START 9713526.2694 0000008

9108L474-WES-147 307

0046460

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 08-16-91
RFW #: 9108L474, GC/MS VOLATILE
W.O. #: 6168-02-01

NARRATIVE

The set of samples consisted of three (3) soil samples collected on 08-15-91.

The samples were analyzed according to criteria set forth in CLP SOW 02/88 (Rev. 05/89) for TCL Volatile target compounds on 08-19,20-91.

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

1. Non-target compounds were detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

3. Matrix spike and spike duplicate samples are associated with RFW lot 9108L424.

4. The laboratory blanks contained the common contaminants methylene chloride and acetone at levels less than 3x the CRQL.

5. Internal standard area and retention time criteria were met for samples and blanks.

6. Continuing calibration criteria were not met for vinyl chloride for the calibration performed on 07-29,30-91.

JAN 1997
RECEIVED
EDMC

9. 6. 91.

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

Date

9713526.2695

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 5

No. B 06104

1. MFR/ORG: Weston
ITEM/MATERIAL NAME: ENVIR. Sample
PART NO.: N/A
DRAWING/SPEC. NO.:
REV.: N/A
PROGRAM/PROJECT: 300-FF-1
P.O./W.O. NO.:
UNUSUAL OCCURRENCE REPORT REQUIRED: ☐ YES ☒ NO
SYSTEM/END USE:
DATE: 8/17/91

2. DESCRIPTION OF NONCONFORMANCE
- WHC C.O.C. not signed, Weston sample analysis request form signed instead.

3. REQUIREMENT VIOLATED

	DOCUMENT	REV	ZONE/PAR/
lab receipt signature on C.O.C.	EPA Statement of Work		

Daniel L. Edwards — ORIGINATOR
28600 — ORGANIZATION
9/3/91 — DATE

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

5. CAUSE OF NONCONFORMANCE
☐ PROCEDURES ☒ PERSONNEL ☐ MATERIALS
☐ EQUIPMENT ☐ OTHERS
REMARKS: WESTON FAILED TO ACCEPT SAMPLE CUSTODY

6. CORRECTIVE ACTION TO ELIMINATE CAUSE
SEE NCR 06103/EQA-91-020
INITIATION DATE:
SERIAL NO.:
RESPONSIBLE ORG. REP.:
TITLE:
DATE:

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

8A. DISPOSITION JUSTIFICATION AND INSTRUCTIONS
PROCEED WITH ANALYSIS - FLAG DATA TO SHOW CUSTODY LOST.

PR-08-002
PC-002-004

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

8B. SUPPLIER ENG.: —
SUPPLIER QA: —

10. DISPOSITION APPROVAL (WHC ONLY)
☐ APPROVED ☐ DISAPPROVED
☐ OTHER (SEE CONTINUATION SHEET)
LC HULSTROM — COGNIZANT ENGINEER — DATE 11/11/91
RG DIEFFENBACHER — COGNIZANT QA ENGINEER — DATE 11-11-91
AUTHORIZED INSPECTOR REVIEW — DATE

11. ADDITIONAL APPROVALS

NAME	TITLE	DATE	NAME	TITLE	DATE

12. DISPOSITION ACTION COMPLETE
NAME — DATE 11-11-91
QTY. ACCEPT: 1
QTY. REJ.: 0
FOLLOW ON NCR

QA LOG NO.

The issuance and acceptance of this request in no way limits or affects the warranty provisions of the order.

RECORD OF DISPOSITION NN-0029

DATE: 8/30/91 | LABORATORY: Weston 300-FF-1

SAMPLE IDENTIFICATION NUMBERS

B010P6	B010P5			
B010P9				
B010P0				
B010P3				

DISPOSITION OF SAMPLES

☐ CANCELLED (REASON) _____

☐ DAMAGED SAMPLE CONTAINER. ANALYSIS CANCELLED

☐ BROKEN GLASS CONTAMINATING SAMPLE. ANALYSIS CANCELLED

☒ OTHER WESTON LAB DID NOT SIGN THE WHC C.O.C.s, THE WESTON SAMPLE ANALYSIS REQUEST FORM WAS SIGNED INSTEAD. CONTINUE WITH THE SAMPLE ANALYSIS, AS INSTRUCTED BY LARRY HULSTROM.

NCR B06104

APPROVED Daniel L. Edwards 9/4/91
PROJECT COORDINATOR DATE

TECHNICAL REPRESENTATIVE DATE

9713526.2696

NCR B06104
PAGE 2 OF 5

WESTON Analytics Use Only
9108L474

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse Hanford/J.D.Fancher
Est. Final Proj. Sampling Date
Work Order # 6168-02-01-0600
Project Contact/Phone # JD Fancher(509)376-2081
AD Project Manager Josie King
QC CLP Del CLP TAT 35
Date Rec'd 8-16-91 Date Due 9-20-91
Account # WS-HANFORD

Refrigerator #		1		5			5														
#/Type Container	Liquid	1G		1G																	
	Solid						1G					1G									
Volume	Liquid																				
	Solid	125ml		500ml			500ml					500ml									
Preservatives		—										—									
ANALYSES REQUESTED →		ORGANIC										INORG									
		VOA	BNA	Pest/PCB	Herb	500 ml 1		500 ml 2	125 ml G			Metal	CN	NH3N	Anions	Pb					
		CLP34H		OPCB				Cyanide Cl-Br SO4				MASLTA		INH3N	Ka Cl	IPB					

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 (✓)	Matrix	Date Collected	VOA	BNA	Pest/PCB	Herb	500 ml 1	500 ml 2	125 ml G		Metal	CN	NH3N	Anions	Pb				
001	B01DP0		Soil	8/15/91	X		X		X	X	X		X		X	X	X				
002	B01DP3		Soil	8/15/91	X		X		X	X	X		X		X	X	X				
003	P01DP5		Soil	8/15/91	X		X		X	X	X		X		X	X	X				

ANALYSES REQUESTED: ANIONS = ICFL, ICSO4, ICNO2, ICNO3
1) PCB's; CLP Metals; Ammonium; Anions by IC (F, SO4, NO2, NO3); pH
2) Gross Alpha; Gross Beta; Co-60; Sr-90; Cs-137; U-235; U-238
3) CLP VOA

Special Instructions:
Project No. 91-016 (300-FF-1)
See WHC Chain of Custody

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

WESTON Analytics Use Only

Samples were: 1) Shipped or Hand Delivered ___ Airbill # ___
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) 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

Relinquished by	Received by	Date	Time
Emery	Pat Kalogi	8-16-91	12:20
		8-16-91	

Relinquished by	Received by	Date	Time
		8-16-91	

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

RFW 21-21-001/A-8/90 L372 L373 L375 L377 L378 Ref# Cooler# 381-596a

9213526.2687

0000002

0000003 FW9108L474

Westinghouse Hanford Company	9713526.2698	CHAIN OF CUSTODY

Custody Form Initiator J.D. Fancher

Company Contact Jon D. Fancher — Telephone (509) 376-2081

Project Designation/Sampling Locations 300-FF-1/ Well ~~7B~~ 1B JDF 8/14/91 — Collection Date 8/14/91

Ice Chest No. SML-17 — Field Logbook No. WHC-N-541-1

Bill of Lading/Airbill No. — Offsite Property No. W91-0214 #

Method of Shipment AIR

Shipped to WESTON — PROJECT NO. 91-016

Possible Sample Hazards/Remarks None detected with field instruments.

Sample Identification

1) B010P0 500ml Amber Glass: PCB's; CLP Metals; Anions (F, SO4, NO2, NO3); pH; Ammonium

500ml Clear Glass: Gross Alpha; Gross Beta; Co-60; Sr-90; Cs-137; U-235; U-238

125ml Amber Glass: CLP VOA

(2) B010P3 125ml GS CLP: VOA

500ml G Gross Alpha, Beta; CO-60; SR-90, CS-137, U-235, U-238

500ml aG CLP; PCB's; CLP Metals; Amonium; Anions By IC (F, SO4, NO2, NO3); pH

(3) B010P5 125ml Gs, CLP: VOA:

500ml G, Gross Alpha, Beta; CO-60; SR-90; CS-137; U-235; U-238;

500ml aG CLP; PCB's; CLP Metals; Amonium; Anions By IC (F, SO4, NO2, NO3); pH

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

Relinquished by: J.D. Fancher	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

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

Report Date: 08/29/91 02:38

RFW Batch Number: 9108L474 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000

	Cust ID:	BO10P0	BO10P3	BO10P5	VBLK	VBLK
Sample Information	RFW#:	001	002	003	91LVB351-MB1	91LVB352-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.02	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	89 %	92 %	97 %	97 %	96 %
	Bromofluorobenzene	81 %	84 %	94 %	87 %	89 %
	1,2-Dichloroethane-d4	102 %	103 %	109 %	91 %	93 %
Chloromethane		10 U	10 U	11 U	10 U	10 U
Bromomethane		10 U	10 U	11 U	10 U	10 U
Vinyl Chloride		10 U	10 U	11 U	10 U	10 U
Chloroethane		10 U	10 U	11 U	10 U	10 U
Methylene Chloride		19 B	21 B	13 B	11	5
Acetone		16 B	12 B	27 B	8 J	6 J
Carbon Disulfide		5 U	5 U	6 U	5 U	5 U
1,1-Dichloroethene		5 U	5 U	6 U	5 U	5 U
1,1-Dichloroethane		5 U	5 U	6 U	5 U	5 U
1,2-Dichloroethene (total)		5 U	5 U	6 U	5 U	5 U
Chloroform		5 U	5 U	6 U	5 U	5 U
1,2-Dichloroethane		5 U	5 U	6 U	5 U	5 U
2-Butanone		10 U	10 U	11 U	10 U	10 U
1,1,1-Trichloroethane		5 U	5 U	6 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	6 U	5 U	5 U
Vinyl Acetate		10 U	10 U	11 U	10 U	10 U
Bromodichloromethane		5 U	5 U	6 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	6 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U	6 U	5 U	5 U
Trichloroethene		5 U	5 U	6 U	5 U	5 U
Dibromochloromethane		5 U	5 U	6 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	6 U	5 U	5 U
Benzene		5 U	5 U	6 U	5 U	5 U
Trans-1,3-Dichloropropene		5 U	5 U	6 U	5 U	5 U
Bromoform		5 U	5 U	6 U	5 U	5 U
4-Methyl-2-pentanone		10 U	10 U	11 U	10 U	10 U
2-Hexanone		10 U	10 U	11 U	10 U	10 U
Tetrachloroethene		5 U	5 U	6 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	5 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

000005
9713526.2699

Cust ID:	BO10P0	BO10P3	BO10P5	VBLK	VBLK
RFW#:	001	002	003	91LVB351-MB1	91LVB352-MB1
Toluene	5 U	5 U	6 U	5 U	5 U
Chlorobenzene	5 U	5 U	6 U	5 U	5 U
Ethylbenzene	5 U	5 U	6 U	5 U	5 U
Styrene	5 U	5 U	6 U	5 U	5 U
Xylene (total)	5 U	5 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

0000006

9113526.2700

1A 0000019

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B010P0

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9108L474-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B081912

Level: (low/med) LOW Date Received: 08/16/91

% Moisture: not dec. 2 Date Analyzed: 08/20/91

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	19	B
67-64-1	Acetone	16	B
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

0714926 2702 1E 0000020

CLIENT SAMPLE NO.

BO10P0

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: 9108L474-001

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

Lab File ID: B081912

Level: (low/med) LOW

Date Received: 08/16/91

% Moisture: not dec. 2

Date Analyzed: 08/20/91

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.				

0000029

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

BO10P3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9108L474-002

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

Lab File ID: B081913

Level: (low/med) LOW

Date Received: 08/16/91

% Moisture: not dec. 3

Date Analyzed: 08/20/91

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	21	B
67-64-1	Acetone	12	B
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

1E 0000030

CLIENT SAMPLE NO.

BO10P3

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: 9108L474-002

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

Lab File ID: B081913

Level: (low/med) LOW

Date Received: 08/16/91

% Moisture: not dec. 3

Date Analyzed: 08/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	25.17	6	J

1A 0000041

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B010P5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9108L474-003

Sample wt/vol: 4.90 (g/mL) G

Lab File ID: B082008

Level: (low/med) LOW

Date Received: 08/16/91

% Moisture: not dec. 3

Date Analyzed: 08/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.02

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	13	B
67-64-1	Acetone	27	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

1E 0000042

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B010P5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9108L474-003

Sample wt/vol: 4.90 (g/mL) G

Lab File ID: B082008

Level: (low/med) LOW

Date Received: 08/16/91

% Moisture: not dec. 3

Date Analyzed: 08/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.02

Number TICs found: 0

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

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

WESTON RADIOACTIVE SAMPLE EVALUATION (Page 2 of 2)

RFW Batch # _____ Completed By C Piper

Activity Rating*	Sample ID	Form (liq or sol)	RFW ID	Gamma microR/hr	Alpha cpm	Alpha eff. fact	Alpha dpm	nCi/g	Mass (g)	nCi
1	B0080	SOL		4	0			0		
1	P3							0.0207		
1	P5							0.0069		
1	B010W3	LIQ		4	0			0.0029		
1	V9							0.0011		
1	V5							0		
1	X1							0		
1	X8							0		
1	W7							0.0018		
1	Y3							0		
1	Y7							0		
1	X6							0		
1	X4							0.0004		
1	Y0							0		

CB 6-9

*Activity Rating: (per lab NRC License)

1 Not Radioactive
2 Radioactive
3 Too Radioactive to Handle at Lab

RFW 21-21-013/A-06/91 (Side 2 of 2)

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

Report Date: 09/30/91 11:25

RFW Batch Number: 9108L474 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Page: 1

	Cust ID:	BO10P0	BO10P3	BO10P5	BO10P5	BO10P5	PBLK
Sample Information	RFW#:	001	002	003	003 MS	003 MSD	91LE1064-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	2.00	2.00	2.00	2.00	2.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate: Di-n-butylchlorendate		84 %	89 %	87 %	91 %	68 %	92 %
Aroclor-1016		160 U	160 U	160 U	160 U	160 U	80 U
Aroclor-1221		160 U	160 U	160 U	160 U	160 U	80 U
Aroclor-1232		160 U	160 U	160 U	160 U	160 U	80 U
Aroclor-1242		160 U	160 U	160 U	160 U	160 U	80 U
Aroclor-1248		160 U	160 U	160 U	160 U	160 U	80 U
Aroclor-1254		320 U	330 U	330 U	84 %	69 %	160 U
Aroclor-1260		320 U	330 U	330 U	330 U	330 U	160 U

	Cust ID:	PBLK BS
Sample Information	RFW#:	91LE1064-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	ug/Kg
Surrogate: Di-n-butylchlorendate		78 %
Aroclor-1016		80 U
Aroclor-1221		80 U
Aroclor-1232		80 U
Aroclor-1242		80 U
Aroclor-1248		80 U
Aroclor-1254		73 %
Aroclor-1260		160 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

9213526.2708 00000C

9713526.2709 7A

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 08-16-91
RFW #: 9108L474, PCB
W.O. #: 6168-02-01

NARRATIVE

The set of samples consisted of three (3) soil samples collected on 08-15-91.

The samples were extracted on 08-19-91 and analyzed according to criteria set forth in the Contract Laboratory Program for PCB target compounds on 09-12-91.

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

1. Linearity and breakdown criteria were met for all compounds except aldrin on the primary column (RSD of calibration factors exceeded 10%). Quantitation of the target compound was not required.

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

3. Retention time criteria were exceeded for the following compounds in standards analyzed prior to sample extracts:

Compound	Column	Date/Time of Analysis
Heptachlor	SP2250/2401	09-12-91 at 07:31
Heptachlor epoxide	SP2250/2401	09-12-91 at 07:31
Endosulfan I	SP2250/2401	09-12-91 at 07:31
Dieldrin	SP2250/2401	09-12-91 at 07:31
Endosulfan II	SP2250/2401	09-12-91 at 07:31
4,4'-DDT	SP2250/2401	09-12-91 at 07:31
Endosulfan II	SP2100	09-12-91 at 07:54
4,4'-DDT	SP2100	09-12-91 at 07:54
Endrin Ketone	SP2100	09-12-91 at 08:26

Larger retention time windows were used for the evaluation of the accompanying data.

4. All surrogate recoveries were within EPA QC limits.

WESTON

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

6. The blank spike recovery was within EPA QC limits.

7. Samples B010PO, B010P3, and sample B010P5 and its associated matrix spike samples required two-fold dilutions because they contained high levels of non-target compounds.

10.10.91.

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

9203526.2711 0000015

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B010P0

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9108L474-001

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 09119113.30

Level: (low/med) LOW Date Received: 08/16/91

% Moisture: not dec. 2 dec. Date Extracted: 08/19/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/12/91

GPC Cleanup: (Y/N) Y pH: 9.2 Dilution Factor: 2.00

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

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	160	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	160	U
53469-21-9	Aroclor-1242	160	U
12672-29-6	Aroclor-1248	160	U
11097-69-1	Aroclor-1254	320	U
11096-82-5	Aroclor-1260	320	U

10-3-91

FORM 1 PEST 12/88 Rev.

1D 9109526 2712 0000020

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BO10P3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9108L474-002

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: 09119113.31

Level: (low/med) LOW

Date Received: 08/16/91

% Moisture: not dec. 3 dec.

Date Extracted: 08/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 09/12/91

GPC Cleanup: (Y/N) Y pH: 9.2

Dilution Factor: 2.00

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

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	160	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	160	U
53469-21-9	Aroclor-1242	160	U
12672-29-6	Aroclor-1248	160	U
11097-69-1	Aroclor-1254	330	U
11096-82-5	Aroclor-1260	330	U

10-3-91

FORM 1 PEST 12/88 Rev.

9713526.2213 0000025

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B010P5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9108L474-003

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 09119113.34

Level: (low/med) LOW Date Received: 08/16/91

% Moisture: not dec. 3 dec. Date Extracted: 08/19/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/12/91

GPC Cleanup: (Y/N) Y pH: 9.2 Dilution Factor: 2.00

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

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	160	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	160	U
53469-21-9	Aroclor-1242	160	U
12672-29-6	Aroclor-1248	160	U
11097-69-1	Aroclor-1254	330	U
11096-82-5	Aroclor-1260	330	U

10-3-91

FORM 1 PEST 12/88 Rev.

9713526.2714

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 08-16-91
RFW #: 9108L474
W.O. #: 6168-02-01-0000

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 preparation blank results were below the required detection limit.

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

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

4. 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).

OCT 1991
RECEIVED
DATA RECEIPT

10.7.91.

