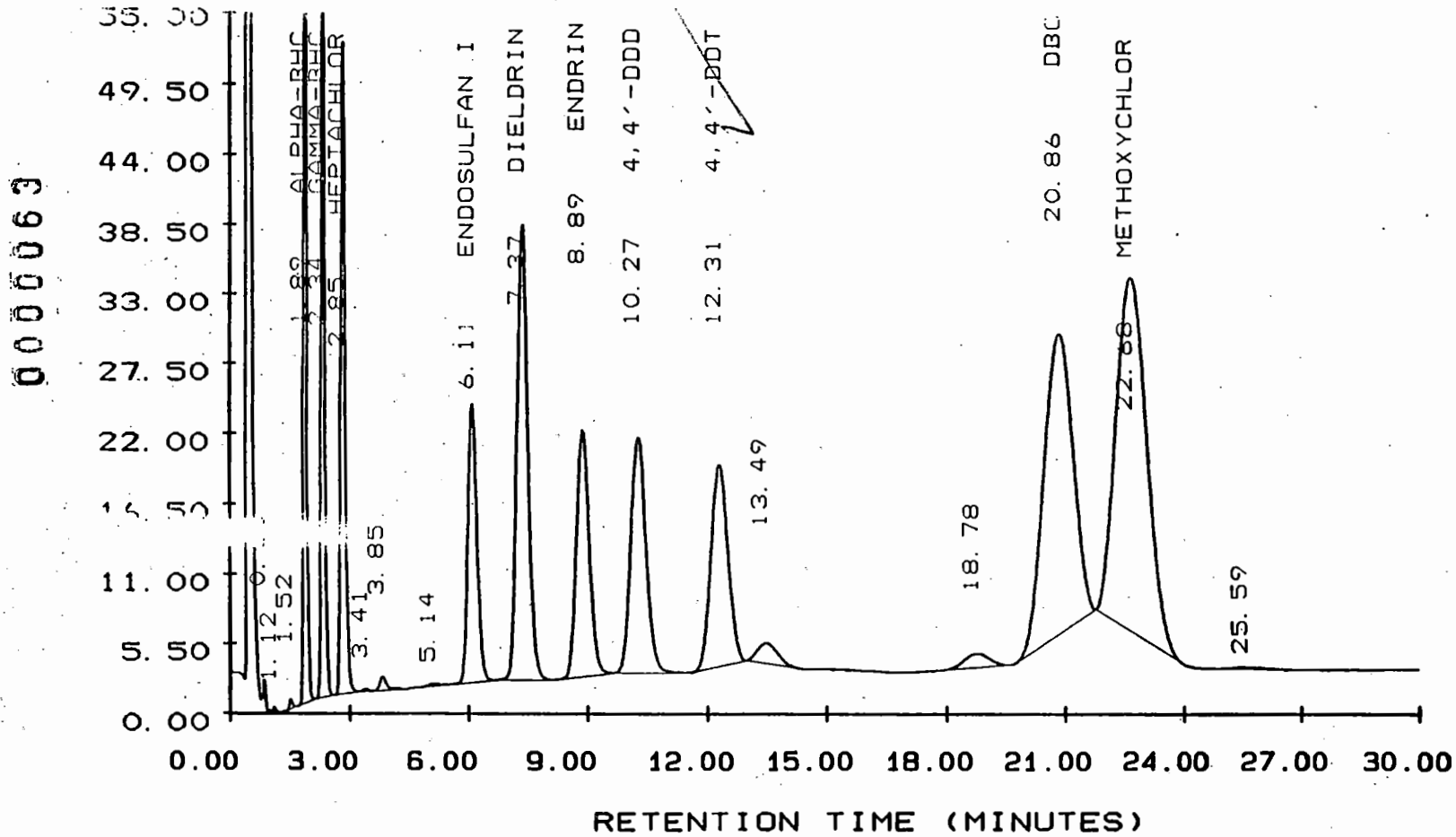
000040
96154402823

INDA 19-67

SAMPLE NO. : 12269103 . 26 INSTRUMENT: 03

TEST NO. : DATE TIME: 12/27/91 07:18:10

METHOD NO. : 03A / 03A PAGE NO. : 01



Y MAXIMUM: 55522. START TIME: 0.00

Y MINIMUM: 3767. END TIME: 30.00

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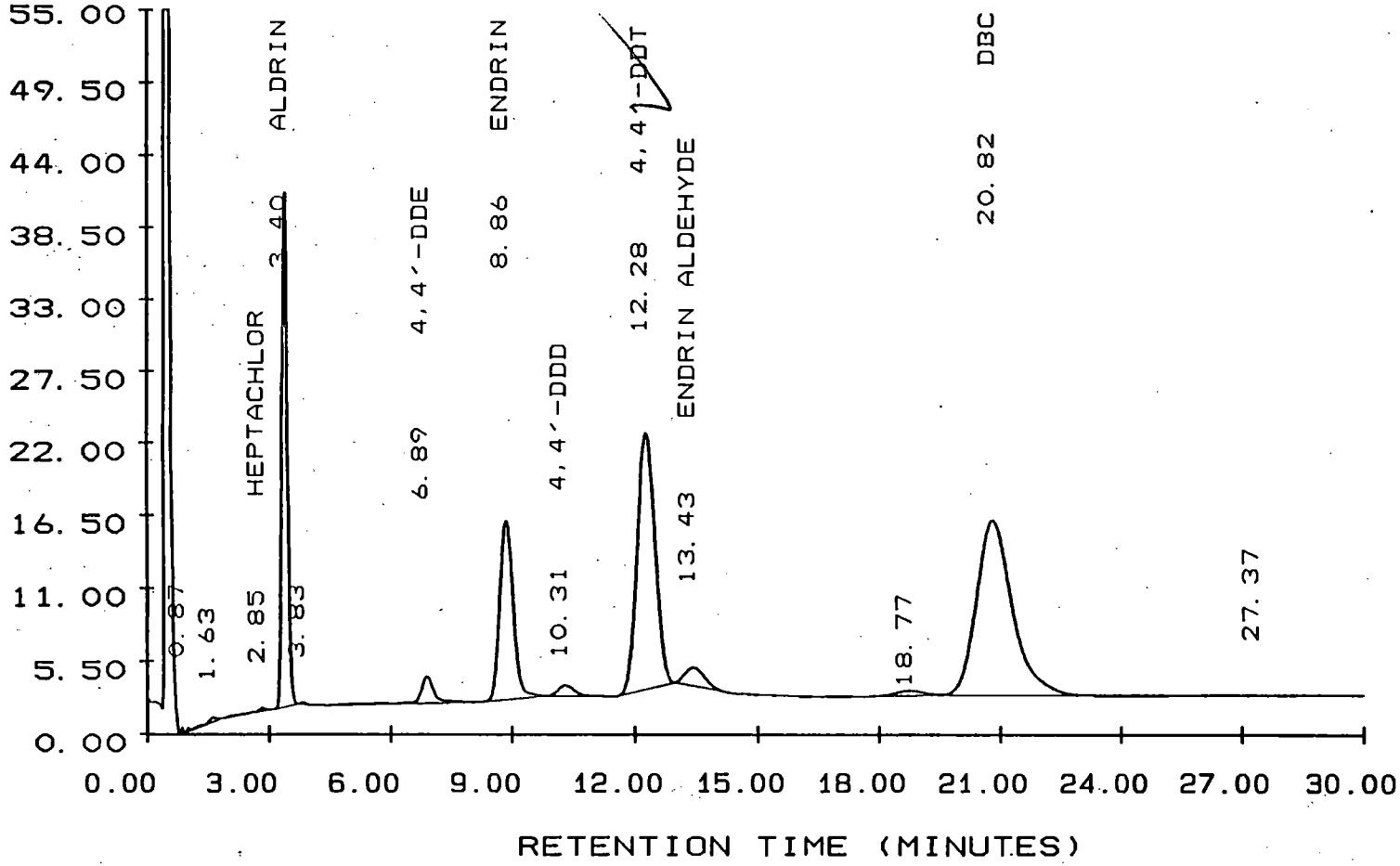
9613440.2824

EVALB 25-60

SAMPLE NO. : 12269103 . 33 INSTRUMENT: 03

TEST NO. : DATE TIME: 12/27/91 11:09:21

METHOD NO. : 03 / 03 PAGE NO. : 01



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000065

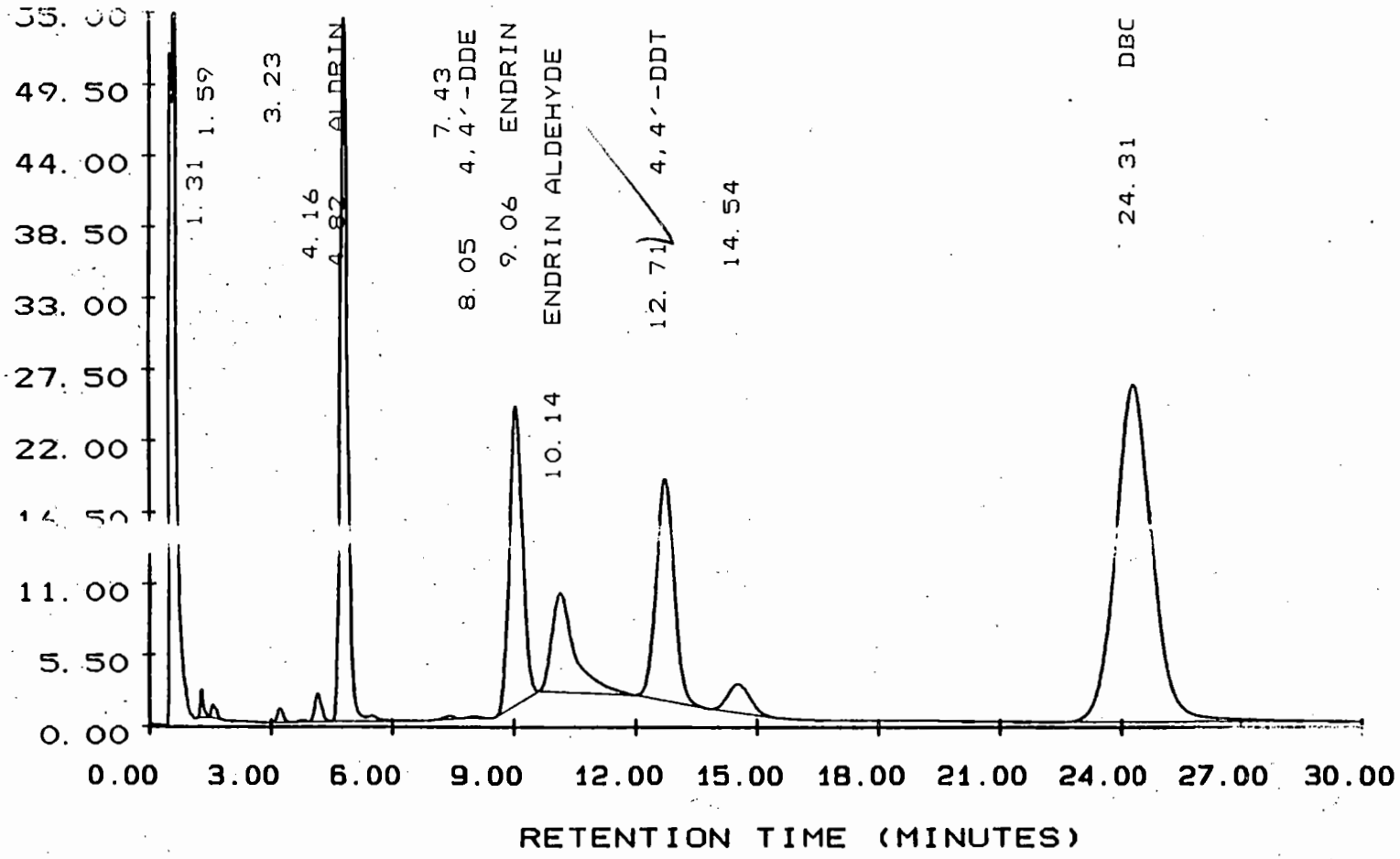
96 1340 2825

EVALA 21-60

SAMPLE NO. : 12269104 . 01 INSTRUMENT: 04

TEST NO. : DATE TIME: 12/26/91 17:14:12

METHOD NO. : 04 / 04 PAGE NO. : 01



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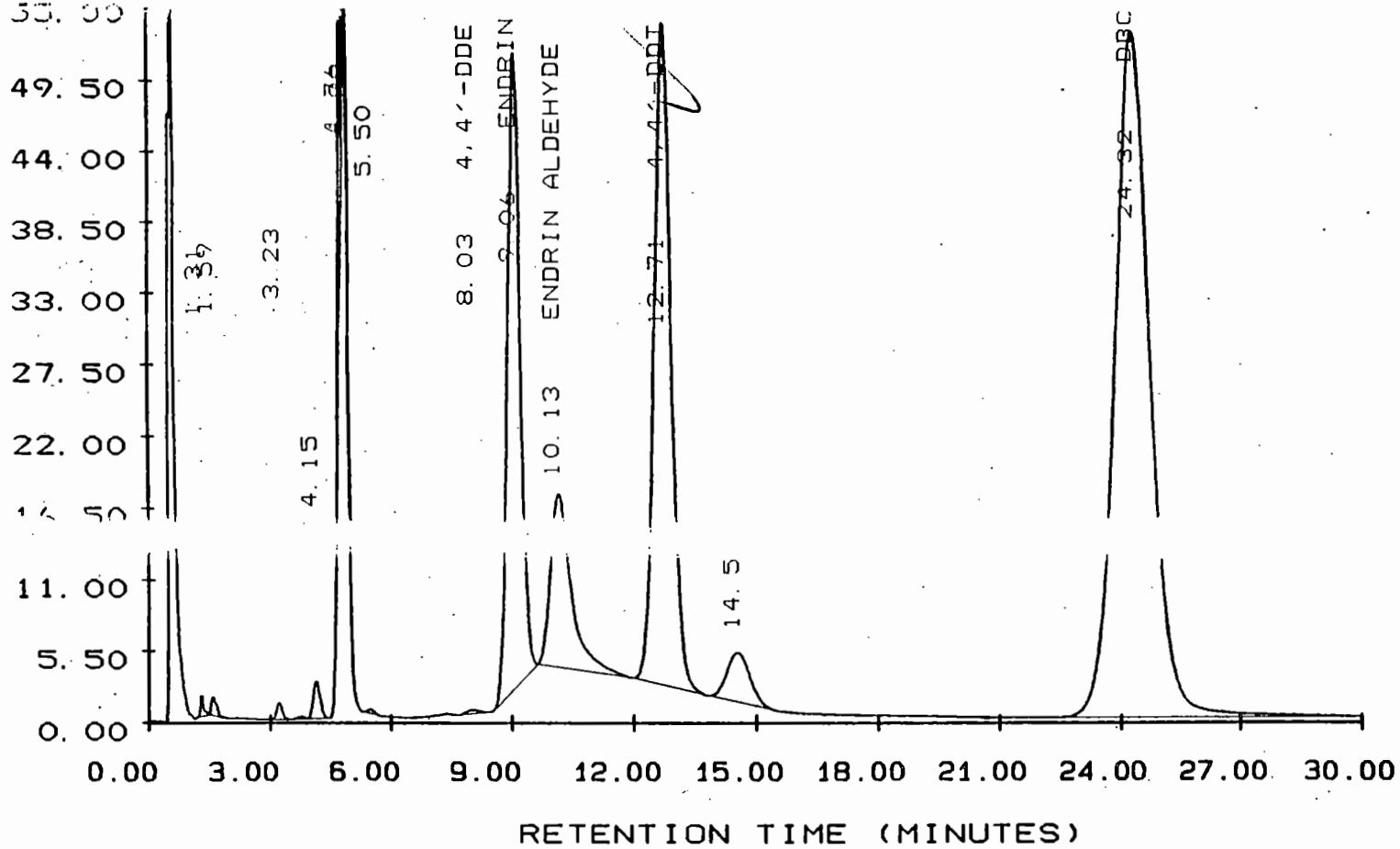
000006 9
9613440.2826

EVALC 22-60

SAMPLE NO. : 12269104 . 03 INSTRUMENT: 04
TEST NO. : DATE TIME: 12/26/91 18:19:58
METHOD NO. : 04 / 04 PAGE NO. : 01



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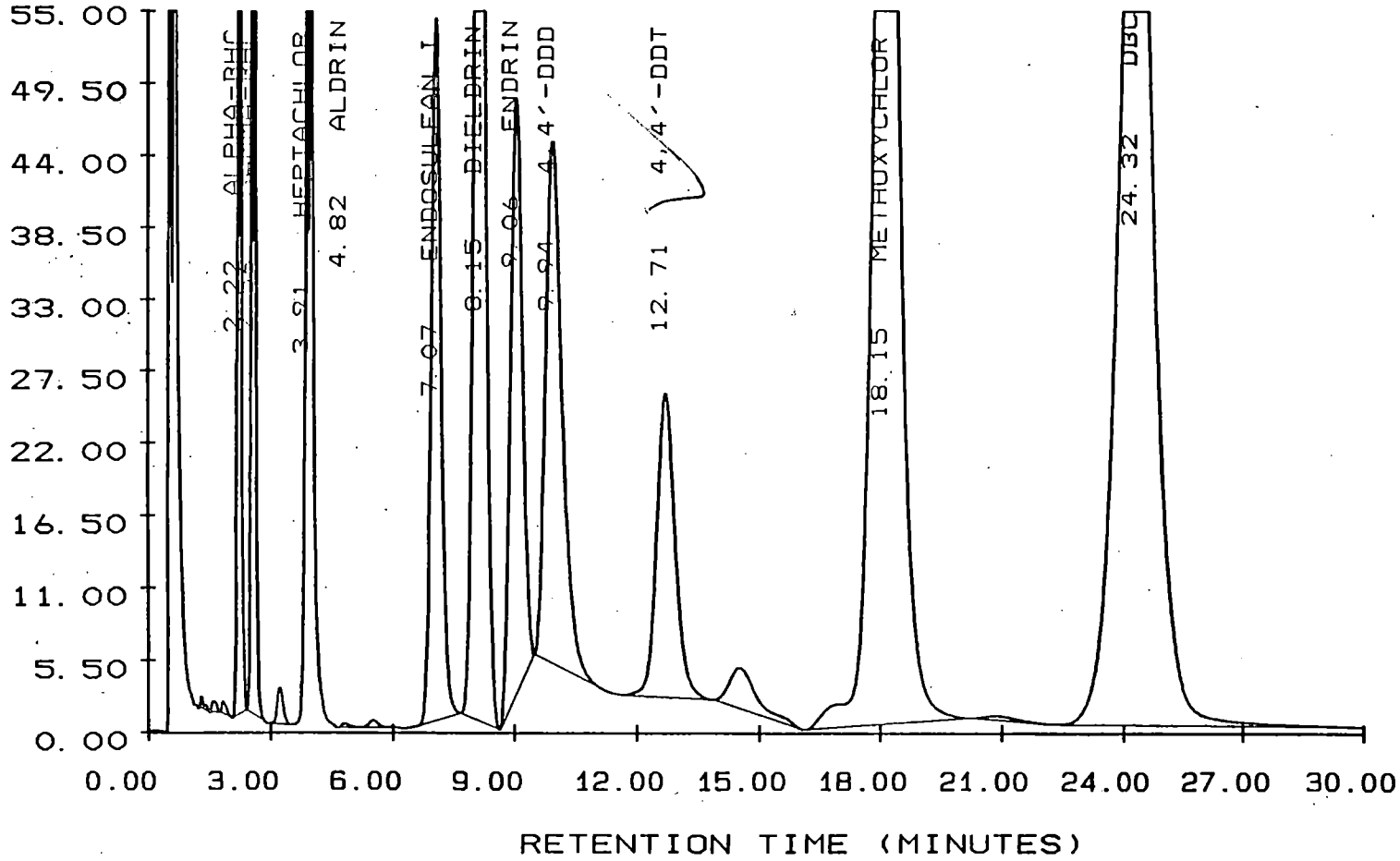
00000075
9613440.2827

INDA 19-67

SAMPLE NO. : 12269104 . 04 INSTRUMENT: 04

TEST NO. : DATE TIME: 12/26/91 19:09:18

METHOD NO. : 04A / 04 PAGE NO. : 01



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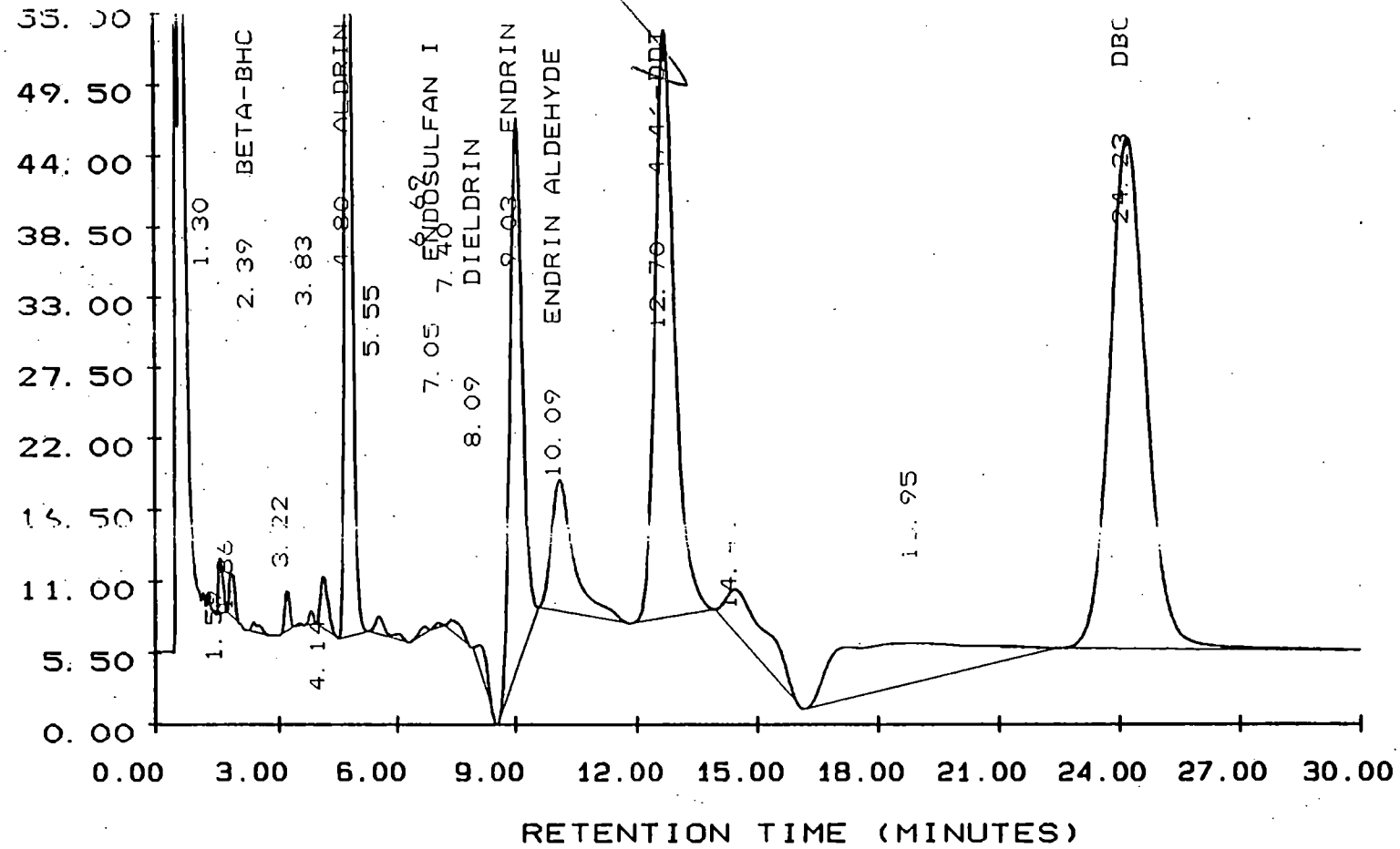
96134042828

EVALB 25-60

SAMPLE NO. : 12269104 . 19 INSTRUMENT: 04

TEST NO. : DATE TIME: 12/27/91 03:28:33

METHOD NO. : 04 / 04 PAGE NO. : 01



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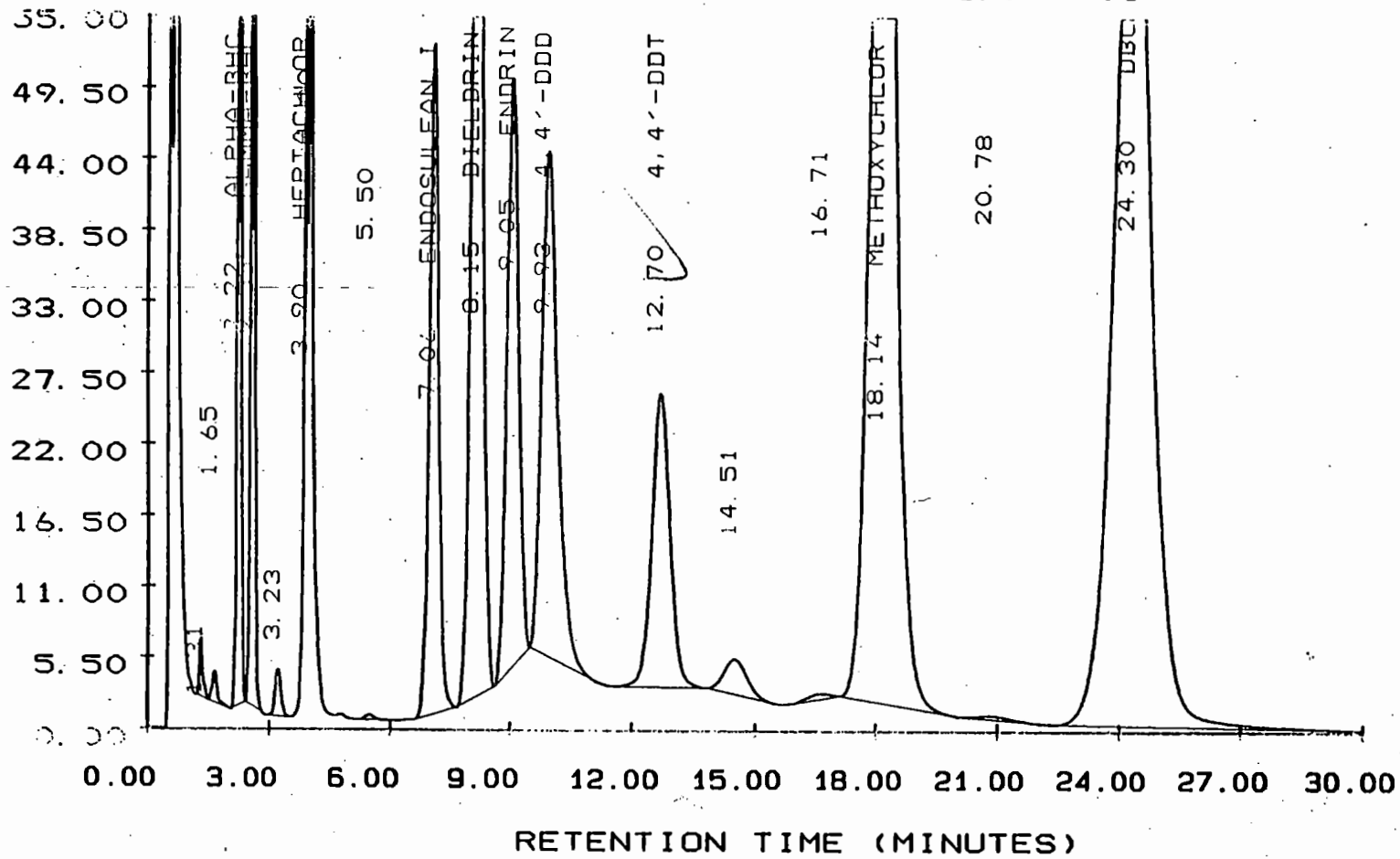
000103

96134402829

INDA 19-67

SAMPLE NO. : 12269104 . 26
TEST NO. :
METHOD NO. : 04A / 04A

INSTRUMENT: 04
DATE TIME: 12/27/91 07:20:38
PAGE NO. : 01



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Y MINIMUM: 35037.