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

ncc\i8-474

9-21-95
MC

9713526.2715 ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/04/91

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

WESTON BATCH #: 9108L474

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	BO10P0	% Solids	97.6		%	0.10
		Fluoride by IC	2.5	u	MG/KG	2.5
		Nitrite by IC	1.3	u	MG/KG	1.3
		Nitrate by IC	6.2		MG/KG	1.3
		Sulfate by IC	9.2		MG/KG	1.3
		Ammonia, as N	1.3	u	MG/KG	1.3
		pH	9.3		PH UNITS	0.010
-002	BO10P3	% Solids	96.9		%	0.10
		Fluoride by IC	2.4	u	MG/KG	2.4
		Nitrite by IC	1.2	u	MG/KG	1.2
		Nitrate by IC	1.2	u	MG/KG	1.2
		Sulfate by IC	4.5		MG/KG	1.2
		Ammonia, as N	1.3		MG/KG	1.3
		pH	9.3		PH UNITS	0.010
-003	BO10P5	% Solids	97.1		%	0.10
		Fluoride by IC	2.6	u	MG/KG	2.6
		Nitrite by IC	1.3	u	MG/KG	1.3
		Nitrate by IC	1.3	u	MG/KG	1.3
		Sulfate by IC	4.0		MG/KG	1.3
		Ammonia, as N	1.3	u	MG/KG	1.3
		pH	9.3		PH UNITS	0.010

ib 9-21-95
MC

Roy F. Weston, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 08/16/91
RFW #: 9108L474
W.O. #: 6168-02-01-0000

METALS NARRATIVE

The set of samples consisted of three (3) soil samples collected on 08/15/91.

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, Pb and Mn. All corresponding samples were flagged with an "N" according to CLP protocol.

7. All duplicate analyses were within the 20% RPD control limit.

8. 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.

WESTON

9. 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).

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

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

10.24.91
Date

pas\ clp-met.nar

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/23/91

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

WESTON BATCH #: 9108L474

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	BO10PO	Silver, Total	1.8	u	MG/KG	1.8
		Aluminum, Total	3590		MG/KG	36.2
		Arsenic, Total	1.9	u	MG/KG	1.9
		Barium, Total	65.2		MG/KG	36.2
		Beryllium, Total	0.91	u	MG/KG	0.91
		Calcium, Total	4970		MG/KG	906
		Cadmium, Total	0.91	u	MG/KG	0.91
		Cobalt, Total	9.1	u	MG/KG	9.1
		Chromium, Total	5.9		MG/KG	1.8
		Copper, Total	14.5		MG/KG	4.5
		Iron, Total	14200		MG/KG	18.1
		Mercury, Total	0.10	u	MG/KG	0.10
		Potassium, Total	906	u	MG/KG	906
		Magnesium, Total	3130		MG/KG	906
		Manganese, Total	241		MG/KG	2.7
		Sodium, Total	906	u	MG/KG	906
		Nickel, Total	7.8		MG/KG	7.2
		Lead, Total	3.3		MG/KG	0.56
		Antimony, Total	10.9	u	MG/KG	10.9
		Selenium, Total	0.93	u	MG/KG	0.93
		Thallium, Total	1.9	u	MG/KG	1.9
		Vanadium, Total	20.1		MG/KG	9.1
		Zinc, Total	25.4		MG/KG	3.6

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/23/91

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

WESTON BATCH #: 9108L474

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-002	B010P3	Silver, Total	2.0	u	MG/KG	2.0
		Aluminum, Total	2570		MG/KG	40.8
		Arsenic, Total	2.0	u	MG/KG	2.0
		Barium, Total	55.5		MG/KG	40.8
		Beryllium, Total	1.0	u	MG/KG	1.0
		Calcium, Total	5860		MG/KG	1020
		Cadmium, Total	1.0	u	MG/KG	1.0
		Cobalt, Total	10.2	u	MG/KG	10.2
		Chromium, Total	2.0	u	MG/KG	2.0
		Copper, Total	11.0		MG/KG	5.1
		Iron, Total	12800		MG/KG	20.4
		Mercury, Total	0.10	u	MG/KG	0.10
		Potassium, Total	1020	u	MG/KG	1020
		Magnesium, Total	2530		MG/KG	1020
		Manganese, Total	178		MG/KG	3.1
		Sodium, Total	1020	u	MG/KG	1020
		Nickel, Total	8.2	u	MG/KG	8.2
		Lead, Total	2.1		MG/KG	0.59
		Antimony, Total	12.3	u	MG/KG	12.3
		Selenium, Total	0.99	u	MG/KG	0.99
		Thallium, Total	2.0	u	MG/KG	2.0
		Vanadium, Total	15.7		MG/KG	10.2
		Zinc, Total	20.2		MG/KG	4.1

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/23/91

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

WESTON BATCH #: 9108L474

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-003	B010P5	Silver, Total	2.0	u	MG/KG	2.0
		Aluminum, Total	2320		MG/KG	40.1
		Arsenic, Total	2.0	u	MG/KG	2.0
		Barium, Total	49.6		MG/KG	40.1
		Beryllium, Total	1.0	u	MG/KG	1.0
		Calcium, Total	5610		MG/KG	1000
		Cadmium, Total	1.0	u	MG/KG	1.0
		Cobalt, Total	10.0	u	MG/KG	10.0
		Chromium, Total	2.0	u	MG/KG	2.0
		Copper, Total	10.5		MG/KG	5.0
		Iron, Total	12200		MG/KG	20.0
		Mercury, Total	0.10	u	MG/KG	0.10
		Potassium, Total	1000	u	MG/KG	1000
		Magnesium, Total	2390		MG/KG	1000
		Manganese, Total	171		MG/KG	3.0
		Sodium, Total	1000	u	MG/KG	1000
		Nickel, Total	8.0	u	MG/KG	8.0
		Lead, Total	1.6		MG/KG	0.60
		Antimony, Total	12.0	u	MG/KG	12.0
		Selenium, Total	0.99	u	MG/KG	0.99
		Thallium, Total	2.0	u	MG/KG	2.0
		Vanadium, Total	16.4		MG/KG	10.0
		Zinc, Total	19.5		MG/KG	4.0

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

B010P0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

Matrix (soil/water): SOIL Lab Sample ID: 910847401

Level (low/med): LOW Date Received: 8/16/91

% Solids: 97.6

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3590.00			P
7440-36-0	Antimony	3.62	U	N	P
7440-38-2	Arsenic	.67	B		F
7440-39-3	Barium	65.20			P
7440-41-7	Beryllium	.27	B		P
7440-43-9	Cadmium	.54	U		P
7440-70-2	Calcium	4970.00			P
7440-47-3	Chromium	5.90			P
7440-48-4	Cobalt	8.40	B		P
7440-50-8	Copper	14.50			P
7439-89-6	Iron	14200.00			P
7439-92-1	Lead	3.30		N	F
7439-95-4	Magnesium	3130.00			P
7439-96-5	Manganese	241.00		N	P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	7.80			P
7440-09-7	Potassium	584.00	B		P
7782-49-2	Selenium	.37	U		F
7440-22-4	Silver	1.81	U		P
7440-23-5	Sodium	238.00	B		P
7440-28-0	Thallium	.54	B		F
7440-62-2	Vanadium	20.10			P
7440-66-6	Zinc	25.40			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B010P3

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

Matrix (soil/water): SOIL Lab Sample ID: 910847402

Level (low/med): LOW Date Received: 8/16/91

% Solids: 96.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2570.00			P
7440-36-0	Antimony	4.08	U	N	P
7440-38-2	Arsenic	.55	B		F
7440-39-3	Barium	55.50			P
7440-41-7	Beryllium	.20	U		P
7440-43-9	Cadmium	.61	U		P
7440-70-2	Calcium	5860.00			P
7440-47-3	Chromium	1.80	B		P
7440-48-4	Cobalt	6.90	B		P
7440-50-8	Copper	11.00			P
7439-89-6	Iron	12800.00			P
7439-92-1	Lead	2.10		N	F
7439-95-4	Magnesium	2530.00			P
7439-96-5	Manganese	178.00		N	P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	4.70	B		P
7440-09-7	Potassium	385.00	B		P
7782-49-2	Selenium	.40	U		F
7440-22-4	Silver	2.04	U		P
7440-23-5	Sodium	219.00	B		P
7440-28-0	Thallium	.40	U		F
7440-62-2	Vanadium	15.70			P
7440-66-6	Zinc	20.20			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B010P5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

Matrix (soil/water): SOIL Lab Sample ID: 910847403

Level (low/med): LOW Date Received: 8/16/91

% Solids: 97.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2320.00			P
7440-36-0	Antimony	4.01	U	N	P
7440-38-2	Arsenic	.56	B		F
7440-39-3	Barium	49.60			P
7440-41-7	Beryllium	.30	B		P
7440-43-9	Cadmium	.60	U		P
7440-70-2	Calcium	5610.00			P
7440-47-3	Chromium	1.90	B		P
7440-48-4	Cobalt	6.60	B		P
7440-50-8	Copper	10.50			P
7439-89-6	Iron	12200.00			P
7439-92-1	Lead	1.60		N	F
7439-95-4	Magnesium	2390.00			P
7439-96-5	Manganese	171.00		N	P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	4.20	B		P
7440-09-7	Potassium	401.00	B		P
7782-49-2	Selenium	.40	U		F
7440-22-4	Silver	2.00	U		P
7440-23-5	Sodium	199.00	B		P
7440-28-0	Thallium	.40	U		F
7440-62-2	Vanadium	16.40			P
7440-66-6	Zinc	19.50			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713526.2724

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: Data Pkg 91084474
Document Number: HCS - WHC/E - 92 15/S 1 - 015

Date: 4/21/92
Originator: DMG

DISTRIBUTION					
M. Gerboth (HC-RL)		S. Kis-Young (HC-Sea)		Other:	
C. Russell (HC-Sea) Cvr Only	X	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	X	
S-2 Memos Transmitting Original Source Packages to WHC		
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

RECEIVED
SEATTLE

MAY 27 1992

HART CROWSER

9713526.2725

APPENDIX F
DATA VALIDATION DOCUMENTATION

Roy F. Weston Laboratories

Data Package 9108L474

Volatile Organics 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.

9713526.2727

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.

9713526.2728

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

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

RFW Batch Number: 9108L474 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Report Date: 08/29/91 02:38 Page: 1a

	Cust ID:	B010P0	B010P3	B010P5	VBLK	VBLK
Sample Information	RFW#:	001	002	003	91LVB351-MB1	91LVB352-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.02	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
	Toluene-d8	89 %	92 %	97 %	97 %	96 %
Surrogate	Bromofluorobenzene	81 %	84 %	94 %	87 %	89 %
Recovery	1,2-Dichloroethane-d4	102 %	103 %	109 %	91 %	93 %
Chloromethane		10 U	10 U	11 U	10 U	10 U
Bromomethane		10 U	10 U	11 U	10 U	10 U
Vinyl Chloride		10 U	10 U	11 U	10 U	10 U
Chloroethane		10 U	10 U	11 U	10 U	10 U
Methylene Chloride		19 B	21 B	13 B	11	5
Acetone		16 B	12 B	27 B	8 J	6 J
Carbon Disulfide		5 U	5 U	6 U	5 U	5 U
1,1-Dichloroethene		5 U	5 U	6 U	5 U	5 U
1,1-Dichloroethane		5 U	5 U	6 U	5 U	5 U
1,2-Dichloroethene (total)		5 U	5 U	6 U	5 U	5 U
Chloroform		5 U	5 U	6 U	5 U	5 U
1,2-Dichloroethane		5 U	5 U	6 U	5 U	5 U
2-Butanone		10 U	10 U	11 U	10 U	10 U
1,1,1-Trichloroethane		5 U	5 U	6 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	6 U	5 U	5 U
Vinyl Acetate		10 U	10 U	11 U	10 U	10 U
Bromodichloromethane		5 U	5 U	6 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	6 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U	6 U	5 U	5 U
Trichloroethene		5 U	5 U	6 U	5 U	5 U
Dibromochloromethane		5 U	5 U	6 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	6 U	5 U	5 U
Benzene		5 U	5 U	6 U	5 U	5 U
Trans-1,3-Dichloropropene		5 U	5 U	6 U	5 U	5 U
Bromoform		5 U	5 U	6 U	5 U	5 U
4-Methyl-2-pentanone		10 U	10 U	11 U	10 U	10 U
2-Hexanone		10 U	10 U	11 U	10 U	10 U
Tetrachloroethene		5 U	5 U	6 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	5 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

91 1352 2729

Cust ID:	B010P0	B010P3	B010P5	VBLK	VBLK
RFW#:	001	002	003	91LVB351-MB1	91LVB352-MB1
Toluene	5 U	5 U	6 U	5 U	5 U
Chlorobenzene	5 U	5 U	6 U	5 U	5 U
Ethylbenzene	5 U	5 U	6 U	5 U	5 U
Styrene	5 U	5 U	6 U	5 U	5 U
Xylene (total)	5 U	5 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

9713526.2730
0000003

9713526.2731

ATTACHMENT 3

Summary of Data Qualifications

9713526.2732

DRAFT 7/91

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9108-1-474	REVIEWER: AC	DATE: 5/7/92	PAGE 1 OF 1
COMMENTS: Soils VOA			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Ical Acetone	UJ (+)	B010P0, B010P3	exceeded 30% RSD
		B010P5	
2-butanone	UJ	B010P0, B010P3 B010P5	exceeded 30% D
vinyl acetate	UJ	↓	
4-methyl-2-pentanone	UJ	↓	
2-hexanone	UJ	↓	
Cal ~~Chloromethane~~	~~UJ~~		
Acetone	UJ	B010P0	exceeded 25% D (30.3%)
Chloromethane	UJ	B010P0, B010P3	
2-butanone	↓	B010P5	
4-methyl-2-pentanone	↓	↓	
2-hexanone	↓	↓	
Bromomethane	UJ	B010P0, B010P3	exceeded 25% D
	↔	↔	
Blanks Methylene Chloride	B010P0, B010P3 B010P5	U at reported value	sample within ten times blank conc.
Acetone	" "	" " " "	↓
unknown TIC	NJ	B010P3	presumptive evidence

9713526.2733

ATTACHMENT 4

As Qualified Data Summary

9713526.2734

1A 0000015

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B010P0

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9108L474-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B081912

Level: (low/med) LOW Date Received: 08/16/91

% Moisture: not dec. 2 Date Analyzed: 08/20/91

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	19	B
67-64-1	Acetone	16	B
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	B
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

U CCU %D
U CCU %D
U <10x blank
U Ical %RSD, CCU % <10x blank
U CCU %D, Ical %RSD
U Ical %RSD
U Ical %RSD, CCU %D
U Ical %RSD, CCU %D

MS 5/13/92

FORM 1 V-1 12/88 Rev.

9713526.2735

1E 0000020

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B010P0

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9108L474-001

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

Lab File ID: B081912

Level: (low/med) LOW

Date Received: 08/16/91

% Moisture: not dec. 2

Date Analyzed: 08/20/91

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.				

9713526.2736

1A 0000025

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B010P3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9108L474-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B081913

Level: (low/med) LOW Date Received: 08/16/91

% Moisture: not dec. 3 Date Analyzed: 08/20/91

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~~ UJ CCV %D
74-83-9	Bromomethane	10	~~U~~ UJ CCV %D
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	21	~~B~~ U <10x blank
67-64-1	Acetone	12	~~B~~ UJ Ical %RSD; <10xBL
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~~ UJ Ical %RSD, CCV %D
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	~~U~~ UJ Ical %RSD
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~~ UJ Ical %RSD, CCV %D
591-78-6	2-Hexanone	10	~~U~~ UJ Ical %RSD, CCV %D
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

AS 5/12/92

9713526.2737

1E 0000036

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B010P3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9108L474-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B081913

Level: (low/med) LOW Date Received: 08/16/91

% Moisture: not dec. 3 Date Analyzed: 08/20/91

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

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	25.176		NJ

FORM 1 VOA-TIC 12/88 Rev.

9713526.2738

1A
VOLATILE ORGANICS ANALYSIS SHEET

0000041

CLIENT SAMPLE NO.

B010P5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9108L474-003

Sample wt/vol: 4.90 (g/mL) G

Lab File ID: B082008

Level: (low/med) LOW

Date Received: 08/16/91

% Moisture: not dec. 3

Date Analyzed: 08/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.02

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	~~B~~ AS. U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	13	~~B~~ U <10x blk
67-64-1	Acetone	27	~~B~~ UJ Ical %RSD <10xblank
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~~ UJ Ical %RSD, CCV%D
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	~~U~~ UJ Ical %RSD
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~~ UJ Ical %RSD, CCV%D
591-78-6	2-Hexanone	11	U UJ Ical %RSD, CCV%D
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

AS 5/17/92

9713526.2739

1E 0000042

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B010P5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9108L474-003

Sample wt/vol: 4.90 (g/mL) G

Lab File ID: B082008

Level: (low/med) LOW

Date Received: 08/16/91

% Moisture: not dec. 3

Date Analyzed: 08/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.02

Number TICs found: 0

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

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

9713526.2740

ATTACHMENT 5

Data Review Supporting Documentation

HOLDING TIME SUMMARY - FORM B-1

SDG: 9108-L474	REVIEWER: AS	DATE: 5/6/92	PAGE 1 OF 1
COMMENTS: Soil			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B01CP0 ✓	VOA	8/14/91 *	N/A	8/20/91	—	5	—
B01CP3 ✓	↓	↓	↓	8/20/91	—	5	—
B01CP5 ✓	↓	↓	↓	8/20/91	—	5	—

* Weston C-o-C lists 8/15/91 as date of collection for these samples; Westinghouse C-o-C lists 8/14/91 as date of collection. Is not problem, as holding times were met.

MMR

✓ MMR

DRAFT

7/91

B-1

9713526.2741

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 9108L-474	REVIEWER: AS	DATE: 5/7/92	PAGE 1 OF 2		
COMMENTS: Soils VOA					
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT: 5100B-capillary			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
ICAL 7/29/91 + 7/30/91	Acetone	.651	51.1 ✓	B0I0P0, B0I0P3 B0I0P5	UJ
	2-Butanone	.168	33.3 ✓	" "	UJ
	Vinyl Acetate	2.282	41.4 ✓	" "	UJ
	4-methyl-2pentanone	.486	31.9 ✓	" "	UJ
	2-Hexanone	.425	35.9 ✓	" "	UJ
5100B Tune 7/29/91	12:44 → ICAL (150, 200, 20, 100)	← 4 pt. calibration; 50ppb std			
7/30/91	10:02 → ICAL (50)	from next day used in RRF calculations.			
8/19/91	18:36 → CCV, VBLK, B0I0P0,	B0I0P3			AMR
8/20/91	9:52 → CCV, VBLK, B0I0P5				

B-2

DRAFT

7/91

97135626.2742

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 91081-474	REVIEWER: AS	DATE: 5/7/92	PAGE 2 OF 2		
COMMENTS: Soils VOA					
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT: 5100 B			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
19:19 8/19/91	Chloromethane		33.5 ✓	B010P0, B010P3	UJ
	Bromomethane		44.6 ✓	" "	UJ
	Acetone		30.3 ✓	B010P0, B010P3	UJ
	2-Butanone		47.6 ✓	B010P0, B010P3	UJ
	4-Methyl-2-pentanone		45.1 ✓	" "	UJ
	2-Hexanone		50.4 ✓	" "	UJ
8:40 8/20/91	Chloromethane		27.6 ✓	B010P5	UJ
	2-Butanone		37.5 ✓	"	UJ
	4-Methyl-2-pentanone		46.9 ✓	"	UJ
	2-Hexanone		44.9 ✓	"	UJ
	Vinyl acetate		25.1 ✓	B010P0, B010P3	UJ

B-2

DRAFT

7/91

97155262.2743

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 7108-L-474	REVIEWER: AS	DATE: 5/8/92	PAGE_____OF_____
COMMENTS: Soil VOA		10X	

	SAMPLE ID	COMPOUND	RESULT	Q	~~RT~~	UNITS	SAMPLES AFFECTED	QUALIFIER
351-MB1	VBLK	Methylene Chloride	11		110		B0108, B0103 ✓	U at value
	↓	Acetone	8 (J)		80		B0108, B0103 ✓	U at value
352-MB1	VBLK	Methylene Chloride	5		50		B0105 ✓	U at value
	↓	Acetone	6 (J)		60		B0105 ✓	U at value

DRAFT

7/91

9115526.2744

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9103-L-474	REVIEWER: AS	DATE: 5/6/92	PAGE 1 OF 1	
COMMENTS: Surrogate, matrix spikes, internal stds.				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
	All ok			
		Range		
(1) surrogates	TOL, BFB, DCE soils:	81-109%	all	none
(2) no ms or msd data were reported with this group. CMK				none
(3) All internal standard areas were found to be acceptable. CMK				none

B-4

DRAFT

7/91

97152626.2745

PRECISION DATA SUMMARY - FORM B-5

SDG: 9105-L-479	REVIEWER AS	DATE: 5/6/92	PAGE 1 OF 1
COMMENTS: Soil VOA			

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
Methylene Chloride	BC1083 (21) (u)	BC1085 (13) (u)	* ~~47%~~	~~cns~~ —	—
Acetone	" (12) (u)	" (27) (u)	~~77%~~	~~cns~~ —	—
	* The data for those compounds were qual. as non-detects (u) during validation (method blank). Therefore, RPD could not be calculated. There were no compounds detected in either sample.				

CMK

DRAFT

7/91

9113526.2716

9713526.2747

DRAFT
CALCULATION SUMMARY - FORM B-6

7/91

9KS-L-474

SDG: ~~9KS-L-474~~	REVIEWER: AS	DATE: 5/6/92	PAGE 1 OF 7

COMMENTS: All calculations dc ✓ 20% checked ✓

Please refer to the attached calc. pages.
OMK

9713526.2748

Calculations

HARTCROWSER

Page 2 of 7

Job No. 2978-40

Project Westinghouse Hanford 91084474

Date 5/7/92

Calculations for Ical + Ccal

Made by A.S.

Ical vinyl chloride

$$RRF20 = \frac{17005(50)}{60047(20)} = .708$$

$$RRF50 = \frac{46158(50)}{56992(50)} = .810$$

Acetone RRF 50

$$\frac{23462(50)}{56992(50)} = .412$$

RRF100

$$\frac{59600(50)}{55709(100)} = .535$$

$$150 = \frac{76646(50)}{71240(150)} = .452$$

2-Butanone

$$RRF50 = \frac{5016(50)}{56992(50)} = .088$$

$$RRF200 = \frac{60343(50)}{66044(200)} = .228$$

Recycled Paper

9713526.2749

Calculations

HARTCROWSER

Page 3 of 7

Job No. 2978-40

Project Westinghouse Hanford 91084474

Date 7/21/92

Calculations for Ical

Made by AS

2-hexanone

RRF20 = $\frac{72563(50)}{\cancel{66047}\,289196(20)}$ .627

RRF100 = $\frac{189998(50)}{272707(100)}$ = .347

Ical 8/19/91 19:19

Vinylchloride

RRF50 = $\frac{24646(50)}{46955(50)}$ = .525

%D = $\frac{.701-.525}{.701}$ = 25.1 %

~~Acetone~~

Acetone = $\frac{21322(50)}{46955(50)}$ = .454

$\frac{.651-.454}{.651}$ = 30.2%

Benzene = $\frac{240106(50)}{248052(50)}$ = .968

~~.468~~ = $\frac{.993-.968}{.993}$ = 2.5%

2-Hexanone = $\frac{54143(50)}{256500(50)}$ = .211 $\frac{.425-.211}{.425}$ = 50.4%

Recycled Paper

9713526.2750

Calculations

HARTCROWSER

Page 4 of 7

Job No. 2978-40

Project 91084474

Date 8/11/92

Calculations for Ccal

Made by AC

Ccal 8/20/92 10:40

Chloromethane = $\frac{22982(50)}{30486(50)} = .754$ ✓

$\frac{1.042 - .754}{1.042} = 27.6\%$ ✓

2-butanone = $\frac{3197(50)}{30486(50)} = .105$ ✓

$\frac{.168 - .105}{.168} = 37.5\%$ ✓

Toluene = $\frac{117542(50)}{168262(50)} = .699$ ✓

$\frac{.694 - .699}{.694} = -.7\%$ ✓

Recycled Paper

9713526.2751

Calculations

HARTCROWSER

Page 5 of 7

Job No. 2978-40

Project 91084474

Date

Calculations for Surrogate check / MS/MSD results

Made by A.S.

B010S3 Tol $= \frac{46.184 \text{ ug/L}}{50} = 92.4\%$

BFB $= \frac{42.045}{50} = 84\%$

DCE $\frac{51.336}{50.0} = 102.7\%$

MS/MSD Check

B00912

Recycled Paper

9713526.2752

.541

.5941

Calculations

HARTCROWSER

Page 6 of 7

Job No. 2978-40

Project Westinghouse Hanford 91084474

Date 5/6/92

Calculations for Compound Identification

Made by AC

RRT =

B0108B = Acetone = $\frac{7.29}{12.27}$ = .594 ✓ $\frac{7.31}{12.27}$ = .596 ✓

Methylene Chloride = $\frac{8.39}{12.27}$ = .684 ✓ $\frac{8.39}{12.27}$ = .684 ✓

B0108S = Acetone = $\frac{7.31}{12.28}$ = .595 ✓ $\frac{7.31}{12.28}$ = .595 ✓

Methylene Chloride = $\frac{8.41}{12.28}$ = .685 ✓ $\frac{8.41}{12.28}$ = .685 ✓

Calculation check

B0108B

21 Methylene chloride = $\frac{19057(50)(5)}{29313(1.549)(5)(.97)}$ = ~~21.56~~ 21.6 ✓

Acetone $\frac{3154(50)(5)}{29313(.454)(5)(.97)}$ = ~~12.74~~ 12.2 ✓

B0108S

13 27 Methylene Chloride $\frac{10584(50)(5)}{29710(1.475)(5)(.97)}$ = 12.45 ✓

Acetone $\frac{7268(50)(5)}{29710(.484)(5)(.97)}$ = 25.47 ✓

Recycled Paper

9713526.2753

Calculations

HARTCROWSER

Page 7 of 7

Job No. 2978-40

Project 9108L474

Date

Calculations for Quantitation limit

Made by A.S.

8010f5 : $\frac{CRQL\ (5)}{\%\ moisture\ (4.9)} = \frac{10\ (5)}{.97\ (4.9g)} = 10.51 \rightarrow 11$ ✓

$\frac{5(5)}{.97(4.9)} = 5.26$

Recycled Paper

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: WESTINGHOUSE/HANFORD	REVIEWER: KAK	DATE: 4/30/92
LABORATORY: ROY F. WESTON	CASE:	SDG: 91086474
SAMPLES/MATRIX:		
B010P0		
B010P3 } SOILS ✓		
B010P5		

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	X		
Data Summary	X		
Chain-of-Custody	X		
QC Summary			
Surrogate report	X		
MS/MSD report	X	X	
Blank summary report	X		
GC/MS tuning report	X		
Internal standard summary report	X	X	
Sample Data			
Sample reports	X		
TIC reports for each sample	X		
RIC reports for all samples	X		
Raw and corrected spectra for all detected results	X		
Raw and corrected library search data for all reported TIC	X		
Quantitation and calculation data for all TIC	X		
Standards Data			
Initial calibration report	X		
RIC and quantitation reports for initial calibration	X		
Continuing calibration reports	X		
RIC and quantitation reports for cont. calibrations	X		
Internal standard summary report	X		
Raw QC Data			
Tuning report, spectra and mass lists	X		
Blank analysis reports	X		
TIC reports for all blanks	X		
RIC and quantitation reports for blanks	X		
Raw and corrected spectra for all detected results in blanks	X		
Raw and corrected library search data for all reported TIC	X		

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

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~~ UMC	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.

no data reported.

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

No Raw data for MS/MSDs

Are there any calculation errors? Yes ~~No~~ N/A

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

5.3 PERFORMANCE AUDIT SAMPLES

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

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

6. PRECISION

no data.

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

No raw MS/MSD data.

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).

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
Unknown compound detected

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

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? Yes No N/A

Were project specific data quality objectives met for this analysis? Yes No N/A

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

Field dup:
B00GY3 / B00GY4
B00H76 / B00H77
B01PR3 / B01PR5
B01RC0 / B01RC2

COMMENTS (attach additional sheets as necessary):

9713526.2762

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/PCBs 9108L474 (App M 300-FF-1 #4) Date: 10/20/92
Document Number: Originator: CMR

HCS - WHC/E - 92 15/T ~~1-041~~

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

9713526.2763

Hart Crowser
J-2978-40

APPENDIX M
DATA VALIDATION DOCUMENTATION

Roy F. Weston Laboratories

Data Package 9108L474

Metals Analyses

9713526.2764

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.

9713526.2766

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

Roy F. Weston, Inc. - Lionville Laboratory

PCBs by GC

Report Date: 09/30/91 11:25

RFW Batch Number: 9108L474 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Page: 1

	Cust ID:	B010P0	B010P3	B010P5	B010P5	B010P5	PBLK
Sample Information	RFW#:	001	002	003	003 MS	003 MSD	91LE1064-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	2.00	2.00	2.00	2.00	2.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate: Di-n-butylchlorendate		84 %	89 %	87 %	91 %	68 %	92 %
Aroclor-1016		160 U	160 U	160 U	160 U	160 U	80 U
Aroclor-1221		160 U	160 U	160 U	160 U	160 U	80 U
Aroclor-1232		160 U	160 U	160 U	160 U	160 U	80 U
Aroclor-1242		160 U	160 U	160 U	160 U	160 U	80 U
Aroclor-1248		160 U	160 U	160 U	160 U	160 U	80 U
Aroclor-1254		320 U	330 U	330 U	84 %	69 %	160 U
Aroclor-1260		320 U	330 U	330 U	330 U	330 U	160 U

	Cust ID:	PBLK BS
Sample Information	RFW#:	91LE1064-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	ug/Kg
Surrogate: Di-n-butylchlorendate		78 %
Aroclor-1016		80 U
Aroclor-1221		80 U
Aroclor-1232		80 U
Aroclor-1242		80 U
Aroclor-1248		80 U
Aroclor-1254		73 %
Aroclor-1260		160 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

000000C

9713526.2767

9713526.2768

1D 0000015

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B010P0

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9108L474-001

Sample wt/vol: 30.6 (g/mL) G

Lab File ID: 09119113.30

Level: (low/med) LOW

Date Received: 08/16/91

% Moisture: not dec. 2 dec.

Date Extracted: 08/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 09/12/91

GPC Cleanup: (Y/N) Y pH: 9.2

Dilution Factor: 2.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	
12674-11-2	Aroclor-1016	160	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	160	U
53469-21-9	Aroclor-1242	160	U
12672-29-6	Aroclor-1248	160	U
11097-69-1	Aroclor-1254	320	U
11096-82-5	Aroclor-1260	320	U

10-3-91

FORM 1 PEST 12/88 Rev.

9713526.2769

1D 0000026

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B010P3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9108L474-002

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: 09119113.31

Level: (low/med) LOW

Date Received: 08/16/91

% Moisture: not dec. 3 dec.

Date Extracted: 08/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 09/12/91

GPC Cleanup: (Y/N) Y pH: 9.2

Dilution Factor: 2.00

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

CAS NO.	COMPOUND			
12674-11-2	Aroclor-1016	160	U	
11104-28-2	Aroclor-1221	160	U	
11141-16-5	Aroclor-1232	160	U	
53469-21-9	Aroclor-1242	160	U	
12672-29-6	Aroclor-1248	160	U	
11097-69-1	Aroclor-1254	330	U	
11096-82-5	Aroclor-1260	330	U	

10-3-91

FORM 1 PEST 12/88 Rev.

9713526.2770

1D 0000025

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B010P5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9108L474-003

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 09119113.34

Level: (low/med) LOW Date Received: 08/16/91

% Moisture: not dec. 3 dec. Date Extracted: 08/19/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/12/91

GPC Cleanup: (Y/N) Y pH: 9.2 Dilution Factor: 2.00

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

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	160	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	160	U
53469-21-9	Aroclor-1242	160	U
12672-29-6	Aroclor-1248	160	U
11097-69-1	Aroclor-1254	330	U
11096-82-5	Aroclor-1260	330	U

10-24

FORM 1 PEST 12/88 Rev.

9713526.2771

ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

CASE NO: 91084474

~~SDG:~~	REVIEWER: CIM	DATE: 5/19/92	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
No data was qualified in this case.			
Aldrin	UJ	BCICIC ISCICP3. BCICIS	% RSD exceeded

9713526.2773

ATTACHMENT 4

As Qualified Data Summary

9713526.2774

1D 0000015

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B010P0

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9108L474-001

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 09119113.30

Level: (low/med) LOW Date Received: 08/16/91

% Moisture: not dec. 2 dec. Date Extracted: 08/19/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/12/91

GPC Cleanup: (Y/N) Y pH: 9.2 Dilution Factor: 2.00

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

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	160	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	160	U
53469-21-9	Aroclor-1242	160	U
12672-29-6	Aroclor-1248	160	U
11097-69-1	Aroclor-1254	320	U
11096-82-5	Aroclor-1260	320	U

10-3-91

FORM 1 PEST 12/88 Rev.

No other compounds detected

A.S. 6/3/92

9713526.2775

1D 0000020

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B010P3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9108L474-002

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: 09119113.31

Level: (low/med) LOW

Date Received: 08/16/91

% Moisture: not dec. 3 dec.

Date Extracted: 08/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 09/12/91

GPC Cleanup: (Y/N) Y pH: 9.2

Dilution Factor: 2.00

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

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	160	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	160	U
53469-21-9	Aroclor-1242	160	U
12672-29-6	Aroclor-1248	160	U
11097-69-1	Aroclor-1254	330	U
11096-82-5	Aroclor-1260	330	U

10-3-91

FORM 1 PEST 12/88 Rev.

No other compounds detected
DS 5/27/92

9713526.2776

1D 0000025

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B010P5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9108L474-003

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 09119113.34

Level: (low/med) LOW Date Received: 08/16/91

% Moisture: not dec. 3 dec. Date Extracted: 08/19/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/12/91

GPC Cleanup: (Y/N) Y pH: 9.2 Dilution Factor: 2.00

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

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	160	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	160	U
53469-21-9	Aroclor-1242	160	U
12672-29-6	Aroclor-1248	160	U
11097-69-1	Aroclor-1254	330	U
11096-82-5	Aroclor-1260	330	U

10-3-91

FORM 1 PEST 12/88 Rev.

No other compounds detected

9713526.2777

ATTACHMENT 5

Data Review Supporting Documentation

HOLDING TIME SUMMARY - FORM B-1

SDG: 91082474	REVIEWER: AS	DATE: 5/11/92	PAGE 1 OF 1
COMMENTS: Soils Pest/PCB			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B010P0	Pest/PCB soil	8/15/91	8/19/91	9/12/92	4	24	—
B010P3	↓	↓	↓	↓	↓	↓	—
B010P5	↓	↓	↓	↓	↓	↓	—

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 9109L474	REVIEWER: AS	DATE: 8/11/92	PAGE 1 OF 1	
COMMENTS: Soil Pest/PCB				
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT: 13 + 14		
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
(13) 9/11/91 - 9/13/91	Aldrin (quantitation)		12.1% RSD	No qualification since	
(14) 9/11/91 - 9/13/91	Aldrin (confirmation)		14.9% RSD	no hits reported.	
	4,4-DDT (confirmation)		17.8% RSD		
9/12/91	aroclor 1254 (quantitation)		21% %D	no qualification since	
9/13/91	aroclor 1254 (quantitation)		23.2%	2nd column in each	
	4-4' DDT (quantitation)		17.4 %D	case, was within	
	methoxychlor (quantitation)		15.9 %D	control limits and	
	lindane (confirmation)		34.3 %D	standards analyzed after	
	alpha BHC (")		27.7 %D	samples in this case.	
	delta BHC (")		27.2 %D		
9/12/91	heptachlor, heptachlor epoxide, endosulfan I, dieldrin, endosulfan II, methoxychlor		quantitation ~~confirmation~~	outside RT window - no qualification since	
9/13/91	Lindane, heptachlor, heptachlor epoxide, endosulfan I, dieldrin, 4,4' DDT, alpha BHC			no peaks were present in samples within ret. time period.	
9/12/91	endosulfan II, 4,4' DDT, endrin ketone		confirmation		
9/13/91	dieldrin, endosulfan II, 4,4' DDT, methoxychlor				
	4,4' DDE, endrin, 4,4' DDD, endosulfan sulfate, methoxychlor				

qualify since all in both cols

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

Case# 9108C475

SDG:	REVIEWER: CJM	DATE: 5/19/92.	PAGE 1 OF 1

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
	NO detects	in	blanks			in samples.			
						ok			
						AS.	5/22/92		

Case No: 91082474

ACCURACY DATA SUMMARY - FORM B-4

~~SDG:~~	REVIEWER: CIM	DATE: 5/19/92	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
MS and Surrogates within specifications - OK				

PRECISION DATA SUMMARY - FORM B-5

COSPNO: 91082474

~~SDG:~~	REVIEWER CIM	DATE: 5/19/92	PAGE 1 OF 1

COMMENTS:

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
Field duplicate, % RPD for MS/MSD pair within specifications — OK					
Field duplicates					
B01013/B01015	All Non-detects ✓				

9213526.2202

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

CALCULATION SUMMARY - FORM B-6

Case No:

~~SDG:~~	REVIEWER: CIM	DATE: 5/9/	PAGE 1 OF 1

COMMENTS:

DBB %D ⟹ %D = (RTi - RTs) / RTi x100

RTi = initial std RT (Eval A)

RTs = RT in sample

Eval A (RT)	Samples (RT)	
20.97 (column 13)	20.86	→ %D = .6
	20.87	.5
	20.90	.3

Standards %D ⟹ %D = (Calib factor (initial) - Calib factor (std)) / Calib factor (initial) x100

aldrin: (6084125 - 5925969) / 6084125 x100 = 2.6 %

Calibration factors ⟹

			Total ng	peak height	Calib
peak height / total ng injected	aldrin	Eval A	.03672	206048	561132
	endrin	Eval B	.08997	161781	179811
	DDT	Eval C	.2257	279002	123611

%RSD ⟹

	S_x	$\bar{X}$ calib factor	%RSD
S_x / $\bar{X}$ calib factor = aldrin	631326	6224468	10.1 %
endrin	71351	1883702	3.9
DDT	101059	1133172	8.9
DBC	21982	805931	2.7

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: Westinghouse Hanford	REVIEWER: [illegible]	DATE: 4/28
LABORATORY: Weston	CASE: 9108 2474	SDG:
SAMPLES/MATRIX:		
B010P0 (Soil)		
B010P3 (Soil)		
B010P5 (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	X		
Data Summary	X		
Chain-of-Custody	X		
QC Summary			
Surrogate report	X		
MS/MSD report	X		
Blank summary report	X		
Sample Data			
Sample reports	X		
Chromatograms	X		
GC integration reports	X		
Worksheets			X
UV traces from GPC			X
GC/MS confirmation spectra			X
Standards Data			
Pesticides Evaluation Standards Summary	X		
Pesticides/PCB Standards Summary	X		
Pesticides/PCB identification			X
Pesticides standard chromatograms	X		
Raw QC Data			
Blank analysis report forms and chromatograms	X		
MS/MSD report forms and chromatograms	X		

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

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

10.1% 14.9% 17.8%

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

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.