START TIME: 0.00
END TIME: 30.00

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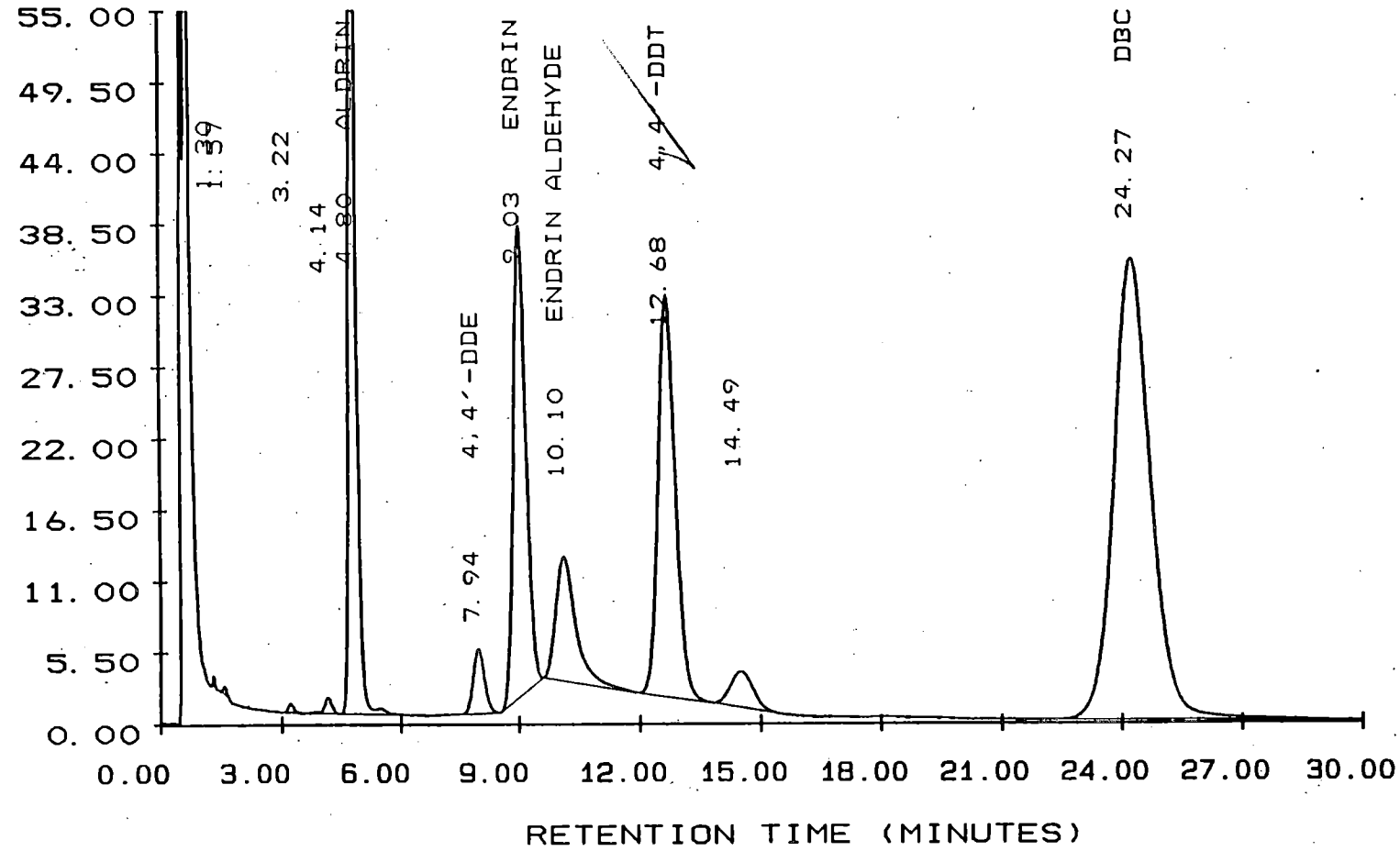
96134402830

EVALB 25-60

SAMPLE NO. : 12269104 .33
TEST NO. :
METHOD NO. : 04 / 04

INSTRUMENT: 04
DATE TIME: 12/27/91 11:11:47
PAGE NO. : 01



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Y MINIMUM: 35017.

START TIME: 0.00
END TIME: 30.00

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96134440.2831

9613440.2832

300-FF-1 OPERABLE UNIT DATA VALIDATION
WESTINGHOUSE HANFORD COMPANY
DISTRIBUTION & FILE RECORD FORM

Task E-92-15 /2978-40
2/3/92
Rev. 0

Document Title: Volatiles 91124637
Document Number:

Date: 10/20/92
Originator: CMR

HCS - WHC/E - 92 15/T ~~1~~ - 028

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C. Russell (HC-Sea)		S. Kis-Young (Filing)	X		
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PROJECT FILES		
MANAGEMENT		Comments
M-1 Correspondence		
M-2 Meeting Minutes		
M-3 Telecons		
M-4 Statements of Work, Task Orders		
M-5 Purchase Requisitions and Receipt documentation		
M-6 Other Management Documents Generated		
M-7 Financial Data		
SOURCE DATA		
S-1 Original Data Packages		
S-2 Memos Transmitting Original Source Packages to WHC		
S-3 Other Original Data Documentation		
TASK TECHNICAL		
T-1 Validation Calculations and Notated Packages	X	
T-2 Progress Memos		
T-3 Completeness Checklists		
T-4 Draft Summary Report(s)		
T-5 Final Summary Report(s)		
T-6 Draft Summary Report Review Comments		
T-7 Other Technical Documentation		

FORM

9613440.2855

300-FF-1 OPERABLE UNIT DATA VALIDATION
WESTINGHOUSE HANFORD COMPANY
DISTRIBUTION & FILE RECORD FORM

Task E-92-15 /2978-4C
2/3/92
Rev. 0

Document Title: 91126637
Document Number: Data package

Date: 6/24/92
Originator: D.M.G.

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PROJECT FILES		
MANAGEMENT		Comments
M-1 Correspondence		
M-2 Meeting Minutes		
M-3 Telecons		
M-4 Statements of Work, Task Orders		
M-5 Purchase Requisitions and Receipt documentation		
M-6 Other Management Documents Generated		
M-7 Financial Data		
SOURCE DATA		
S-1 Original Data Packages	X	B00H61
S-2 Memos Transmitting Original Source Packages to WHC		metal, inorganic, VOA, PCB
S-3 Other Original Data Documentation		
TASK TECHNICAL		
T-1 Validation Calculations and Notated Packages		
T-2 Progress Memos		
T-3 Completeness Checklists		
T-4 Draft Summary Report(s)		
T-5 Final Summary Report(s)		
T-6 Draft Summary Report Review Comments		
T-7 Other Technical Documentation		

FORM

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VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT:	REVIEWER: SS	DATE: 5-20-92
LABORATORY: Weston	CASE: 91122637	SDG:
SAMPLES/MATRIX: B00H61 (Soil)		

1. DATA PACKAGE COMPLETENESS

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 (11-18-91)(12-10-91)	✓		
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 11-18-91	✓		
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	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.

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).

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? 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).

9613440.2837

APPENDIX B
DATA VALIDATION DOCUMENTATION

Roy F. Weston Laboratories

Data Package 9112L637

Volatile Organics Analyses

9613440.2838

THIS APPENDIX CONSISTS OF FIVE 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

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.

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ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

9613440.2841 0000017

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOH61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L637-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: AXCA07

Level: (low/med) LOW Date Received: 12/06/91

% Moisture: not dec. 7 Date Analyzed: 12/10/91

Column: (pack/cap) CAP Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	7	
67-64-1	Acetone	31	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

9613440.2842

1E

0000018

CLIENT SAMPLE NO.

BOOH61

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L637-001

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

Lab File ID: AXCA07

Level: (low/med) LOW

Date Received: 12/06/91

% Moisture: not dec. 7

Date Analyzed: 12/10/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

9613440.2843

ATTACHMENT 3

Summary of Data Qualifications

Report #6
Appendix (B)

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9112L637	REVIEWER: AS	DATE: 7/7/92	PAGE 1 OF 1
COMMENTS: Level 2			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Acetone	UJ	B00H61	exceeded ccal %D
2-butanone	UJ		30-62%
vinyl acetate			
4-methy-2-pentanone			
2-hexanone			
1,1,2,2-tetrachloroethane			
Acetone	~~UJ~~ U at value	B00H61	Blank contamination
methylene chloride	U at value	B00H61	common contam. <2xCRQL

9613440.2845

ATTACHMENT 4

As Qualified Data Summary

9613440.2846 0000017

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOH61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L637-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: AXCA07

Level: (low/med) LOW Date Received: 12/06/91

% Moisture: not dec. 7 % solids 92.8 Date Analyzed: 12/10/91

Column: (pack/cap) CAP Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	7	U <2xCRQL common contam.
67-64-1	Acetone	31	~~B~~ UJ calc %D, <10x blank
75-15-0	Carbon Disulfide	~~6~~ 5	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	11	~~U~~ UJ calc %D
71-55-6	1,1,1-Trichloroethane	~~6~~ 5	U
56-23-5	Carbon Tetrachloride	~~6~~ 5	U
108-05-4	Vinyl Acetate	11	~~U~~ UJ calc %D
75-27-4	Bromodichloromethane	~~6~~ 5	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-pentanone	11	~~U~~ UJ calc %D
591-78-6	2-Hexanone	11	~~U~~ UJ calc %D
127-18-4	Tetrachloroethene	~~6~~ 5	U
79-34-5	1,1,2,2-Tetrachloroethane	6	~~U~~ UJ calc %D
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

AS 7/2/92

FORM 1 V-1 12/88 Rev.

✓ CMK

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1E

0000018

CLIENT SAMPLE NO.

BOOH61

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L637-001

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

Lab File ID: AXCA07

Level: (low/med) LOW

Date Received: 12/06/91

% Moisture: not dec. 7

Date Analyzed: 12/10/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

9613440.2848

ATTACHMENT 5

Data Review Supporting Documentation

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: Westinghouse Hanford 300-FF-1	REVIEWER: SS	DATE: 5-20-92
LABORATORY: Weston	CASE: 91122637	SDG:
SAMPLES/MATRIX: B00H61 (Soil)		

1. DATA PACKAGE COMPLETENESS

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 (11-18-91)(12-10-91)	✓		
Internal standard summary report		✓ AS. 7/7/92	
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 11-18-91	✓		
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 Level 2

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	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

None submitted

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

Level 2

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 Level 2

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 None submitted

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

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? See Form B-5 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? ~~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).

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 Level 2

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 None submitted

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

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? See Form B-5 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? 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).

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):

CLP SOW 2-88 (Rev. 5/89)

Report #6
Appendix (B)

HOLDING TIME SUMMARY - FORM B-1

SDG: 9112L637	REVIEWER: AS	DATE: 7/7/92	PAGE 1 OF 1
COMMENTS: Level 2			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B00H61	VOA	12/2/91 ✓	—	12/10/91 ✓	—	8	—
—							
					✓		
					CMR		

9213410.WHS SD-EN-SPP-002, Rev. 1

Report #6
Appendix (B)

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 9112637	REVIEWER: AS	DATE: 7/7/92	PAGE 1 OF 1
COMMENTS: Level 2			
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT: HP-MSD X — capillary	

	CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
Ical →	11/18/92	All compounds acceptable ✓		—	—	—
Tuning →	11/18/92	All acceptable ✓	→ ICAL			none
Tuning →	12/10/92	All acceptable ✓	→ CCV, VBLK, B00H61, B00H61MS, B00HMSD			
Ccal	12/10/92	Acetone ✓		-41.8 %D	B00H61	~~(+)~~ (-)
		2-butanone ✓		-32.6 %		
		vinyl acetate ✓		40.3 %		
		4-methyl-2-pentanone ✓		-61.7 %		
		2-hexanone ✓		-55.0 %		
		1,1,2,2,-tetrachloroethane ✓		-30.3 %		

✓

96E3410WHCSD-EN-SPP-002, Rev. 1

Report #6
Appendix (B)

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 9112637 REVIEWER: AS DATE: 7/6/92 PAGE 1 OF 1

COMMENTS: Level 2

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
VBLK	Acetone	14			ug/kg		140	B00H61	UJ
	No other compounds detected								
There was one other common lab contam. found in the sample									
at <2x CRQL:									
	methylene chloride							B00H61	UJ

✓

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

Report #6
Appendix (B)

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9112L637	REVIEWER: AS	DATE: 7/7/92	PAGE 1 OF 1	
COMMENTS: Level 2				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
(1) B00H61 surrogates	All recoveries within limits	96-109%	B00H61	none
(2) MS/MSD for B00H61	recoveries acceptable	116%-162%	B00H61	none
(3) all internal standard areas were acceptable.			B00H61	none

Report #6
Appendix (B)

PRECISION DATA SUMMARY - FORM B-5

SDG: 91I2L637	REVIEWER AS	DATE: 7/7/92	PAGE 1 OF 1

COMMENTS: Level 2

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
(1) MS Dups					
B00H61 All RPDs	acceptable (B00H61 MS)	0-5% (B00H61 MSD)		B00H61	none
(2) Field Dups					
There were no field duplicates with this data set.					
(3) Field Split Samples	B00H61	B00H59/B00H60		B00H61, B00H59 B00H60	none ↓
all three samples showed all compounds as undetected after validation; showing acceptable between-lab precision.					

9613140.2057
WHC-SD-EN-SPP-002, Rev. 1

Report # 6
Appendix (B)

CALCULATION SUMMARY - FORM B-6

SDG: 91121637	REVIEWER: #S	DATE: 7/7/92	PAGE 1 OF 1
COMMENTS: Level 2			
See calc sheets			

9613440.2859

Report #6
Appendix (B)

Calculations

HARTCROWSER

Page 1 of 4
Job No. 2978-40
Date 7/7/92
Made by DS

Project WHC
Calculations for GC/MS Tuning / Ical ; 9112L637

HP-MSD X

RRF20

Vinyl chloride $\frac{12127(50)}{36164(20)} = .838$

Benzene $\frac{38836(50)}{140060(20)} = .693$

Toluene $\frac{30166(50)}{132212(20)} = .570$

RRF50

Acetone = $\frac{7973(50)}{33325(50)} = .239$ ✓

Vinyl acetate $\frac{62527(50)}{33325(50)} = 1.876$ ✓

Bromoform $\frac{106134(\cancel{129039}\ 50)}{129039(50)} = .822$ ✓

Styrene $\frac{91898(50)}{129039(50)} = .712$ ✓

RRF100

Chloromethane = $\frac{40859(50)}{31277(100)} = .653$

Methylene chloride = $\frac{65969(50)}{31277(100)} = 1.054$

Chloroform = $\frac{155400(50)}{31277(100)} = 2.484$

Trichloroethane = $\frac{104713(50)}{124246(100)} = .421$

2-hexanone = $\frac{42405(50)}{121348(100)} = .174$ ✓

RRF150

Chloroethane = $\frac{40227(50)}{31095(150)} = .431$

carbon disulfide = $\frac{166118(50)}{31095(150)} = 1.716$

2-butanone = $\frac{8006(50)}{31095(150)} = .096$

benzene = $\frac{235864(50)}{122315(150)} = .64$

ethylbenzene = $\frac{125793(50)}{120158(150)} = .349$

Recycled Paper

9613440.2860

Report #6
Appendix (B)

Calculations

HARTCROWSER

Page 2 of 4

Job No. 2978-40

Project WHC

Date 7/7/92

Calculations for Ical & Ccal ; 91124637

Made by AS

RRF200

Bromomethane = $\frac{93687(50)}{31000(200)} = .755$ ✓

1,2-dichloroethane $\frac{195792(50)}{116544(200)} = .419$ ✓

dibromochloromethane $\frac{315658(50)}{114214(200)} = .690$ ✓

2-hexanone $\frac{116134(50)}{114214(200)} = .254$ ✓

Ccal 12/10/91 HP MSD X

Acetone: $\frac{17253(50)}{41964(50)} = .411$

$\frac{.29 - .411}{.29} = -41.8$ ✓

2-butanone = $\frac{4840(50)}{41964(50)} = .115$

$\frac{.087 - .115}{.087} = -32.6\%$

Vinyl acetate = $\frac{47130(50)}{41964(50)} = 1.123$

$\frac{1.881 - 1.123}{1.881} = 40.3\%$

4-methyl-2-pentanone = $\frac{67923(50)}{149469(50)} = .454$

$\frac{.281 - .454}{.281} = -61.6$

2-hexanone = $\frac{49105(50)}{149469(50)} = .328$

$\frac{.212 - .329}{.212} = 55.2$

1,1,2,2-tetrachloroethane

$\frac{94227(50)}{149469(50)} = .630$ ✓

$\frac{.484 - .630}{.484} = -30.3\%$ ✓

Recycled Paper

Report #6
Appendix (B)
Calculations

HARTCROWSER

Page 3 of 4
Job No. 2978-40
Project WHC
Date 7/7/92
Calculations for Surrogate / MS/MSD recoveries; 9112L637
Made by AC

B00461

Toluene d8 = $\frac{50.85}{50}$ = 101.7 % ✓

Bromofluorobenzene = $\frac{48.08}{50.0}$ = 96 % ✓

1,2-Dichloroethane = $\frac{54.54}{50.0}$ ~ 109 % ✓

B00461 MS/MSD

1,1 Dichloroethylene = $\frac{26211(50)}{24533(.658)(.93)}$ = 87.29

$\frac{89.3}{55.0}$ = 1.62 = 162 % ✓

Toluene = $\frac{67.5}{55.0}$ = 123 %

RPD Trichloroethene = ~~2~~

$\frac{125-122}{123.5}$ = 2.4 % ✓

Chlorobenzene

$\frac{122-118}{120}$ = 3 % ✓

Report #6
Appendix (B)
Calculations

HARTCROWSER

Page 4 of 4
Job No. 2978-40
Date 7/7/92
Made by HS

Project WHC
Calculations for Compound Identification ; 91121637

RRT = Acetone : $\frac{2.37}{6.42} = .369$ $\frac{2.40}{6.43} = .373$

Methylene Chloride : $\frac{2.93}{6.42} = \frac{2.95}{6.43} = .456$ $\frac{2.95}{6.43} = .459$

Calculation
Booth 1

Acetone = $\frac{6428(50)}{27923(.411)(.93)} = 30.11$

Methylene chloride = $\frac{3257(50)}{27923(.912)(.93)} = 6.87$

9613440.2863

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

DATE RECEIVED: 12/06/91 RFW LOT # :9112L637

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOOH61	001	S	91LVX206	12/02/91	N/A	12/10/91
BOOH61	001 MS	S	91LVX206	12/02/91	N/A	12/10/91
BOOH61	001 MSD	S	91LVX206	12/02/91	N/A	12/10/91
LAB QC:						
VBLK	MB1	S	91LVX206	N/A	N/A	12/10/91

FEB 1992
RECEIVED
OSM DMO

9613440.2864

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b. Quantitation Report(s)
c. HSL Mass Spectra
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1. Bar Graph
2. Mass Listing

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

VI. Additional Documentation..... 69
A. Extraction Record

9613440.2865

WESTON

CHAIN OF CUSTODY

WESTON Analytics Use Only: 9112L637

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse Hanford
Est. Final Proj. Sampling Date:
Work Order #: 6168-02-01-0000
Project Contact/Phone #: Jonathan Lucas
AD Project Manager: Jack King
QC: CLP Del: CLP TAT: 35
Date Rec'd: 12-6-91 Date Due: 1-10-92
Account #: WS-HANFORD

Refrigerator #		1		6			1	SUB	3							
#/Type Container	Liquid															
	Solid	1G		1G			1	1G	1G							
Volume	Liquid															
	Solid	125		500m			1	500m	250							
Preservatives		-		-				-	-							

ANALYSES REQUESTED →

ORGANIC							INORG	
VOA	BNA	Pest/PCB	Herb	Ammonia	Anions	Radio Chem	Metal	CN

WESTON Analytics Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	PCB	Herb	Ammonia	Anions	Radio Chem	Metal
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															
	001	B00H61			S	12-2-91		✓		✓		✓	✓	✓	✓

RAD info to follow

Radio Chem = Gross Alpha/Beta, Co-60, Sr-90, Cs-137, U-235, 238

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
MS/MSD Required on Each Batch & Each Matrix
TASK 300-FF-1
ANIONS = ICCL, ICFL, ICPO4, ICSO4, ICNO2, ICNO3
Original Rewritten

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

Relinquished by	Received by	Date	Time
Emery	[illegible]	12-6-91	13:15
	[illegible] 12-6-91		

Relinquished by	Received by	Date	Time
	[illegible] 12-6-91		

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___ Airbill #2474352770
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'd 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

000002

9902.0440.96

9613440 2867

EMERY WORLDWIDE — A CF Company

SIGNATURE AND TALLY RECORD

60229-46 (8/90) Litho USA

00000 12-05-91 SHIPMENT NO.: 247425277 0
SHIPPER WESTINGHOUSE SHIPPING DEPT (509)37
REFERENCE NO.: W92-0-012303

SHIPPER NAME AND ADDRESS	CONSIGNEE NAME AND ADDRESS
WESTINGHOUSE SHIPPING DEPT (509) 376-6665 S2-06 US DEPARTMENT OF ENERGY C/O WESTINGHOUSE HANFORD COMPANY 2355 STEVENS DRIVE 1163 BUILDING PO BOX 1970 RICHLAND WA 99352	PEG BRATT RF WESTON INC 208 WELSH POOL ROAD LIONVILLE PA 19341-1313

Pieces	Weight	Description/Marks	Emery Authorization No.
1	27 LBS	W92-0-012303 ICE CHEST RM#39 SOIL SAMPLES	

EACH PERSON HANDLING OR TAKING CUSTODY OF THIS SHIPMENT MUST SIGN AND COMPLETE THE INFORMATION BELOW

	Name of Person/Company	Transship Point/Destination	Signature of Person Accepting Custody	Time/Date
1.				
2.				
3.				
4.				
5.				0345
6.				1100
7.	W D SNYDER	PHL		1145
8.	Rich Filagggi	Lionville		13:15

SPECIAL HANDLING INSTRUCTIONS

CONSIGNEE COPY

83

FORM OF PAYMENT: GBL CBL; PCCOD; COL; OTH; COMAT

SERVICES — UNITED STATES / CANADA: Same Day; AM; Second Day; PM; Saturday Delivery. INTERNATIONAL: Express; Preferred; Standard

EMERY WORLDWIDE — A CF Company

Shipper's Account Number: 850281585

Date: 12-05-91 | Origin: PSC | Shipment Number: 247425277

From:
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
US DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD
BLDG 1163
2355 STEVENS DRIVE
RICHLAND WA 99352

To:
PEG BRATT
RF WESTON INC
208 WELSH POOL ROAD
LIONVILLE PA 19341-1313

Customer's Reference Numbers: W81223 PC3B4 W92-0-012303

Consignee's Account Number: E

Tariff Dest.

Check to Shipper $

EMERY WORLDWIDE will collect cor... check made p... only to the sh... for the value ... goods in the ... shown above.

Declared Value $

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

Description	Pcs	L	W	H	Total Pieces	Total Weight (in Lbs)
1 ICE CHEST RM#39 SOIL SAMPLES BOOH61 W92-0-012303	1		6	17	1	27

A B C D E F G H I J K

1 2 3 4 5 6 7 8 9 0 1 2

Envelope 9X12 Pack 12X15

SIGNATURE SECURITY SERVICE
RIGHT DELIVERY

Shipper's Signature: Commodity Code

Third Party Account Number

Domestic Charges

Shipper's Account Number Mandatory for third party billing

International Declared Value

International Insurance

3-PRL-4

9613440.2868

WESTON

DATA SUMMARY

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

Report Date: 01/02/92 14:34

RFW Batch Number: 9112L637 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Page: 1a

	Cust ID:	BOOH61		BOOH61		BOOH61		VBLK	
Sample Information	RFW#:	001		001 MS		001 MSD		91LVX206-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	102	%	107	%	110	%	105	%
	Bromofluorobenzene	96	%	97	%	104	%	103	%
	1,2-Dichloroethane-d4	109	%	103	%	116	%	99	%
Chloromethane		11	U	11	U	11	U	10	U
Bromomethane		11	U	11	U	11	U	10	U
Vinyl Chloride		11	U	11	U	11	U	10	U
Chloroethane		11	U	11	U	11	U	10	U
Methylene Chloride		7		8		6	U	5	U
Acetone		31	B	23	B	11	U	14	
Carbon Disulfide		6	U	6	U	6	U	5	U
1,1-Dichloroethene		6	U	162	%	154	%	5	U
1,1-Dichloroethane		6	U	6	U	6	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	5	U
Chloroform		6	U	6	U	6	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	5	U
2-Butanone		11	U	11	U	11	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	5	U
Vinyl Acetate		11	U	11	U	11	U	10	U
Bromodichloromethane		6	U	6	U	6	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	5	U
Trichloroethene		6	U	125	%	122	%	5	U
Dibromochloromethane		6	U	6	U	6	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	5	U
Benzene		6	U	116	%	116	%	5	U
Trans-1,3-Dichloropropene		6	U	6	U	6	U	5	U
Bromoform		6	U	6	U	6	U	5	U
4-Methyl-2-pentanone		11	U	11	U	11	U	10	U
2-Hexanone		11	U	11	U	11	U	10	U
Tetrachloroethene		6	U	6	U	6	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	5	U

*= Outside of EPA CLP QC limits.

000005
9613440.2869

RFW Batch Number: 9112L637 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Page: 1b

Cust ID:	BOOH61	BOOH61	BOOH61	VBLK
RFW#:	001	001 MS	001 MSD	91LVX206-MB1
Toluene	6 U	123 %	122 %	5 U
Chlorobenzene	6 U	118 %	122 %	5 U
Ethylbenzene	6 U	6 U	6 U	5 U
Styrene	6 U	6 U	6 U	5 U
Xylene (total)	6 U	6 U	6 U	5 U

*= Outside of EPA CLP QC limits.

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WESTON

CASE NARRATIVE

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ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 12-06-91
RFW #: 9112L637, GC/MS VOLATILE
W.O. #: 6168-02-01

NARRATIVE

One (1) soil sample was collected on 12-02-91.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 02-88 (Rev. 05-89) for TCL Volatile target compounds on 12-10-91.

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 surrogate recoveries were within EPA QC limits. ✓
3. All matrix spike recoveries were within EPA QC limits. ✓
4. The laboratory blank contained the common contaminant acetone at a level less than 2x the CRQL.
5. All internal standard area and retention time criteria were met.

1.09.92.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

WESTON

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 spiking 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.

WESTON

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)

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2B

SOIL VOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD Level:(low/med)LOW

RFW Lot No.: 9112L637

	CLIENT SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	BOOH61	102	96	109		0
02	BOOH61MS	107	97	103		0
03	BOOH61MSD	110	104	116		0
04	VBLKLVX206-MB1	105	103	99		0

	QC LIMITS
S1 (TOL) = Toluene-d8	(81-117)
S2 (BFB) = Bromofluorobenzene	(74-121)
S3 (DCE) = 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogates diluted out

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9112L637-001

MATRIX Spike - Sample No.: BOOH61 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC
1,1-Dichloroethene	55.0	0	89.3	162	59-172
Trichloroethene	55.0	0	68.7	125	62-137
Benzene	55.0	0	63.9	116	66-142
Toluene	55.0	0	67.5	123	59-139
Chlorobenzene	55.0	0	65.1	118	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
1,1-Dichloroethene	55.0	84.6	154	5	22	59-172
Trichloroethene	55.0	66.9	122	2	24	62-137
Benzene	55.0	63.8	116	0	21	66-142
Toluene	55.0	67.2	122	0	21	59-139
Chlorobenzene	55.0	67.1	122	3	21	60-133

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

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

COMMENTS:

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

Lab File ID: AXCA06 Lab Sample ID: 91LVX206-MB1

Date Analyzed: 12/10/91 Time Analyzed: 1209

Matrix:(Soil/Water) SOIL Level:(low/med) LOW

Instrument ID: HP-MSD X

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

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	BOOH61	9112L637-001	AXCA07	1251
02	BOOH61MS	9112L637-001S	AXCA08	1348
03	BOOH61MSD	9112L637-001T	AXCA09	1420

COMMENTS:

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5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

Lab File ID: AXBI05 BFB Injection Date: 11/18/91

Instrument ID: HP-MSD X BFB Injection Time: 1252

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.2
75	30.0 - 60.0% of mass 95	47.4
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	83.8
175	5.0 - 9.0% of mass 174	4.3(5.1)1
176	Greater than 95.0% but less than 101.0% of mass 174	84.2(100.4)1
177	5.0 - 9.0% of mass 176	5.8(6.8)2

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

OK CMR

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

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD20	VSTD20	AXBI07	11/18/91	1420
02	VSTD50	VSTD50	AXBI08	11/18/91	1454
03	VSTD100	VSTD100	AXBI09	11/18/91	1528
04	VSTD150	VSTD150	AXBI10	11/18/91	1600
05	VSTD200	VSTD200	AXBI11	11/18/91	1632
06					
07					
08					
09					
10					<12hr
11					
12					CMR
13					
14					
15					
16					
17					
18					
19					
20					

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VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

Lab File ID: AXCA03 BFB Injection Date: 12/10/91

Instrument ID: HP-MSD X BFB Injection Time: 1023

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.9
75	30.0 - 60.0% of mass 95	46.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.3
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	77.4
175	5.0 - 9.0% of mass 174	4.4(5.8)1
176	Greater than 95.0% but less than 101.0% of mass 174	75.6(97.7)1
177	5.0 - 9.0% of mass 176	5.4(7.2)2

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

THIS TUNE 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	AXCA04	12/10/91	1040
02	VBLKLVX206-MB1	91LVX206-MB1	AXCA06.	12/10/91	1209
03	BOOH61	9112L637-001	AXCA07.	12/10/91	1251
04	BOOH61MS	9112L637-001S	AXCA08.	12/10/91	1348
05	BOOH61MSD	9112L637-001T	AXCA09.	12/10/91	1420
06					
07					
08					<12 hr
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

WESTON

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

WESTON

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)

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1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOH61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L637-001

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

Lab File ID: AXCA07

Level: (low/med) LOW

Date Received: 12/06/91

% Moisture: not dec. 7

Date Analyzed: 12/10/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	7	
67-64-1	Acetone	31	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

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1E 0000018 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOOH61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L637-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: AXCA07

Level: (low/med) LOW Date Received: 12/06/91

% Moisture: not dec. 7 Date Analyzed: 12/10/91

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

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

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QUANT REPORT

Operator ID: PSS Quant Rev: 6 Quant Time: 911210 13:20
Output File: ^XCA07::QQ Injected at: 911210 12:51
Data File: >XCA07::D3A Dilution Factor: 1.00000
Name: 9112L637-001 AXC903 PSS 1/3
Misc: AXBI 5PT SOIL WESTINGHOUSE 5.0G #HP-MSD X PS

ID File: I_XCAA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911210 11:37

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*BROMOCHLOROMETHANE	6.42	128.0	27923	50.00	ug/kg	43
11)	ACETONE	2.37	43.0	6428	28.00	ug/kg	75
12)	METHYLENE CHLORIDE	2.93	84.0	3257	6.39	ug/kg	75
24)	*1,4-DIFLUOROBENZENE	9.66	114.0	102858	50.00	ug/kg	69
26)	1,2-DICHLOROETHANE D4	8.10	65.0	51413	54.54	ug/kg	88
34)	*CHLOROBENZENE-D5	16.88	117.0	99273	50.00	ug/kg	93
36)	TOLUENE D8	13.25	98.0	98514	50.85	ug/kg	92
50)	4-BROMOFLUOROBENZENE	20.13	95.0	70303	48.08	ug/kg	88

* Compound is ISTD

No TIC

IS, SS ok

PSS 12/10/91

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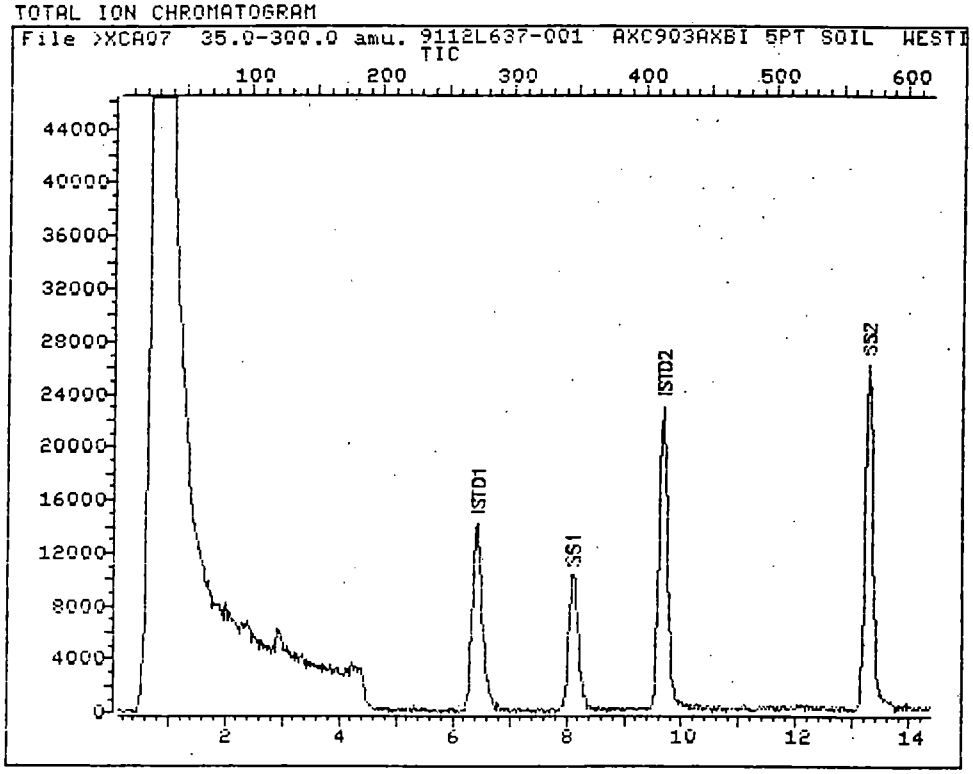
TOTAL ION CHROMATOGRAM



Data File: >XCA07::D3 A Quant Output File: ^XCA07::QQ
Name: 9112L637-001 AXC903 B, 1,3
Misc: AXBI 5PT SOIL WESTINGHOUSE 5.0G #HP-MSD X PS

Id File: I_XCAA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911210 11:37

Operator ID: PSS
Quant Time: 911210 13:20
Injected at: 911210 12:51

TIC page 1 of 2

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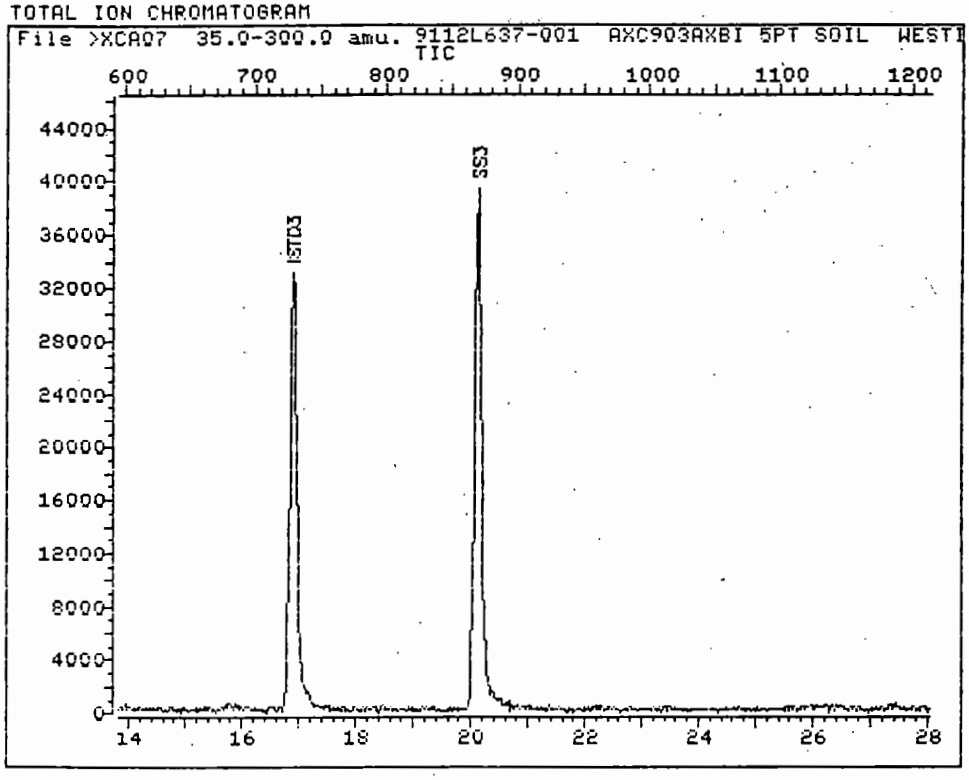
TOTAL ION CHROMATOGRAM



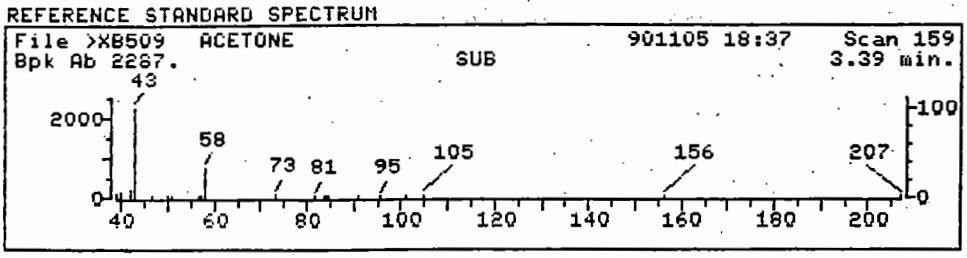
Data File: >XCA07::D3 A Quant Output File: ^XCA07::QQ
Name: 9112L637-001 AXC903 PSS
Misc: AXBI 5PT SOIL WESTINGHOUSE 5.0G #HP-MSD X PS

Id File: I_XCAA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911210 11:37

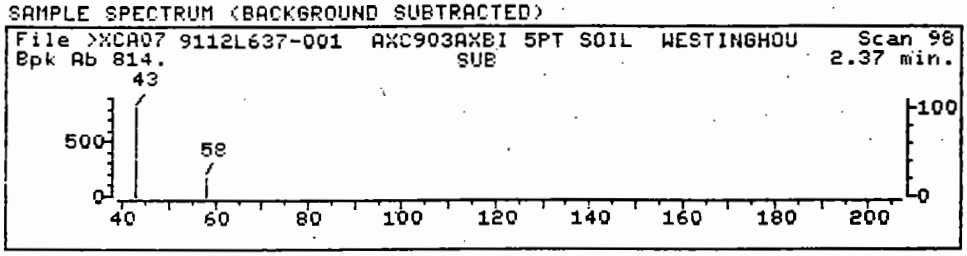
Operator ID: PSS
Quant Time: 911210 13:20
Injected at: 911210 12:51

TIC page 2 of 2

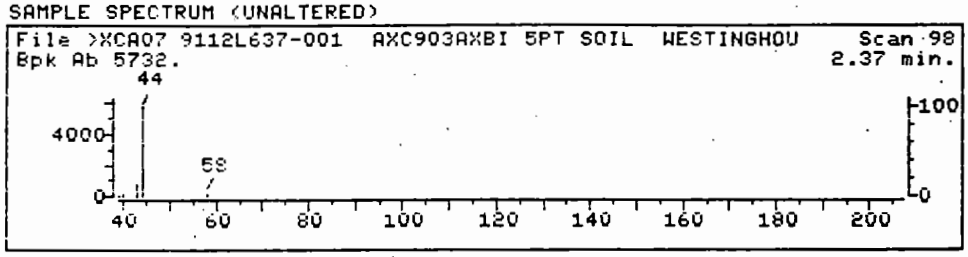
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)

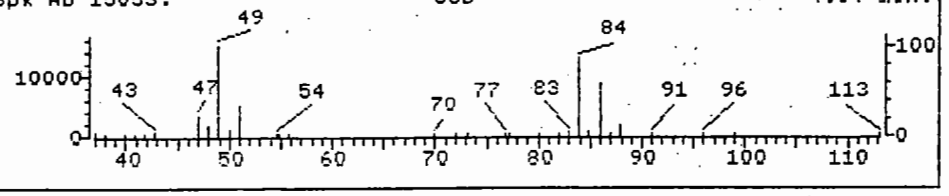


Data File: >XCA07::D3 A Quant Output File: ^XCA07::QQ
Name: 9112L637-001 AXC903 pss 13
Misc: AXBI 5PT SOIL WESTINGHOUSE 5.0G #HP-MSD X PS
Quant Time: 911210 13:20 Quant ID File: I_XCAA::QQ
Injected at: 911210 12:51 Last Calibration: 911210 11:37

Compound No: 11
Compound Name: ACETONE
Scan Number: 98
Retention Time: 2.37 min.
Quant Ion: 43.0
Area: 6428
Concentration: 28.00 ug/kg
q-value: 75

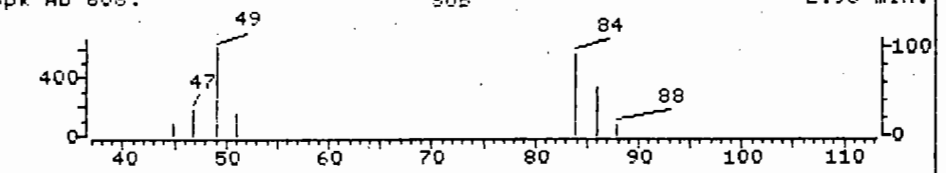
REFERENCE STANDARD SPECTRUM

File >XB509 METHYLENE CHLORIDE 901105 18:37 Scan 191
Bpk Ab 15053. SUB 4.04 min.



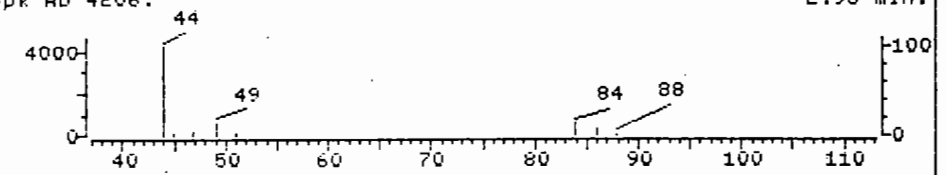
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

File >XCA07 9112L637-001 AXC903AXBI 5PT SOIL WESTINGHOU Scan 122
Bpk Ab 608. SUB 2.93 min.



SAMPLE SPECTRUM (UNALTERED)

File >XCA07 9112L637-001 AXC903AXBI 5PT SOIL WESTINGHOU Scan 122
Bpk Ab 4206. 2.93 min.



Data File: >XCA07::D3 A Quant Output File: ^XCA07::QQ
Name: 9112L637-001 AXC903 B
Misc: AXBI 5PT SOIL WESTINGHOUSE 5.0G #HP-MSD X PS
Quant Time: 911210 13:20 Quant ID File: I_XCAA::QQ
Injected at: 911210 12:51 Last Calibration: 911210 11:37

Compound No: 12
Compound Name: METHYLENE CHLORIDE
Scan Number: 122
Retention Time: 2.93 min.
Quant Ion: 84.0
Area: 3257
Concentration: 6.39 ug/kg
q-value: 75

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6A

VOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L637

Instrument ID: HP-MSD X Calibration Date(s): 11/18/91 11/18/91

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) CAP

Min $\overline{RRF}$ for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = AXBI07 RRF50 = AXBI08
RRF100= AXBI09 RRF150= AXBI10 RRF200= AXBI11

COMPOUND	RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD
Chloromethane #	0.640	0.616	0.649	0.636	0.519	0.612	8.7#
Bromomethane	0.994	0.976	0.965	0.901	0.758	0.918	10.6
Vinyl Chloride *	0.838	0.847	0.836	0.788	0.679	0.798	8.8*
Chloroethane	0.522	0.478	0.456	0.431	0.368	0.451	12.6
Methylene Chloride	1.220	1.088	1.055	0.986	0.610	0.992	23.2
Acetone	0.296	0.239	0.320	0.282	0.314	0.290	11.1
Carbon Disulfide	2.470	2.080	1.786	1.716	1.553	1.921	18.8
1,1-Dichloroethene *	0.943	0.724	0.681	0.643	0.582	0.715	19.3*
1,1-Dichloroethane #	0.646	0.614	0.611	0.612	0.554	0.608	5.5#
1,2-Dichloroethene (total)	1.174	1.103	1.113	1.078	0.646	1.023	20.9
Chloroform *	2.576	2.486	2.484	2.393	2.208	2.429	5.7*
1,2-Dichloroethane	0.420	0.416	0.405	0.402	0.420	0.413	2.1
2-Butanone	0.067	0.089	0.075	0.086	0.117	0.087	21.9
1,1,1-Trichloroethane	2.563	2.529	2.494	2.404	2.235	2.445	5.4
Carbon Tetrachloride	2.742	2.689	2.743	2.640	2.443	2.652	4.7
Vinyl Acetate	1.760	1.876	1.791	1.870	2.105	1.881	7.2
Bromodichloromethane	0.579	0.572	0.573	0.554	0.558	0.567	1.9
1,2-Dichloropropane *	0.266	0.258	0.260	0.245	0.243	0.254	3.8*
cis-1,3-Dichloropropene	0.473	0.467	0.414	0.430	0.423	0.441	6.1
Trichloroethene	0.449	0.428	0.421	0.402	0.400	0.420	4.8
Dibromochloromethane	0.760	0.735	0.695	0.678	0.693	0.712	4.8
1,1,2-Trichloroethane	0.360	0.320	0.300	0.294	0.317	0.318	8.1
Benzene	0.693	0.677	0.681	0.643	0.636	0.666	3.8
Trans-1,3-Dichloropropene	0.443	0.454	0.466	0.482	0.496	0.468	4.5
Bromoform #	0.855	0.822	0.747	0.746	0.830	0.800	6.3#
4-Methyl-2-pentanone	0.282	0.290	0.237	0.248	0.351	0.281	15.8
2-Hexanone	0.230	0.205	0.175	0.195	0.254	0.212	14.6
Tetrachloroethene	0.614	0.547	0.531	0.493	0.473	0.531	10.3
1,1,2,2-Tetrachloroethane #	0.505	0.483	0.442	0.454	0.538	0.484	8.0#
Toluene *	0.570	0.532	0.512	0.497	0.481	0.519	6.7*
Chlorobenzene #	0.887	0.822	0.831	0.811	0.800	0.830	4.1#
Ethylbenzene *	0.357	0.348	0.354	0.349	0.333	0.348	2.7*
Styrene	0.751	0.712	0.705	0.686	0.646	0.700	5.5
Xylene (total)	0.475	0.466	0.408	0.383	0.359	0.418	12.2
Toluene-d8	1.056	0.954	0.993	0.946	0.944	0.979	4.9
Bromofluorobenzene	0.805	0.784	0.766	0.767	0.748	0.774	2.8
1,2-Dichloroethane-d4	0.417	0.417	0.402	0.397	0.414	0.409	2.3

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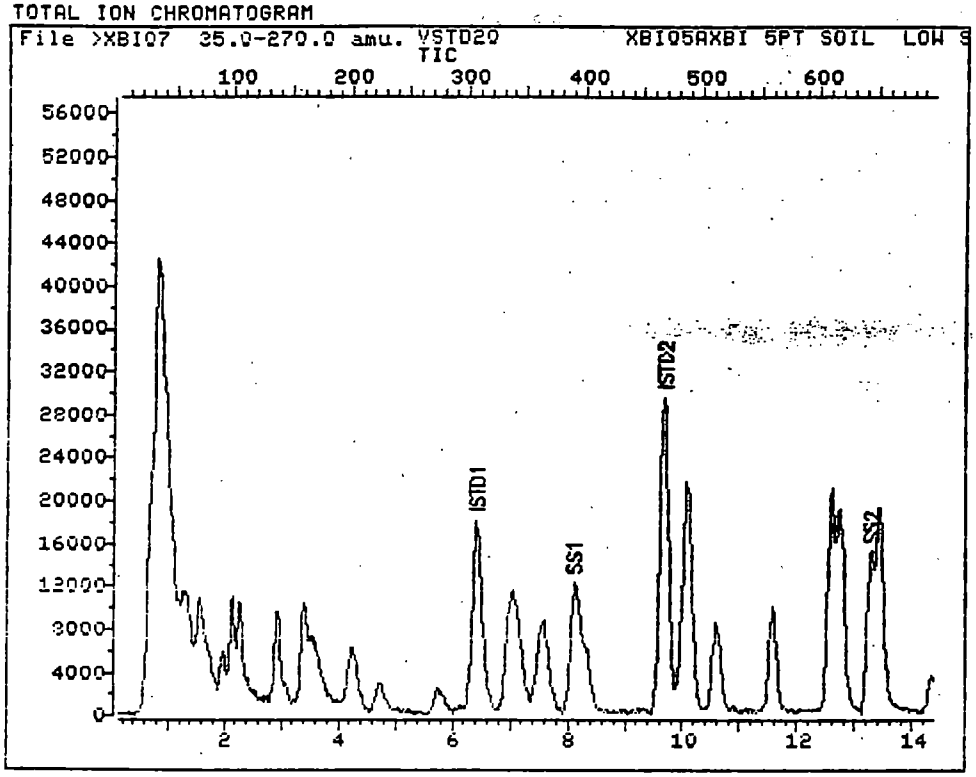
TOTAL ION CHROMATOGRAM



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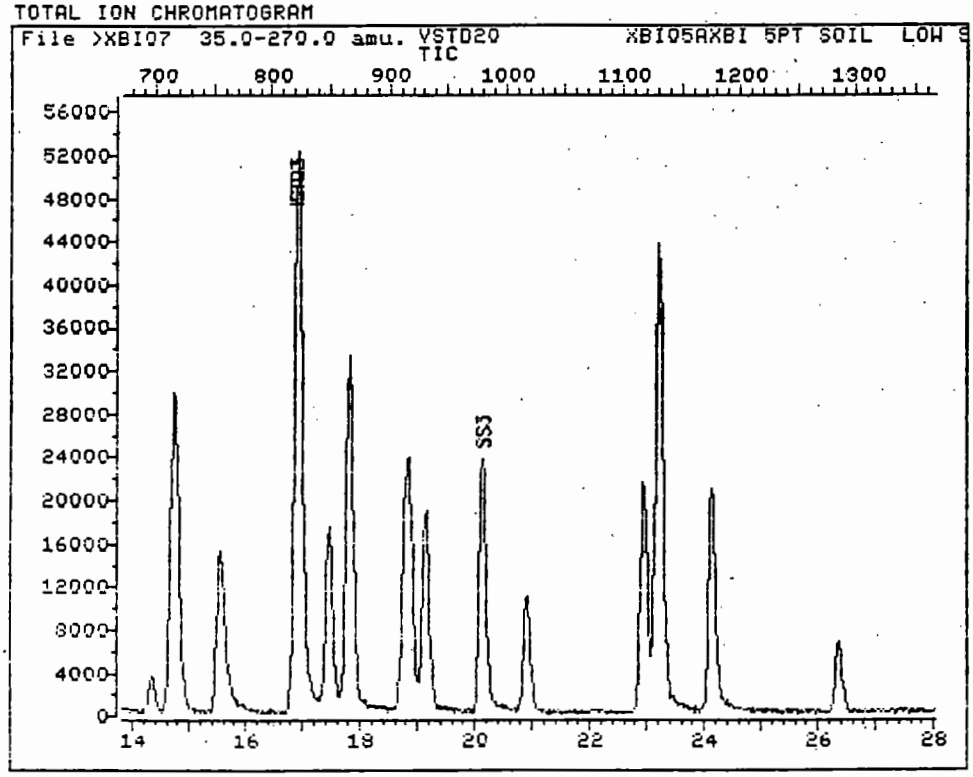
Misc: AXBI 5PT SOIL LOW SOIL ICL # HP-MSD X

Id File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

Operator ID: PSS
Quant Time: 911118 14:49
Injected at: 911118 14:20

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



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Name: VSTD20 XBI05
Misc: AXBI 5PT SOIL LOW SOIL ICL # HP-MSD X

Id File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

Operator ID: PSS
Quant Time: 911118 14:49
Injected at: 911118 14:20

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QUANT REPORT

Operator ID: PSS Quant Rev: 6 Quant Time: 911118 14:49
Output File: ^XBI07::QQ Injected at: 911118 14:20
Data File: >XBI07::D3 Dilution Factor: 1.00000
Name: VSTD20 XBI05
Misc: AXBI 5PT SOIL LOW SOIL ICL # HP-MSD X

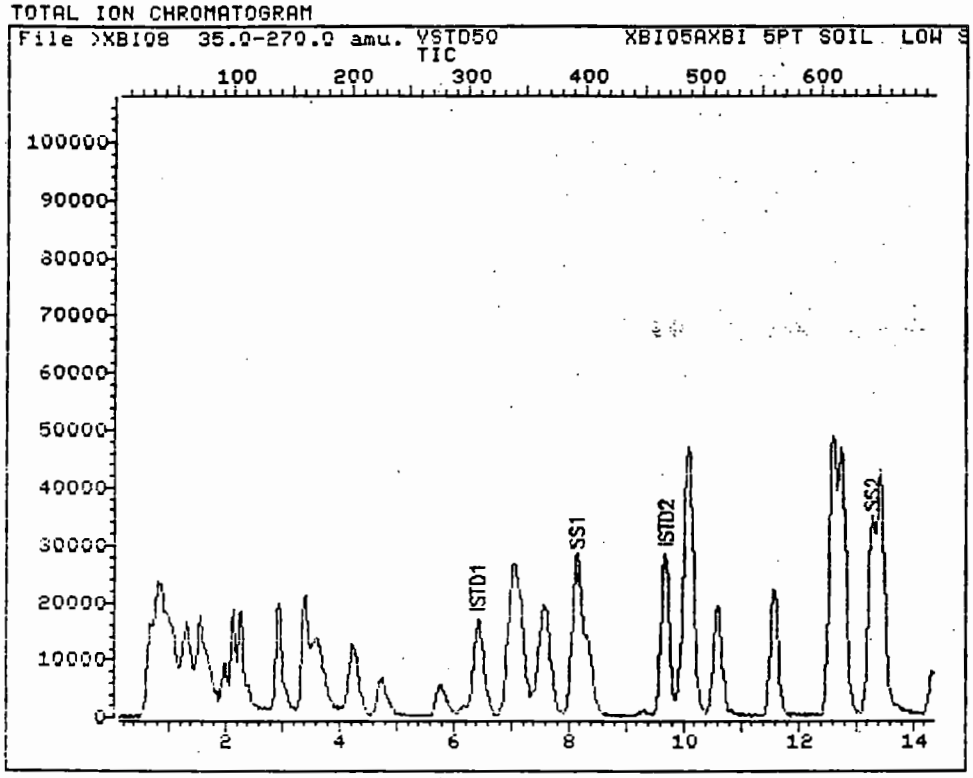
ID File: 1_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*BROMOCHLOROMETHANE	6.41	128.0	36164	50.00	ug/kg	62
2)	CHLOROMETHANE	1.00	50.0	9263	19.43	ug/kg	75
3)	VINYL CHLORIDE	1.08	62.0	12127	20.73	ug/kg	88
4)	BROMOMETHANE	1.33	94.0	14380	22.54	ug/kg	100
5)	CHLOROETHANE	1.35	64.0	7544	22.03	ug/kg	80
6)	TRICHLOROFLUOROMETHANE	1.55	101.0	37694	24.83	ug/kg	99
7)	DIETHYLETHER	1.96	59.0	8924	22.53	ug/kg	82
8)	1,1-DICHLOROETHYLENE	2.15	96.0	13642	28.69	ug/kg	90
9)	ACROLEIN	2.10	56.0	194M	3.61	ug/kg	
10)	CARBON DISULFIDE	2.27	76.0	35734	26.24	ug/kg	100
11)	ACETONE	2.39	43.0	4274M	15.20	ug/kg	88
12)	METHYLENE CHLORIDE	2.92	84.0	17641	26.83	ug/kg	72
13)	1,2-DICHLOROETHENE (TOTAL)	3.39	96.0	16990	26.41	ug/kg	95
14)	ACRYLONITRILE	3.45	53.0	2619M	12.62	ug/kg	
15)	METHYL-T-BUTYLETHER	3.57	73.0	37008	21.40	ug/kg	93
16)	1,1-DICHLOROETHANE	4.27	65.0	9351	21.26	ug/kg	97
17)	T-BUTYL ALCOHOL	3.96	59.0	1807M	9.63	ug/kg	
18)	VINYL ACETATE	4.74	43.0	25458	15.65	ug/kg	80
19)	1,2-DICHLOROETHENE (CIS)	5.74	96.0	6701	17.33	ug/kg	70
20)	2-BUTANONE	6.21	72.0	973	9.13	ug/kg	81
21)	CHLOROFORM	6.98	83.0	37257	21.29	ug/kg	88
22)	1,1,1-TRICHLOROETHANE	7.13	97.0	37076	22.06	ug/kg	95
23)	CARBON TETRACHLORIDE	7.55	117.0	39663	22.66	ug/kg	76
24)	*1,4-DIFLUOROBENZENE	9.68	114.0	140060	50.00	ug/kg	68
25)	BENZENE	8.13	78.0	38836	19.85	ug/kg	74
26)	1,2-DICHLOROETHANE D4	8.11	65.0	23348	19.85	ug/kg	95
27)	1,2-DICHLOROETHANE	8.35	62.0	23534	19.78	ug/kg	94
28)	TRICHLOROETHYLENE	10.11	130.0	25170	21.69	ug/kg	98
29)	BICYCLOHEPTADIENE	10.07	91.0	39058	20.84	ug/kg	93
30)	2-CHLOROETHYLVINYLETHER	12.72	63.0	8620	13.28	ug/kg	77
31)	1,2-DICHLOROPROPANE	10.58	63.0	14890	18.68	ug/kg	84
32)	BROMODICHLOROMETHANE	11.58	83.0	32455	17.73	ug/kg	87
33)	DIMETHYLDISULFIDE	12.60	94.0	56138	16.59	ug/kg	90
34)	*CHLOROBENZENE-D5	16.88	117.0	132212	50.00	ug/kg	95
35)	CIS-1,3-DICHLOROPROPENE	12.74	75.0	40495	32.55	ug/kg	91
36)	TOLUENE D8	13.27	98.0	55844	21.64	ug/kg	93
37)	TOLUENE	13.43	92.0	30166	21.60	ug/kg	98
38)	4-METHYL-2-PENTANONE	13.43	43.0	14929	12.31	ug/kg	74
39)	TRANS-1,3-DICHLOROPROPENE	14.33	75.0	8903	6.75	ug/kg	90
40)	TETRACHLOROETHYLENE	14.76	164.0	32452	25.30	ug/kg	92
41)	1,1,2-TRICHLOROETHANE	14.70	97.0	19012	20.47	ug/kg	96
42)	DIBROMOCHLOROMETHANE	15.54	129.0	40179	21.49	ug/kg	97
43)	2-HEXANONE	15.66	43.0	12140	12.06	ug/kg	92

	Compound	R.T.	Q ion	Area	Conc	Units	q
44)	CHLOROBENZENE	16.95	112.0	46924	22.40	ug/kg	85
45)	ETHYLBENZENE	17.46	106.0	18873	20.31	ug/kg	99
46)	XYLENE	17.80	106.0	47975	44.94	ug/kg	91
47)	STYRENE	18.86	104.0	39703	20.60	ug/kg	98
48)	XYLENES (TOTAL)	18.78	106.0	25102	23.77	ug/kg	93
49)	BROMOFORM	19.13	173.0	45199	21.07	ug/kg	93
50)	4-BROMOFLUOROBENZENE	20.13	95.0	42577	19.39	ug/kg	77
51)	1,1,2,2-TETRACHLOROETHANE	20.91	83.0	26709	16.12	ug/kg	89
52)	1,3-DICHLOROBENZENE	22.93	146.0	52828	22.84	ug/kg	95
53)	1,4-DICHLOROBENZENE	23.23	146.0	55903	24.61	ug/kg	93
54)	DICYCLOPENTADIENE	23.21	66.0	100772	22.41	ug/kg	68
55)	1,2-DICHLOROBENZENE	24.13	146.0	56102	24.50	ug/kg	98
56)	DIBROMOCHLOROPROPANE	26.36	157.0	11430	11.29	ug/kg	90

* Compound is ISTD

TOTAL ION CHROMATOGRAM



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Misc: AXBI 5PT SOIL LOW SOIL ICL # HP-MSD X