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

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):

THIS PAGE INTENTIONALLY LEFT BLANK

9713526.2794

0000016

2F

SOIL PESTICIDE SURROGATE RECOVERY

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

Case No.: WESTINGHOUSE HANFORD

RFW Lot No.: 9108L474

	CLIENT SAMPLE NO.	S1 (DBC)#	OTHER
01	BO10P0	84	
02	BO10P3	89	
03	BO10P5	87	
04	BO10P5MS	91	
05	BO10P5MSD	68	
06	PBLKLE1064-MB1	92	
07	PBLKLE1064-MB1 BS	78	

ADVISORY QC LIMITS (20-150)

S1 (DBC) = Di-n-butylchlorendate

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

9713526.2795

0000022

Roy F. Weston, Inc. - Lionville Laboratory 09/27/91 10:35:26

EXTERNAL STANDARD

SAMPLE: 09119113 .31 INST:13 VIAL:F0 SEQ NUMBER:031
TEST : OPCB DATE-TIME INJECTED : 09/12/91 10:46:56
COLLECTION TIME : 29.98 DATE-TIME PROCESSED : 09/27/91 10:35:26
METHOD: 13 / DL13 REV #: 00101 ANALYST: BARKER SAMP RATE: 0.78
CLIENT ID: BO10P3 SAMPLE VOL: 3.0 ul
CLIENT: WESTINGHOUSE HANFORD COLUMN TYPE: 2250/2401
LAB ID: 9108L474-002 * : 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	3850639	534336	V	0.896				
002	6209997	864501	V	1.152				
003	906157	168138	V	1.508				
				1.917	1	ALPHA-BHC		
004	18789664	859910	V	2.048				
005	2052327	317229	V	2.357	1	GAMMA-BHC	0.027	*
				2.650	1	BETA-BHC		
006	12782291	835609	V	2.709				
				2.889	1	HEPTACHLOR		
007	415634	62279	V	3.048	1	DELTA-BHC	0.011	
008	1319565	146936	V	3.347				
				3.461	1	ALDRIN		
009	982705	77449	V	3.806				
010	78052	2890	V	4.821				
				4.954	1	HEPT. EPOXIDE		
011	55813	3608	V	5.248				
				5.508	1	G. CHLORDANE		
012	139155	4725	V	5.845				
				5.977	1	A. CHLORDANE		
				6.164	1	ENDOSULFAN I		
013	530716	9030	V	7.020	1	4,4'-DDE	0.003	*
				7.444	1	DIELDRIN		
014	27077	1081	V	8.562				
				8.991	1	ENDRIN		
015	39825	1604	V	9.131				
016	104698	3440	V	10.396	1	4,4'-DDD	0.002	
				10.732	1	ENDOSULFAN II		
017	106253	1015	V	11.526				
				12.482	1	4,4'-DDT		
				13.604	1	ENDRIN ALDEHYDE		
018	246004	5648	V	15.527				
				16.053	1	ENDO. SULFATE		
019	123917	2743	V	16.916				
020	179062	3671	V	18.687				
021	7840283	112870	V	20.867	1	DBC	0.089	*
				23.098	1	METHOXYCHLOR		
022	164442	1419		24.811				

9713526.2796

0000024

Roy F. Weston, Inc. - Lionville Laboratory 09/12/91 11:40:06

EXTERNAL STANDARD

SAMPLE: 09119114 .31 INST:14 VIAL:F0 SEQ NUMBER:031
TEST : OPCB DATE-TIME INJECTED : 09/12/91 11:09:36
COLLECTION TIME : 29.98 DATE-TIME PROCESSED : 09/12/91 11:40:06
METHOD: 14 / 14 REV #: 00201 ANALYST: BARKER SAMP RATE: 0.78
CLIENT ID: BO10P3 SAMPLE VOL: 3.0 ul
CLIENT: WESTINGHOUSE HANFORD COLUMN TYPE: SP2100
LAB ID: 9108L474-002 RAW FILE: RAW2:IC151203
SAMPLE WT : % MOISTURE : DILUTION FACTOR : 2.0000

PK NO	PEAK AREA	PEAK HEIGHT	BL	RT MINUTES	GR #	COMPONENT NAME	HEIGHT CONC NG/UL
001	2698577	443615	V	0.971			
002	11273719	778613	V	1.323			
003	9638055	843218	V	1.707			
004	172608	30211	V	2.083			
				2.336	1	ALPHA-BHC	
				2.503	1	BETA-BHC	
005	26431952	787981	V	2.688	1	GAMMA-BHC	0.120
				2.777	1	DELTA-BHC	
006	800348	118298	V	2.980			
007	798302	62776	V	3.334			
008	144410	14886	V	3.860			
				4.072	1	HEPTACHLOR	
009	1355571	100444	V	4.260			
				4.937	1	ALDRIN	
010	21728	1682	V	5.877	1	HEPT. EPOXIDE	0.000
011	80910	5499	V	6.354			
				6.665	1	G. CHLORDANE	
012	152070	3996	V	6.906			
				7.206	1	ENDOSULFAN I	
				7.296	1	A. CHLORDANE	
013	86322	2579	V	8.068	1	4,4'-DDE	0.001
				8.308	1	DIELDRIN	
014	292032	3936	V	9.195	1	ENDRIN	0.002
				9.448	1	ENDOSULFAN II	
				10.072	1	4,4'-DDD	
				10.385	1	ENDRIN ALDEHYDE	
				11.861	1	ENDO. SULFATE	
015	774707	7989	V	12.599			
				12.868	1	4,4'-DDT	
				15.071	1	ENDRIN KETONE	
016	123136	1020	V	17.268			
				18.325	1	METHOXYCHLOR	
017	55286	619	V	20.321			
018	7944051	99987		24.356	1	DBC	0.094

9713526.2797

0000027

Roy F. Weston, Inc. - Lionville Laboratory 09/27/91 10:37:03

EXTERNAL STANDARD

SAMPLE: 09119113 .34 INST:13 VIAL:F0 SEQ NUMBER:034
TEST : OPCB-T DATE-TIME INJECTED : 09/12/91 12:24:04
COLLECTION TIME : 29.98 DATE-TIME PROCESSED : 09/27/91 10:37:03
METHOD: 13 / DL13 REV #: 00101 ANALYST: BARKER SAMP RATE: 0.78
CLIENT ID: B010P5 SAMPLE VOL: 3.0 ul
CLIENT: WESTINGHOUSE HANFORD COLUMN TYPE: 2250/2401
LAB ID: 9108L474-003 * : 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	3832189	745655	V	0.889				
002	2908839	557658	V	1.143				
003	155405	24673	V	1.510				
004	5927693	898021	V	1.819				
				1.917	1	ALPHA-BHC		
005	8309	1787	V	2.178				
				2.371	1	GAMMA-BHC		
				2.650	1	BETA-BHC		
006	619654	55075	V	2.839				
				2.889	1	HEPTACHLOR		
				3.076	1	DELTA-BHC		
007	212518	21362	V	3.439	1	ALDRIN	0.002	*
008	3495525	260692	V	3.813				
				4.954	1	HEPT. EPOXIDE		
009	158667	6368	V	5.066				
				5.508	1	G. CHLORDANE		
010	42430	1897	V	5.706				
				5.977	1	A. CHLORDANE		
				6.164	1	ENDOSULFAN I		
				6.998	1	4,4'-DDE		
011	933480	30929	V	7.414	1	DIELDRIN	0.008	*
012	174554	3839	V	8.984	1	ENDRIN	0.002	*
013	17526	648	V	10.201				
				10.398	1	4,4'-DDD		
				10.732	1	ENDOSULFAN II		
014	28134	620	V	12.212				
				12.482	1	4,4'-DDT ✓		
				13.604	1	ENDRIN ALDEHYDE		
015	277094	4732	V	15.515				
				16.053	1	ENDO. SULFATE		
016	230527	4878	V	18.618				
017	7681447	109376	V	20.896	1	DBC	0.087	*
				23.098	1	METHOXYCHLOR		
018	43392	677		25.870				

9713526.2798

0000029

Roy F. Weston, Inc. - Lionville Laboratory 09/12/91 13:16:45

EXTERNAL STANDARD

SAMPLE: 09119114 .34 INST:14 VIAL:F0 SEQ NUMBER:034
TEST : OPCB-T DATE-TIME INJECTED : 09/12/91 12:46:18
COLLECTION TIME : 29.98 DATE-TIME PROCESSED : 09/12/91 13:16:45
METHOD: 14 / 14 REV #: 00201 ANALYST: BARKER SAMP RATE: 0.78
CLIENT ID: BO10P5 SAMPLE VOL: 3.0 ul
CLIENT: WESTINGHOUSE HANFORD COLUMN TYPE: SP2100
LAB ID: 9108L474-003 RAW FILE: RAW2:IC151251
SAMPLE WT : % MOISTURE : DILUTION FACTOR : 2.0000

PK NO	PEAK AREA	PEAK HEIGHT	BL	RT MINUTES	GR #	COMPONENT NAME	HEIGHT CONC NG/UL
001	908533	241169	V	0.966			
002	6936083	851919	V	1.278			
003	3922017	608257	V	1.672			
004	40191	6816	V	2.075			
005	16102	3214	V	2.311	1	ALPHA-BHC	0.001
				2.503	1	BETA-BHC	
006	8268647	911988	V	2.560			
				2.683	1	GAMMA-BHC	
				2.777	1	DELTA-BHC	
007	714142	65367	V	3.333			
008	68067	7633	V	3.830			
				4.072	1	HEPTACHLOR	
009	5481575	366537	V	4.260			
010	95809	9006	V	4.913	1	ALDRIN	0.002
				5.890	1	HEPT. EPOXIDE	
				6.665	1	G. CHLORDANE	
				7.206	1	ENDOSULFAN I	
				7.296	1	A. CHLORDANE	
011	109355	3493	V	7.498			
				8.093	1	4,4'-DDE	
012	449984	20569	V	8.276	1	DIELDRIN	0.007
013	237107	2992	V	9.190	1	ENDRIN	0.002
				9.448	1	ENDOSULFAN II	
				10.072	1	4,4'-DDD	
				10.385	1	ENDRIN ALDEHYDE	
				11.861	1	ENDO. SULFATE	
014	378944	7511	V	12.628			
				12.868	1	4,4'-DDT ✓	
015	98889	1239	V	15.027	1	ENDRIN KETONE	0.001
				18.325	1	METHOXYCHLOR	
016	266816	2248	V	18.734			
017	66222	710	V	20.617			
018	7269671	92217		24.357	1	DBC	0.087

9713526.2799

0000031

8D

PESTICIDE EVALUATION STANDARD SUMMARY

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

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 09119113

RFW Lot No.: 9108L474

Instrument ID: 13 GC Column ID: 2250/2401

Dates of Analyses: 09/11/91 to 09/13/91

Calibration factors calculated using height

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (</= 10.0%)
ALDRIN	5611329	6189543	6872531	10.1
ENDRIN	1751399	1798167	1891541	3.9
4,4'-DDT	1034163	1129189	1246163 ~~1240069~~	8.9 ~~9.1~~ (1)
DBC	788084	799223	830485	2.7

(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	09/11/91	1858	0.0	3.2	
02	EVAL MIX B	09/12/91	0415	0.0	3.5	
03	EVAL MIX B	09/12/91	1151	0.0	4.9	
04	EVAL MIX B	09/12/91	2004	0.0	7.8	
05	EVAL MIX B	09/13/91	0343	0.0	5.2	

(2) See Form Instructions.

9713526.2800

0000032
8D

PESTICIDE EVALUATION STANDARD SUMMARY

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

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 09119114

RFW Lot No.: 9108L474

Instrument ID: 14 GC Column ID: SP2100

Dates of Analyses: 09/11/91 to 09/13/91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (</= 10.0%)	
ALDRIN	3298775	3751913	4429849	14.9	
ENDRIN	1261165	1360021	1491549	8.4	
4,4'-DDT	431010	519346	617218	17.8	(1)
DBC	553630	570198	608823	4.9	

(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	09/11/91	1901			4.4
02	EVAL MIX B	09/12/91	0438			3.7
03	EVAL MIX B	09/12/91	1214			2.6
04	EVAL MIX B	09/12/91	2007			5.5
05	EVAL MIX B	09/13/91	0347			3.7

(2) See Form Instructions.

9713526.2801

0000033

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: 09119113

Instrument ID: 13 GC Column ID: 2250/2401

Dates of Analyses: 09/11/91 to 09/13/91

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALA	16-60	09/11/91	1826	0.0	
02	EVALB	19-60	09/11/91	1858	-0.1	
03	EVALC	18-60	09/11/91	1931	-0.1	
04	INDA	27-55	09/11/91	2003	-0.1	
05	INDB	27-56	09/11/91	2035	-0.1	
06	TOXAPH	03-270	09/11/91	2108	-0.1	
07	AR1660	03-52	09/11/91	2141	0.0	
08	AR1221	01-280	09/11/91	2215	-0.1	
09	AR1232	03-265	09/11/91	2248	0.0	
10	AR1242	04-266	09/11/91	2321	0.0	
11	AR1248	02-277	09/11/91	2354	0.0	
12	AR1254	02-271	09/12/91	0027	0.3	
13	ZZZZZ	9108L364-001	09/12/91	0100	0.7	
14	ZZZZZ	9108L390-001	09/12/91	0133	0.5	
15	ZZZZZ	9108L423-001	09/12/91	0206	0.5	
16	ZZZZZ	91LE1051-MB1	09/12/91	0239	0.5	
17	ZZZZZ	91LE1051-MB1S	09/12/91	0311	0.7	
18	ZZZZZ	HEXANE	09/12/91	0343		
19	EVALB	19-60	09/12/91	0415	0.5	
20	ZZZZZ	9108L364-001S	09/12/91	0448	0.9	
21	ZZZZZ	9108L364-001T	09/12/91	0521	0.8	
22	ZZZZZ	9108L390-001S	09/12/91	0554	0.5	
23	ZZZZZ	9108L390-001T	09/12/91	0626	0.6	
24	ZZZZZ	HEXANE	09/12/91	0659		
25	INDA	27-55	09/12/91	0731	0.5	
26	INDB	27-56	09/12/91	0804	0.5	
27	ZZZZZ	9108L445-001	09/12/91	0836	0.6	
28	ZZZZZ	9108L445-002	09/12/91	0909	0.8	
29	ZZZZZ	9108L461-003	09/12/91	0941	0.6	
30	BO10P0	9108L474-001	09/12/91	1014	0.5	
31	BO10P3	9108L474-002	09/12/91	1046	0.5	
32	ZZZZZ	HEXANE	09/12/91	1119		
33	EVALB	19-60	09/12/91	1151	0.4	
34	BO10P5	9108L474-003	09/12/91	1224	0.4	
35	PBLKLE1064	91LE1064-MB1	09/12/91	1256	0.4	
36	PBLKLE1064 MS	91LE1064-MB1S	09/12/91	1329	0.3	
37	ZZZZZ	9108L445-002	09/12/91	1437	0.7	
38	ZZZZZ	9108L461-003	09/12/91	1510	0.3	

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

9713526.2802

0000034

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: 09119113

Instrument ID: 13 GC Column ID: 2250/2401

Dates of Analyses: 09/11/91 to 09/13/91

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
39	ZZZZZ	HEXANE	09/12/91	1543		
40	AR1254	02-271	09/12/91	1615	0.2	
41	BO10P0	9108L474-001	09/12/91	1648	0.4	
42	BO10P3	9108L474-002	09/12/91	1720	0.2	
43	BO10P5MS	9108L474-003S	09/12/91	1753	0.2	
44	BO10P5MSD	9108L474-003T	09/12/91	1826	0.2	
45	ZZZZZ	9108L449-007	09/12/91	1859	0.4	
46	ZZZZZ	HEXANE	09/12/91	1932	-1.2	
47	EVALB	19-60	09/12/91	2004	0.1	
48	ZZZZZ	9108L483-001	09/12/91	2037	0.5	
49	ZZZZZ	9108L483-002	09/12/91	2109	0.5	
50	ZZZZZ	9108L505-001	09/12/91	2142	0.6	
51	ZZZZZ	9108L505-002	09/12/91	2214	0.6	
52	ZZZZZ	9108L449-006	09/12/91	2247	0.7	
53	ZZZZZ	HEXANE	09/12/91	2320		
54	AR1254	02-271	09/12/91	2352	0.3	
55	ZZZZZ	9108L449-003	09/13/91	0025	0.7	
56	ZZZZZ	9108L449-005	09/13/91	0058	1.0	
57	ZZZZZ	9108L449-008	09/13/91	0131	1.3	
58	ZZZZZ	9108L449-002	09/13/91	0205		*
59	ZZZZZ	9108L449-004	09/13/91	0238		*
60	ZZZZZ	HEXANE	09/13/91	0311	-1.2	
61	EVALB	19-60	09/13/91	0343	0.4	
62	ZZZZZ	91LE1083-MB1	09/13/91	0415	0.6	
63	ZZZZZ	91LE1083-MB1S	09/13/91	0447	0.6	
64	ZZZZZ	9108L483-001S	09/13/91	0520	0.8	
65	ZZZZZ	9108L483-001T	09/13/91	0553	0.7	
66	ZZZZZ	9108L449-008S	09/13/91	0627	1.1	
67	ZZZZZ	HEXANE	09/13/91	0700		
68	AR1254	02-271	09/13/91	0732	0.6	
69	INDA	27-55	09/13/91	0825	0.6	
70	INDB	27-56	09/13/91	0858	0.6	