Id File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

Operator ID: PSS
Quant Time: 911118 15:23
Injected at: 911118 14:54

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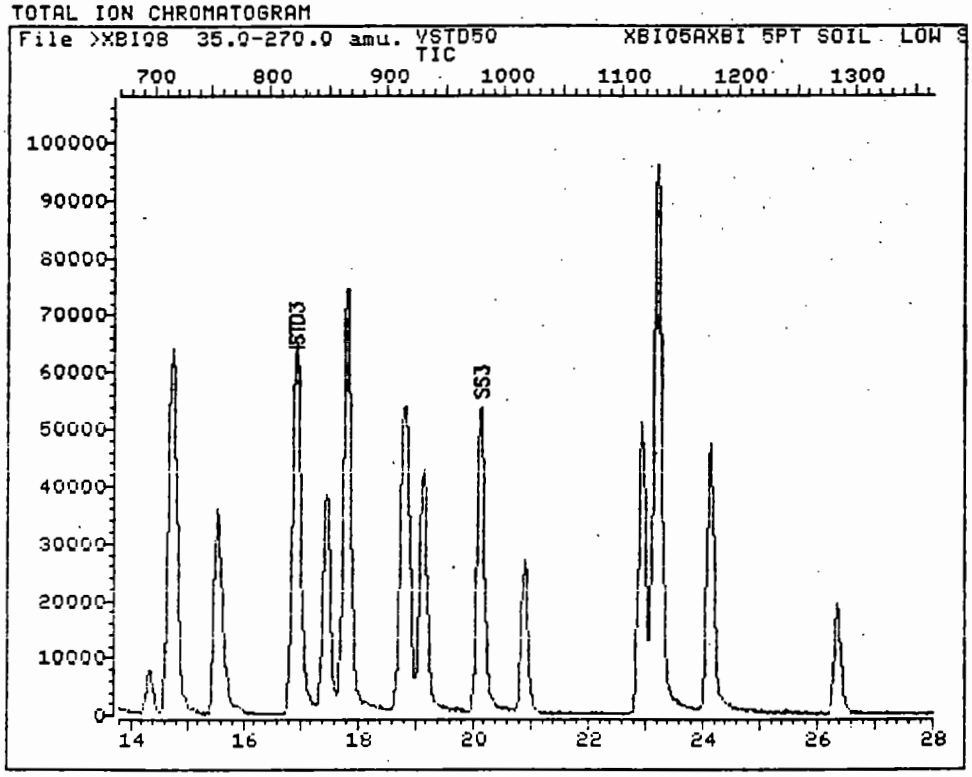
TOTAL ION CHROMATOGRAM



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Name: VSTD50 XBI05
Misc: AXBI 5PT SOIL LOW SOIL ICL # HP-MSD X

Id File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY (DB624)
Last Calibration: 911114 13:33

Operator ID: PSS
Quant Time: 911118 15:23
Injected at: 911118 14:54

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QUANT REPORT

Operator ID: PSS Quant Rev: 6 Quant Time: 911118 15:23
Output File: ^XB108::QQ Injected at: 911118 14:54
Data File: >XB108::D3 Dilution Factor: 1.00000
Name: VSTD50 XB105
Misc: AXBI 5PT SOIL LOW SOIL ICL # HP-MSD X

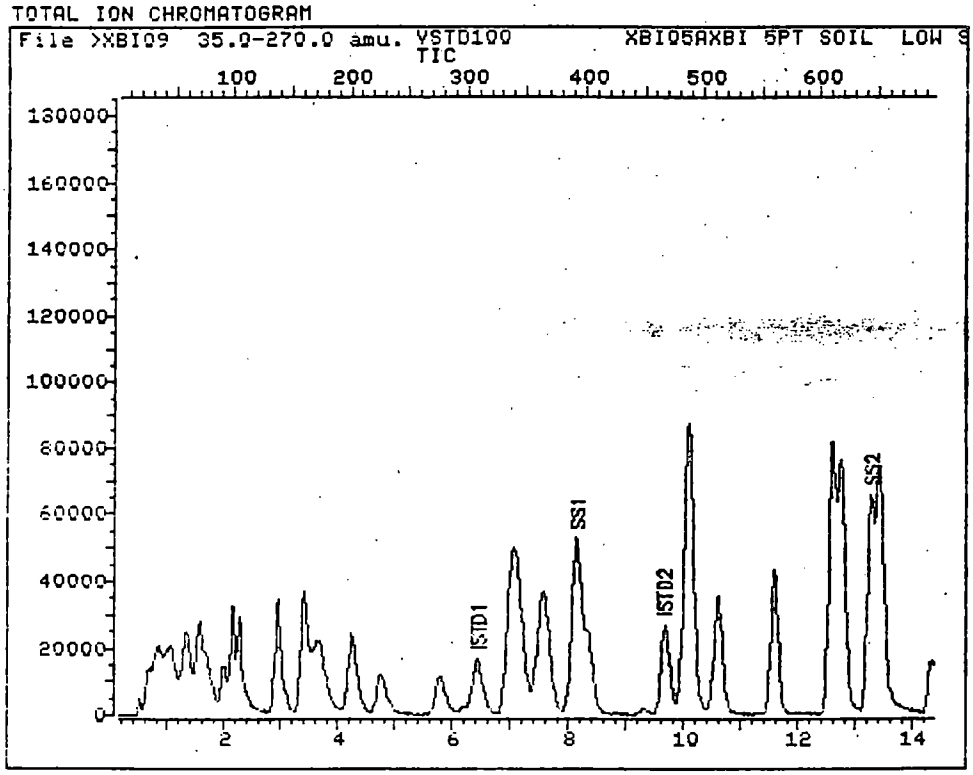
ID File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*BROMOCHLOROMETHANE	6.41	128.0	33325	50.00	ug/kg	59
2)	CHLOROMETHANE	1.02	50.0	20519	46.70	ug/kg	90
3)	VINYL CHLORIDE	1.08	62.0	28223	52.36	ug/kg	91
4)	BROMOMETHANE	1.33	94.0	32527	55.33	ug/kg	100
5)	CHLOROETHANE	1.35	64.0	15940	50.52	ug/kg	90
6)	TRICHLOROFLUOROMETHANE	1.57	101.0	80868	57.80	ug/kg	90
7)	DIETHYLETHER	1.98	59.0	17018	46.62	ug/kg	84
8)	1,1-DICHLOROETHYLENE	2.14	96.0	24143	55.10	ug/kg	94
9)	ACROLEIN	2.10	56.0	908	18.35	ug/kg	90
10)	CARBON DISULFIDE	2.29	76.0	69323	55.24	ug/kg	100
11)	ACETONE	2.41	43.0	7973	30.78	ug/kg	87
12)	METHYLENE CHLORIDE	2.94	84.0	36266	59.86	ug/kg	86
13)	1,2-DICHLOROETHENE (TOTAL)	3.39	96.0	36770	62.04	ug/kg	93
14)	ACRYLONITRILE	3.47	53.0	6277	32.83	ug/kg	95
15)	METHYL-T-BUTYLETHER	3.61	73.0	84051	52.74	ug/kg	99
16)	1,1-DICHLOROETHANE	4.25	65.0	20466	50.49	ug/kg	92
17)	T-BUTYL ALCOHOL	4.12	59.0	5053M	29.22	ug/kg	100
18)	VINYL ACETATE	4.76	43.0	62527	41.70	ug/kg	79
19)	1,2-DICHLOROETHENE (CIS)	5.80	96.0	17130	48.08	ug/kg	78
20)	2-BUTANONE	6.19	72.0	2954	30.08	ug/kg	78
21)	CHLOROFORM	7.02	83.0	82834	51.36	ug/kg	94
22)	1,1,1-TRICHLOROETHANE	7.13	97.0	84264	54.41	ug/kg	89
23)	CARBON TETRACHLORIDE	7.59	117.0	89616	55.57	ug/kg	90
24)	*1,4-DIFLUOROBENZENE	9.68	114.0	130334	50.00	ug/kg	69
25)	BENZENE	8.15	78.0	88293	48.50	ug/kg	74
26)	1,2-DICHLOROETHANE D4	8.13	65.0	54308	49.62	ug/kg	99
27)	1,2-DICHLOROETHANE	8.33	62.0	54230	48.98	ug/kg	92
28)	TRICHLOROETHYLENE	10.09	130.0	55721	51.60	ug/kg	97
29)	BICYCLOHEPTADIENE	10.07	91.0	87751	50.31	ug/kg	93
30)	2-CHLOROETHYLVINYLETHER	12.70	63.0	22598	37.40	ug/kg	88
31)	1,2-DICHLOROPROPANE	10.62	63.0	33588	45.27	ug/kg	93
32)	BROMODICHLOROMETHANE	11.58	83.0	74541	43.75	ug/kg	91
33)	DIMETHYLDISULFIDE	12.60	94.0	133086	42.28	ug/kg	86
34)	*CHLOROBENZENE-D5	16.91	117.0	129039	50.00	ug/kg	96
35)	CIS-1,3-DICHLOROPROPENE	12.76	75.0	97573	80.36	ug/kg	95
36)	TOLUENE D8	13.27	98.0	123094	48.87	ug/kg	98
37)	TOLUENE	13.42	92.0	68642	50.36	ug/kg	92
38)	4-METHYL-2-PENTANONE	13.46	43.0	37364	31.57	ug/kg	93
39)	TRANS-1,3-DICHLOROPROPENE	14.33	75.0	22251	17.28	ug/kg	89
40)	TETRACHLOROETHYLENE	14.74	164.0	70615	56.42	ug/kg	98
41)	1,1,2-TRICHLOROETHANE	14.70	97.0	41258	45.52	ug/kg	94
42)	DIBROMOCHLOROMETHANE	15.54	129.0	94867	52.00	ug/kg	96
43)	2-HEXANONE	15.66	43.0	26509	26.99	ug/kg	89

	Compound	R.T.	Q ion	Area	Conc	Units	q
44)	CHLOROBENZENE	16.97	112.0	106006	51.85	ug/kg	85
45)	ETHYLBENZENE	17.48	106.0	44972	49.59	ug/kg	88
46)	XYLENE	17.83	106.0	104797	100.58	ug/kg	91
47)	STYRENE	18.87	104.0	91898	48.85	ug/kg	94
48)	XYLENES (TOTAL)	18.77	106.0	60181	58.38	ug/kg	92
49)	BROMOFORM	19.13	173.0	106134	50.69	ug/kg	91
50)	4-BROMOFLUOROBENZENE	20.13	95.0	101154	47.20	ug/kg	81
51)	1,1,2,2-TETRACHLOROETHANE	20.91	83.0	62297	38.51	ug/kg	91
52)	1,3-DICHLOROBENZENE	22.95	146.0	122401	54.23	ug/kg	97
53)	1,4-DICHLOROBENZENE	23.22	146.0	117322	52.92	ug/kg	98
54)	DICYCLOPENTADIENE	23.20	66.0	226649	51.64	ug/kg	66
55)	1,2-DICHLOROBENZENE	24.14	146.0	116774	52.25	ug/kg	94
56)	DIBROMOCHLOROPROPANE	26.36	157.0	33146	33.54	ug/kg	84

* Compound is ISTD

TOTAL ION CHROMATOGRAM



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Misc: AXBI 5PT SOIL LOW SOIL ICL # HP-MSD X

Id File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

Operator ID: PSS
Quant Time: 911118 15:57
Injected at: 911118 15:28

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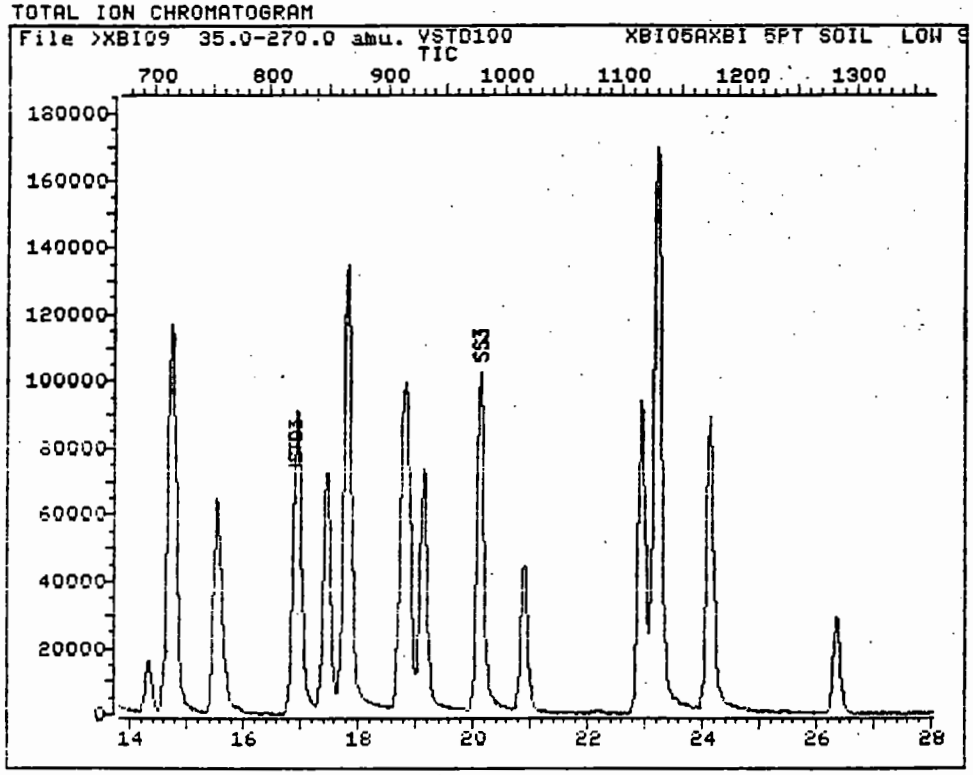
TOTAL ION CHROMATOGRAM



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Name: VSTD100 XBI05
Misc: AXBI 5PT SOIL LOW SOIL ICL # HP-MSD X

Id File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

Operator ID: PSS
Quant Time: 911118 15:57
Injected at: 911118 15:28

TIC page 2 of 2

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QUANT REPORT

Operator ID: PSS Quant Rev: 6 Quant Time: 911118 15:57
Output File: ^XBI09::QQ Injected at: 911118 15:28
Data File: >XBI09::D3 Dilution Factor: 1.00000
Name: VSTD100 XBI05
Misc: AXBI 5PT SOIL LOW SOIL ICL # HP-MSD X

ID File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*BROMOCHLOROMETHANE	6.44	128.0	31277	50.00	ug/kg	58
2)	CHLOROMETHANE	1.00	50.0	40589	98.42	ug/kg	92
3)	VINYL CHLORIDE	1.08	62.0	52294	103.37	ug/kg	98
4)	BROMOMETHANE	1.33	94.0	60375	109.42	ug/kg	100
5)	CHLOROETHANE	1.37	64.0	28549	96.40	ug/kg	93
6)	TRICHLOROFLUOROMETHANE	1.55	101.0	148087	112.77	ug/kg	96
7)	DIETHYLETHER	1.98	59.0	24645	71.94	ug/kg	84
8)	1,1-DICHLOROETHYLENE	2.13	96.0	42586	103.56	ug/kg	89
9)	ACROLEIN	2.11	56.0	2089M	44.98	ug/kg	76
10)	CARBON DISULFIDE	2.27	76.0	111721	94.85	ug/kg	100
11)	ACETONE	2.00	43.0	19985M	82.20	ug/kg	81
12)	METHYLENE CHLORIDE	2.94	84.0	65969	116.02	ug/kg	76
13)	1,2-DICHLOROETHENE (TOTAL)	3.41	96.0	69629	125.16	ug/kg	96
14)	ACRYLONITRILE	3.49	53.0	11340	63.19	ug/kg	93
15)	METHYL-T-BUTYLETHER	3.66	73.0	150264	100.47	ug/kg	96
16)	1,1-DICHLOROETHANE	4.23	65.0	38237	100.51	ug/kg	94
17)	T-BUTYL ALCOHOL	4.27	59.0	8381M	51.64	ug/kg	
18)	VINYL ACETATE	4.74	43.0	112050	79.62	ug/kg	79
19)	1,2-DICHLOROETHENE (CIS)	5.78	96.0	33518	100.23	ug/kg	82
20)	2-BUTANONE	6.21	72.0	4665M	50.61	ug/kg	81
21)	CHLOROFORM	7.03	83.0	155400	102.65	ug/kg	95
22)	1,1,1-TRICHLOROETHANE	7.11	97.0	155980	107.31	ug/kg	89
23)	CARBON TETRACHLORIDE	7.56	117.0	171561	113.34	ug/kg	90
24)	*1,4-DIFLUOROBENZENE	9.66	114.0	124246	50.00	ug/kg	67
25)	BENZENE	8.13	78.0	169213	97.50	ug/kg	76
26)	1,2-DICHLOROETHANE D4	8.15	65.0	100021	95.86	ug/kg	93
27)	1,2-DICHLOROETHANE	8.34	62.0	100664	95.38	ug/kg	99
28)	TRICHLOROETHYLENE	10.11	130.0	104713	101.72	ug/kg	93
29)	BICYCLOHEPTADIENE	10.03	91.0	164782	99.11	ug/kg	90
30)	2-CHLOROETHYLVINYLETHER	12.71	63.0	35103	60.94	ug/kg	74
31)	1,2-DICHLOROPROPANE	10.58	63.0	64531	91.24	ug/kg	94
32)	BROMODICHLOROMETHANE	11.58	83.0	142276	87.60	ug/kg	93
33)	DIMETHYLDISULFIDE	12.58	94.0	220289	73.41	ug/kg	92
34)	*CHLOROBENZENE-D5	16.89	117.0	121348	50.00	ug/kg	96
35)	CIS-1,3-DICHLOROPROPENE	12.77	75.0	162666	142.46	ug/kg	93
36)	TOLUENE D8	13.28	98.0	240950	101.73	ug/kg	93
37)	TOLUENE	13.42	92.0	124322	96.99	ug/kg	95
38)	4-METHYL-2-PENTANONE	13.46	43.0	57439	51.60	ug/kg	90
39)	TRANS-1,3-DICHLOROPROPENE	14.34	75.0	42954	35.48	ug/kg	92
40)	TETRACHLOROETHYLENE	14.73	164.0	128863	109.48	ug/kg	97
41)	1,1,2-TRICHLOROETHANE	14.69	97.0	72721	85.32	ug/kg	92
42)	DIBROMOCHLOROMETHANE	15.53	129.0	168592	98.27	ug/kg	99
43)	2-HEXANONE	15.65	43.0	42405	45.90	ug/kg	90

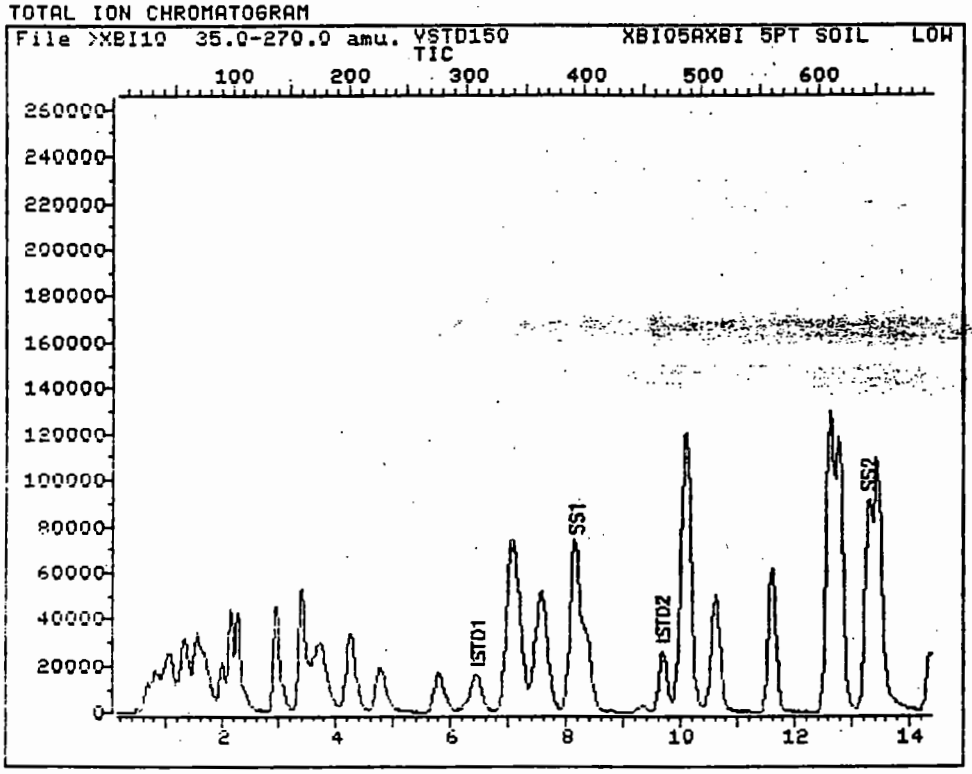
	Compound	R.T.	Q ion	Area	Conc	Units	q
44)	CHLOROBENZENE	16.96	112.0	201633	104.87	ug/kg	89
45)	ETHYLBENZENE	17.45	106.0	85999	100.84	ug/kg	91
46)	XYLENE	17.81	106.0	186214	190.05	ug/kg	91
47)	STYRENE	18.88	104.0	171047	96.69	ug/kg	95
48)	XYLENES (TOTAL)	18.77	106.0	99080M	102.20	ug/kg	
49)	BROMOFORM	19.14	173.0	181193	92.03	ug/kg	93
50)	4-BROMOFLUOROBENZENE	20.12	95.0	186013	92.30	ug/kg	76
51)	1,1,2,2-TETRACHLOROETHANE	20.92	83.0	107203	70.48	ug/kg	89
52)	1,3-DICHLOROBENZENE	22.94	146.0	224682	105.85	ug/kg	99
53)	1,4-DICHLOROBENZENE	23.23	146.0	224048	107.46	ug/kg	98
54)	DICYCLOPENTADIENE	23.19	66.0	401420	97.26	ug/kg	68
55)	1,2-DICHLOROBENZENE	24.13	146.0	218471	103.95	ug/kg	98
56)	DIBROMOCHLOROPROPANE	26.33	157.0	53830	57.92	ug/kg	89

* Compound is ISTD

9613440.2902

0000038

TOTAL ION CHROMATOGRAM



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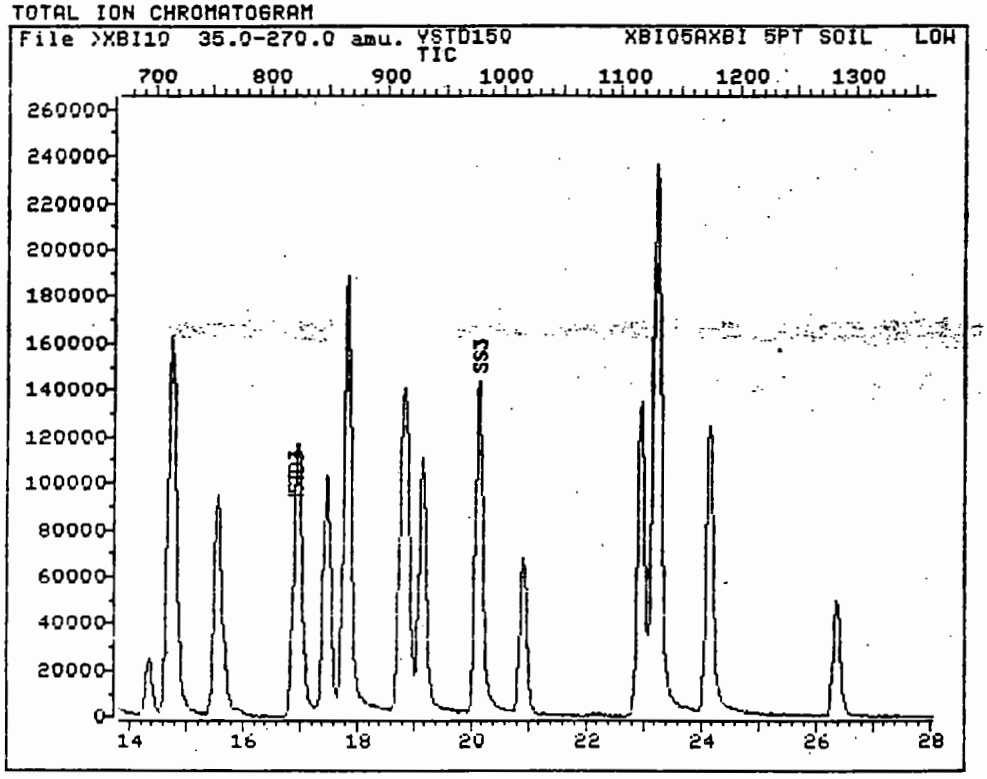
Name: VSTD150 XBI05
Misc: AXBI 5PT SOIL LOW SOIL ICL #HP-MSD X PSS

Id File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

Operator ID: PSS
Quant Time: 911118 16:29
Injected at: 911118 16:00

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



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Name: VSTD150 XBI05
Misc: AXBI 5PT SOIL LOW SOIL ICL #HP-MSD X PSS

Id File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

Operator ID: PSS
Quant Time: 911118 16:29
Injected at: 911118 16:00

TIC page 2 of 2

9613440.2904

0000040

QUANT REPORT

Operator ID: PSS Quant Rev: 6 Quant Time: 911118 16:29
Output File: ^XBI10::QQ Injected at: 911118 16:00
Data File: >XBI10::D3 Dilution Factor: 1.00000
Name: VSTD150 XBI05
Misc: AXBI 5PT SOIL LOW SOIL ICL #HP-MSD X PSS

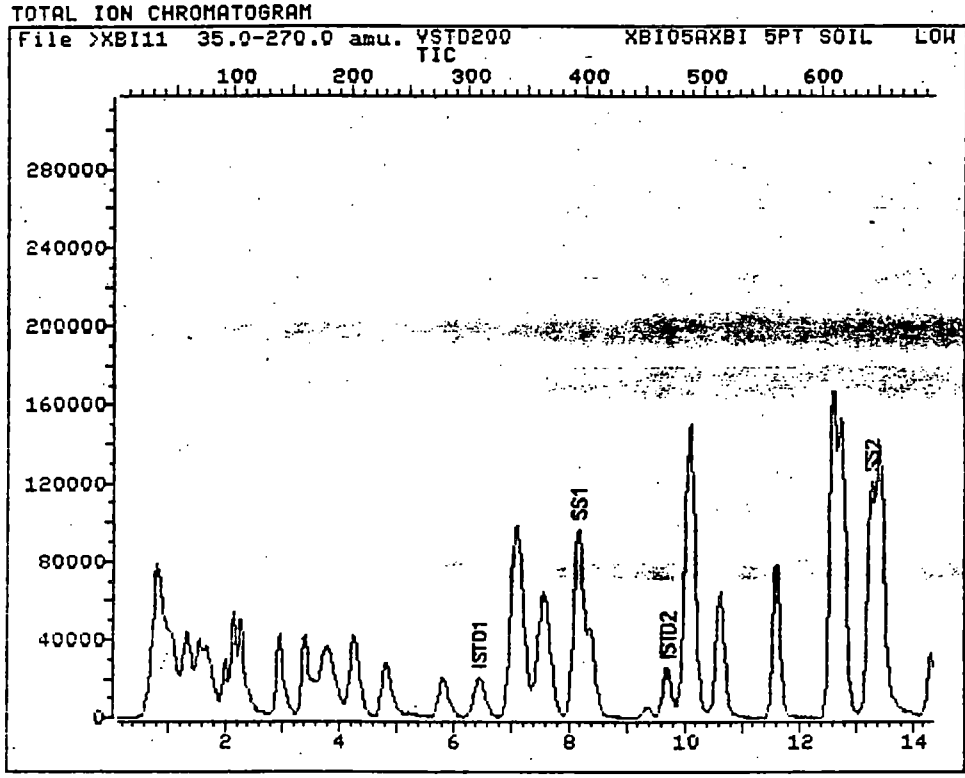
ID File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*BROMOCHLOROMETHANE	6.48	128.0	31095	50.00	ug/kg	54
2)	CHLOROMETHANE	1.00	50.0	59285	144.60	ug/kg	95
3)	VINYL CHLORIDE	1.10	62.0	73481	146.10	ug/kg	99
4)	BROMOMETHANE	1.33	94.0	84040	153.19	ug/kg	100
5)	CHLOROETHANE	1.35	64.0	40227	136.63	ug/kg	95
6)	TRICHLOROFLUOROMETHANE	1.55	101.0	206604M	158.25	ug/kg	98
7)	DIETHYLETHER	2.00	59.0	45200	132.71	ug/kg	84
8)	1,1-DICHLOROETHYLENE	2.15	96.0	59961	146.66	ug/kg	93
9)	ACROLEIN	2.10	56.0	4143	89.74	ug/kg	89
10)	CARBON DISULFIDE	2.27	76.0	160118	136.73	ug/kg	100
11)	ACETONE	2.00	43.0	26284M	108.75	ug/kg	86
12)	METHYLENE CHLORIDE	2.94	84.0	92000	162.75	ug/kg	78
13)	1,2-DICHLOROETHENE (TOTAL)	3.41	96.0	100560	181.82	ug/kg	95
14)	ACRYLONITRILE	3.51	53.0	13916	78.00	ug/kg	90
15)	METHYL-T-BUTYLETHER	3.72	73.0	220031	147.97	ug/kg	99
16)	1,1-DICHLOROETHANE	4.25	65.0	57041	150.81	ug/kg	98
17)	T-BUTYL ALCOHOL	4.41	59.0	13863M	85.91	ug/kg	100
18)	VINYL ACETATE	4.78	43.0	174433	124.68	ug/kg	81
19)	1,2-DICHLOROETHENE (CIS)	5.80	96.0	49516	148.94	ug/kg	88
20)	2-BUTANONE	6.31	72.0	8006	87.37	ug/kg	87
21)	CHLOROFORM	7.05	83.0	223199	148.30	ug/kg	93
22)	1,1,1-TRICHLOROETHANE	7.11	97.0	224305	155.22	ug/kg	98
23)	CARBON TETRACHLORIDE	7.58	117.0	246315	163.68	ug/kg	91
24)	*1,4-DIFLUOROBENZENE	9.68	114.0	122315	50.00	ug/kg	69
25)	BENZENE	8.15	78.0	235864	138.05	ug/kg	74
26)	1,2-DICHLOROETHANE D4	8.17	65.0	145553	141.70	ug/kg	96
27)	1,2-DICHLOROETHANE	8.36	62.0	147560	142.02	ug/kg	99
28)	TRICHLOROETHYLENE	10.11	130.0	147314	145.36	ug/kg	97
29)	BICYCLOHEPTADIENE	10.07	91.0	241545	147.58	ug/kg	88
30)	2-CHLOROETHYLVINYLETHER	12.73	63.0	56199	99.11	ug/kg	88
31)	1,2-DICHLOROPROPANE	10.62	63.0	89908	129.13	ug/kg	91
32)	BROMODICHLOROMETHANE	11.60	83.0	203288	127.14	ug/kg	97
33)	DIMETHYLDISULFIDE	12.62	94.0	357584	121.04	ug/kg	93
34)	*CHLOROBENZENE-D5	16.91	117.0	120158	50.00	ug/kg	94
35)	CIS-1,3-DICHLOROPROPENE	12.79	75.0	251121	222.11	ug/kg	92
36)	TOLUENE D8	13.28	98.0	341076	145.43	ug/kg	94
37)	TOLUENE	13.44	92.0	179145	141.15	ug/kg	94
38)	4-METHYL-2-PENTANONE	13.46	43.0	89531	81.23	ug/kg	86
39)	TRANS-1,3-DICHLOROPROPENE	14.34	75.0	65965	55.03	ug/kg	93
40)	TETRACHLOROETHYLENE	14.77	164.0	177625	152.40	ug/kg	95
41)	1,1,2-TRICHLOROETHANE	14.71	97.0	105786	125.35	ug/kg	98
42)	DIBROMOCHLOROMETHANE	15.55	129.0	244532	143.94	ug/kg	97
43)	2-HEXANONE	15.67	43.0	70418	76.98	ug/kg	92