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

9713526.2803

0000035

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: 09119114

Instrument ID: 14 GC Column ID: SP2100

Dates of Analyses: 09/11/91 to 09/13/91

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALA	16-60	09/11/91	1829	0.0	
02	EVALB	19-60	09/11/91	1901	-0.1	
03	EVALC	18-60	09/11/91	1933	0.0	
04	INDA	27-55	09/11/91	2005	0.0	
05	INDB	27-56	09/11/91	2038	0.0	
06	TOXAPH	03-270	09/11/91	2111	0.0	
07	AR1660	03-52	09/11/91	2144	0.2	
08	AR1221	01-280	09/11/91	2238	0.0	
09	AR1232	03-265	09/11/91	2311	0.0	
10	AR1242	04-266	09/11/91	2344	0.0	
11	AR1248	02-277	09/12/91	0018	0.1	
12	AR1254	02-271	09/12/91	0050	0.3	
13	ZZZZZ	9108L364-001	09/12/91	0123	-0.2	
14	ZZZZZ	9108L390-001	09/12/91	0157	0.3	
15	ZZZZZ	9108L423-001	09/12/91	0229	0.3	
16	ZZZZZ	91LE1051-MB1	09/12/91	0302	0.3	
17	ZZZZZ	91LE1051-MB1S	09/12/91	0334	0.2	
18	ZZZZZ	HEXANE	09/12/91	0406	0.0	
19	EVALB	19-60	09/12/91	0438	0.4	
20	ZZZZZ	9108L364-001S	09/12/91	0511	0.0	
21	ZZZZZ	9108L364-001T	09/12/91	0544	0.1	
22	ZZZZZ	9108L390-001S	09/12/91	0617	0.3	
23	ZZZZZ	9108L390-001T	09/12/91	0649	0.4	
24	ZZZZZ	HEXANE	09/12/91	0722	0.5	
25	INDA	27-55	09/12/91	0754	0.3	
26	INDB	27-56	09/12/91	0826	0.3	
27	ZZZZZ	9108L445-001	09/12/91	0859	0.4	
28	ZZZZZ	9108L445-002	09/12/91	0932	0.4	
29	ZZZZZ	9108L461-003	09/12/91	1004	0.3	
30	BO10P0	9108L474-001	09/12/91	1037	0.3	
31	BO10P3	9108L474-002	09/12/91	1109	0.3	
32	ZZZZZ	HEXANE	09/12/91	1142	-0.3	
33	EVALB	19-60	09/12/91	1214	0.3	
34	BO10P5	9108L474-003	09/12/91	1246	0.3	
35	PBLKLE1064	91LE1064-MB1	09/12/91	1318	0.3	
36	PBLKLE1064 MS	91LE1064-MB1S	09/12/91	1351	0.3	
37	ZZZZZ	9108L445-002	09/12/91	1440	0.2	
38	ZZZZZ	9108L461-003	09/12/91	1512	0.0	

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

9713526.2804

0000033

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: 09119114

Instrument ID: 14 GC Column ID: SP2100

Dates of Analyses: 09/11/91 to 09/13/91

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
39	ZZZZZ	HEXANE	09/12/91	1545	-1.4	
40	AR1254	02-271	09/12/91	1617	0.3	
41	BO10P0	9108L474-001	09/12/91	1650	0.2	
42	BO10P3	9108L474-002	09/12/91	1723	0.0	
43	BO10P5MS	9108L474-003S	09/12/91	1755	0.2	
44	BO10P5MSD	9108L474-003T	09/12/91	1828	0.2	
45	ZZZZZ	9108L449-007	09/12/91	1901	0.0	
46	ZZZZZ	HEXANE	09/12/91	1935	0.1	
47	EVALB	19-60	09/12/91	2007	0.1	
48	ZZZZZ	9108L483-001	09/12/91	2039	0.0	
49	ZZZZZ	9108L483-002	09/12/91	2112	0.1	
50	ZZZZZ	9108L505-001	09/12/91	2144	0.0	
51	ZZZZZ	9108L505-002	09/12/91	2217	0.0	
52	ZZZZZ	9108L449-006	09/12/91	2249	1.0	
53	ZZZZZ	HEXANE	09/12/91	2322		
54	AR1254	02-271	09/12/91	2355	0.3	
55	ZZZZZ	9108L449-003	09/13/91	0028	1.3	
56	ZZZZZ	9108L449-005	09/13/91	0101	1.3	
57	ZZZZZ	9108L449-008	09/13/91	0134	1.0	
58	ZZZZZ	9108L449-002	09/13/91	0208	0.7	
59	ZZZZZ	9108L449-004	09/13/91	0241	1.4	
60	ZZZZZ	HEXANE	09/13/91	0314		
61	EVALB	19-60	09/13/91	0347	0.4	
62	ZZZZZ	91LE1083-MB1	09/13/91	0419	0.4	
63	ZZZZZ	91LE1083-MB1S	09/13/91	0452	0.4	
64	ZZZZZ	9108L483-001S	09/13/91	0525	0.3	
65	ZZZZZ	9108L483-001T	09/13/91	0558	0.3	
66	ZZZZZ	9108L449-008S	09/13/91	0631	0.8	
67	ZZZZZ	HEXANE	09/13/91	0705		
68	AR1254	02-271	09/13/91	0737	0.5	
69	INDA	27-55	09/13/91	0828	0.5	
70	INDB	27-56	09/13/91	0901	0.4	

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

9713526.2805

0000037

9

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: Westinghouse Hanford GC Sample ID: 09119113.25

RFW Lot No.: 91081 474

Instrument ID: 13 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 09/11/91 TO: 09/12/91
TIME(S) OF ANALYSIS FROM: 2003 TO: 0027

DATE OF ANALYSIS 09/12/91
TIME OF ANALYSIS 0731
EPA SAMPLE NO. (STANDARD) INDA 27-55

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.92	1.91	1.93	8872755				
Beta-BHC	2.65	2.63	2.67	4794811				
Delta-BHC	3.08	3.06	3.10	3764755				
gamma-BHC (Lindane)	2.37	2.36	2.38	7749453	2.36	7558691	Y	12.5
Heptachlor	2.89	2.88	2.90	9560717	2.87	9002895	Y	5.8
Aldrin	3.46	3.39	3.53	6084125	3.44	5696407	Y	6.4
Heptachlor epoxide	4.95	4.93	4.97	5014167	4.92	4630181	Y	7.7
Endosulfan I	6.16	6.14	6.18	3433415	6.13	3181265	Y	7.3
Dieldrin	7.44	7.41	7.47	2656783	7.40	2475549	Y	6.8
4,4'-DDE	7.00	6.95	7.05	2383797				
Endrin	8.99	8.90	9.08	1700707				
Endosulfan II	10.73	10.68	10.78	1851843	10.67	1675419	Y	9.5
4,4'-DDD	10.40	10.32	10.48	1187351				
Endosulfan sulfate	16.05	15.75	16.35	1166305				
4,4'-DDT	12.48	12.43	12.53	966635	12.41	844990	Y	12.6
Methoxychlor	23.10	22.80	23.40	521418	22.97	462335	Y	11.3
Endrin ketone	******	******	******	COELUTES *				
alpha-Chlordane	5.98	5.93	6.03	3397581				
gamma-Chlordane	5.51	5.47	5.55	3680545				
Toxaphene	10.93	10.83	11.03	275440				
Aroclor-1016	2.84	2.81	2.87	1910973				
Aroclor-1221	1.80	1.79	1.81	622547				
Aroclor-1232	2.84	2.82	2.86	1293747				
Aroclor-1242	2.84	2.83	2.85	1614895				
Aroclor-1248	2.84	2.81	2.87	2201833				
Aroclor-1254	8.68	8.67	8.69	1413933				
Aroclor-1260	9.72	9.62	9.82	931691				

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.

9713526.2806

0000030

9

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: Westinghouse Hanford GC Sample ID: 09119113.26

RFW Lot No.: 9108L474

Instrument ID: 13 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 09/11/91 TO: 09/12/91
TIME(S) OF ANALYSIS FROM: 2003 TO: 0027

DATE OF ANALYSIS 09/12/91
TIME OF ANALYSIS 0804
EPA SAMPLE NO. (STANDARD) INDB 27-56

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.92	1.91	1.93	8872755	1.91	8550277	Y	3.6
Beta-BHC	2.65	2.63	2.67	4794811	2.64	4354591	Y	9.2
Delta-BHC	3.08	3.06	3.10	3764755	3.06	3525893	Y	6.3
gamma-BHC (Lindane)	2.37	2.36	2.38	7749453				
Heptachlor	2.89	2.88	2.90	9560717				
Aldrin	3.46	3.39	3.53	6084125	3.44	5925969	Y	2.6
Heptachlor epoxide	4.95	4.93	4.97	5014167				
Endosulfan I	6.16	6.14	6.18	3433415				
Dieldrin	7.44	7.41	7.47	2656783				
4,4'-DDE	7.00	6.95	7.05	2383797	6.96	2263515	Y	5.0
Endrin	8.99	8.90	9.08	1700707	8.94	1705321	Y	0.3
Endosulfan II	10.73	10.68	10.78	1851843				
4,4'-DDD	10.40	10.32	10.48	1187351	10.34	1116817	Y	5.9
Endosulfan sulfate	16.05	15.75	16.35	1166305	15.95	1081627	Y	7.3
4,4'-DDT	12.48	12.43	12.53	966635				
Methoxychlor	23.10	22.80	23.40	521418				
Endrin ketone	******	******	******	COELUTES *				
alpha-Chlordane	5.98	5.93	6.03	3397581	5.94	3087953	Y	9.1
gamma-Chlordane	5.51	5.47	5.55	3680545	5.48	3329127	Y	9.5
Toxaphene	10.93	10.83	11.03	275440				
Aroclor-1016	2.84	2.81	2.87	1910973				
Aroclor-1221	1.80	1.79	1.81	622547				
Aroclor-1232	2.84	2.82	2.86	1293747				
Aroclor-1242	2.84	2.83	2.85	1614895				
Aroclor-1248	2.84	2.81	2.87	2201833				
Aroclor-1254	8.68	8.67	8.69	1413933				
Aroclor-1260	9.72	9.62	9.82	931691				

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.

9713526.2807

0000039

PESTICIDE/PCB STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6163 - 02-01-0000

Case No.: Westinghouse Hanford GC Sample ID: 09119113.40

RFW Lot No.: 9108L474

Instrument ID: 13 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 09/11/91 TO: 09/12/91
TIME(S) OF ANALYSIS FROM: 2003 TO: 0027

DATE OF ANALYSIS 09/12/91
TIME OF ANALYSIS 1615
EPA SAMPLE NO. (STANDARD) AR1254 02-27

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.92	1.91	1.93	8872755				
Beta-BHC	2.65	2.63	2.67	4794811				
Delta-BHC	3.08	3.06	3.10	3764755				
gamma-BHC (Lindane)	2.37	2.36	2.38	7749453				
Heptachlor	2.89	2.88	2.90	9560717				
Aldrin	3.46	3.39	3.53	6084125				
Heptachlor epoxide	4.95	4.93	4.97	5014167				
Endosulfan I	6.16	6.14	6.18	3433415				
Dieldrin	7.44	7.41	7.47	2656783				
4,4'-DDE	7.00	6.95	7.05	2383797				
Endrin	8.99	8.90	9.08	1700707				
Endosulfan II	10.73	10.68	10.78	1851843				
4,4'-DDD	10.40	10.32	10.48	1187351				
Endosulfan sulfate	16.05	15.75	16.35	1166305				
4,4'-DDT	12.48	12.43	12.53	966635				
Methoxychlor	23.10	22.80	23.40	521418				
Endrin ketone	******	******	******	COELUTES *				
alpha-Chlordane	5.98	5.93	6.03	3397581				
gamma-Chlordane	5.51	5.47	5.55	3680545				
Toxaphene	10.93	10.83	11.03	275440				
Aroclor-1016	2.84	2.81	2.87	1910973				
Aroclor-1221	1.80	1.79	1.81	622547				
Aroclor-1232	2.84	2.82	2.86	1293747				
Aroclor-1242	2.84	2.83	2.85	1614895				
Aroclor-1248	2.84	2.81	2.87	2201833				
Aroclor-1254	8.68	8.67	8.69	1413933	8.68	1311395	Y	7.3
Aroclor-1260	9.72	9.62	9.82	931691				

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.

9713526.2808

0000040

9

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: Westinghouse Hanford GC Sample ID: 09119113.54

RFW Lot No.: 9108L474

Instrument ID: 13 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 09/11/91 TO: 09/12/91	DATE OF ANALYSIS 09/12/91
TIME(S) OF ANALYSIS FROM: 2003 TO: 0027	TIME OF ANALYSIS 2352
	EPA SAMPLE NO. (STANDARD) AR1254 02-27

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.92	1.91	1.93	8872755				
Beta-BHC	2.65	2.63	2.67	4794811				
Delta-BHC	3.08	3.06	3.10	3764755				
gamma-BHC (Lindane)	2.37	2.36	2.38	7749453				
Heptachlor	2.89	2.88	2.90	9560717				
Aldrin	3.46	3.39	3.53	6084125				
Heptachlor epoxide	4.95	4.93	4.97	5014167				
Endosulfan I	6.16	6.14	6.18	3433415				
Dieldrin	7.44	7.41	7.47	2656783				
4,4'-DDE	7.00	6.95	7.05	2383797				
Endrin	8.99	8.90	9.08	1700707				
Endosulfan II	10.73	10.68	10.78	1851843				
4,4'-DDD	10.40	10.32	10.48	1187351				
Endosulfan sulfate	16.05	15.75	16.35	1166305				
4,4'-DDT	12.48	12.43	12.53	966635				
Methoxychlor	23.10	22.80	23.40	521418				
Endrin ketone	******	******	******	COELUTES *				
alpha-Chlordane	5.98	5.93	6.03	3397581				
gamma-Chlordane	5.51	5.47	5.55	3680545				
Toxaphene	10.93	10.83	11.03	275440				
Aroclor-1016	2.84	2.81	2.87	1910973				
Aroclor-1221	1.80	1.79	1.81	622547				
Aroclor-1232	2.84	2.82	2.86	1293747				
Aroclor-1242	2.84	2.83	2.85	1614895				
Aroclor-1248	2.84	2.81	2.87	2201833				
Aroclor-1254	8.68	8.67	8.69	1413933	8.67	1117657	Y	21.0
Aroclor-1260	9.72	9.62	9.82	931691				

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.

9713526.2809

0000041

9

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: Westinghouse Hanford GC Sample ID: 09119113.68

RFW Lot No.: 9108L474

Instrument ID: 13 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 09/11/91 TO: 09/12/91
TIME(S) OF ANALYSIS FROM: 2003 TO: 0027

DATE OF ANALYSIS 09/13/91
TIME OF ANALYSIS 0732
EPA SAMPLE NO. (STANDARD) AR1254 02-27

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.92	1.91	1.93	8872755				
Beta-BHC	2.65	2.63	2.67	4794811				
Delta-BHC	3.08	3.06	3.10	3764755				
gamma-BHC (Lindane)	2.37	2.36	2.38	7749453				
Heptachlor	2.89	2.88	2.90	9560717				
Aldrin	3.46	3.39	3.53	6084125				
Heptachlor epoxide	4.95	4.93	4.97	5014167				
Endosulfan I	6.16	6.14	6.18	3433415				
Dieldrin	7.44	7.41	7.47	2656783				
4,4'-DDE	7.00	6.95	7.05	2383797				
Endrin	8.99	8.90	9.08	1700707				
Endosulfan II	10.73	10.68	10.78	1851843				
4,4'-DDD	10.40	10.32	10.48	1187351				
Endosulfan sulfate	16.05	15.75	16.35	1166305				
4,4'-DDT	12.48	12.43	12.53	966635				
Methoxychlor	23.10	22.80	23.40	521418				
Endrin ketone	******	******	******	COELUTES *				
alpha-Chlordane	5.98	5.93	6.03	3397581				
gamma-Chlordane	5.51	5.47	5.55	3680545				
Toxaphene	10.93	10.83	11.03	275440				
Aroclor-1016	2.84	2.81	2.87	1910973				
Aroclor-1221	1.80	1.79	1.81	622547				
Aroclor-1232	2.84	2.82	2.86	1293747				
Aroclor-1242	2.84	2.83	2.85	1614895				
Aroclor-1248	2.84	2.81	2.87	2201833				
Aroclor-1254	8.68	8.67	8.69	1413933	8.65	1086337	Y	23.2
Aroclor-1260	9.72	9.62	9.82	931691				

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.

9713526.2810

0000042

9

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: Westinghouse Hanford GC Sample ID: 09119113.69

RFW Lot No.: 9108L474

Instrument ID: 13 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 09/11/91 TO: 09/12/91
TIME(S) OF ANALYSIS FROM: 2003 TO: 0027

DATE OF ANALYSIS 09/13/91
TIME OF ANALYSIS 0825
EPA SAMPLE NO. (STANDARD) INDA 27-55

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.92	1.91	1.93	8872755				
Beta-BHC	2.65	2.63	2.67	4794811				
Delta-BHC	3.08	3.06	3.10	3764755				
gamma-BHC (Lindane)	2.37	2.36	2.38	7749453	2.35	7402977	Y	4.5
Heptachlor	2.89	2.88	2.90	9560717	2.87	8447585	Y	11.6
Aldrin	3.46	3.39	3.53	6084125	3.44	5471279	Y	10.1
Heptachlor epoxide	4.95	4.93	4.97	5014167	4.93	4440041	Y	11.5
Endosulfan I	6.16	6.14	6.18	3433415	6.12	3027451	Y	11.8
Dieldrin	7.44	7.41	7.47	2656783	7.39	2372635	Y	10.7
4,4'-DDE	7.00	6.95	7.05	2383797				
Endrin	8.99	8.90	9.08	1700707				
Endosulfan II	10.73	10.68	10.78	1851843	10.65	1637745	Y	11.6
4,4'-DDD	10.40	10.32	10.48	1187351				
Endosulfan sulfate	16.05	15.75	16.35	1166305				
4,4'-DDT	12.48	12.43	12.53	966635	12.40	797994	Y	17.4
Methoxychlor	23.10	22.80	23.40	521418	22.93	438441	Y	15.9
Endrin ketone	******	******	******	COELUTES *				
alpha-Chlordane	5.98	5.93	6.03	3397581				
gamma-Chlordane	5.51	5.47	5.55	3680545				
Toxaphene	10.93	10.83	11.03	275440				
Aroclor-1016	2.84	2.81	2.87	1910973				
Aroclor-1221	1.80	1.79	1.81	622547				
Aroclor-1232	2.84	2.82	2.86	1293747				
Aroclor-1242	2.84	2.83	2.85	1614895				
Aroclor-1248	2.84	2.81	2.87	2201833				
Aroclor-1254	8.68	8.67	8.69	1413933				
Aroclor-1260	9.72	9.62	9.82	931691				

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.

9713526.2811

0000043

9

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: Westinghouse Hanford GC Sample ID: 09119113.70

RFW Lot No.: 91081 474

Instrument ID: 13 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 09/11/91 TO: 09/12/91
TIME(S) OF ANALYSIS FROM: 2003 TO: 0027

DATE OF ANALYSIS 09/13/91
TIME OF ANALYSIS 0858
EPA SAMPLE NO. (STANDARD) INDB 27-56

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.92	1.91	1.93	8872755	1.90	8543691	Y	3.7
Beta-BHC	2.65	2.63	2.67	4794811	2.63	4236667	Y	11.6
Delta-BHC	3.08	3.06	3.10	3764755	3.06	3501289	Y	7.0
gamma-BHC (Lindane)	2.37	2.36	2.38	7749453				
Heptachlor	2.89	2.88	2.90	9560717				
Aldrin	3.46	3.39	3.53	6084125	3.44	5748045	Y	5.5
Heptachlor epoxide	4.95	4.93	4.97	5014167				
Endosulfan I	6.16	6.14	6.18	3433415				
Dieldrin	7.44	7.41	7.47	2656783				
4,4'-DDE	7.00	6.95	7.05	2383797	6.95	2215401	Y	7.1
Endrin	8.99	8.90	9.08	1700707	8.93	1724177	Y	1.4
Endosulfan II	10.73	10.68	10.78	1851843				
4,4'-DDD	10.40	10.32	10.48	1187351	10.33	1126287	Y	5.1
Endosulfan sulfate	16.05	15.75	16.35	1166305	15.94	1110639	Y	4.8
4,4'-DDT	12.48	12.43	12.53	966635				
Methoxychlor	23.10	22.80	23.40	521418				
Endrin ketone	******	******	******	COELUTES *				
alpha-Chlordane	5.98	5.93	6.03	3397581	5.94	3026165	Y	10.9
gamma-Chlordane	5.51	5.47	5.55	3680545	5.47	3274147	Y	11.0
Toxaphene	10.93	10.83	11.03	275440				
Aroclor-1016	2.84	2.81	2.87	1910973				
Aroclor-1221	1.80	1.79	1.81	622547				
Aroclor-1232	2.84	2.82	2.86	1293747				
Aroclor-1242	2.84	2.83	2.85	1614895				
Aroclor-1248	2.84	2.81	2.87	2201833				
Aroclor-1254	8.68	8.67	8.69	1413933				
Aroclor-1260	9.72	9.62	9.82	931691				

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.

9713526.2812

0000044
9

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: Westinghouse Hanford GC Sample ID: 09119114.25

RFW Lot No.: 4108L474

Instrument ID: 14 GC Column ID: SP2100

DATE(S) OF ANALYSIS FROM: 09/11/91 TO: 09/12/91	DATE OF ANALYSIS 09/12/91
TIME(S) OF ANALYSIS FROM: 2005 TO: 0050	TIME OF ANALYSIS 0754
	EPA SAMPLE NO. (STANDARD) INDA 27-55

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	2.34	2.32	2.36	2973219				
Beta-BHC	2.50	2.47	2.53	3204975				
Delta-BHC	2.78	2.75	2.81	1968845				
gamma-BHC (Lindane)	2.68	2.66	2.70	4387125	2.68	5006309	N	14.1
Heptachlor	4.07	4.04	4.10	5448241	4.06	5573075	N	2.3
Aldrin	4.94	4.91	4.97	3578389	4.92	3705929	N	3.6
Heptachlor epoxide	5.89	5.84	5.94	3519389	5.87	3492711	N	0.8
Endosulfan I	7.21	7.14	7.28	2229193	7.18	2264961	N	1.6
Dieldrin	8.31	8.28	8.34	1884549	8.28	1875569	N	0.5
4,4'-DDE	8.09	8.06	8.12	1676601				
Endrin	9.22	9.19	9.25	1139505				
Endosulfan II	9.45	9.42	9.48	1380137	9.41	1325979	N	3.9
4,4'-DDD	10.07	10.04	10.10	748033				
Endosulfan sulfate	11.86	11.74	11.98	707011				
4,4'-DDT	12.87	12.84	12.90	468294	12.82	457046	N	2.4
Methoxychlor	18.32	18.26	18.38	503781	18.26	491966	N	2.3
Endrin ketone	15.07	15.04	15.10	920027				
alpha-Chlordane	7.30	7.27	7.33	2594135				
gamma-Chlordane	6.66	6.60	6.72	2894423				
Toxaphene	10.05	10.02	10.08	297159				
Aroclor-1016	3.59	3.56	3.62	1672717				
Aroclor-1221	2.35	2.33	2.37	587398				
Aroclor-1232	2.35	2.32	2.38	1247755				
Aroclor-1242	3.59	3.56	3.62	1457605				
Aroclor-1248	3.60	3.57	3.63	2068179				
Aroclor-1254	6.93	6.90	6.96	1645465				
Aroclor-1260	11.45	11.42	11.48	1113849				

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.

9713526.2813

0000045
9

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: Westinghouse Hanford GC Sample ID: 09119114.26

RFW Lot No.: 9108L474

Instrument ID: 14 GC Column ID: SP2100

DATE(S) OF ANALYSIS FROM: 09/11/91 TO: 09/12/91
TIME(S) OF ANALYSIS FROM: 2005 TO: 0050

DATE OF ANALYSIS 09/12/91
TIME OF ANALYSIS 0826
EPA SAMPLE NO. (STANDARD) INDB 27-56

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	2.34	2.32	2.36	2973219	2.33	3308571	N	11.3
Beta-BHC	2.50	2.47	2.53	3204975	2.50	2942555	N	8.2
Delta-BHC	2.78	2.75	2.81	1968845	2.77	2041587	N	3.7
gamma-BHC (Lindane)	2.68	2.66	2.70	4387125				
Heptachlor	4.07	4.04	4.10	5448241				
Aldrin	4.94	4.91	4.97	3578389	4.92	3652097	N	2.1
Heptachlor epoxide	5.89	5.84	5.94	3519389				
Endosulfan I	7.21	7.14	7.28	2229193				
Dieldrin	8.31	8.28	8.34	1884549				
4,4'-DDE	8.09	8.06	8.12	1676601	8.07	1645081	N	1.9
Endrin	9.22	9.19	9.25	1139505	9.20	1183233	N	3.8
Endosulfan II	9.45	9.42	9.48	1380137				
4,4'-DDD	10.07	10.04	10.10	748033	10.04	743103	N	0.7
Endosulfan sulfate	11.86	11.74	11.98	707011	11.83	692395	N	2.1
4,4'-DDT	12.87	12.84	12.90	468294				
Methoxychlor	18.32	18.26	18.38	503781				
Endrin ketone	15.07	15.04	15.10	920027	15.03	905015	N	1.6
alpha-Chlordane	7.30	7.27	7.33	2594135	7.28	2593093	N	0.0
gamma-Chlordane	6.66	6.60	6.72	2894423	6.65	2910933	N	0.6
Toxaphene	10.05	10.02	10.08	297159				
Aroclor-1016	3.59	3.56	3.62	1672717				
Aroclor-1221	2.35	2.33	2.37	587398				
Aroclor-1232	2.35	2.32	2.38	1247755				
Aroclor-1242	3.59	3.56	3.62	1457605				
Aroclor-1248	3.60	3.57	3.63	2068179				
Aroclor-1254	6.93	6.90	6.96	1645465				
Aroclor-1260	11.45	11.42	11.48	1113849				

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.

9713526.2914

0000049

9

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: Westinghouse Hanford GC Sample ID: 09119114.69

RFW Lot No.: 9108L474

Instrument ID: 14 GC Column ID: SP2100

DATE(S) OF ANALYSIS FROM: 09/11/91 TO: 09/12/91
TIME(S) OF ANALYSIS FROM: 2005 TO: 0050

DATE OF ANALYSIS 09/13/91
TIME OF ANALYSIS 0828
EPA SAMPLE NO. (STANDARD) INDA 27-55

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	2.34	2.32	2.36	2973219				
Beta-BHC	2.50	2.47	2.53	3204975				
Delta-BHC	2.78	2.75	2.81	1968845				
gamma-BHC (Lindane)	2.68	2.66	2.70	4387125	2.67	5892461	N	34.3
Heptachlor	4.07	4.04	4.10	5448241	4.05	5943195	N	9.1
Aldrin	4.94	4.91	4.97	3578389	4.91	4075869	N	13.9
Heptachlor epoxide	5.89	5.84	5.94	3519389	5.86	3761527	N	6.9
Endosulfan I	7.21	7.14	7.28	2229193	7.17	2513997	N	12.8
Dieldrin	8.31	8.28	8.34	1884549	8.26	2094611	N	11.1
4,4'-DDE	8.09	8.06	8.12	1676601				
Endrin	9.22	9.19	9.25	1139505				
Endosulfan II	9.45	9.42	9.48	1380137	9.39	1492107	N	8.1
4,4'-DDD	10.07	10.04	10.10	748033				
Endosulfan sulfate	11.86	11.74	11.98	707011				
4,4'-DDT	12.87	12.84	12.90	468294	12.80	508663	N	8.6
Methoxychlor	18.32	18.26	18.38	503781	18.22	518902	N	3.0
Endrin ketone	15.07	15.04	15.10	920027				
alpha-Chlordane	7.30	7.27	7.33	2594135				
gamma-Chlordane	6.66	6.60	6.72	2894423				
Toxaphene	10.05	10.02	10.08	297159				
Aroclor-1016	3.59	3.56	3.62	1672717				
Aroclor-1221	2.35	2.33	2.37	587398				
Aroclor-1232	2.35	2.32	2.38	1247755				
Aroclor-1242	3.59	3.56	3.62	1457605				
Aroclor-1248	3.60	3.57	3.63	2068179				
Aroclor-1254	6.93	6.90	6.96	1645465				
Aroclor-1260	11.45	11.42	11.48	1113849				

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.

9713526.2815

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: Westinghouse Hanford GC Sample ID: 09119114.70

RFW Lot No.: 9108L474

Instrument ID: 14 GC Column ID: SP2100

DATE(S) OF ANALYSIS FROM: 09/11/91 TO: 09/12/91
TIME(S) OF ANALYSIS FROM: 2005 TO: 0050

DATE OF ANALYSIS 09/13/91
TIME OF ANALYSIS 0901
EPA SAMPLE NO. (STANDARD) INDB 27-56

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	2.34	2.32	2.36	2973219	2.33	3796151	N	27.7
Beta-BHC	2.50	2.47	2.53	3204975	2.49	3103913	N	3.2
Delta-BHC	2.78	2.75	2.81	1968845	2.76	2503393	N	27.2
gamma-BHC (Lindane)	2.68	2.66	2.70	4387125				
Heptachlor	4.07	4.04	4.10	5448241				
Aldrin	4.94	4.91	4.97	3578389	4.92	4094951	N	14.4
Heptachlor epoxide	5.89	5.84	5.94	3519389				
Endosulfan I	7.21	7.14	7.28	2229193				
Dieldrin	8.31	8.28	8.34	1884549				
4,4'-DDE	8.09	8.06	8.12	1676601	8.05	1878053	N	12.0
Endrin	9.22	9.19	9.25	1139505	9.18	1378013	N	20.9
Endosulfan II	9.45	9.42	9.48	1380137				
4,4'-DDD	10.07	10.04	10.10	748033	10.01	909239	N	21.6
Endosulfan sulfate	11.86	11.74	11.98	707011	11.79	837375	N	18.4
4,4'-DDT	12.87	12.84	12.90	468294				
Methoxychlor	18.32	18.26	18.38	503781				
Endrin ketone	15.07	15.04	15.10	920027	14.99	1086397	N	18.1
alpha-Chlordane	7.30	7.27	7.33	2594135	7.27	2909599	N	12.2
gamma-Chlordane	6.66	6.60	6.72	2894423	6.64	3269623	N	13.0
Toxaphene	10.05	10.02	10.08	297159				
Aroclor-1016	3.59	3.56	3.62	1672717				
Aroclor-1221	2.35	2.33	2.37	587398				
Aroclor-1232	2.35	2.32	2.38	1247755				
Aroclor-1242	3.59	3.56	3.62	1457605				
Aroclor-1248	3.60	3.57	3.63	2068179				
Aroclor-1254	6.93	6.90	6.96	1645465				
Aroclor-1260	11.45	11.42	11.48	1113849				

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.

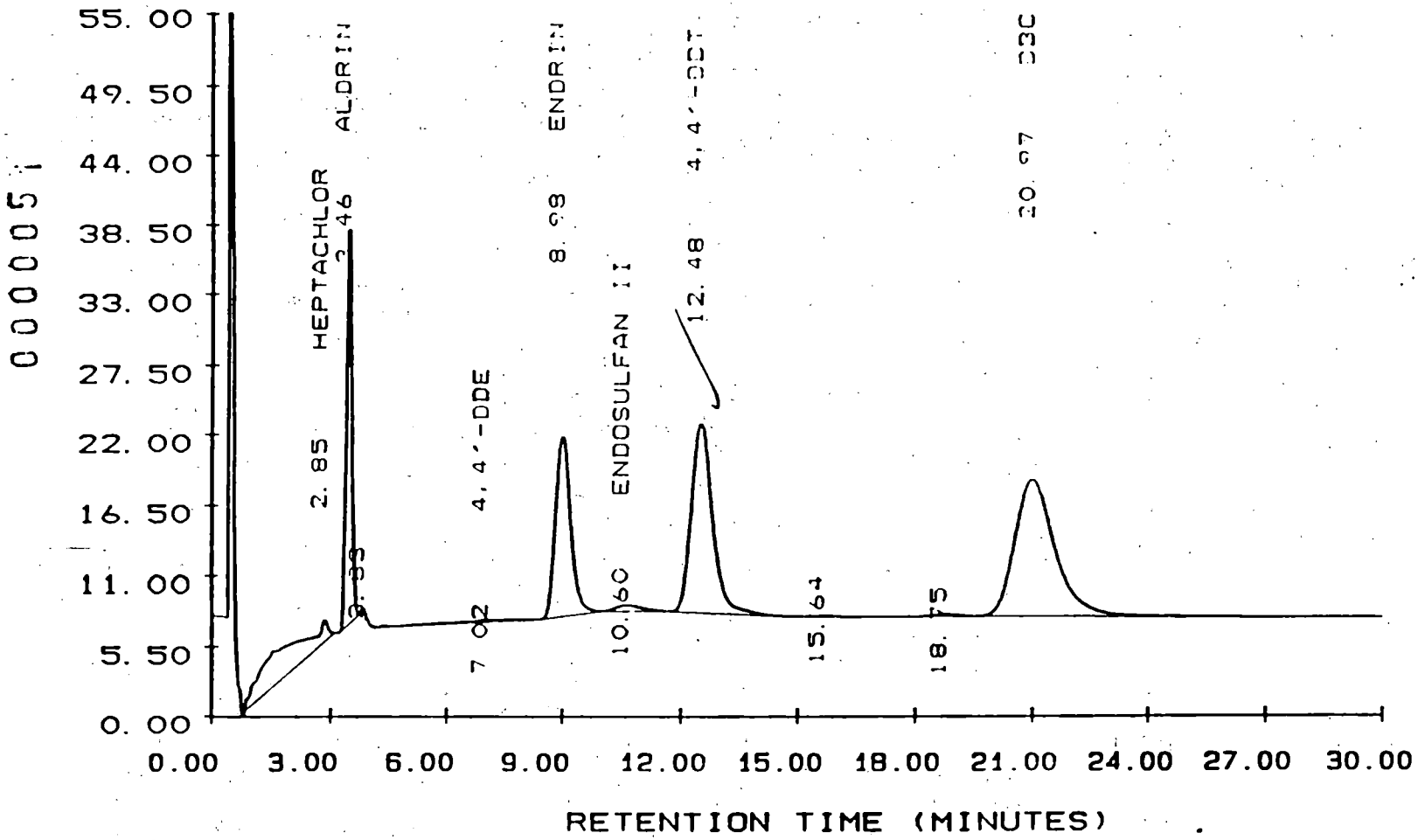
Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

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.

EVALA 16-60

SAMPLE NO. : 09119113 . 01
TEST NO. :
METHOD NO. : 13 / 13

INSTRUMENT: 13
DATE TIME: 09/11/91 18:26:36
PAGE NO. : 01



Y MAXIMUM: 39090.
Y MINIMUM: 1732.

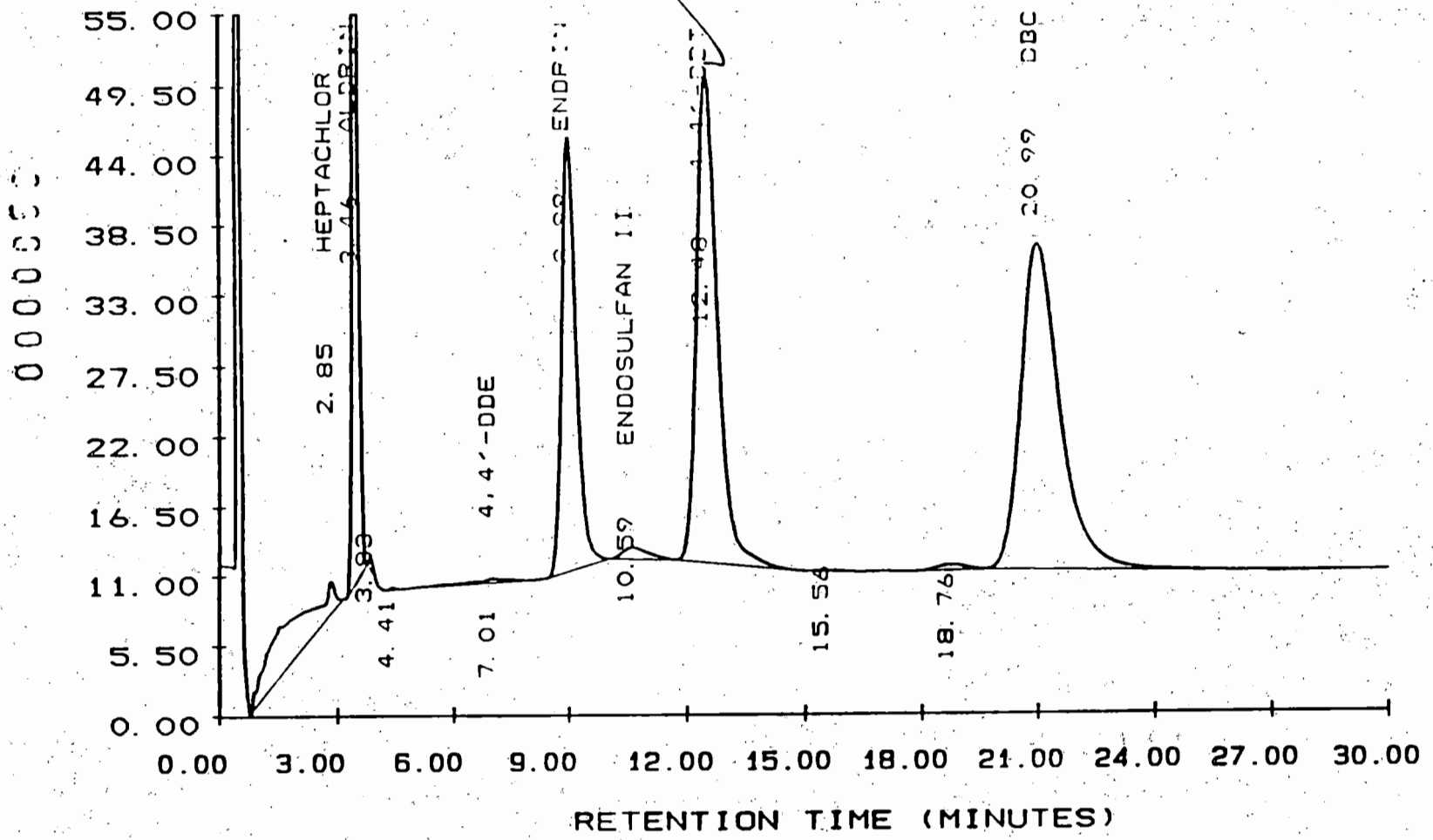
START TIME: 0.00
END TIME: 30.00

9713526.2816

EVALB 19-60

SAMPLE NO. : 09119113 . 02
TEST NO. :
METHOD NO. : 13 / 13

INSTRUMENT: 13
DATE TIME: 09/11/91 18:58:52
PAGE NO. : 01



Y MAXIMUM: 27600.
Y MINIMUM: 1451.