	Compound	R.T.	Q ion	Area	Conc	Units	q
44)	CHLOROBENZENE	16.97	112.0	292245	153.51	ug/kg	88
45)	ETHYLBENZENE	17.47	106.0	125793	148.96	ug/kg	92
46)	XYLENE	17.81	106.0	279761	288.35	ug/kg	90
47)	STYRENE	18.88	104.0	247161	141.10	ug/kg	93
48)	XYLENES (TOTAL)	18.77	106.0	137992	143.75	ug/kg	92
49)	BROMOFORM	19.16	173.0	268795	137.88	ug/kg	97
50)	4-BROMOFLUOROBENZENE	20.14	95.0	276404	138.51	ug/kg	83
51)	1,1,2,2-TETRACHLOROETHANE	20.92	83.0	163485	108.54	ug/kg	87
52)	1,3-DICHLOROBENZENE	22.96	146.0	323239	153.79	ug/kg	99
53)	1,4-DICHLOROBENZENE	23.23	146.0	298309	144.49	ug/kg	95
54)	DICYCLOPENTADIENE	23.21	66.0	583783	142.85	ug/kg	70
55)	1,2-DICHLOROBENZENE	24.15	146.0	299537	143.93	ug/kg	94
56)	DIBROMOCHLOROPROPANE	26.35	157.0	91156	99.05	ug/kg	87

* Compound is ISTD

TOTAL ION CHROMATOGRAM



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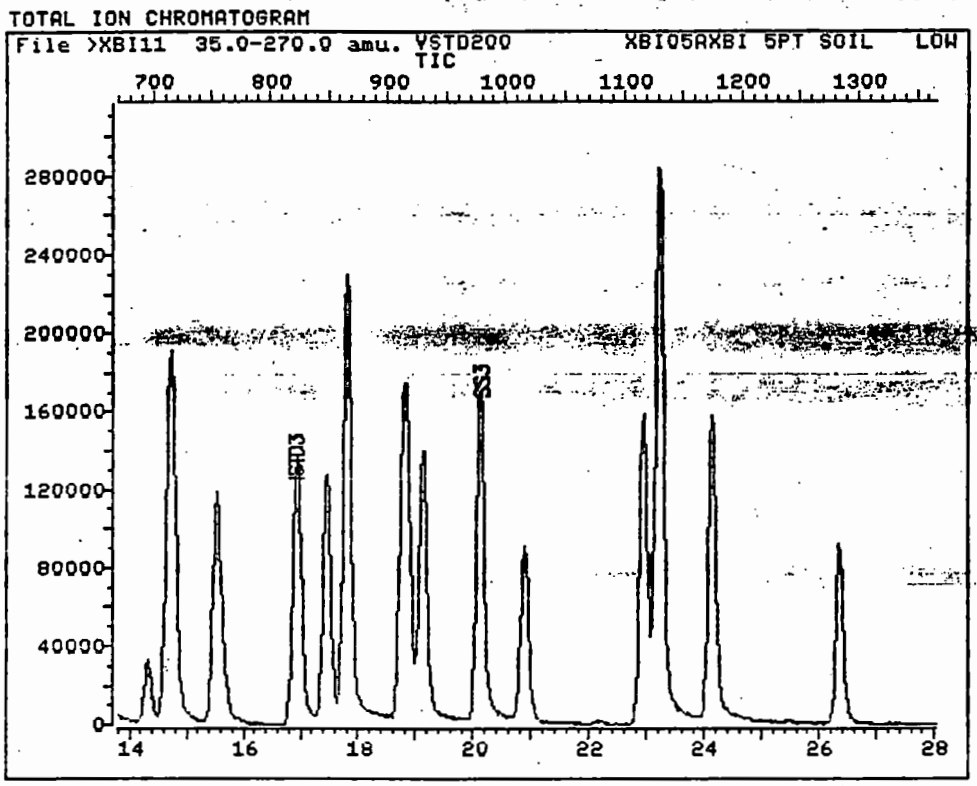
Name: VSTD200 XBI05
Misc: AXBI 5PT SOIL LOW SOIL ICL #HP-MSD X PSS

Id File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

Operator ID: PSS
Quant Time: 911118 17:01
Injected at: 911118 16:32

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >XBI11::D3 Quant Output File: ^XBI11::QQ
Name: VSTD200 XBI05
Misc: AXBI 5PT SOIL LOW SOIL ICL #HP-MSD X PSS

Id File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

Operator ID: PSS
Quant Time: 911118 17:01
Injected at: 911118 16:32

TIC page 2 of 2

QUANT REPORT

Operator ID: PSS Quant Rev: 6 Quant Time: 911118 17:01
Output File: ^XBI11::QQ Injected at: 911118 16:32
Data File: >XBI11::D3 Dilution Factor: 1.00000
Name: VSTD200 XBI05
Misc: AXBI 5PT SOIL LOW SOIL ICL #HP-MSD X PSS

ID File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911114 13:33

	Compound	R.T.	Q Ion	Area	Conc	Units	q
1)	*BROMOCHLOROMETHANE	6.45	128.0	31000	50.00	ug/kg	44
2)	CHLOROMETHANE	1.02	50.0	64372	157.49	ug/kg	98
3)	VINYL CHLORIDE	1.08	62.0	84191	167.90	ug/kg	96
4)	BROMOMETHANE	1.33	94.0	93687	171.30	ug/kg	100
5)	CHLOROETHANE	1.39	64.0	45666	155.55	ug/kg	90
6)	TRICHLOROFLUOROMETHANE	1.67	101.0	243446M	187.05	ug/kg	94
7)	DIETHYLETHER	2.00	59.0	59608	175.55	ug/kg	82
8)	1,1-DICHLOROETHYLENE	2.14	96.0	72101	176.89	ug/kg	91
9)	ACROLEIN	2.10	56.0	8163	177.35	ug/kg	90
10)	CARBON DISULFIDE	2.29	76.0	192573	164.95	ug/kg	100
11)	ACETONE	2.45	43.0	38983M	161.78	ug/kg	87
12)	METHYLENE CHLORIDE	2.96	84.0	75623	134.19	ug/kg	92
13)	1,2-DICHLOROETHENE (TOTAL)	3.41	96.0	80151	145.37	ug/kg	90
14)	ACRYLONITRILE	3.59	53.0	27377	153.92	ug/kg	96
15)	METHYL-T-BUTYLETHER	3.82	73.0	287715	194.09	ug/kg	98
16)	1,1-DICHLOROETHANE	4.29	65.0	68761	182.35	ug/kg	95
17)	T-BUTYL ALCOHOL	5.23	59.0	24933M	154.99	ug/kg	100
18)	VINYL ACETATE	4.84	43.0	261059	187.17	ug/kg	75
19)	1,2-DICHLOROETHENE (CIS)	5.82	96.0	59919	180.78	ug/kg	91
20)	2-BUTANONE	6.39	72.0	14493	158.65	ug/kg	89
21)	CHLOROFORM	7.09	83.0	273824	182.50	ug/kg	96
22)	1,1,1-TRICHLOROETHANE	7.15	97.0	277121	192.36	ug/kg	91
23)	CARBON TETRACHLORIDE	7.58	117.0	302963	201.94	ug/kg	86
24)	*1,4-DIFLUOROBENZENE	9.70	114.0	116544	50.00	ug/kg	68
25)	BENZENE	8.15	78.0	296515	182.14	ug/kg	76
26)	1,2-DICHLOROETHANE D4	8.17	65.0	193205	197.40	ug/kg	97
27)	1,2-DICHLOROETHANE	8.37	62.0	195792	197.78	ug/kg	99
28)	TRICHLOROETHYLENE	10.11	130.0	186561	193.20	ug/kg	95
29)	BICYCLOHEPTADIENE	10.07	91.0	296911	190.39	ug/kg	86
30)	2-CHLOROETHYLVINYLETHER	12.70	63.0	82080	151.92	ug/kg	83
31)	1,2-DICHLOROPROPANE	10.62	63.0	113411	170.95	ug/kg	99
32)	BROMODICHLOROMETHANE	11.62	83.0	259945	170.63	ug/kg	87
33)	DIMETHYLDISULFIDE	12.60	94.0	448278	159.25	ug/kg	97
34)	*CHLOROBENZENE-D5	16.91	117.0	114214	50.00	ug/kg	92
35)	CIS-1,3-DICHLOROPROPENE	12.76	75.0	312898	291.15	ug/kg	92
36)	TOLUENE D8	13.28	98.0	431198	193.42	ug/kg	94
37)	TOLUENE	13.44	92.0	219885	182.26	ug/kg	96
38)	4-METHYL-2-PENTANONE	13.44	43.0	160194	152.91	ug/kg	95
39)	TRANS-1,3-DICHLOROPROPENE	14.32	75.0	86099	75.56	ug/kg	92
40)	TETRACHLOROETHYLENE	14.75	164.0	216001	194.97	ug/kg	97
41)	1,1,2-TRICHLOROETHANE	14.69	97.0	144699	180.38	ug/kg	94
42)	DIBROMOCHLOROMETHANE	15.52	129.0	315658	195.48	ug/kg	94
43)	2-HEXANONE	15.65	43.0	116134	133.57	ug/kg	90

	Compound	R.T.	Q ion	Area	Conc	Units	q
44)	CHLOROBENZENE	16.95	112.0	365560	202.01	ug/kg	88
45)	ETHYLBENZENE	17.44	106.0	152132	189.52	ug/kg	94
46)	XYLENE	17.81	106.0	336199	364.55	ug/kg	87
47)	STYRENE	18.85	104.0	295106	177.24	ug/kg	90
48)	XYLENES (TOTAL)	18.77	106.0	163810	179.52	ug/kg	92
49)	BROMOFORM	19.14	173.0	379141	204.60	ug/kg	92
50)	4-BROMOFLUOROBENZENE	20.14	95.0	341794	180.19	ug/kg	86
51)	1,1,2,2-TETRACHLOROETHANE	20.90	83.0	245607	171.55	ug/kg	89
52)	1,3-DICHLOROBENZENE	22.94	146.0	410563	205.50	ug/kg	99
53)	1,4-DICHLOROBENZENE	23.23	146.0	371133	189.12	ug/kg	97
54)	DICYCLOPENTADIENE	23.19	66.0	705838	181.70	ug/kg	70
55)	1,2-DICHLOROBENZENE	24.13	146.0	392681	198.51	ug/kg	98
56)	DIBROMOCHLOROPROPANE	26.35	157.0	167577	191.57	ug/kg	88

* Compound is ISTD

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L637

Instrument ID: HP-MSD X Calibration Date: 12/10/91 Time: 1040

Lab File ID: AXCA04 Init. Calib. Date(s): 11/18/91 11/18/91

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) CAP

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

COMPOUND	RRF	RRF50	%D
Chloromethane #	0.612	0.520	15.0 #
Bromomethane	0.918	0.811	11.7
Vinyl Chloride *	0.798	0.672	15.8 *
Chloroethane	0.451	0.434	3.9
Methylene Chloride	0.992	0.912	8.0
Acetone	0.290	0.411	-41.8
Carbon Disulfide	1.921	1.751	8.9
1,1-Dichloroethene *	0.715	0.658	8.0 *
1,1-Dichloroethane #	0.608	0.573	5.7 #
1,2-Dichloroethene (total)	1.023	0.999	2.3
Chloroform *	2.429	2.342	3.6 *
1,2-Dichloroethane	0.413	0.453	-9.6
2-Butanone	0.087	0.115	-32.6
1,1,1-Trichloroethane	2.445	2.403	1.7
Carbon Tetrachloride	2.652	2.550	3.8
Vinyl Acetate	1.881	1.123	40.3
Bromodichloromethane	0.567	0.566	0.1
1,2-Dichloropropane *	0.254	0.250	1.5 *
cis-1,3-Dichloropropene	0.441	0.410	6.9
Trichloroethene	0.420	0.398	5.1
Dibromochloromethane	0.712	0.745	-4.7
1,1,2-Trichloroethane	0.318	0.342	-7.7
Benzene	0.666	0.674	-1.2
Trans-1,3-Dichloropropene	0.468	0.443	5.3
Bromoform #	0.800	0.877	-9.6 #
4-Methyl-2-pentanone	0.281	0.454	-61.7
2-Hexanone	0.212	0.329	-55.0
Tetrachloroethene	0.531	0.473	11.0
1,1,2,2-Tetrachloroethane #	0.484	0.630	-30.3 #
Toluene *	0.519	0.516	0.7 *
Chlorobenzene #	0.830	0.762	8.1 #
Ethylbenzene *	0.348	0.325	6.7 *
Styrene	0.700	0.685	2.2
Xylene (total)	0.418	0.396	5.2
Toluene-d8	0.979	0.976	0.3
Bromofluorobenzene	0.774	0.736	4.9
1,2-Dichloroethane-d4	0.409	0.458	-12.0

QUANT REPORT

Operator ID: PSS Quant Rev: 6 Quant Time: 911210 11:09
Output File: ^XCA04::QQ Injected at: 911210 10:40
Data File: >XCA04::D3 Dilution Factor: 1.00000
Name: VSTD50 AXC903
Misc: AXBI 5PT SOIL LOW SOIL CCL #HP-MSD X PS

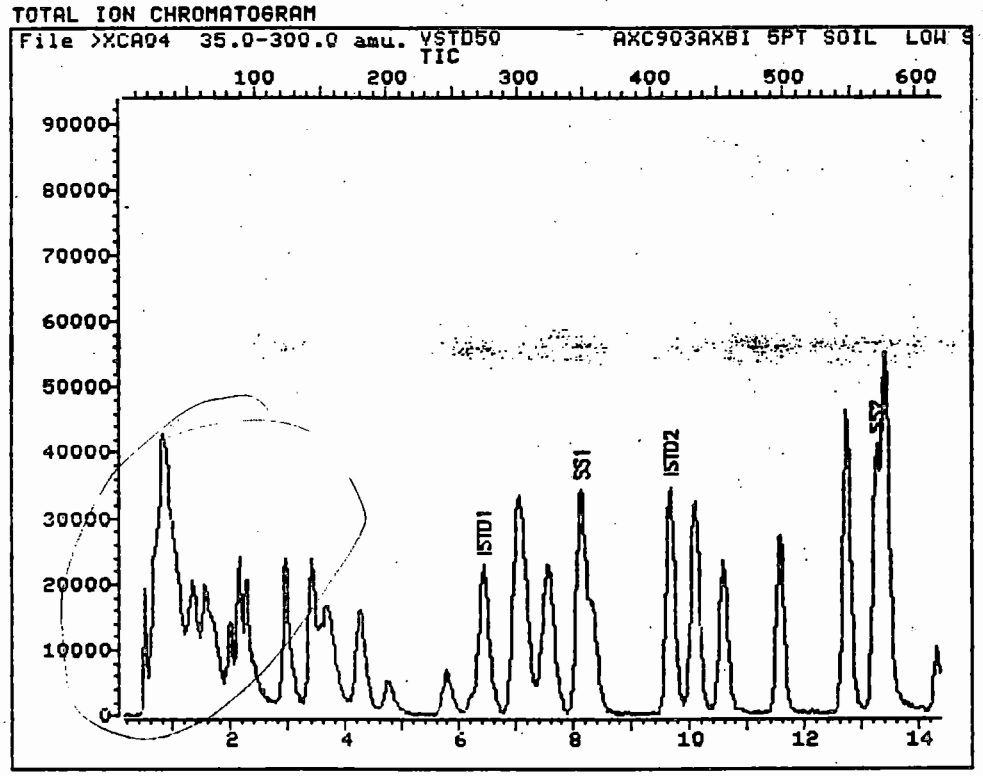
ID File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911119 11:46

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*BROMOCHLOROMETHANE	6.43	128.0	41964	50.00	ug/kg	49
2)	CHLOROMETHANE	1.02	50.0	21825	42.50	ug/kg	96
3)	VINYL CHLORIDE	1.11	62.0	28185	42.11	ug/kg	85
4)	BROMOMETHANE	1.34	94.0	34024	44.14	ug/kg	100
5)	CHLOROETHANE	1.39	64.0	18197	48.06	ug/kg	94
6)	TRICHLOROFLUOROMETHANE	1.57	101.0	93757	48.24	ug/kg	94
7)	DIETHYLETHER	1.99	59.0	26034	62.37	ug/kg	85
8)	1,1-DICHLOROETHYLENE	2.15	96.0	27605	46.03	ug/kg	96
9)	ACROLEIN	2.10	56.0	2169	70.11	ug/kg	61
10)	CARBON DISULFIDE	2.29	76.0	73462	45.56	ug/kg	100
11)	ACETONE	2.40	43.0	17253M	70.87	ug/kg	73
12)	METHYLENE CHLORIDE	2.95	84.0	38281	45.99	ug/kg	89
13)	1,2-DICHLOROETHENE (TOTAL)	3.41	96.0	41927	48.83	ug/kg	94
14)	ACRYLONITRILE	3.48	53.0	9561M	61.87	ug/kg	94
15)	METHYL-T-BUTYLETHER	3.67	73.0	105486	51.67	ug/kg	98
16)	1,1-DICHLOROETHANE	4.24	65.0	24048	47.16	ug/kg	99
17)	T-BUTYL ALCOHOL	4.31	59.0	5452	42.73	ug/kg	100
18)	VINYL ACETATE	4.77	43.0	47130	29.86	ug/kg	78
19)	1,2-DICHLOROETHENE (CIS)	5.78	96.0	20133	47.46	ug/kg	87
20)	2-BUTANONE	6.24	72.0	4840M	66.56	ug/kg	81
21)	CHLOROFORM	7.00	83.0	98297	48.21	ug/kg	97
22)	1,1,1-TRICHLOROETHANE	7.12	97.0	100825	49.14	ug/kg	89
23)	CARBON TETRACHLORIDE	7.55	117.0	107025	48.09	ug/kg	88
24)	*1,4-DIFLUOROBENZENE	9.67	114.0	156942	50.00	ug/kg	67
25)	BENZENE	8.15	78.0	105774	50.59	ug/kg	77
26)	1,2-DICHLOROETHANE D4	8.13	65.0	71915	55.96	ug/kg	97
27)	1,2-DICHLOROETHANE	8.34	62.0	71019	54.83	ug/kg	91
28)	TRICHLOROETHYLENE	10.08	130.0	62529	47.43	ug/kg	94
30)	2-CHLOROETHYLVINYLETHER	12.68	63.0	24229	48.38	ug/kg	75
31)	1,2-DICHLOROPROPANE	10.59	63.0	39270	49.20	ug/kg	97
32)	BROMODICHLOROMETHANE	11.56	83.0	88867	49.93	ug/kg	96
34)	*CHLOROBENZENE-D5	16.89	117.0	149469	50.00	ug/kg	91
35)	CIS-1,3-DICHLOROPROPENE	12.75	75.0	99372	75.35	ug/kg	92
36)	TOLUENE D8	13.26	98.0	145857	49.86	ug/kg	99
37)	TOLUENE	13.40	92.0	77062	49.71	ug/kg	92
38)	4-METHYL-2-PENTANONE	13.44	43.0	67923M	80.71	ug/kg	93
39)	TRANS-1,3-DICHLOROPROPENE	14.32	75.0	25169	17.99	ug/kg	91
40)	TETRACHLOROETHYLENE	14.76	164.0	70649	44.47	ug/kg	96
41)	1,1,2-TRICHLOROETHANE	14.69	97.0	51193	53.88	ug/kg	96
42)	DIBROMOCHLOROMETHANE	15.51	129.0	111427	52.37	ug/kg	95
43)	2-HEXANONE	15.65	43.0	49105M	77.54	ug/kg	87
44)	CHLOROBENZENE	16.94	112.0	113967	45.93	ug/kg	84
45)	ETHYLBENZENE	17.45	106.0	48548	46.62	ug/kg	96

	Compound	R.T.	Q ion	Area	Conc	Units	q
46)	XYLENE	17.79	106.0	120135	100.50	ug/kg	92
47)	STYRENE	18.85	104.0	102329	48.91	ug/kg	96
48)	XYLENES (TOTAL)	18.76	106.0	59252	47.40	ug/kg	90
49)	BROMOFORM	19.13	173.0	131113	54.83	ug/kg	97
50)	4-BROMOFLUOROBENZENE	20.12	95.0	110074	47.57	ug/kg	73
51)	1,1,2,2-TETRACHLOROETHANE	20.88	83.0	94227	65.11	ug/kg	91
52)	1,3-DICHLOROBENZENE	22.95	146.0	128777	46.14	ug/kg	96
53)	1,4-DICHLOROBENZENE	23.22	146.0	133830	49.42	ug/kg	99
55)	1,2-DICHLOROBENZENE	24.12	146.0	123053	45.17	ug/kg	89

* Compound is ISTD

TOTAL ION CHROMATOGRAM



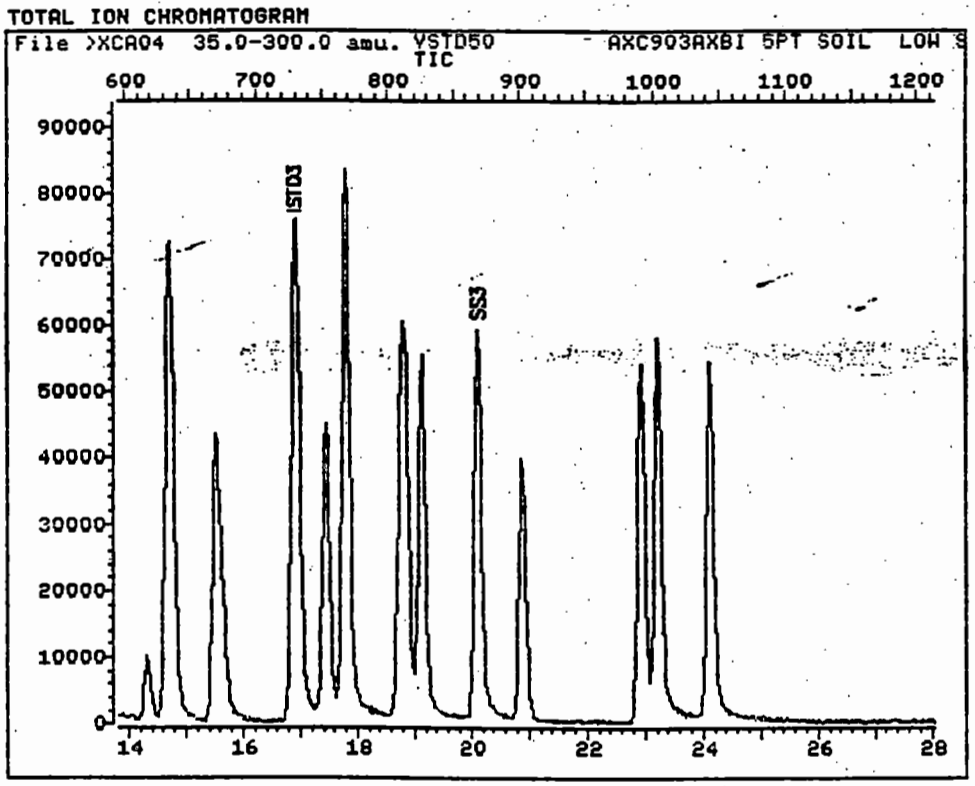
Data File: >XCA04::D3 Quant Output File: ^XCA04::QQ
Name: VSTD50 AXC903
Misc: AXBI 5PT SOIL LOW SOIL CCL #HP-MSD X PS

Id File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911119 11:46

Operator ID: PSS
Quant Time: 911210 11:09
Injected at: 911210 10:40

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >XCA04::D3 Quant Output File: ^XCA04::QQ
Name: VSTD50 AXC903
Misc: AXBI 5PT SOIL LOW SOIL CCL #HP-MSD X PS

Id File: I_XBIA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911119 11:46

Operator ID: PSS
Quant Time: 911210 11:09
Injected at: 911210 10:40

TIC page 2 of 2

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8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L637

Lab File ID (Standard): AXCA04 Date Analyzed: 12/10/91

Instrument ID: HP-MSD X Time Analyzed: 1040

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) CAP

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	12 HOUR STD	41964	6.43	156942	9.67	149469	16.89
	UPPER LIMIT	83928	6.93	313884	10.17	298938	17.39
	LOWER LIMIT	20982	5.93	78471	9.17	74735	16.39
	CLIENT SAMPLE NO.						
01	BOOH61	27923	6.42	102858	9.66	99273	16.88
02	BOOH61MS	24533	6.42	94091	9.67	90385	16.89
03	BOOH61MSD	24479	6.40	90982	9.68	85584	16.91
04	VBLKLVX206-MB1	34844	6.42	141036	9.66	140656	16.88

AS

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

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

WESTON

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

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

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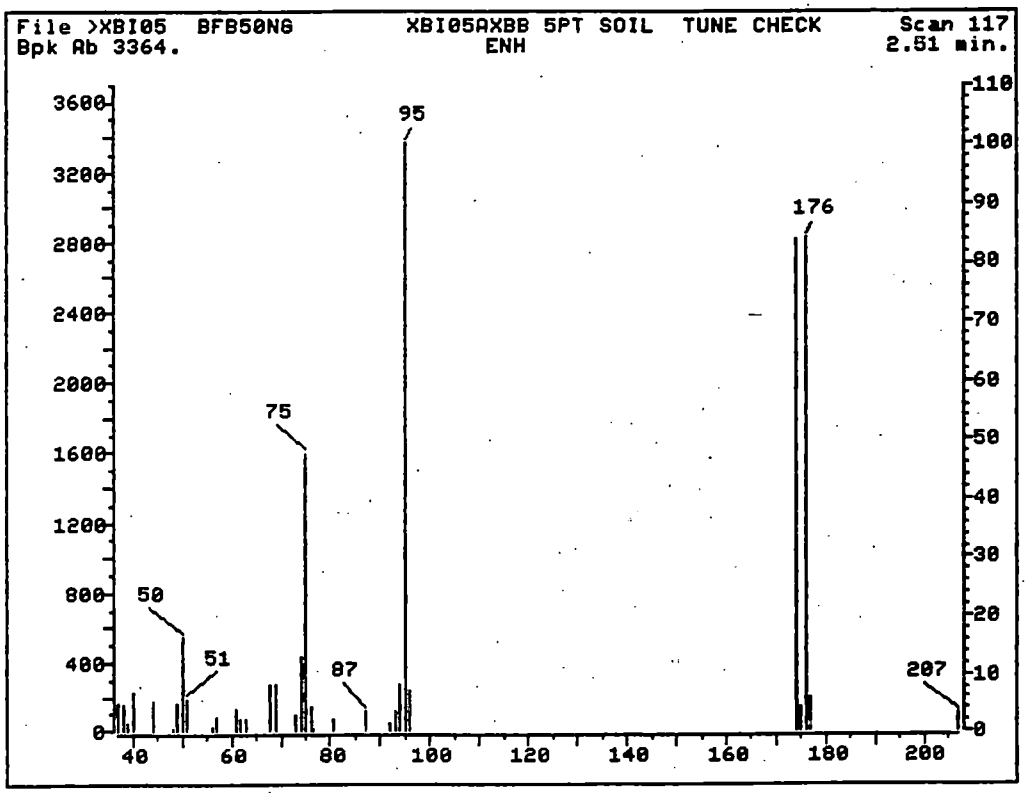
0000053

MS data file header from : >XBI05

Sample: BFB50NG XBI05 Operator: PSS SUPER GRP. 11/18/91 12:52
Misc : AXBB 5PT SOIL TUNE CHECK # HP-MSD X PSS
Sys. #: 1 MS model: 70 SW/HW rev.: IA ALS # : 0
Method file: BFB Tuning file: MT_XBI No. of extra records: 2
Source temp.: 0 Analyzer temp.: 250 Transfer line temp. : 0

Chromatographic temperatures :	80.	200.	0.	0.	0.
Chromatographic times, min. :	0.0	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	10.0	0.0	0.0	0.0	0.0