START TIME: 0.00
END TIME: 30.00

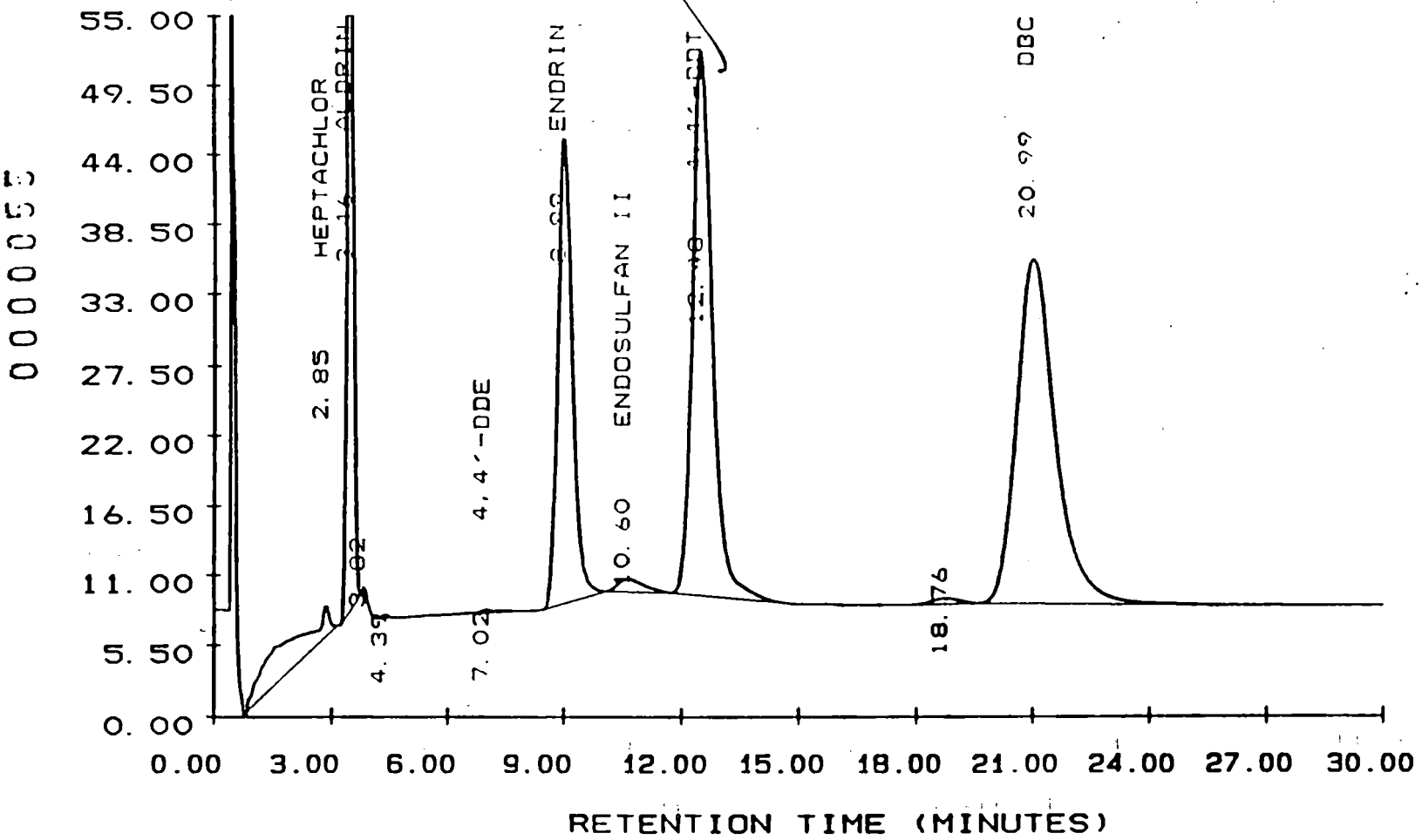
9113526.2817

EVALC 18-60

SAMPLE NO. : 09119113 . 03 INSTRUMENT: 13

TEST NO. : DATE TIME: 09/11/91 19:31:02

METHOD NO. : 13 / 13 PAGE NO. : 01



Y MAXIMUM: 37666. START TIME: 0.00

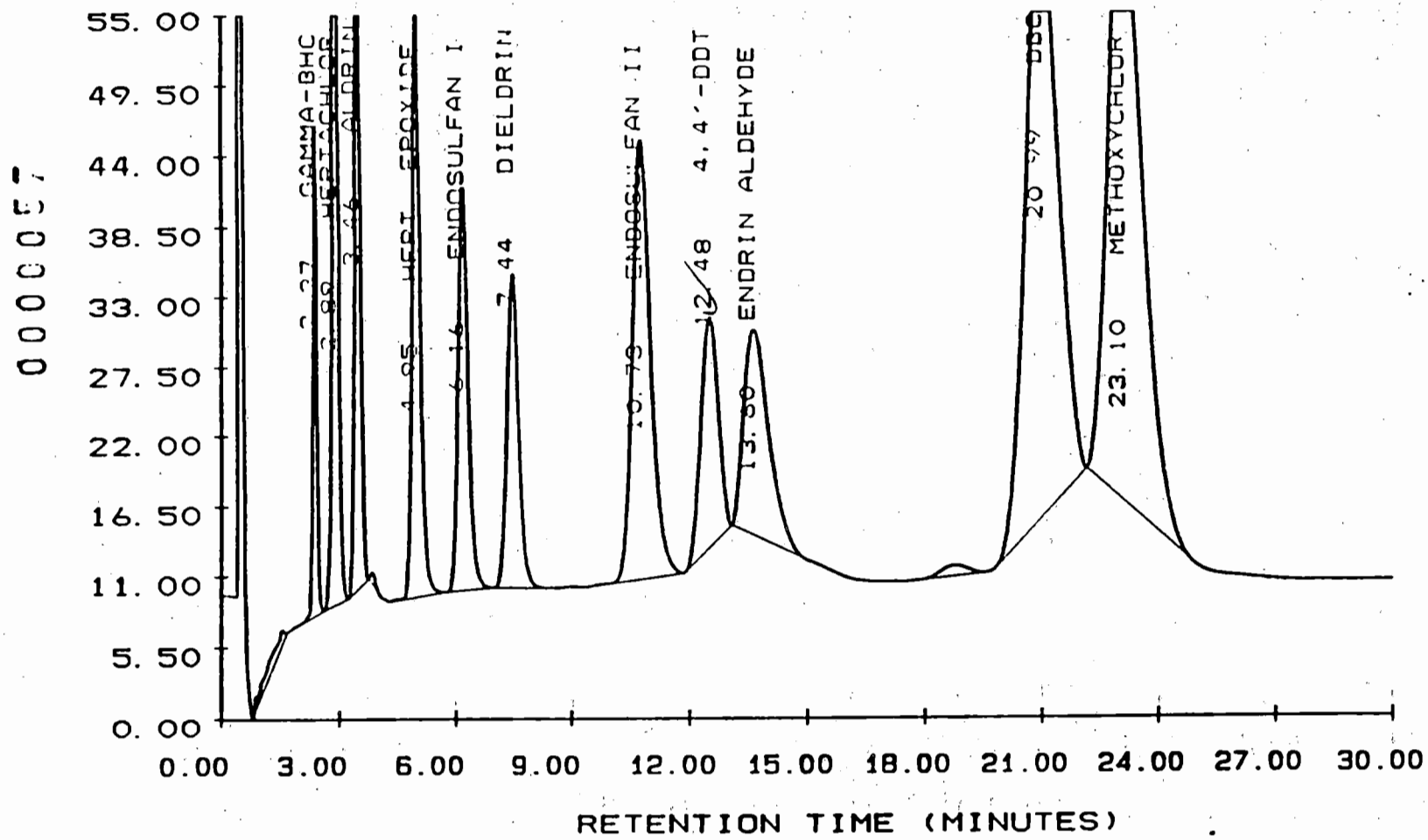
Y MINIMUM: 1659. END TIME: 30.00

9713526.2818

INDA 27-55

SAMPLE NO. : 09119113 . 04
TEST NO. :
METHOD NO. : 13A / 13A

INSTRUMENT: 13
DATE TIME: 09/11/91 20:03:18
PAGE NO. : 01



Y MAXIMUM: 31631.
Y MINIMUM: 1938.

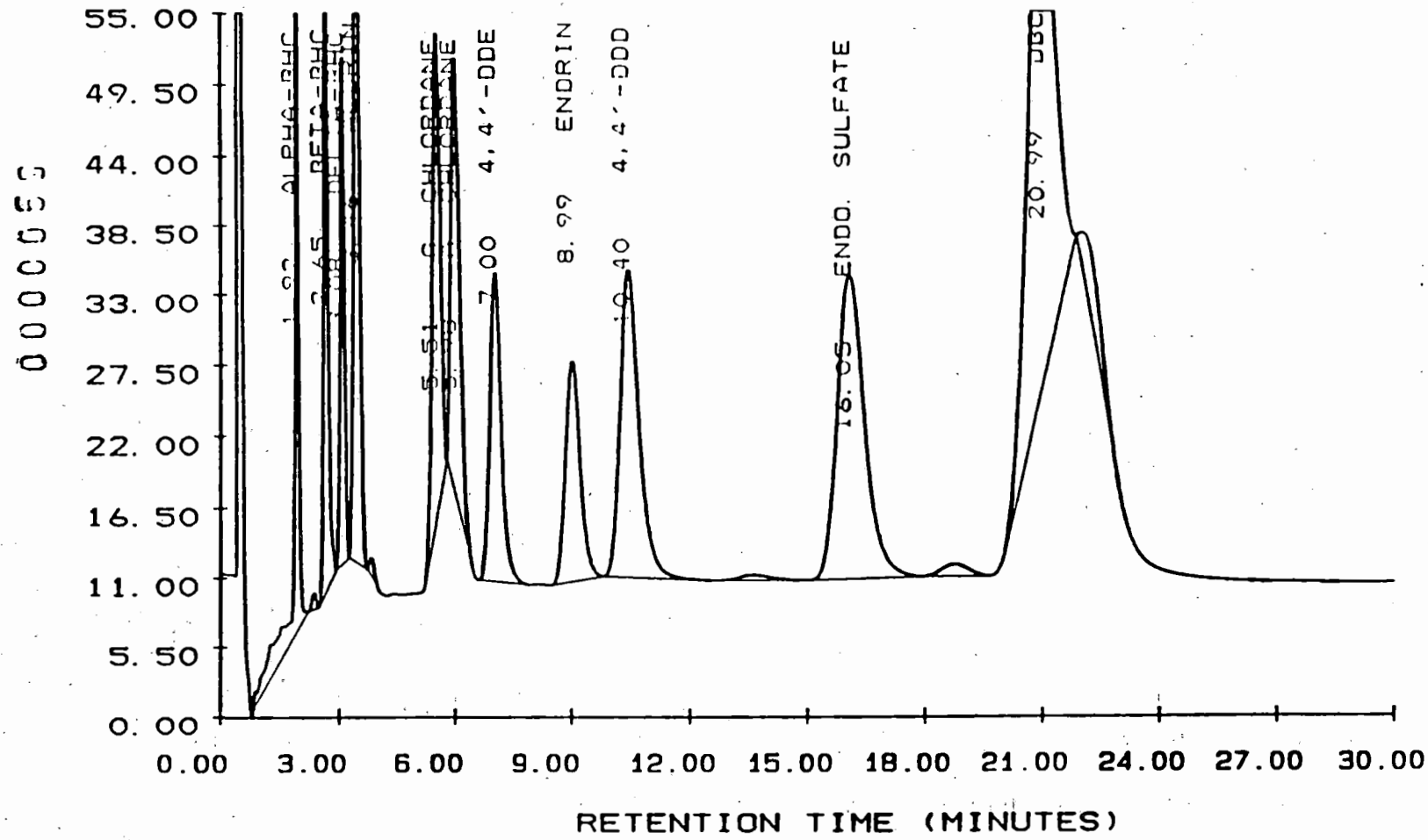
START TIME: 0.00
END TIME: 30.00

9713526.2819

INDB 27-56

SAMPLE NO. : 09119113 . 05
TEST NO. :
METHOD NO. : 13B / 13B

INSTRUMENT: 13
DATE TIME: 09/11/91 20:35:51
PAGE NO. : 01



Y MAXIMUM: 28759.
Y MINIMUM: 1477.

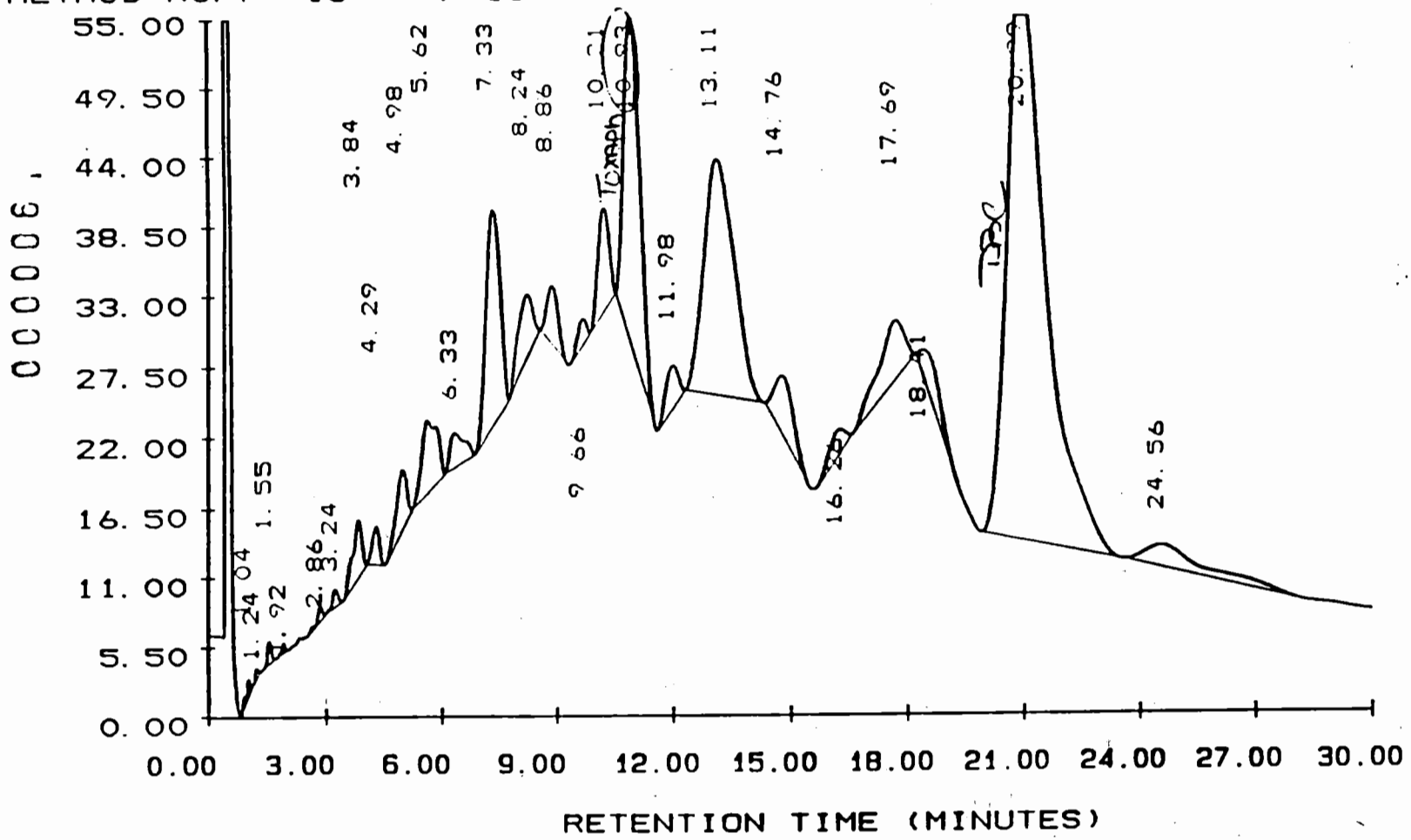
START TIME: 0.00
END TIME: 30.00

000065
9713526.2820

TOXAPH 03-270

SAMPLE NO. : 09119113 .06
TEST NO. :
METHOD NO. : 13 / 13

INSTRUMENT: 13
DATE TIME: 09/11/91 21:08:31
PAGE NO. : 01



Y MAXIMUM: 39719.
Y MINIMUM: 2769.