>XBI05 BFB50NG XBI05AXBB 5PT SOIL TUNE CHECK
117 NRM ENH

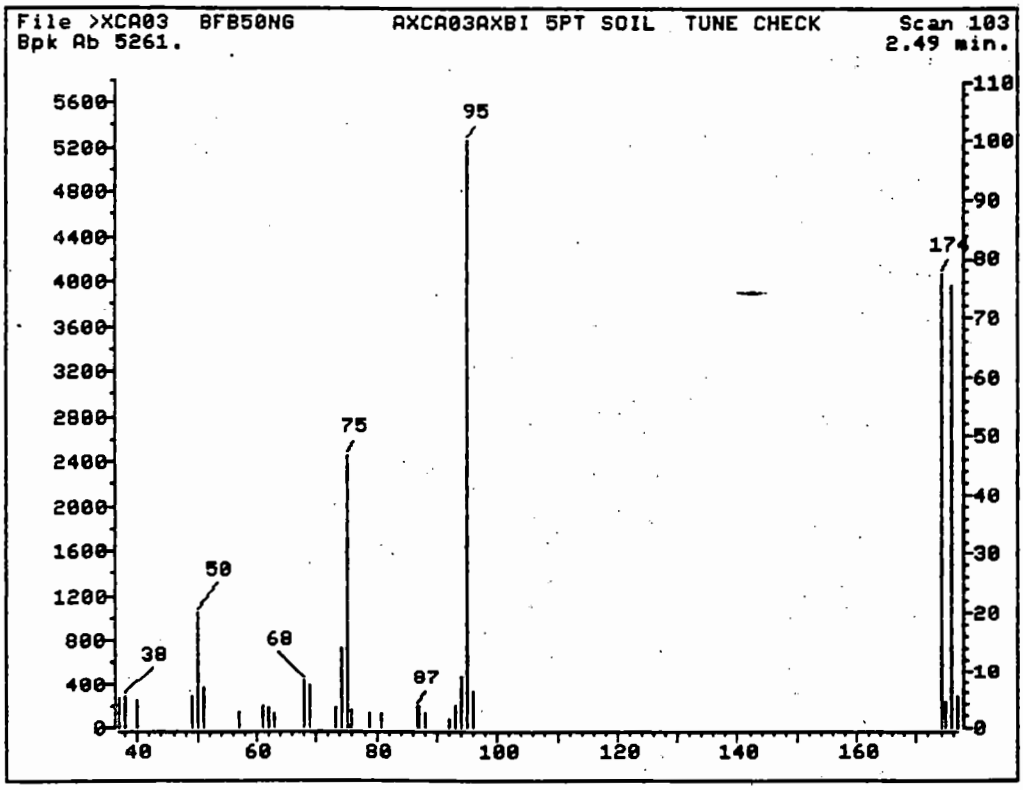
File: >XBI05 Scan #: 117 Retn. time: 2.51

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.00	4.747	50.00	16.252	67.95	8.156	80.75	2.190	96.00	7.076
38.00	4.568	51.00	5.510	69.05	8.334	87.00	3.389	174.00	83.797
39.10	1.387	55.95	.684	72.95	2.913	91.90	1.486	174.90	4.291
40.00	6.967	56.85	2.577	74.05	12.853	92.90	3.568	176.00	84.174
44.00	5.312	60.95	3.934	75.05	47.409	94.00	8.295	176.90	5.758
48.10	.476	61.95	2.012	76.05	4.103	95.00	100.000	207.05	3.062
49.00	4.697	62.85	2.071	76.65	.297				

MS data file header from : >XCA03

Sample: BFB50NG AXCA03 Operator: PSS SUPER GRP. 12/10/91 10:23
Misc : AXBI 5PT SOIL TUNE CHECK #HP-MSD X PS
Sys. #: 1 MS model: 70 SW/HW rev.: IA ALS # : 0
Method file: BFB Tuning file: MT_XCA No. of extra records: 2
Source temp.: 0 Analyzer temp.: 250 Transfer line temp. : 0

Chromatographic temperatures :	80.	200.	0.	0.	0.
Chromatographic times, min. :	0.0	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	10.0	0.0	0.0	0.0	0.0



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0000056

>XCA03 BFB50NG AXCA03AXBI 5PT SOIL TUNE CHECK
103 NRM

File: >XCA03 Scan #: 103 Retn. time: 2.49

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.00	5.303	57.05	2.813	73.15	3.516	86.80	3.707	95.00	100.000
38.00	5.398	60.95	3.707	74.05	13.971	87.00	3.707	96.00	6.273
40.00	4.923	62.05	3.630	75.05	46.569	87.90	2.604	174.00	77.362
49.00	5.588	63.05	2.414	75.95	3.231	92.00	1.464	174.90	4.448
50.00	19.920	68.05	8.192	78.85	2.547	93.00	3.707	175.90	75.594
51.05	6.691	69.05	7.166	80.95	2.566	94.00	8.801	176.90	5.436

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0000057

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LVX206-MB1

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

Lab File ID: AXCA06

Level: (low/med) LOW

Date Received: 12/10/91

% Moisture: not dec. 0

Date Analyzed: 12/10/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	14	
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

9613440.2922

0000058

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LVX206-MB1

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

Lab File ID: AXCA06

Level: (low/med) LOW

Date Received: 12/10/91

% Moisture: not dec. 0

Date Analyzed: 12/10/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

9613440.2923

0000059

QUANT REPORT

Operator ID: PSS
Output File: ^XCA06::QQ
Data File: >XCA06::D3
Name: 91LVX206-MB1 AXC203
Misc: AXBI 5PT SOIL VOA BLK

Quant Rev: 6
Quant Time: 911210 12:38
Injected at: 911210 12:09
Dilution Factor: 1.00000

#HP-MSD X PS

ID File: I_XCAA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911210 11:37

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*BROMOCHLOROMETHANE	6.42	128.0	34844	50.00	ug/kg	70
11)	ACETONE	2.40	43.0	4147	14.47	ug/kg	88
24)	*1,4-DIFLUOROBENZENE	9.66	114.0	141036	50.00	ug/kg	71
26)	1,2-DICHLOROETHANE D4	8.10	65.0	64061	49.56	ug/kg	91
34)	*CHLOROBENZENE-D5	16.88	117.0	140656	50.00	ug/kg	94
36)	TOLUENE D8	13.25	98.0	144262	52.55	ug/kg	93
38)	4-METHYL-2-PENTANONE	13.25	43.0	288	.23	ug/kg	1
50)	4-BROMOFLUOROBENZENE	20.13	95.0	107003	51.65	ug/kg	78

* Compound is ISTD

No TIC

PSS
12/10/91

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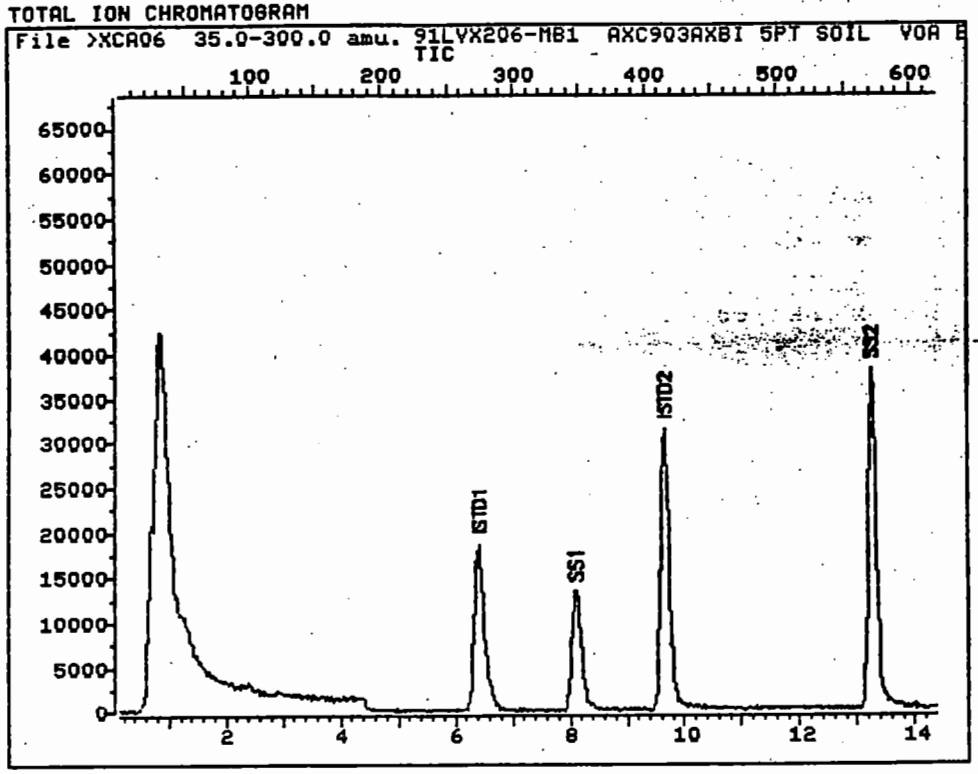
0000060

TOTAL ION CHROMATOGRAM



Data File: >XCA06::D3 A Quant Output File: ^XCA06::QQ
Name: 91LVX206-MB1 AXC903
Misc: AXBI 5PT SOIL VOA BLK #HP-MSD X PS

Id File: I_XCAA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911210 11:37

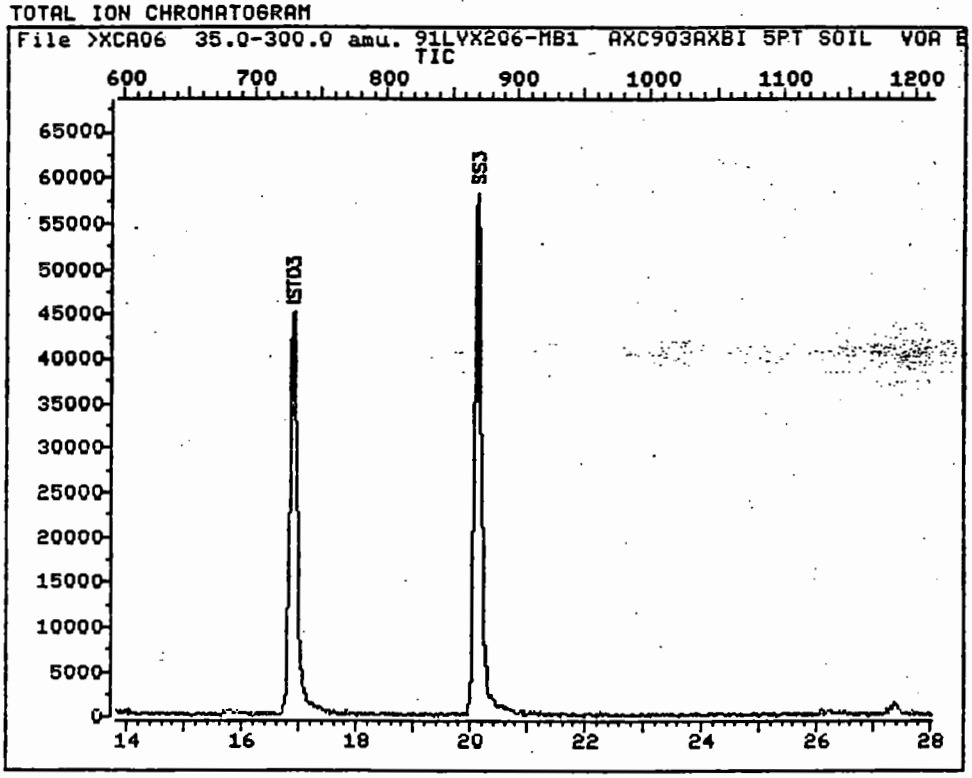
Operator ID: PSS
Quant Time: 911210 12:38
Injected at: 911210 12:09

TIC page 1 of 2

9613440.2925

0000061

TOTAL ION CHROMATOGRAM



Data File: >XCA06::D3 A Quant Output File: ^XCA06::QQ
Name: 91LVX206-MB1 AXC903
Misc: AXBI 5PT SOIL VOA BLK #HP-MSD X PS

Id File: I_XCAA::QQ
Title: VOLATILES BY CAPILLARY (DB624)
Last Calibration: 911210 11:37

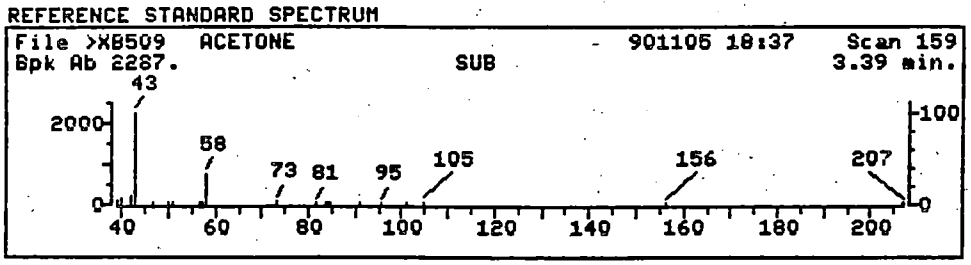
Operator ID: PSS
Quant Time: 911210 12:38
Injected at: 911210 12:09

TIC page 2 of 2

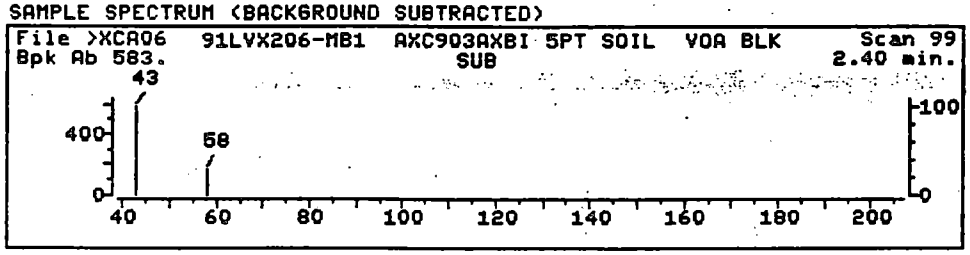
9613440.2926

0000062

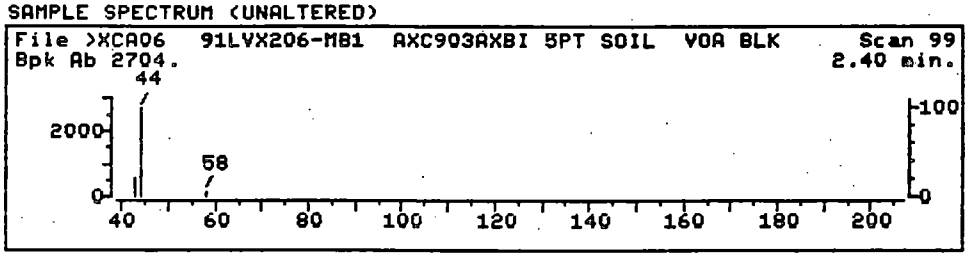
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Data File: >XCA06::D3 A Quant Output File: ^XCA06::QQ
Name: 91LVX206-MB1 AXC903 BS 1/3
Misc: AXBI 5PT SOIL VOA BLK #HP-MSD X PS
Quant Time: 911210 12:38 Quant ID File: I_XCAA::QQ
Injected at: 911210 12:09 Last Calibration: 911210 11:37

Compound No: 11
Compound Name: ACETONE
Scan Number: 99
Retention Time: 2.40 min.
Quant Ion: 43.0
Area: 4147
Concentration: 14.47 ug/kg
q-value: 88

9613440.2927

0000063

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOH61MS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L637-001 MS

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

Lab File ID: AXCA08

Level: (low/med) LOW

Date Received: 12/06/91

% Moisture: not dec. 7

Date Analyzed: 12/10/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	8	
67-64-1	Acetone	23	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene		S
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene		S
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene		S
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene		S
108-90-7	Chlorobenzene		S
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

S: SPIKE COMPOUND

FORM 1 V-1

12/88 Rev.

9613440.2928

0000064

QUANT REPORT

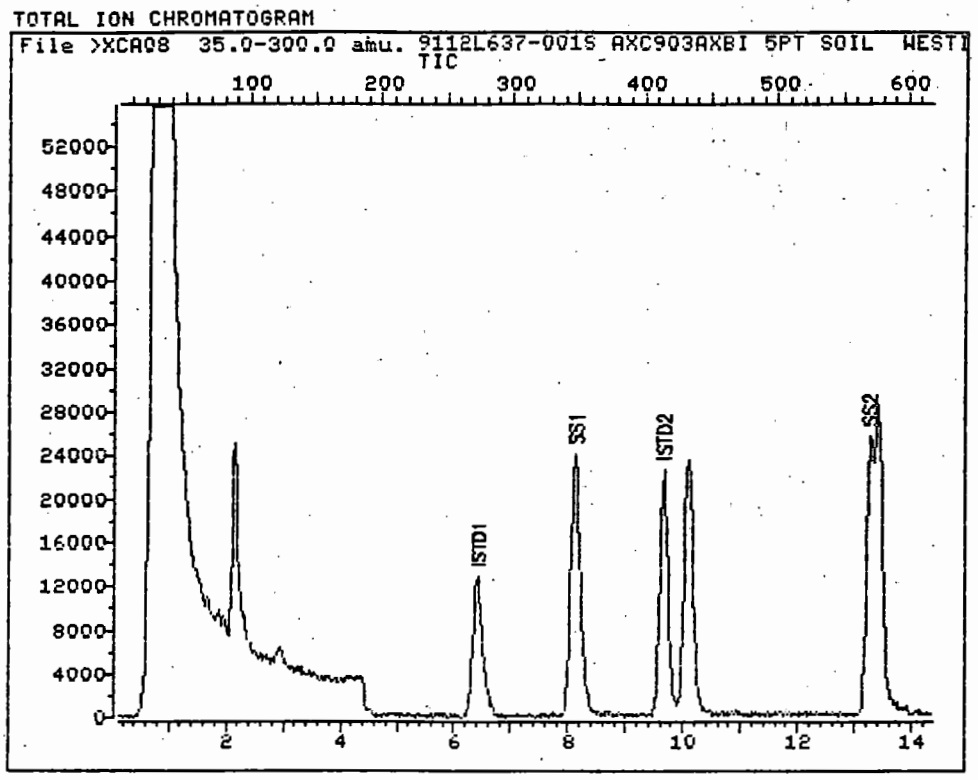
Operator ID: PSS Quant Rev: 6 Quant Time: 911210 14:17
Output File: ^XCA08::QQ Injected at: 911210 13:48
Data File: >XCA08::D3 Dilution Factor: 1.00000
Name: 9112L637-001S AXCB03
Misc: AXBI 5PT SOIL WESTINGHOUSE SPIKE 5.0G #HP-MSD X PS

ID File: .I_XCAA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911210 11:37

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*BROMOCHLOROMETHANE	6.42	128.0	24533	50.00	ug/kg	61
8)	1,1-DICHLOROETHYLENE	2.14	96.0	26211	81.21	ug/kg	90
11)	ACETONE	2.35	43.0	4148	20.56	ug/kg	73
12)	METHYLENE CHLORIDE	2.93	84.0	3238	7.23	ug/kg	59
24)	*1,4-DIFLUOROBENZENE	9.67	114.0	94091	50.00	ug/kg	71
25)	BENZENE	8.15	78.0	73695	58.11	ug/kg	84
26)	1,2-DICHLOROETHANE D4	8.13	65.0	44261	51.33	ug/kg	92
28)	TRICHLOROETHYLENE	10.08	130.0	46835	62.47	ug/kg	91
34)	*CHLOROBENZENE-D5	16.89	117.0	90385	50.00	ug/kg	86
36)	TOLUENE D8	13.25	98.0	94348	53.48	ug/kg	98
37)	TOLUENE	13.42	92.0	57217	61.39	ug/kg	99
44)	CHLOROBENZENE	16.96	112.0	81610	59.21	ug/kg	80
50)	4-BROMOFLUOROBENZENE	20.13	95.0	64714	48.61	ug/kg	87

* Compound is ISTD

TOTAL ION CHROMATOGRAM



Data File: >XCA08::D3 A Quant Output File: ^XCA08::QQ
Name: 9112L637-001S AXC903 PS=1.3
Misc: AXBI 5PT SOIL WESTINGHOUSE SPIKE 5.0G #HP-MSD X PS

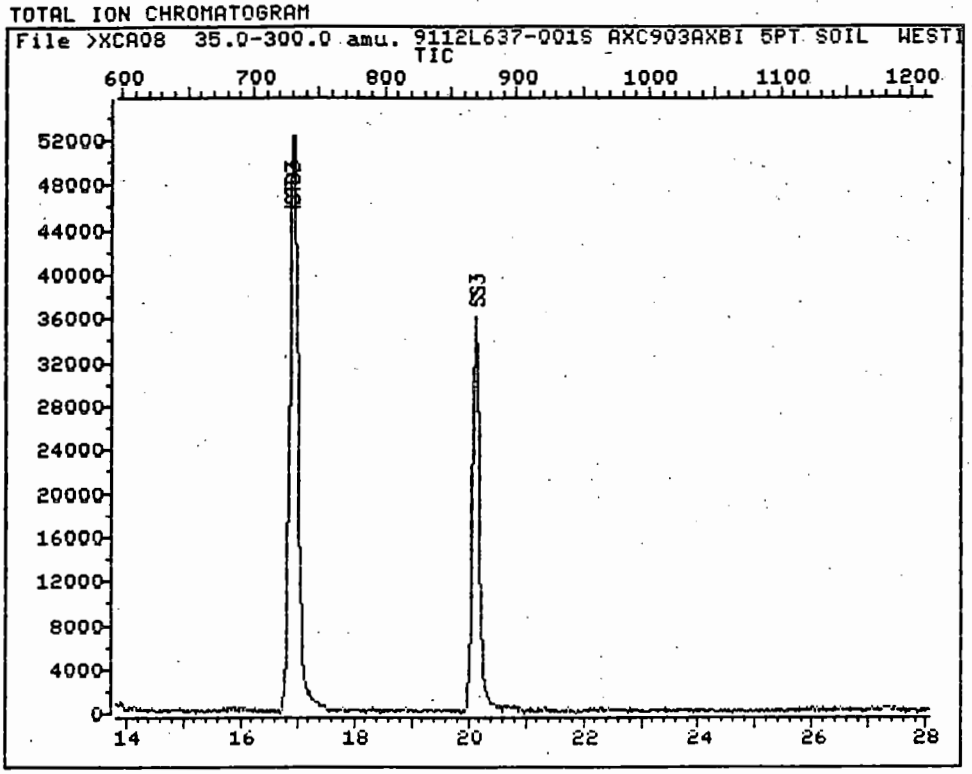
Id File: I_XCAA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911210 11:37

Operator ID: PSS
Quant Time: 911210 14:17
Injected at: 911210 13:48

TIC page 1 of 2

9613440.2930

TOTAL ION CHROMATOGRAM



Data File: >XCA08::D3 A Quant Output File: ^XCA08::QQ
Name: 9112L637-001S AXC903 PS 1B
Misc: AXBI 5PT SOIL WESTINGHOUSE SPIKE 5.0G #HP-MSD X PS

Id File: I_XCAA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911210 11:37

Operator ID: PSS
Quant Time: 911210 14:17
Injected at: 911210 13:48

TIC page 2 of 2

9613440.2931

1A 0000066 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

BOOH61MSD

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L637-001 MSD

Sample wt/vol: 5.00 (g/mL) G Lab File ID: AXCA09

Level: (low/med) LOW Date Received: 12/06/91

% Moisture: not dec. 7 Date Analyzed: 12/10/91

Column: (pack/cap) CAP Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	6	U
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene		S
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene		S
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene		S
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene		S
108-90-7	Chlorobenzene		S
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

S: SPIKE COMPOUND

9613440.2932

0000067

QUANT REPORT

Operator ID: PSS Quant Rev: 6 Quant Time: 911210 14:49
Output File: ^XCA09::QQ Injected at: 911210 14:20
Data File: >XCA09::D3 Dilution Factor: 1.00000
Name: 9112L637-001T AXC~~0~~03 PSS13
Misc: AXBI 5PT SOIL WESTINGHOUSE SPIKEDUP 5.0G #HP-MSD X PS

ID File: I_XCAA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911210 11:37

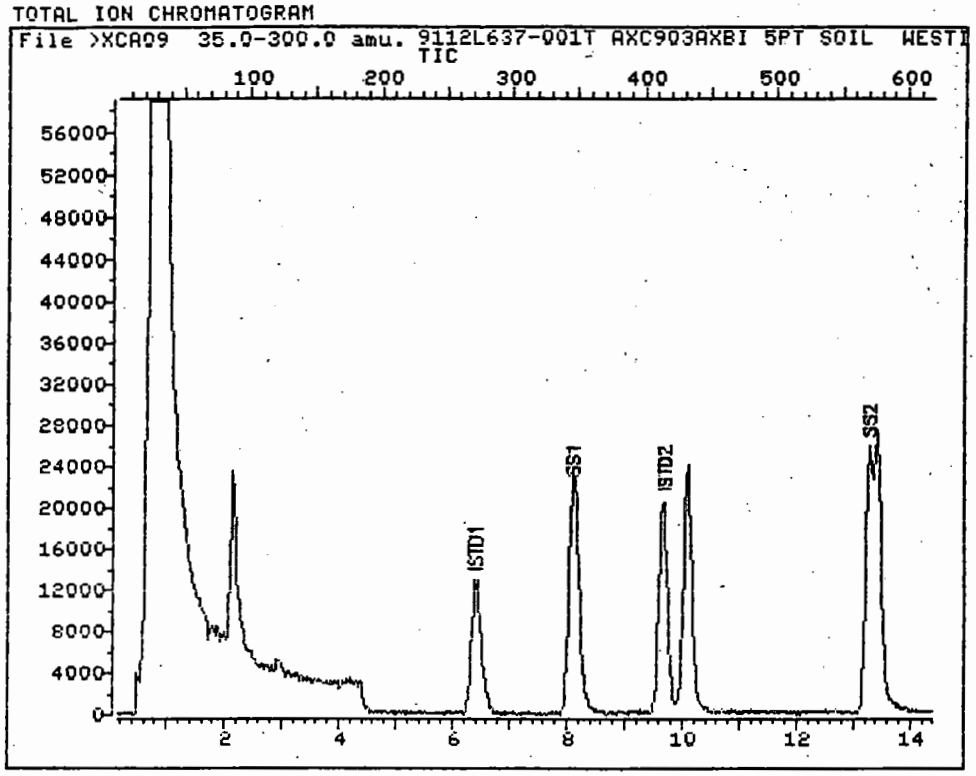
	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*BROMOCHLOROMETHANE	6.40	128.0	24479	50.00	ug/kg	61
8)	1,1-DICHLOROETHYLENE	2.14	96.0	24763	76.89	ug/kg	92
24)	*1,4-DIFLUOROBENZENE	9.68	114.0	90982	50.00	ug/kg	65
25)	BENZENE	8.14	78.0	71181	58.04	ug/kg	73
26)	1,2-DICHLOROETHANE D4	8.10	65.0	48295	57.92	ug/kg	93
28)	TRICHLOROETHYLENE	10.10	130.0	44094	60.82	ug/kg	89
34)	*CHLOROBENZENE-D5	16.91	117.0	85584	50.00	ug/kg	96
36)	TOLUENE D8	13.27	98.0	91683	54.89	ug/kg	84
37)	TOLUENE	13.43	92.0	53948	61.13	ug/kg	98
44)	CHLOROBENZENE	16.95	112.0	79630	61.01	ug/kg	83
50)	4-BROMOFLUOROBENZENE	20.15	95.0	65257	51.77	ug/kg	97

* Compound is ISTD

9613440.2933

0000068

TOTAL ION CHROMATOGRAM



Data File: >XCA09::D3 A Quant Output File: ^XCA09::QQ
Name: 9112L637-001T AXC903 PSS 1b
Misc: AXBI 5PT SOIL WESTINGHOUSE SPIKEDUP 5.0G #HP-MSD X PS

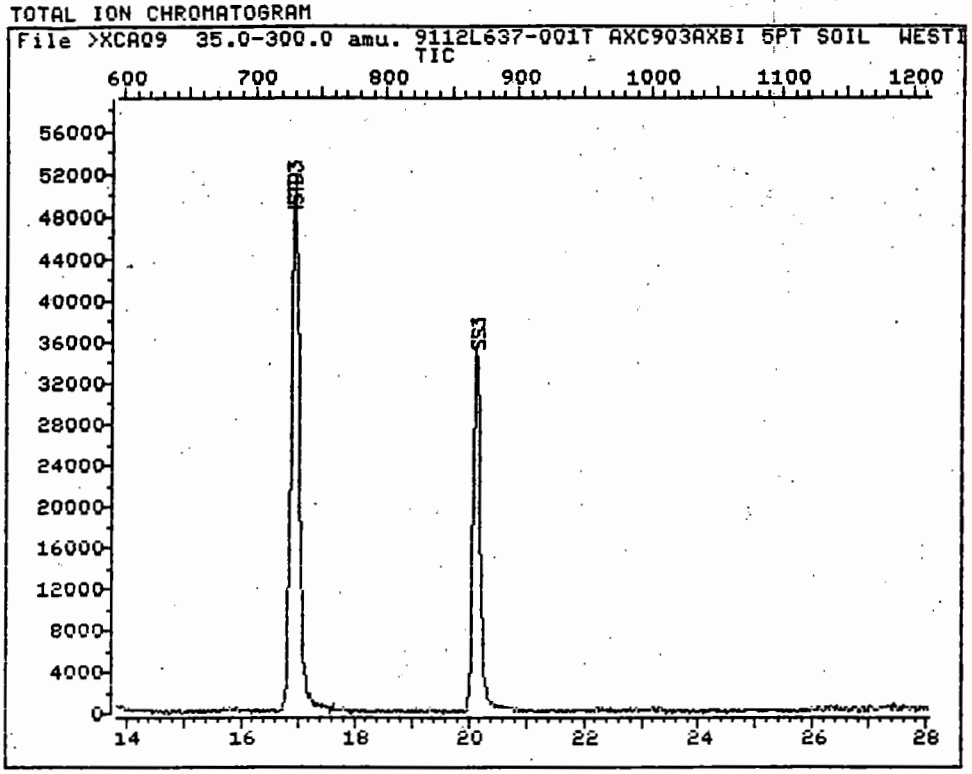
Id File: I_XCAA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911210 11:37

Operator ID: PSS
Quant Time: 911210 14:49
Injected at: 911210 14:20

TIC page 1 of 2

9613440.2934

TOTAL ION CHROMATOGRAM



Data File: >XCA09::D3 Quant Output File: ^XCA09::QQ
Name: 9112L637-001T AXC903 PSS13
Misc: AXBI 5PT SOIL WESTINGHOUSE SPIKEDUP 5.0G #HP-MSD X PS

Id File: I_XCAA::QQ
Title: VOLATILES BY CAPILLARY {DB624}
Last Calibration: 911210 11:37

Operator ID: PSS
Quant Time: 911210 14:49
Injected at: 911210 14:20

TIC page 2 of 2

9613440.2955

WESTON

VI. Additional Documentation

A. Extraction Record

SAMPLE PREP RECORD

Sheet no.: 1

Extract. Date: 12/10/91 Extraction Batch No: 91LVX206 Analyst: PS Method: N/A

Test: O624 Cleanup Date: Analyst: Client: COE-MW MANUFACTURING

LIMS Report Date: 01/07/92 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
9112L618-	COE-MW MANUFACTURING										
001 H	MW-FAD1-FEED-01	7.00	5.0	1.0		5		1.0	N	82.5	1.2
9112L637-	WESTINGHOUSE HANFORD										
001 H	BOOH61	7	5.0	1.0		5.0		1.0	N	92.8	1.1= 1.078
001 HS	BOOH61	7	5.0	1.0	1.0	5.0		1.0	N	92.8	1.1
001 HT	BOOH61	7	5.0	1.0	1.0	5.0		1.0	N	92.8	1.1
91LVX206-MB1 H		7.00	5.0	1.0		5		1.0	N	100.0	1.0

Comments:
Surrogate:
Spike:

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

000070

9613440.2936

WESTON

END OF DATA PACKAGE

0000071

9613440.2957

9613140.2958

300-FF-1 OPERABLE UNIT DATA VALIDATION
WESTINGHOUSE HANFORD COMPANY
DISTRIBUTION & FILE RECORD FORM

Task E-92-15 /2978-40
2/3/92
Rev. 0

Document Title: Metals 91/2L637 (App. L Rpt. 6) Date: 10/20/92
Document Number: Originator: CMR

HCS - WHC/E - 92 15/T ~~1-050~~

DISTRIBUTION					
M. Gerboth (HC-RL)		S. Kis-Young (HC-Sea)		Other:	
C. Russell (HC-Sea)		S. Kis-Young (Filing)	X		
D. Mantooth (Ebasco)		R. Moses (HC-RL)			

PROJECT FILES		
MANAGEMENT		Comments
M-1 Correspondence		
M-2 Meeting Minutes		
M-3 Telecons		
M-4 Statements of Work, Task Orders		
M-5 Purchase Requisitions and Receipt documentation		
M-6 Other Management Documents Generated		
M-7 Financial Data		
SOURCE DATA		
S-1 Original Data Packages		
S-2 Memos Transmitting Original Source Packages to WHC		
S-3 Other Original Data Documentation		
TASK TECHNICAL		
T-1 Validation Calculations and Notated Packages	X	
T-2 Progress Memos		
T-3 Completeness Checklists		
T-4 Draft Summary Report(s)		
T-5 Final Summary Report(s)		
T-6 Draft Summary Report Review Comments		
T-7 Other Technical Documentation		

FORM

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT:	REVIEWER: SS	DATE: 5-20-92
LABORATORY: Weston	CASE: 91121637	SDG:
SAMPLES/MATRIX: B00H61 (Soil)		

1. COMPLETENESS AND CONTRACT COMPLIANCE

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

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓		
Cover Page	✓		
Traffic Reports	✓		
Sample Data			
Inorganic Analysis Data Sheets	✓		
Standards Data			
Initial and Continuing Calibration Verification	✓		
CRDL Standard for AA and ICP	✓		
QC Summary			
Blanks	✓		
ICP Interference Check Summary	✓		
Spike Sample Recovery	✓		
Post-Digestion Spike Sample Recovery	✓		
Duplicate	✓		
Laboratory Control Sample	✓		
Standard Addition Results	✓		
ICP Serial Dilutions	✓		
Instrument Detection Limits	✓		
ICP Interelement Correction Factors	✓		
ICP Linear Ranges	✓		
Preparation Log	✓		
Analysis Run Log	✓		
Raw Data			
ICP Raw Data	✓		
Furnace AA Raw Data	✓		
Mercury Raw Data	✓		
Cyanide Raw Data		✓	
Additional Data			
Internal laboratory chain-of-custody		✓	
Laboratory Sample Preparation Records	✓		

Data Package Item	Present?: Yes	No	N/A
Percent Solids Analysis Records	✓		
Reduction Formulae		✓	
Instrument Run Logs		✓	
Chemist Notebook Pages		✓	

2. HOLDING TIMES

Have all samples been analyzed within holding times? Yes No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? Yes No N/A

Are the correlation coefficients ≥0.995? Yes No N/A

Was a midrange cyanide standard distilled? Yes No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results >IDL as estimated (J) and results <IDL as estimated (UJ), if the correlation coefficient is <0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? Yes No N/A

Are the AB solution %R values within control? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? Yes No N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks? Yes No N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? Yes No N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSES

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

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

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? Yes No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? Yes No N/A

Is there evidence of negative interference? Yes No N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

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

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

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

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? Yes No N/A

Are applicable duplicate injection RSD values within control? Yes No N/A

If no, were samples rerun once as required? Yes No N/A

Does the RSD for the rerun fall within the control limits? Yes No N/A

Were analytical spike recoveries within the control limits? Yes No N/A

If no, were MSA analyses performed when required?	Yes	No	N/A
Are MSA correlation coefficients $\geq$0.995?	Yes	No	N/A
If no, was a second MSA analysis performed?	Yes	No	N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is <40% qualify detects as estimated (J). If the analytical spike recovery is $\geq$10% but <40%, qualify all nondetects as estimated (UJ) and if the analytical spike recovery is <10%, reject all nondetects (R). If the sample absorbance is <50% of the analytical spike absorbance and the analytical spike recovery is <85% or >115%, qualify all results as estimated (J for detects and UJ for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was <0.995, qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	Yes	No	N/A
Are results within the calibrated range of the instruments and within the linear range of the ICP?	Yes	No	N/A
Are all detection limits below the CRQL?	Yes	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. 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 and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

9613140.2942

APPENDIX L
DATA VALIDATION DOCUMENTATION

Roy F. Weston Laboratories

Data Package 9112L637

Metals Analyses

9615140.2943

THIS APPENDIX CONSISTS OF FIVE 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.

ATTACHMENT 1

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.

9615440.2945

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 01/27/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9112L637

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	BOOH61	Silver, Total	16.1		MG/KG	2.1
		Aluminum, Total	10800		MG/KG	43.0
		Arsenic, Total	2.8		MG/KG	2.1
		Barium, Total	117		MG/KG	43.0
		Beryllium, Total	1.1	u	MG/KG	1.1
		Calcium, Total	8640		MG/KG	1080
		Cadmium, Total	1.1	u	MG/KG	1.1
		Cobalt, Total	11.5		MG/KG	10.7
		Chromium, Total	107		MG/KG	2.1
		Copper, Total	1340		MG/KG	5.4
		Iron, Total	18800		MG/KG	21.5
		Mercury, Total	0.76		MG/KG	0.11
		Potassium, Total	1080	u	MG/KG	1080
		Magnesium, Total	5180		MG/KG	1080
		Manganese, Total	335		MG/KG	3.2
		Sodium, Total	1080	u	MG/KG	1080
		Nickel, Total	93.3		MG/KG	8.6
		Lead, Total	20.2		MG/KG	3.1
		Antimony, Total	12.9	u	MG/KG	12.9
		Selenium, Total	1.0	u	MG/KG	1.0
		Thallium, Total	2.1	u	MG/KG	2.1
		Vanadium, Total	30.3		MG/KG	10.7
		Zinc, Total	56.3		MG/KG	4.3

9615440.2947

ATTACHMENT 3

Summary of Data Qualifications

Appendix (L)

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 91121637	REVIEWER: KR	DATE: 7/14/92	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Aluminum	J	B00H61	%RPD >10% serial dil.
Iron	J		
Magnesium	J		
Manganese	J		
Nickel	J		
~~Arsenic~~	~~J~~	~~B00H61~~	~~Correlation Coeff. < 0.995~~ ~~ANK~~
~~Antimony~~			
Chromium	J	B00H61	% Recovery out of Control Windows matrix spike
Nickel	J		
Silver	J		
antimony	UJ		matrix spike
calcium	J		ICP serial dilution
chromium	J		ICP serial dilution
selenium	UJ		matrix spike; anal. spike
~~beryllium~~ ANK	~~J~~ ANK	~~B00H61~~ ANK	~~<5xDL~~ ANK

9613140.2949

ATTACHMENT 4

As Qualified Data Summary

9615440.2950

ATTACHMENT 5

Data Review Supporting Documentation

9615440.2951

00000013

Appendix (L)

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

BOOH61

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Matrix (soil/water): SOIL Lab Sample ID: 911263701

Level (low/med): LOW Date Received: 12/06/91

% Solids: 92.8

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	10800.00		J	P	ISD
7440-36-0	Antimony	4.30	U	~~N~~ J	P	MS
7440-38-2	Arsenic	2.80		~~J~~	F	
7440-39-3	Barium	117.00			P	
7440-41-7	Beryllium	.41	~~B~~	~~J~~ curve	P	~~ISD~~ curve
7440-43-9	Cadmium	.64	U		P	
7440-70-2	Calcium	8640.00		J	P	ISD
7440-47-3	Chromium	107.00		~~N~~ J	P	MS; ISD
7440-48-4	Cobalt	11.50			P	
7440-50-8	Copper	1340.00			P	
7439-89-6	Iron	18800.00		J	P	ISD
7439-92-1	Lead	20.20		~~S~~	F	
7439-95-4	Magnesium	5180.00		J	P	ISD
7439-96-5	Manganese	335.00		J	P	ISD
7439-97-6	Mercury	.76			CV	
7440-02-0	Nickel	93.30		~~N*~~ J	P	MS; ISD
7440-09-7	Potassium	784.00	~~B~~		P	
7782-49-2	Selenium	.41	U	~~NW~~ J	F	MS; AS
7440-22-4	Silver	16.10		~~N~~ J	P	MS
7440-23-5	Sodium	178.00	~~B~~		P	
7440-28-0	Thallium	.41	U		F	
7440-62-2	Vanadium	30.30			P	
7440-66-6	Zinc	56.30			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

Appendix (L)

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT:	REVIEWER: SS	DATE: 5-20-92
LABORATORY: Weston	CASE: 91121637	SDG:
SAMPLES/MATRIX: B00H61 (Soil)		

1. COMPLETENESS AND CONTRACT COMPLIANCE

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

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓		
Cover Page	✓		
Traffic Reports	✓		
Sample Data			
Inorganic Analysis Data Sheets	✓		
Standards Data			
Initial and Continuing Calibration Verification	✓		
CRDL Standard for AA and ICP	✓		
QC Summary			
Blanks	✓		
ICP Interference Check Summary	✓		
Spike Sample Recovery	✓		
Post-Digestion Spike Sample Recovery	✓		
Duplicate	✓		
Laboratory Control Sample	✓		
Standard Addition Results	✓		
ICP Serial Dilutions	✓		
Instrument Detection Limits	✓		
ICP Interelement Correction Factors	✓		
ICP Linear Ranges	✓		
Preparation Log	✓		
Analysis Run Log	✓		
Raw Data			
ICP Raw Data	✓		
Furnace AA Raw Data	✓		
Mercury Raw Data	✓		
Cyanide Raw Data		✓	
Additional Data			
Internal laboratory chain-of-custody	✓	~~✓~~	~~✓~~ ok
Laboratory Sample Preparation Records	✓		

Data Package Item	Present?: Yes	No	N/A
Percent Solids Analysis Records	✓		
Reduction Formulae		✓	
Instrument Run Logs		✓	
Chemist Notebook Pages		✓	

2. HOLDING TIMES

Have all samples been analyzed within holding times? (Yes) No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? (Yes) No N/A

Are the correlation coefficients ≥0.995? (Yes) ~~No~~ N/A

Was a midrange cyanide standard distilled? Yes No (N/A)

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results >IDL as estimated (J) and results <IDL as estimated (UJ), if the correlation coefficient is <0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? (Yes) No N/A

Are there calculation errors? Yes (No) N/A (Level 2)

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? (Yes) No N/A

Are the AB solution %R values within control? (Yes) No N/A

Are there calculation errors? Yes (No) N/A (Level 2)

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? Yes No N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks? Yes No N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? Yes No N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A (Level 2)

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSES

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

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

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? Yes No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? Yes No N/A

Is there evidence of negative interference? Yes No N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

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

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits? vanadium Yes No ~~N/A~~ CMC

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

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? Yes No N/A

Are applicable duplicate injection RSD values within control? Yes No N/A

If no, were samples rerun once as required? Yes No N/A

Does the RSD for the rerun fall within the control limits? Yes No N/A

Were analytical spike recoveries within the control limits? ~~Yes~~ No N/A CMC

If no, were MSA analyses performed when required? Yes No ~~N/A~~ OK

Are MSA correlation coefficients ≥0.995? Yes No ~~N/A~~ OK

If no, was a second MSA analysis performed? Yes No N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is <40% qualify detects as estimated (J). If the analytical spike recovery is ≥10% but <40%, qualify all nondetects as estimated (UJ) and if the analytical spike recovery is <10%, reject all nondetects (R). If the sample absorbance is <50% of the analytical spike absorbance and the analytical spike recovery is <85% or >115%, qualify all results as estimated (J for detects and UJ for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was <0.995, qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? Yes No N/A

Are results within the calibrated range of the instruments and within the linear range of the ICP? Yes No N/A

Are all detection limits below the CRQL? Yes No N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. 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 and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

CLPSOW 3/90

Hg ~~taken~~ signed out of the refrigerator 12/26/91, but not prepped until 12/30/91.

ICP serial dilution log flagged Cd "E" even though straight run was undetected (U). This was not marked on the Form I.

Appendix (L)

HOLDING TIME SUMMARY - FORM B-1

SDG: 91-121637	REVIEWER: KRISTINE ROIIA	DATE: JULY 9, 1992	PAGE 1 OF 1
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B00H61	ICP	12/2/91	1/3/92	1/22/92	31	19	none
↓	GFAA	12/2/91	1/3/92	1/7/92	31	4	↓
↓	CVAP (Hg)	12/2/91	12/30/91	12/31/91	28	1	↓

96134013.2EF
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CALIBRATION DATA SUMMARY - FORM B-2

Appendix (L)

SDG: 91124637	REVIEWER: KRISTINE ROLLA	DATE: July 9, 1992	PAGE 1 OF 1			
COMMENTS:						
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT:				
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER	
1/7/92	As Correlation Coeffic. =	~~0.9866~~ 0.9994		B00H61	~~J~~ none	
All ICP and ICV and CCVs are acceptable.						
and GFAA						
and Hg						

9513140.2056
WHC-SD-EN-SPP-002, Rev. 1

Appendix (L)

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 9112L637 REVIEWER: KRISTINE ROLLA DATE: July 9, 1992 PAGE 1 OF 1

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
CCB	Copper	21.5			µg/L	107.5 µg/L ~~107.5 mg/L~~ ~~215 ug~~		0	(none)

Appendix (L)

ACCURACY DATA SUMMARY - FORM B-4

SDG: 91126637	REVIEWER: KRISTINE Rolla	DATE: 7/10/92	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
(3) B00H61S (matrix spike)	Antimony	69.1	B00H61	UJ ~~none~~
	Chromium	54.1		J
	Nickel	67.1		J
	Selenium	71.0 ~~70~~		UJ ~~none~~
	Silver	71.6 ~~72.4~~		J
(1) all CRDL stds. are between 70 and 130% recoveries				none
(2) all ICP ICS percent recoveries are acceptable.				none
(4) all postdig. spike recoveries (Sb, Cr, Ni) were acceptable.				none
(5) all LCS recoveries acceptable.				none
(6) B00H61A	lead	82, 88 dup; MSD OK		none
	Se	81, 83 dup		UJ

Appendix (L)

PRECISION DATA SUMMARY - FORM B-5

SDG: 9112L637	REVIEWER Kristine) Rolla	DATE: July 14, 1992	PAGE 1 OF 1

COMMENTS:

	COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
(2)	Aluminum ICP Serial Dilution	B00H61L		12.4	B00H61	J
	Iron	B00H61L		10.7	"	J
	Magnesium	B00H61L		11.1	"	J
	Manganese	B00H61L		11.3	"	J
	Nickel	B00H61L		52.4	"	J
	Calcium Chromium			11.0 12.2		
(1)	All dup precision acceptable.	B00H61D	—	—	B00H61	none
	~~(2) All LCS~~					
(3)	Field Duplicates	B00H61	B00H59			none at present
		B00H61	B00H60			
		See attached worksheet				
		Vanadium only exceedence case				

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

9613440.2960

Field Split Sample Comparison and Review

Element	TMA SAMPLE B00H59		WESTON SAMPLE B00H61		5XCRDL MG/KG	<5XCRDL?	TMA FIELD SPLIT %RPD	2XCRDL MG/KG	ABS DIFF	ABS DIFF< 2XCRDL?
Aluminum	12400.00		10800.00	J	215.63	0	13.8%	86.25		
Antimony	10.40	UJ	4.30	UJ	64.69			25.88	NA	
Arsenic	3.20		2.80		10.78			4.31	0.4	Y
Barium	124.00		117.00		215.63			86.25	7	Y
Beryllium	0.22	U	0.41	J	5.39			2.16	NA	
Cadmium	0.66	U	0.64	U	5.39			2.16	NA	
Calcium	7890.00		8640.00	J	5390.84	0	-9.1%	2156.33		
Chromium	98.80		107.00	J	10.78	0	-8.0%	4.31		
Cobalt	13.80		11.50		53.91			21.56	2.3	Y
Copper	1240.00		1340.00		26.95	0	-7.8%	10.78		
Iron	24500.00		18800.00	J	107.82	0	26.3%	43.13		
Lead	20.80		20.20		3.23	0	2.9%	1.29		
Magnesium	5840.00		5180.00	J	5390.84			2156.33	660	Y
Manganese	370.00		335.00	J	16.17	0	9.9%	6.47		
Mercury	0.99		0.76		0.22	0	26.3%	0.09		
Nickel	83.90		93.30	J	43.13	0	-10.6%	17.25		
Potassium	1180.00		784.00		5390.84			2156.33	396	Y
Selenium		R	0.41	UJ	5.39			2.16	NA	
Silver	11.60		16.10	J	10.78	0	-32.5%	4.31		
Sodium	245.00		178.00		5390.84			2156.33	67	Y
Thallium	0.22	U	0.41	U	10.78			4.31	NA	
Vanadium	57.40		30.30		53.91			21.56	27.1	NO
Zinc	65.00		56.30		21.56	0	14.3%	8.63		
Cyanide										

0 = NO

All % RPDs are acceptable.
Only vanadium does not meet the ±2xCRDL criteria for values <5xCRDL.

CMZ

Field Split Sample Comparison and Review

Element	TMA SAMPLE B00H60		WESTON SAMPLE B00H61		5XCRDL MG/KG	<5XCRDL?	TMA FIELD SPLIT %RPD	2XCRDL MG/KG	ABS DIFF	ABS DIFF< 2XCRDL?
Aluminum	11200.00		10800.00	J	215.63	0	3.6%	86.25		
Antimony	10.00	UJ	4.30	UJ	64.69			25.88	NA	
Arsenic	3.20		2.80		10.78			4.31	0.4	Y
Barium	119.00		117.00		215.63			86.25	2	Y
Beryllium	0.21	U	0.41	J	5.39			2.16	NA	
Cadmium	0.64	U	0.64	U	5.39			2.16	NA	
Calcium	7730.00		8640.00	J	5390.84	0	-11.1%	2156.33		
Chromium	84.30		107.00	J	10.78	0	-23.7%	4.31		
Cobalt	12.60		11.50		53.91			21.56	1.1	Y
Copper	1030.00		1340.00		26.95	0	-26.2%	10.78		
Iron	24900.00		18800.00	J	107.82	0	27.9%	43.13		
Lead	20.00		20.20		3.23	0	-1.0%	1.29		
Magnesium	5470.00		5180.00	J	5390.84			2156.33	290	Y
Manganese	353.00		335.00	J	16.17	0	5.2%	6.47		
Mercury	0.81		0.76		0.22	0	6.4%	0.09		
Nickel	70.20		93.30	J	43.13	0	-28.3%	17.25		
Potassium	1280.00		784.00		5390.84			2156.33	496	Y
Selenium		R	0.41	UJ	5.39			2.16	NA	
Silver	8.40		16.10	J	10.78	0	-62.9%	4.31		
Sodium	224.00		178.00		5390.84			2156.33	46	Y
Thallium	0.21	U	0.41	U	10.78			4.31	NA	
Vanadium	58.20		30.30		53.91			21.56	27.9	0
Zinc	62.00		56.30		21.56	0	9.6%	8.63		
Cyanide										

0="no"

All % RPDS acceptable.
Only vanadium does not meet the ± 2xCRDL criteria for values <5xCRDL.

CMK

Appendix (L)

CALCULATION SUMMARY - FORM B-6

SDG:	REVIEWER: Kristine R	DATE: 7/14/92	PAGE 6 OF 6

COMMENTS:

All calculations were performed according to the SOW. KR 7/14/92

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FEB 1992
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OSM DMO

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

DATE RECEIVED: 12/06/91 RFW LOT # :9112L637

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOOH61						
SILVER, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
SILVER, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
SILVER, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
ALUMINUM, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
ALUMINUM, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
ALUMINUM, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
ARSENIC, TOTAL	001	S	92L0030	12/02/91	01/03/92	01/07/92
ARSENIC, TOTAL	001 REP	S	92L0030	12/02/91	01/03/92	01/07/92
ARSENIC, TOTAL	001 MS	S	92L0030	12/02/91	01/03/92	01/07/92
BARIUM, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
BARIUM, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
BARIUM, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
BERYLLIUM, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
BERYLLIUM, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
BERYLLIUM, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
CALCIUM, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
CALCIUM, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
CALCIUM, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
CADMIUM, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
CADMIUM, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
CADMIUM, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
COBALT, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
COBALT, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
COBALT, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
CHROMIUM, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
CHROMIUM, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
CHROMIUM, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
COPPER, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
COPPER, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
COPPER, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
IRON, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
IRON, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
IRON, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
MERCURY, TOTAL	001	S	91C0368	12/02/91	12/30/91	12/31/91
MERCURY, TOTAL	001 REP	S	91C0368	12/02/91	12/30/91	12/31/91
MERCURY, TOTAL	001 MS	S	91C0368	12/02/91	12/30/91	12/31/91
POTASSIUM, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92

9613140.2964

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

DATE RECEIVED: 12/06/91 RFW LOT # :9112L637

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
POTASSIUM, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
POTASSIUM, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
MAGNESIUM, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
MAGNESIUM, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
MAGNESIUM, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
MANGANESE, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
MANGANESE, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
MANGANESE, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
SODIUM, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
SODIUM, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
SODIUM, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
NICKEL, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
NICKEL, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
NICKEL, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
LEAD, TOTAL	001	S	92L0030	12/02/91	01/03/92	01/06/92
LEAD, TOTAL	001 REP	S	92L0030	12/02/91	01/03/92	01/06/92
LEAD, TOTAL	001 MS	S	92L0030	12/02/91	01/03/92	01/06/92
ANTIMONY, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
ANTIMONY, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
ANTIMONY, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
SELENIUM, TOTAL	001	S	92L0030	12/02/91	01/03/92	01/06/92
SELENIUM, TOTAL	001 REP	S	92L0030	12/02/91	01/03/92	01/06/92
SELENIUM, TOTAL	001 MS	S	92L0030	12/02/91	01/03/92	01/06/92
THALLIUM, TOTAL	001	S	92L0030	12/02/91	01/03/92	01/06/92
THALLIUM, TOTAL	001 REP	S	92L0030	12/02/91	01/03/92	01/06/92
THALLIUM, TOTAL	001 MS	S	92L0030	12/02/91	01/03/92	01/06/92
VANADIUM, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
VANADIUM, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
VANADIUM, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92
ZINC, TOTAL	001	S	92L0031	12/02/91	01/03/92	01/22/92
ZINC, TOTAL	001 REP	S	92L0031	12/02/91	01/03/92	01/22/92
ZINC, TOTAL	001 MS	S	92L0031	12/02/91	01/03/92	01/22/92

LAB QC:

SILVER LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
ALUMINUM LABORTORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
BARIUM LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
BERYLLIUM LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
CALCIUM LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92

9613440.2965

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

DATE RECEIVED: 12/06/91 RFW LOT # :9112L637

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
COBALT LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
CHROMIUM LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
COPPER LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
IRON LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
POTASSIUM LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
MAGNESIUM LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
MANGANESE LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
SODIUM LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
NICKEL LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
ANTIMONY LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
VANADIUM LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
ZINC LABORATORY	LC1 BS	S	92L0031	N/A	01/03/92	01/22/92
SILVER LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
ALUMINUM LABORTORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
BARIUM LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
BERYLLIUM LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
CALCIUM LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
CADMIUM LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
COBALT LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
CHROMIUM LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
COPPER LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
IRON LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
POTASSIUM LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
MAGNESIUM LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
MANGANESE LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
SODIUM LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
NICKEL LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
ANTIMONY LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
VANADIUM LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
ZINC LABORATORY	LC2 BS	S	92L0031	N/A	01/03/92	01/22/92
SILVER, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
ALUMINUM, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
BARIUM, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
BERYLLIUM, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
CALCIUM, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
CADMIUM, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
COBALT, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
CHROMIUM, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
COPPER, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92

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

DATE RECEIVED: 12/06/91 RFW LOT # :9112L637

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
POTASSIUM, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
MAGNESIUM, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
MANGANESE, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
SODIUM, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
NICKEL, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
ANTIMONY, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
VANADIUM, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
ZINC, TOTAL	MB1	S	92L0031	N/A	01/03/92	01/22/92
ARSENIC LABORATORY	LC1 BS	S	92L0030	N/A	01/03/92	01/07/92
LEAD LABORATORY	LC1 BS	S	92L0030	N/A	01/03/92	01/06/92
SELENIUM LABORATORY	LC1 BS	S	92L0030	N/A	01/03/92	01/06/92
THALLIUM LABORATORY	LC1 BS	S	92L0030	N/A	01/03/92	01/06/92
ARSENIC LABORATORY	LC2 BS	S	92L0030	N/A	01/03/92	01/07/92
LEAD LABORATORY	LC2 BS	S	92L0030	N/A	01/03/92	01/06/92
SELENIUM LABORATORY	LC2 BS	S	92L0030	N/A	01/03/92	01/06/92
THALLIUM LABORATORY	LC2 BS	S	92L0030	N/A	01/03/92	01/06/92
ARSENIC, TOTAL	MB1	S	92L0030	N/A	01/03/92	01/07/92
LEAD, TOTAL	MB1	S	92L0030	N/A	01/03/92	01/06/92
SELENIUM, TOTAL	MB1	S	92L0030	N/A	01/03/92	01/06/92
THALLIUM, TOTAL	MB1	S	92L0030	N/A	01/03/92	01/06/92
MERCURY LABORATORY	LC1 BS	S	91C0368	N/A	12/30/91	12/31/91
MERCURY LABORATORY	LC2 BS	S	91C0368	N/A	12/30/91	12/31/91
MERCURY, TOTAL	MB1	S	91C0368	N/A	12/30/91	12/31/91
MERCURY, TOTAL	MB2	S	91C0368	N/A	12/30/91	12/31/91

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WESTON

WESTON ANALYTICS
INORGANIC METHODOLOGY SUMMARY

METALS

EPA	206.2	:	As		
EPA	200.7	:	Sb		
EPA	239.1	:	Pb		
EPA	270.1	:	Se		
EPA	279.2	:	Tl		
EPA	245.1	:	Hg		
EPA	200.72	:	Ag	Co	Mn
			Al	Cr	Na
			Ba	Cu	Ni
			Be	Fe	V
			Ca	K	Zn
			Cd	Mg	

Total Cyanide : EPA 335.2

Total Recoverable Phenolics : EPA 420.1

Other :

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0000003

9112L637

Item/Reason	Relinquished by	Received by	Date	Time
% Sol	Sterlo	J. Kennedy	12-9	8:50
N H_3	Sterlo	Anthony Joseph	12-9	9:30
NOVOA	Sterlo	[illegible]	12/9	12:15
NH_3 RTN	R. [illegible]	Sterlo	12/9	6:00
PCB(S)	Sterlo	[illegible]	12/10/91	10:00
PCB(S)	[illegible]	M Jason	12/10/91	4:50
Storage	J. Kennedy	Sterlo	12-10-91	5:00
ANION	Sterlo	M.C.	12-11-91	8:30 AM
ANION STORE	M.C.	Sterlo	12/12/91	12 pm
metals-Hg	Sterlo	J. Jeffrey Welch	12/26/91	[illegible]
NOVOA(S)	[illegible]	Sterlo	12/27	10:30
metals return	J. Jeffrey Welch	Sterlo	12/31/91	11:45
Metals (1)	Sterlo	Palthouse	1-3-92	8:50
Metals (1)	Palthouse	Sterlo	1-6-92	9:00

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4A

Roy F. Weston, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 12/06/91
RFW #: 9112L637
W.O. #: 6168-02-01

METALS NARRATIVE

The set of samples consisted of one (1) soil sample collected on 12/02/91.

The samples were analyzed according to criteria set forth in CLP SOW 3/90.

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

1. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory.

2. All ICV and CCV values were within control limits.

3. All ICB and CCB values were within control limits.

4. All preparation blank values were within control limits.

5. All LCS results were within the 80-120% control limits.

6. All matrix spike recoveries were within the 75-125% control limits with the exception of Sb, Cr, Ni, Se and Ag. All corresponding samples were flagged with an "N" according to CLP protocol.

7. All duplicate analyses were within the 20% RPD control limit with the exception of Ni. All corresponding samples were flagged with an "*" according to CLP protocol.

8. Pb sample results were calculated by the method of standard addition (MSA). All corresponding samples were flagged with an "S" according to CLP protocol.

9. For MSA, results reported on Form 8 are calculated from absorbance values. Results reported on other forms are based on concentration. As indicated in the SOW1LJM01.0, page B-32, differences due to rounding may be found between the MSA values on Form 8 and the results reported on the other forms.

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0000007

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 01/27/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9112L637

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BOOH61	Silver, Total	16.1	MG/KG	2.1
		Aluminum, Total	10781 10800	MG/KG	43.0
		Arsenic, Total	2.8	MG/KG	2.1
		Barium, Total	117	MG/KG	43.0
		Beryllium, Total	1.1 u	MG/KG	1.1
		Calcium, Total	8660 8640	MG/KG	1080
		Cadmium, Total	1.1 u	MG/KG	1.1
		Cobalt, Total	11.5	MG/KG	10.7
		Chromium, Total	107	MG/KG	2.1
		Copper, Total	1340	MG/KG	5.4
		Iron, Total	18861 18800	MG/KG	21.5
		Mercury, Total	0.76	MG/KG	0.11
		Potassium, Total	1080 u	MG/KG	1080
		Magnesium, Total	5197 5180	MG/KG	1080
		Manganese, Total	335	MG/KG	3.2 OK
		Sodium, Total	1080 u	MG/KG	1080
		Nickel, Total	93.3	MG/KG	8.6 OK
		Lead, Total	20.2	MG/KG	3.1 CROL= 3
		Antimony, Total	12.9 u	MG/KG	12.9
		Selenium, Total	1.0 u	MG/KG	1.0
		Thallium, Total	2.1 u	MG/KG	2.1
		Vanadium, Total	30.3	MG/KG	10.7
		Zinc, Total	56.3	MG/KG	4.3

OK, when use % moisture.

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Initial Calibration Source: IV

Continuing Calibration Source: IV

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum	5000.0	5127.80	102.6	5000.0	5264.40	105.3	5118.50	102.4	P
Antimony	3000.0	2948.00	98.3	3000.0	3014.00	100.5	2996.00	99.9	P
Arsenic									NR
Barium	5000.0	5021.00	100.4	5000.0	5148.80	103.0	5035.30	100.7	P
Beryllium	250.0	250.10	100.0	250.0	256.10	102.4	250.10	100.0	P
Cadmium	250.0	248.70	99.5	250.0	247.10	98.8	250.30	100.1	P
Calcium	25000.0	25533.40	102.1	25000.0	26213.80	104.9	25614.00	102.5	P
Chromium	500.0	494.50	98.9	500.0	506.30	101.3	500.10	100.0	P
Cobalt	2500.0	2492.30	99.7	2500.0	2537.90	101.5	2466.90	98.7	P
Copper	1250.0	1275.30	102.0	1250.0	1306.60	104.5	1292.80	103.4	P
Iron	5000.0	4974.50	99.5	5000.0	5117.30	102.3	5023.30	100.5	P
Lead	40.0	41.60	104.0	40.0	38.00	95.0	39.60	99.0	F
Magnesium	25000.0	25162.40	100.6	25000.0	25877.50	103.5	25350.80	101.4	P
Manganese	750.0	747.00	99.6	750.0	762.70	101.7	745.20	99.4	P
Mercury	5.0	4.99	99.7	5.0	4.96	99.2	4.95	98.9	CV
Nickel	2000.0	1944.40	97.2	2000.0	2001.60	100.1	1991.40	99.6	P
Potassium	25000.0	24541.90	98.2	25000.0	25709.70	102.8	24793.40	99.2	P
Selenium	40.0	42.60	106.5	40.0	41.80	104.5	41.10	102.8	F
Silver	500.0	494.50	98.9	500.0	495.50	99.1	482.50	96.5	P
Sodium	25000.0	25070.90	100.3	25000.0	25918.20	103.7	25684.30	102.7	P
Thallium	40.0	42.00	105.0	40.0	39.00	97.5	37.90	94.7	F
Vanadium	2500.0	2575.10	103.0	2500.0	2621.00	104.8	2542.30	101.7	P
Zinc	1000.0	985.10	98.5	1000.0	1010.60	101.1	1000.00	100.0	P
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

03/90

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Initial Calibration Source: IV

Continuing Calibration Source: IV

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum				5000.0	5192.80	103.9			P
Antimony				3000.0	3037.30	101.2			P
Arsenic									NR
Barium				5000.0	5125.70	102.5			P
Beryllium				250.0	255.40	102.2			P
Cadmium				250.0	231.40	92.6			P
Calcium				25000.0	26235.60	104.9			P
Chromium				500.0	512.20	102.4			P
Cobalt				2500.0	2509.10	100.4			P
Copper				1250.0	1295.10	103.6			P
Iron				5000.0	5131.90	102.6			P
Lead				40.0	39.60	99.0	40.10	100.3	F
Magnesium				25000.0	25863.40	103.5			P
Manganese				750.0	759.10	101.2			P
Mercury				5.0	4.81	96.3	4.82	96.3	CV
Nickel				2000.0	2038.90	101.9			P
Potassium				25000.0	25422.20	101.7			P
Selenium				40.0	41.20	103.0			F
Silver				500.0	487.90	97.6			P
Sodium				25000.0	26216.10	104.9			P
Thallium				40.0	38.30	95.8			F
Vanadium				2500.0	2577.60	103.1			P
Zinc				1000.0	1020.90	102.1			P
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Initial Calibration Source: IV

Continuing Calibration Source: IV

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									NR
Antimony									NR
Arsenic	40.0	39.10	97.8	40.0	39.40	98.5	41.40	103.5	F
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead				40.0	39.70	99.3			F
Magnesium									NR
Manganese									NR
Mercury				5.0	4.92	98.4			CV
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Initial Calibration Source: IV

Continuing Calibration Source: IV

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									NR
Antimony									NR
Arsenic				40.0	40.80	102.0			F
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

AA CRDL Standard Source: IV

ICP CRDL Standard Source: IV

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
					Initial		Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony				120.0	125.40	104.5	131.10	109.2
Arsenic	10.0	12.40	124.0					
Barium								
Beryllium				10.0	10.00	100.0	10.00	100.0
Cadmium				10.0	8.90	89.0	9.20	92.0
Calcium								
Chromium				20.0	19.80	99.0	19.60	98.0
Cobalt				100.0	99.90	99.9	97.60	97.6
Copper				50.0	54.50	109.0	62.80	125.6
Iron								
Lead	3.0	3.30	110.0					
Magnesium								
Manganese				30.0	29.80	99.3	29.80	99.3
Mercury	.2	.21	105.0					
Nickel				80.0	78.80	98.5	77.40	96.7
Potassium								
Selenium	5.0	4.70	94.0					
Silver				20.0	16.50	82.5	16.20	81.0
Sodium								
Thallium	10.0	8.70	87.0					
Vanadium				100.0	101.70	101.7	103.50	103.5
Zinc				40.0	44.40	111.0	42.40	106.0

FORM II (PART 2) - IN

03/90

U.S. EPA - CLP

3
BLANKS

Lab name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Preparation Blank Matrix (soil/water): SOIL

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	91.0	U	91.0	U	91.0	U	91.0	U	18.200	U	P
Antimony	20.0	U	20.0	U	20.0	U	20.0	U	4.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Barium	16.0	U	16.0	U	16.0	U	16.0	U	3.200	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	.200	U	P
Cadmium	3.0	U	3.0	U	3.0	U	3.0	U	.600	U	P
Calcium	63.0	U	63.0	U	63.0	U	63.0	U	12.600	U	P
Chromium	6.0	U	6.0	U	6.0	U	6.0	U	1.200	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Copper	10.0	U	10.0	U	21.5	B	10.0	U	2.000	U	P
Iron	46.0	U	46.0	U	46.0	U	46.0	U	9.200	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Magnesium	87.0	U	87.0	U	87.0	U	87.0	U	17.400	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	P
Mercury	.1	U	.1	U	.1	U	.1	U	.050	U	CV
Nickel	11.0	U	11.0	U	11.0	U	11.0	U	2.200	U	P
Potassium	862.0	U	862.0	U	862.0	U	862.0	U	172.400	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Silver	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Sodium	110.0	U	110.0	U	110.0	U	110.0	U	22.000	U	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Vanadium	8.0	U	8.0	U	8.0	U	8.0	U	1.600	U	P
Zinc	6.0	U	6.0	U	6.0	U	6.0	U	1.200	U	P
Cyanide											NR

U.S. EPA - CLP

3
BLANKS

Lab name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Preparation Blank Matrix (soil/water): SOIL

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											NR
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead			2.0	U	2.0	U					F
Magnesium											NR
Manganese											NR
Mercury			.1	U	.1	U			.050	U	CV
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

ICP ID Number: IC1 ICS Source: IV

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum	496140	494080	499400	497562.1	100.7	498822	498553.9	100.9
Antimony		0	-55	-59.0		-64	-38.0	
Arsenic								
Barium		556	3	482.7	86.8	3	485.6	87.3
Beryllium		503	0	451.0	89.7	0	452.5	90.0
Cadmium		984	-2	926.5	94.2	0	934.1	94.9
Calcium	506920	516300	470626	470687.0	91.2	473766	475075.1	92.0
Chromium		459	-2	439.9	95.8	-1	447.6	97.5
Cobalt		488	8	452.5	92.7	8	451.3	92.5
Copper		466	-6	461.3	99.0	16	476.4	102.2
Iron	189780	193120	175785	175284.6	90.8	177490	177269.3	91.8
Lead								
Magnesium	518920	524480	495402	495251.8	94.4	499054	499071.3	95.2
Manganese		483	82	533.9	110.5	77	528.6	109.4
Mercury								
Nickel		942	-8	854.1	90.7	-6	883.8	93.8
Potassium		0	-220	-180.0		-290	-360.0	
Selenium								
Silver		1012	4	963.5	95.2	8	952.4	94.1
Sodium		0	131	161.5		169	172.3	
Thallium								
Vanadium		539	11	476.9	88.5	19	478.7	88.8
Zinc		1006	0	911.8	90.6	-2	927.7	92.2

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U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BOOH61S

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 92.8

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M	
Aluminum									NR	
Antimony	75-125	68.0000		4.3000	U	98.30	69.1	N	P	OK
Arsenic	75-125	8.8000		2.8000		8.00	75.0		F	
Barium	75-125	452.6001		116.9000		393.20	85.4		P	
Beryllium	75-125	8.3000		.4100	B	9.80	80.5		P	
Cadmium	75-125	7.9000		.5200	B	9.80	75.3		P	
Calcium									NR	
Chromium	75-125	128.3000		107.0000		<2x 39.30	54.1	N	P	320.0
Cobalt	75-125	93.3000		11.5000		98.30	83.2		P	
Copper	75-125	1177.6000		1336.0000		<4x 49.20	320.0		P	NA.
Iron									NR	
Lead	75-125	23.0000		20.2000		<4x 4.00	68.3		F	NA
Magnesium									NR	
Manganese	75-125	431.8999		334.8000		98.30	98.8		P	
Mercury	75-125	1.3580		.7600		.54	111.0		CV	
Nickel	75-125	159.2000		93.3000		98.30	67.1	N	P	
Potassium									NR	
Selenium	75-125	1.4000		.4130	U	2.00	71.0	N	F	70
Silver	75-125	23.2000		16.1000		~<2x 9.80	71.6	N	P	72.4
Sodium									NR	
Thallium	75-125	8.3000		.4130	U	10.00	82.8		F	83
Vanadium	75-125	116.2000		30.3000		98.30	87.5		P	87.4
Zinc	75-125	135.1000		56.3000		98.30	80.2		P	
Cyanide									NR	

Comments:

U.S. EPA - CLP

5B
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BOOH61A

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Matrix: Level (low/med):

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	✓	126.40		20.00	U	120.0	105.3		P
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium	✓	1359.30		497.70		1000.0	86.2		P
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel	✓	1177.20		434.00		850.0	87.4		P
Potassium									NR
Selenium	NA								NR
Silver	NA								NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

Comments:

✓

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

BOOH61D

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

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

% Solids for Sample: 92.8 % Solids for Duplicate: 92.8

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	%RPD	Q	M
Aluminum		10750.9000		9079.3980		16.9		P
Antimony		4.3000	U	4.1460	U			P
Arsenic	2.1	2.8000		2.7000		3.6		F
Barium	43.0	116.9000		101.6000		14.0		P
Beryllium		.4100	B	.3700	B	9.0		P
Cadmium		.6450	U	.6219	U			P
Calcium		8635.1990		7783.5000		10.4		P
Chromium		107.0000		90.9000		16.3		P
Cobalt	10.7	11.5000		9.5000	B	18.5		P
Copper		1336.0000		1136.9000		16.1		P
Iron		18805.3000		16098.2000		15.5		P
Lead		20.2000		19.8000		2.4		F
Magnesium	1075.0	5181.0000		4255.6990		19.6		P
Manganese		334.8000		283.7000		16.5		P
Mercury		.7600		.8350		9.5		CV
Nickel		93.3000		75.5000		21.1	*	P
Potassium		784.1001	B	670.3999	B	15.6		P
Selenium		.4130	U	.4248	U			F
Silver		16.1000		18.2000		12.2		P
Sodium		178.4000	B	160.8000	B	10.4		P
Thallium		.4130	U	.4248	U			F
Vanadium	10.7	30.3000		26.2000		14.5		P
Zinc		56.3000		47.6000		16.7		P
Cyanide								NR

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7

LABORATORY CONTROL SAMPLE

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Solid LCS Source: IV

Aqueous LCS Source: IV

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum				1000.0	1021.5		800.0	1200.0	102.2
Antimony				600.0	607.4		480.0	720.0	101.2
Arsenic				6.0	5.9		4.8	7.2	98.0
Barium				1000.0	999.4		800.0	1200.0	99.9
Beryllium				50.0	48.7		40.0	60.0	97.3
Cadmium				50.0	47.3		40.0	60.0	94.6
Calcium				5000.0	5071.3		4000.0	6000.0	101.4
Chromium				100.0	98.1		80.0	120.0	98.1
Cobalt				500.0	493.2		400.0	600.0	98.6
Copper				250.0	241.9		200.0	300.0	96.8
Iron				1000.0	994.6		800.0	1200.0	99.5
Lead				6.0	6.1		4.8	7.2	101.0
Magnesium				5000.0	5013.9		4000.0	6000.0	100.3
Manganese				150.0	148.4		120.0	180.0	98.9
Mercury				12.7	14.1		10.2	15.2	110.9
Nickel				400.0	393.4		320.0	480.0	98.4
Potassium				5000.0	4894.0		4000.0	6000.0	97.9
Selenium				6.0	5.5		4.8	7.2	91.3
Silver				100.0	103.3		80.0	120.0	103.3
Sodium				5000.0	5042.4		4000.0	6000.0	100.8
Thallium				6.0	6.2		4.8	7.2	103.7
Vanadium				500.0	497.9		400.0	600.0	99.6
Zinc				200.0	195.6		160.0	240.0	97.8
Cyanide									

FORM VII - IN

03/90

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Solid LCS Source: IV

Aqueous LCS Source: IV

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R	
Aluminum				1000.0	1060.0		800.0	1200.0	106.0	
Antimony				600.0	625.6		480.0	720.0	104.3	
Arsenic				6.0	5.8		4.8	7.2	96.7	
Barium				1000.0	1027.0		800.0	1200.0	102.7	
Beryllium				50.0	50.4		40.0	60.0	100.7	
Cadmium				50.0	48.4		40.0	60.0	96.8	
Calcium				5000.0	5203.3		4000.0	6000.0	104.1	
Chromium				100.0	100.5		80.0	120.0	100.5	
Cobalt				500.0	505.3		400.0	600.0	101.1	
Copper				250.0	248.5		200.0	300.0	99.4	
Iron				1000.0	1026.4		800.0	1200.0	102.6	
Lead				6.0	5.5		4.8	7.2	91.0	
Magnesium				5000.0	5146.7		4000.0	6000.0	102.9	
Manganese				150.0	152.0		120.0	180.0	101.3	
Mercury				12.7	14.0		10.2	15.2	110.6	
Nickel				400.0	404.6		320.0	480.0	101.1	
Potassium				5000.0	5070.1		4000.0	6000.0	101.4	
Selenium				6.0	5.5		4.8	7.2	91.0	91.6
Silver				100.0	105.5		80.0	120.0	105.5	
Sodium				5000.0	5179.8		4000.0	6000.0	103.6	
Thallium				6.0	6.2		4.8	7.2	103.7	
Vanadium				500.0	509.2		400.0	600.0	101.8	
Zinc				200.0	200.6		160.0	240.0	100.3	
Cyanide										

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U.S. EPA - CLP

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Standard Addition Results

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Concentration Units: ug/L

EPA Sample No.	An	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
BOOH61	PB	.047	10.00	.104	20.00	.155	30.00	.200	98.0	.9986	

FORM VIII - IN 03/90

U.S. EPA - CLP

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ICP SERIAL DILUTIONS

EPA SAMPLE NO.

BOOH61L

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
	50X1D						
Aluminum	50004.30		43812.50		12.4	E	P
Antimony	20.00	U	100.00	U			P
Arsenic							NR
Barium	543.80		484.00	B	11.0		P
Beryllium	1.90	B	5.00	U	~~100.0~~		P
Cadmium	3.00	U	15.00	U	~~100.0~~	~~E~~	P
Calcium	40163.70		35750.00		11.0	E	P
Chromium	497.70		437.00		12.2	E	P
Cobalt	53.40		53.00	B	.7		P
Copper	6214.10		5643.00		9.2		P
Iron	87466.50		78151.00		10.7	E	P
Lead							NR
Magnesium	24097.50		21411.50	B	11.1	E	P
Manganese	1557.20		1381.50		11.3	E	P
Mercury							NR
Nickel	434.00		395.00		52.4	E	P
Potassium	3647.10	B	4310.00	U	~~100.0~~		P
Selenium							NR
Silver	75.00		64.50		14.0		P
Sodium	829.70	B	795.00	B	4.2		P
Thallium							NR
Vanadium	140.70		131.00	B	6.9		P
Zinc	261.70		262.50		.3		P

U.S. EPA - CLP

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

ICP ID Number: IC1 Date: 1/01/92

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	83.0	P
Antimony	206.80		60	18.0	P
Arsenic			10		
Barium	493.40		200	16.0	P
Beryllium	313.00		5	1.0	P
Cadmium	228.80		5	2.0	P
Calcium	317.90		5000	63.0	P
Chromium	267.70		10	4.0	P
Cobalt	228.60		50	5.0	P
Copper	324.70		25	6.0	P
Iron	259.90		100	46.0	P
Lead			3		
Magnesium	279.00		5000	87.0	P
Manganese	257.60		15	2.0	P
Mercury			0.2		NR
Nickel	231.60		40	8.0	P
Potassium	766.40		5000	862.0	P
Selenium			5		
Silver	328.00		10	3.0	P
Sodium	588.90		5000	110.0	P
Thallium			10		
Vanadium	292.40		50	7.0	P
Zinc	213.80		20	6.0	P

50 x IDL
Al
Fe

Comments:

FORM X - IN

03/90

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U.S. EPA - CLP

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ANALYSIS RUN LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Instrument ID Number: AA6 Method: F

Start Date: 1/07/92 End Date: 1/07/92

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1548		–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S10	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S15	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S30	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S60	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ICV1	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ICB1	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
CRA	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
CCV1	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
CCB1	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
PBS130	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
PBS130A	1.00		104.0	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
LCSS130	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
LCSS130A	1.00		96.5	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
LCSS230	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
LCSS230A	1.00		104.5	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BOOH61	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BOOH61A	1.00		90.5	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BOOH61D	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BOOH61DA	1.00		91.0	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
CCV2	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
CCB2	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BOOH61S	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ZZZZZZ	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ZZZZZZ	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ZZZZZZ	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
CCV3	1.00			–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
CCB3	1.00	1749		–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

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U.S. EPA - CLP

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ANALYSIS RUN LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Instrument ID Number: AA3 Method: F

Start Date: 1/06/92 End Date: 1/06/92

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1956													X												
S3	1.00														X												
S15	1.00														X												
S30	1.00														X												
S60	1.00														X												
ICV1	1.00														X												
ICB1	1.00														X												
CRA	1.00														X												
CCV1	1.00														X												
CCB1	1.00														X												
PBS130	1.00																										
PBS130A	1.00		79.5																								
LCSS130	1.00														X												
LCSS130A	1.00		67.0												X												
LCSS230	1.00														X												
LCSS230A	1.00		67.0												X												
ZZZZZZ	1.00																										
CCV2	1.00														X												
CCB2	1.00														X												
PBS130	1.00																										
PBS130A	1.00		84.0																								
BOOH61	10.00																										
BOOH61A	10.00		82.0																								
BOOH61D	10.00														X												
BOOH61DA	10.00		88.0												X												
BOOH61S	10.00														X												
ZZZZZZ	10.00																										
CCV3	1.00														X												
CCB3	1.00														X												
ZZZZZZ	1.00																										
PBS130	1.00														X												
PBS130A	1.00		89.0												X												

9613440.2989

0000044

U.S. EPA - CLP

14

ANALYSIS RUN LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP637

Instrument ID Number: AA1 Method: F

Start Date: 1/06/92 End Date: 1/06/92

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1856		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
S5	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
S10	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
S30	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
S60	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
ICV1	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
ICB1	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
CRA	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
CCV1	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
CCB1	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
PBS130	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
PBS130A	1.00		91.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
LCSS130	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
LCSS130A	1.00		96.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
LCSS230	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
LCSS230A	1.00		97.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
BOOH61	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
BOOH61A	1.00		81.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
BOOH61D	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
BOOH61DA	1.00		83.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
CCV2	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
CCB2	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
BOOH61S	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
ZZZZZZ	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–
CCV3	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
CCB3	1.00	2059		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

FORM XIV - IN 03/90

	As ug/L
S15	
Mean Conc.	----
% RSD	
Recovery	
Mean Abs.	0.110
S30	
Mean Conc.	----
% RSD	
Recovery	
Mean Abs.	0.211
S60	
Mean Conc.	----
% RSD	
Recovery	
Mean Abs.	0.407
Blank	
Mean Conc.	0.0
% RSD	
Recovery	
Mean Abs.	0.000
Standard 1	
Mean Conc.	10.0
% RSD	
Recovery	
Mean Abs.	0.078
Standard 2	
Mean Conc.	15.0
% RSD	
Recovery	
Mean Abs.	0.110
Standard 3	
Mean Conc.	30.0
% RSD	
Recovery	
Mean Abs.	0.211
Standard 4	
Mean Conc.	60.0
% RSD	
Recovery	
Mean Abs.	0.407
ICV	
Mean Conc.	39.1
% RSD	0.86
Recovery	
Mean Abs.	0.269

0.9994

0.9996

Analyst\Date: PMP 01/07/92 Rev'd by\Date: CAD 1-9-92

As ID: 92L0030-LC1 Seq. No.: 00014 A/S Pos.: 2 Date: 01/07/9

Replicate 1 Time: 16:44
Concentration (ug/L): 48.3

Replicate 2 Time: 16:47
Concentration (ug/L): 49.0

Mean Conc (ug/L): 48.7 SD: 0.52 RSD(%): 1.07

Recovery is 96.1%

As ID: 92L0030-LC2 Seq. No.: 00015 A/S Pos.: 3 Date: 01/07/9

Replicate 1 Time: 16:49
Concentration (ug/L): 28.6

Replicate 2 Time: 16:51
Concentration (ug/L): 29.3

Mean Conc (ug/L): 29.0 SD: 0.50 RSD(%): 1.72

As ID: 92L0030-LC2 Seq. No.: 00016 A/S Pos.: 3 Date: 01/07/9

Replicate 1 Time: 16:53
Concentration (ug/L): 48.5

Replicate 2 Time: 16:55
Concentration (ug/L): 51.4

Mean Conc (ug/L): 49.9 SD: 2.05 RSD(%): 4.10

Recovery is 104.9%

As ID: 9112L637-001 Seq. No.: 00017 A/S Pos.: 4 Date: 01/07/9

Replicate 1 Time: 16:58
Concentration (ug/L): 13.6

Replicate 2 Time: 17:00
Concentration (ug/L): 13.2

Mean Conc (ug/L): 13.4 SD: 0.26 RSD(%): 1.95

As ID: 9112L637-001 Seq. No.: 00018 A/S Pos.: 4 Date: 01/07/9

Replicate 1 Time: 17:02
Concentration (ug/L): 31.8

Replicate 2 Time: 17:04
Concentration (ug/L): 31.1

Mean Conc (ug/L): 31.5 SD: 0.47 RSD(%): 1.50

Recovery is 90.4%

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As ID: 9112L637-001R Seq. No.: 00019 A/S Pos.: 5 Date: 01/07/9:

Replicate 1 Time: 17:07
Concentration (ug/L): 12.8

Replicate 2 Time: 17:09
Concentration (ug/L): 12.8

Mean Conc (ug/L): 12.8 SD: 0.03 RSD(%): 0.27

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As ID: 9112L637-001R Seq. No.: 00020 A/S Pos.: 5 Date: 01/07/9:

Replicate 1 Time: 17:11
Concentration (ug/L): 30.7

Replicate 2 Time: 17:13
Concentration (ug/L): 31.3

Mean Conc (ug/L): 31.0 SD: 0.36 RSD(%): 1.17

Recovery is 91.0%

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As ID: CCV Seq. No.: 00021 A/S Pos.: 38 Date: 01/07/9:

Replicate 1 Time: 17:15
Concentration (ug/L): 41.9

Replicate 2 Time: 17:18
Concentration (ug/L): 40.8

Mean Conc (ug/L): 41.4 SD: 0.77 RSD(%): 1.85

QC sample is within range 35.8 - 44.1

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As ID: CCB Seq. No.: 00022 A/S Pos.: 39 Date: 01/07/9:

Replicate 1 Time: 17:20
Concentration (ug/L): 0.3

Replicate 2 Time: 17:22
Concentration (ug/L): 0.2

Mean Conc (ug/L): 0.3 SD: 0.10 RSD(%): 38.86

QC sample is within range -10.0 - 10.0

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As ID: 9112L637-001S Seq. No.: 00023 A/S Pos.: 6 Date: 01/07/9

Replicate 1 Time: 17:24
Concentration (ug/L): 44.2

Replicate 2 Time: 17:27
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9613440.2993

Mean Conc (ug/L): 39.6 SD: 0.07 RSD(%): 0.18

0000094

QC sample is within range 35.8 - 44.1

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Pb ID: CCB Seq. No.: 00019 A/S Pos.: 39 Date: 01/06/9:

Replicate 1 Time: 21:17
Concentration (ug/L): 0.0

Replicate 2 Time: 21:19
Concentration (ug/L): -0.0

Mean Conc (ug/L): 0.0 SD: 0.03 RSD(%): 228.80

QC sample is within range -3.0 - 3.0

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Pb ID: 92L0030-MB1 Seq. No.: 00020 A/S Pos.: 1 Date: 01/06/9:

Replicate 1 Time: 21:21
Concentration (ug/L): 0.6

Replicate 2 Time: 21:23
Concentration (ug/L): -0.3

Mean Conc (ug/L): 0.2 SD: 0.69 RSD(%): 456.14

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Pb ID: 92L0030-MB1 Seq. No.: 00021 A/S Pos.: 1 Date: 01/06/9:

Replicate 1 Time: 21:25
Concentration (ug/L): 16.8

Replicate 2 Time: 21:28
Concentration (ug/L): 16.7

Mean Conc (ug/L): 16.8 SD: 0.08 RSD(%): 0.46

see rerun

Recovery is 83.1% (outside of specified limits)

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Pb ID: 9112L637-001 Seq. No.: 00022 A/S Pos.: 4 Date: 01/06/9

Replicate 1 Time: 21:30
Concentration (ug/L): 10.5 Corrected Conc (ug/L): 105.

with 10X

Replicate 2 Time: 21:32
Concentration (ug/L): 9.1 Corrected Conc (ug/L): 91.

Mean Conc (ug/L): 9.8 SD: 1.01 RSD(%): 10.26
Corrected Conc (ug/L): 98.

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Pb ID: 9112L637-001 Seq. No.: 00023 A/S Pos.: 4 Date: 01/06/9

Replicate 1 Time: 21:34
Concentration (ug/L): 26.2 Corrected Conc (ug/L): 262.
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9613440.2994

0000095

Replicate 2 Time: 21:36
Concentration (ug/L): 26.2 Corrected Conc (ug/L): 262.

Mean Conc (ug/L): 26.2 SD: 0.05 RSD(%): 0.20
Corrected Conc (ug/L): 262.

See MSA at 5X

Recovery is 81.9% (outside of specified limits)

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Pb ID: 9112L637-001R Seq. No.: 00024 A/S Pos.: 5 Date: 01/06/9

Replicate 1 Time: 21:39
Concentration (ug/L): 9.0 Corrected Conc (ug/L): 90.

with 10X

Replicate 2 Time: 21:41
Concentration (ug/L): 9.6 Corrected Conc (ug/L): 96.

Mean Conc (ug/L): 9.3 SD: 0.42 RSD(%): 4.53
Corrected Conc (ug/L): 93.

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Pb ID: 9112L637-001R Seq. No.: 00025 A/S Pos.: 5 Date: 01/06/9

Replicate 1 Time: 21:43
Concentration (ug/L): 26.6 Corrected Conc (ug/L): 266.

Replicate 2 Time: 21:45
Concentration (ug/L): 27.1 Corrected Conc (ug/L): 271.

Mean Conc (ug/L): 26.9 SD: 0.40 RSD(%): 1.48
Corrected Conc (ug/L): 269.

Recovery is 87.5%

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Pb ID: 9112L637-001S Seq. No.: 00026 A/S Pos.: 6 Date: 01/06/9

Replicate 1 Time: 21:47
Concentration (ug/L): 11.7 Corrected Conc (ug/L): 117.

with 10X

Replicate 2 Time: 21:50
Concentration (ug/L): 11.2 Corrected Conc (ug/L): 112.

Mean Conc (ug/L): 11.5 SD: 0.34 RSD(%): 2.99
Corrected Conc (ug/L): 115.

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Pb ID: 9112L637-001S Seq. No.: 00027 A/S Pos.: 6 Date: 01/06/9

Replicate 1 Time: 21:52
Concentration (ug/L): 28.7 Corrected Conc (ug/L): 287.

Replicate 2 Time: 21:54
Concentration (ug/L): 27.2 Corrected Conc (ug/L): 272.

Mean Conc (ug/L): 28.0 SD: 1.00 RSD(%): 3.58
Corrected Conc (ug/L): 280.

Recovery is 82.4% (outside of specified limits)