START TIME: 0.00
END TIME: 30.00

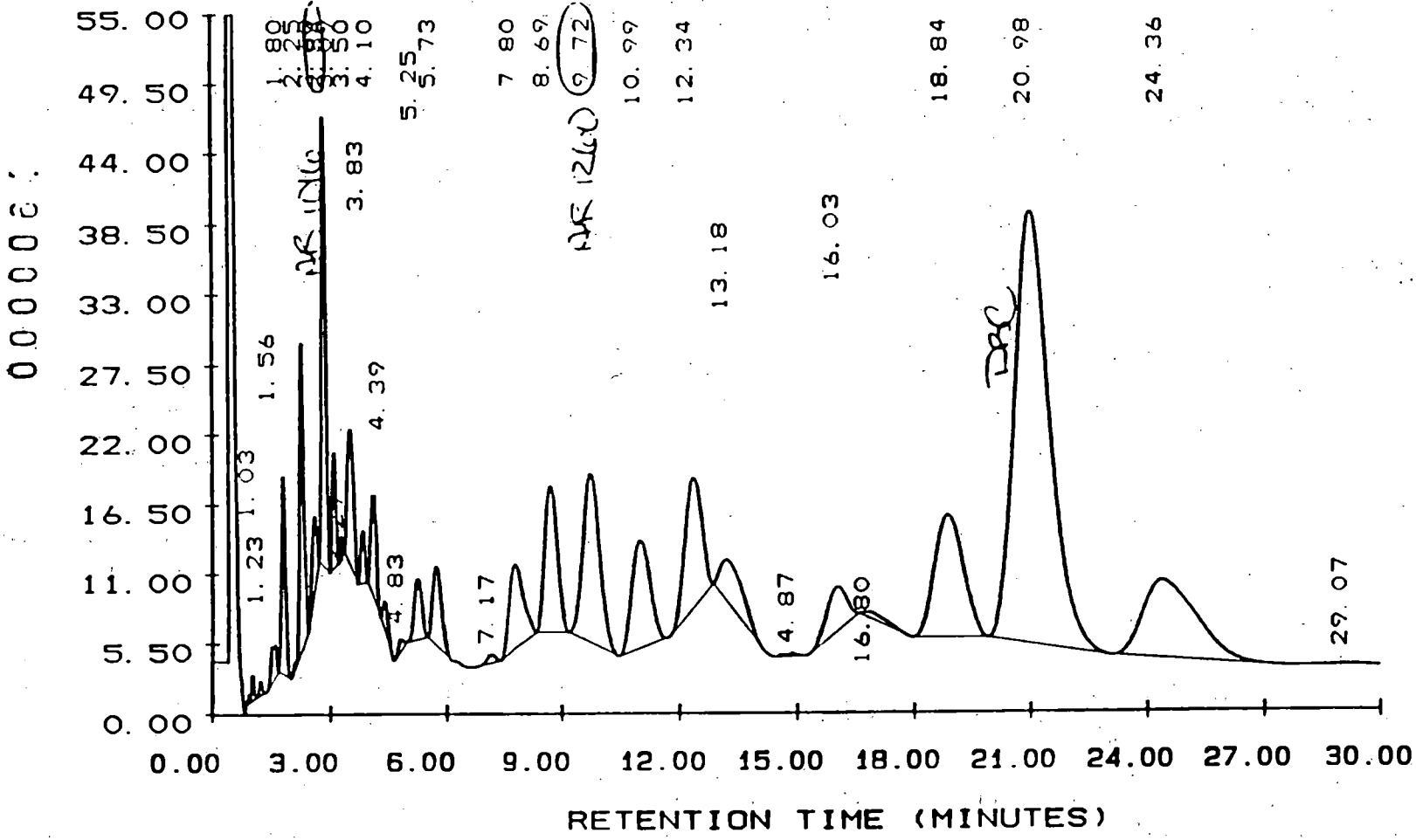
0000006

9713526.2921

AR1660 03-52

SAMPLE NO. : 09119113 . 07
TEST NO. :
METHOD NO. : 13 / 13

INSTRUMENT: 13
DATE TIME: 09/11/91 21:41:55
PAGE NO. : 01



Y MAXIMUM: 55646.
Y MINIMUM: 3176.

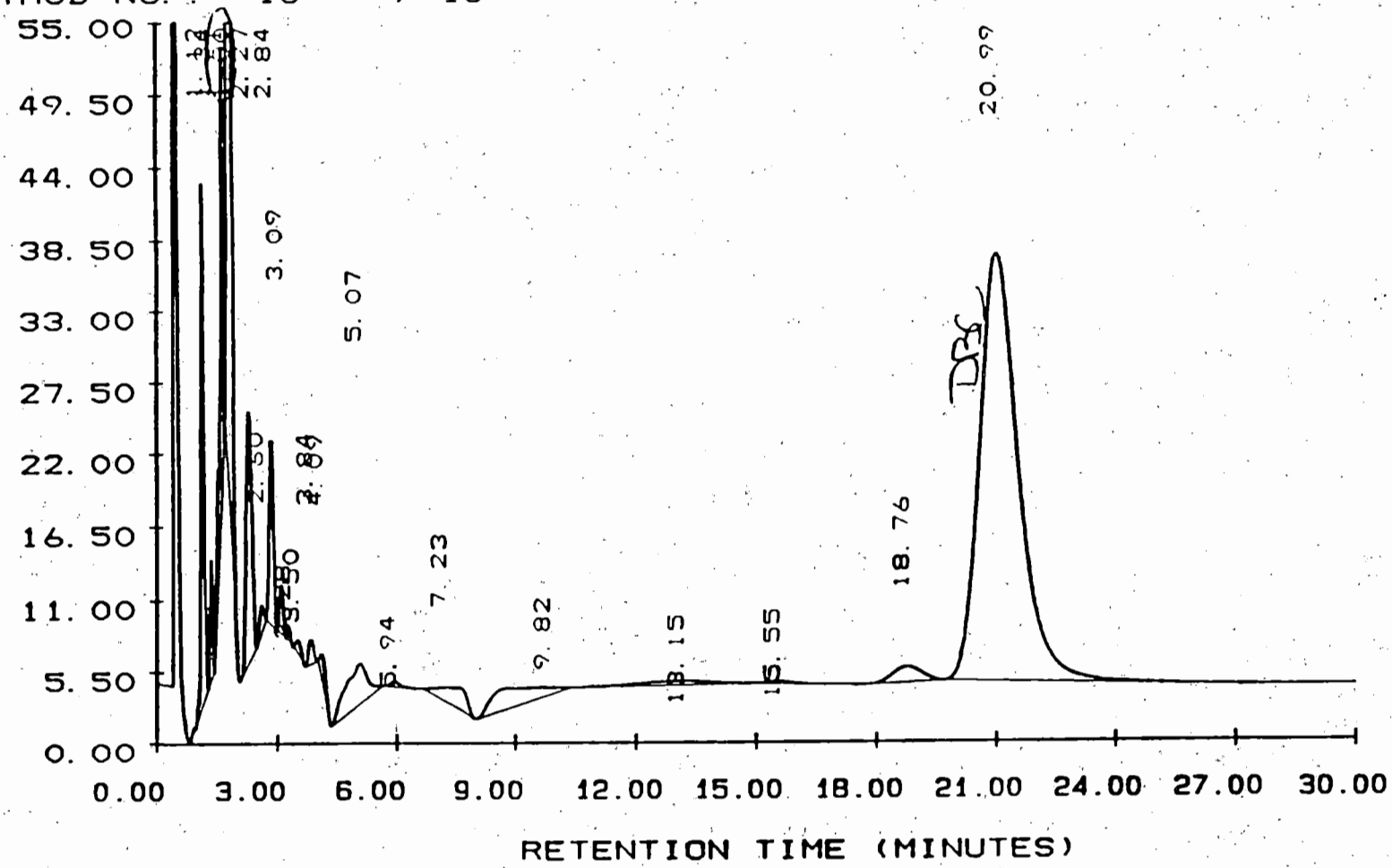
START TIME: 0.00
END TIME: 30.00

9713526.2822

AR1221 01-280

SAMPLE NO. : AR1221 09119113 . 08
TEST NO. :
METHOD NO. : 13 / 13

INSTRUMENT: 13
DATE TIME: 09/11/91 22:15:25
PAGE NO. : 01



Y MAXIMUM: 55406.
Y MINIMUM: 2652.

START TIME: 0.00
END TIME: 30.00

0000067

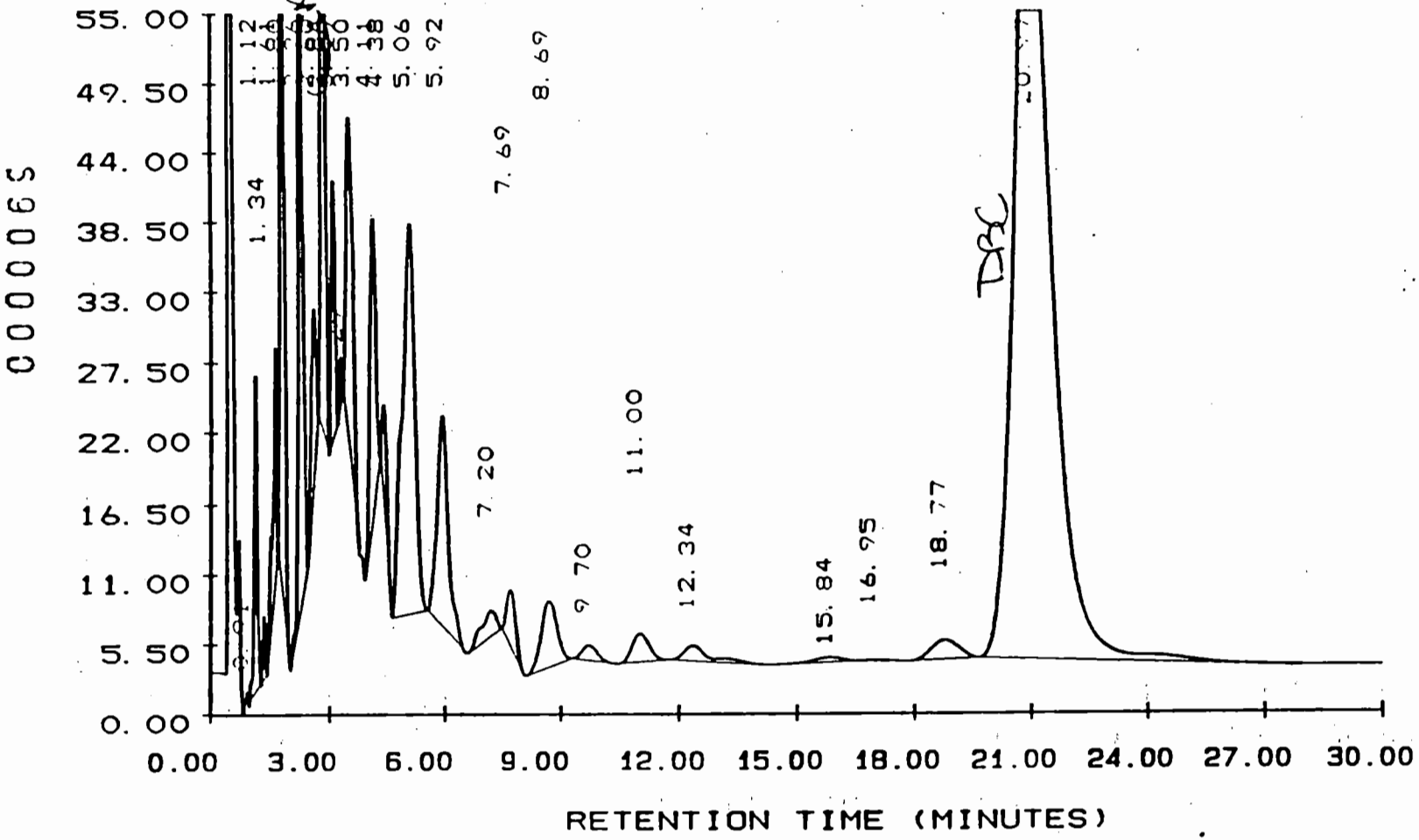
9713526.2823

AR1232 03-265

SAMPLE NO. : 09119113 .09 INSTRUMENT: 13

TEST NO. : DATE TIME: 09/11/91 22:48:16

METHOD NO. : 13 / 13 PAGE NO. : 01



Y MAXIMUM: 44165. START TIME: 0.00

Y MINIMUM: 4720. END TIME: 30.00

0000065

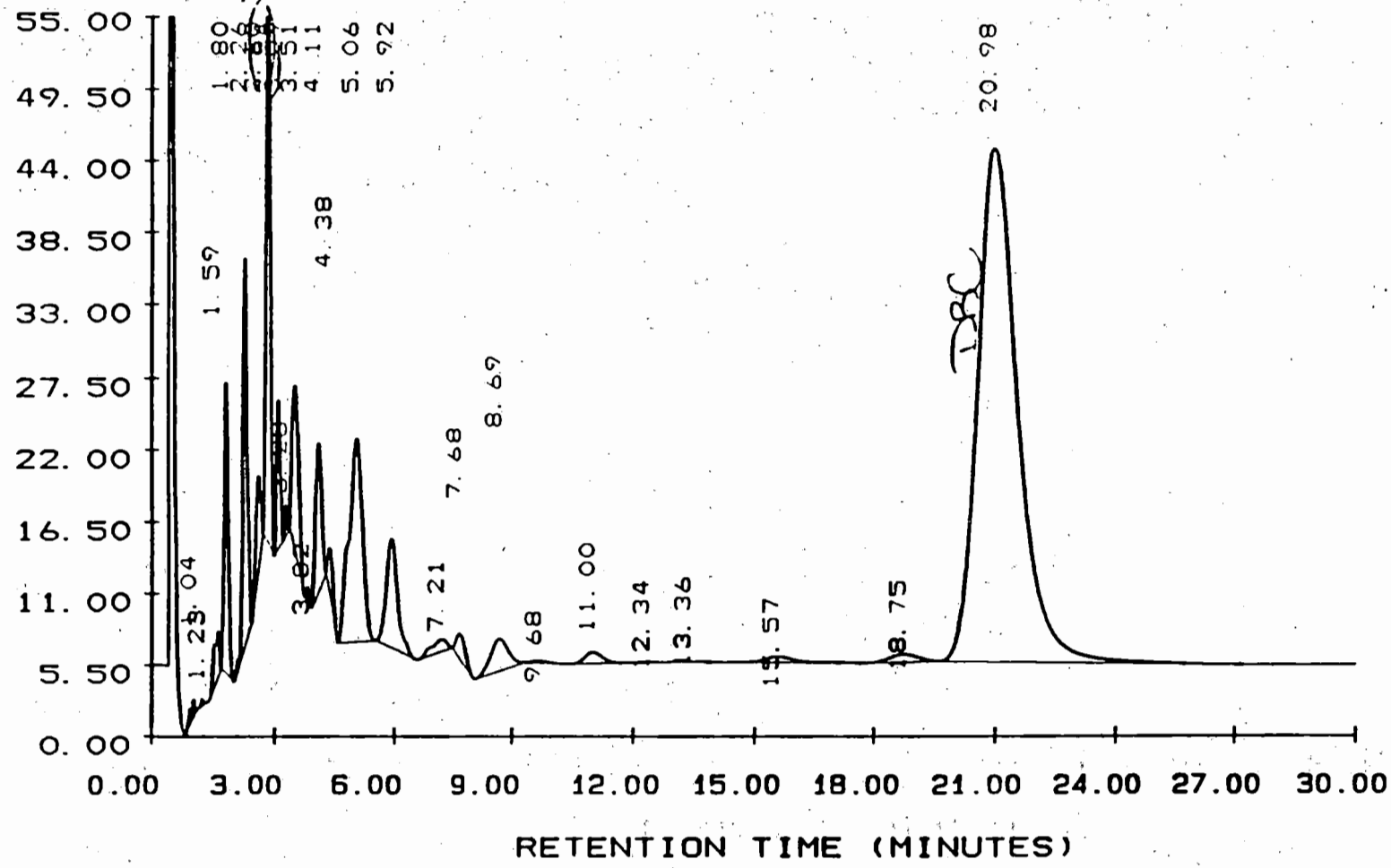
9713526.2824

AR1242 04-266

SAMPLE NO. : 09119113 . 10 INSTRUMENT: 13

TEST NO. : DATE TIME: 09/11/91 23:21:38

METHOD NO. : 13 / 13 PAGE NO. : 01



Y MAXIMUM: 46352. START TIME: 0.00

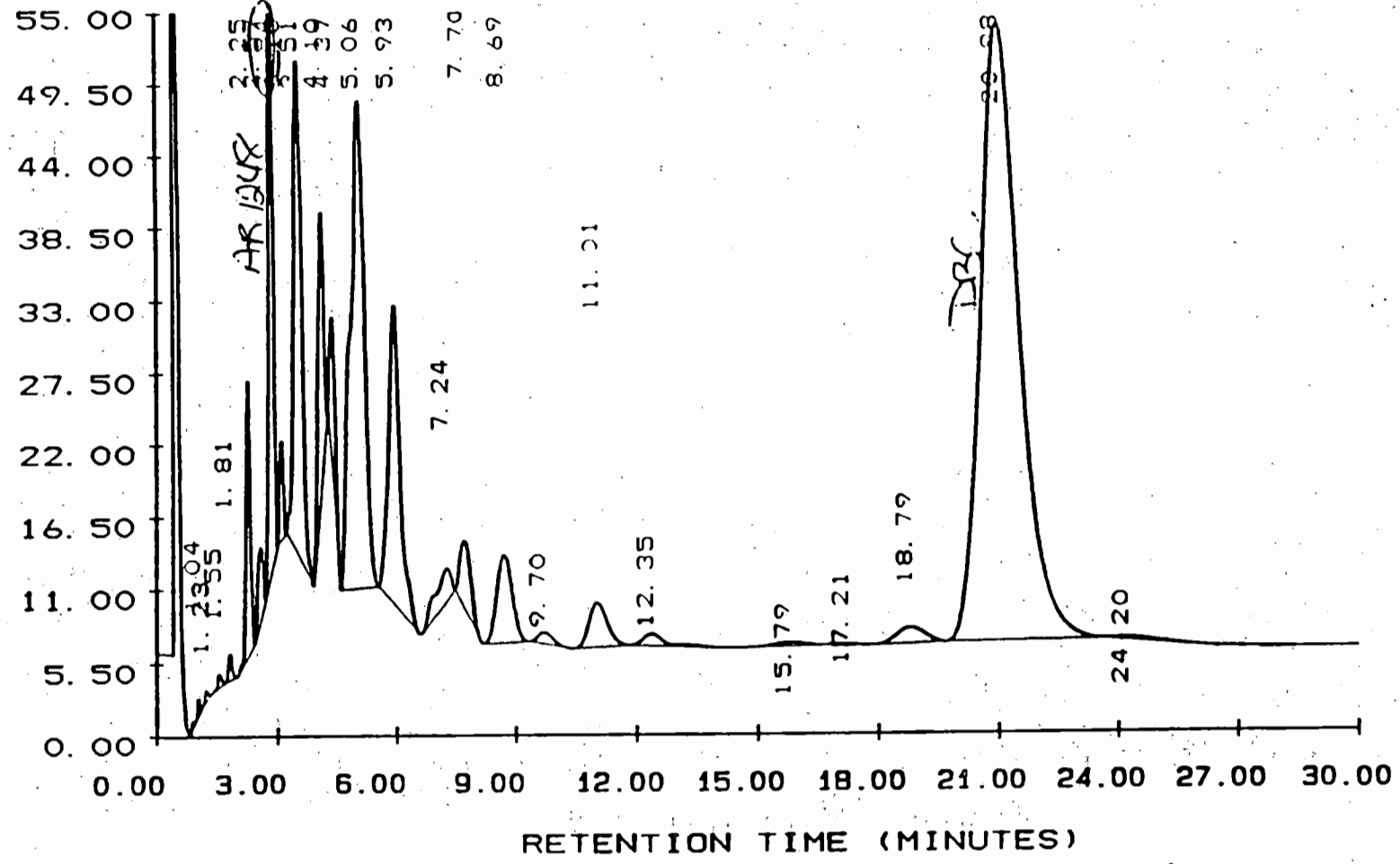
Y MINIMUM: 2684. END TIME: 30.00

9713526.2825

AR1248 02-277

SAMPLE NO. : 09119113 . 11
TEST NO. :
METHOD NO. : 13 / 13

INSTRUMENT: 13
DATE TIME: 09/11/91 23:54:39
PAGE NO. : 01



Y MAXIMUM: 43633.
Y MINIMUM: 2387.

START TIME: 0.00
END TIME: 30.00

0000075

9713526.2826

AR1254 02-271

SAMPLE NO. : 09119113 . 12

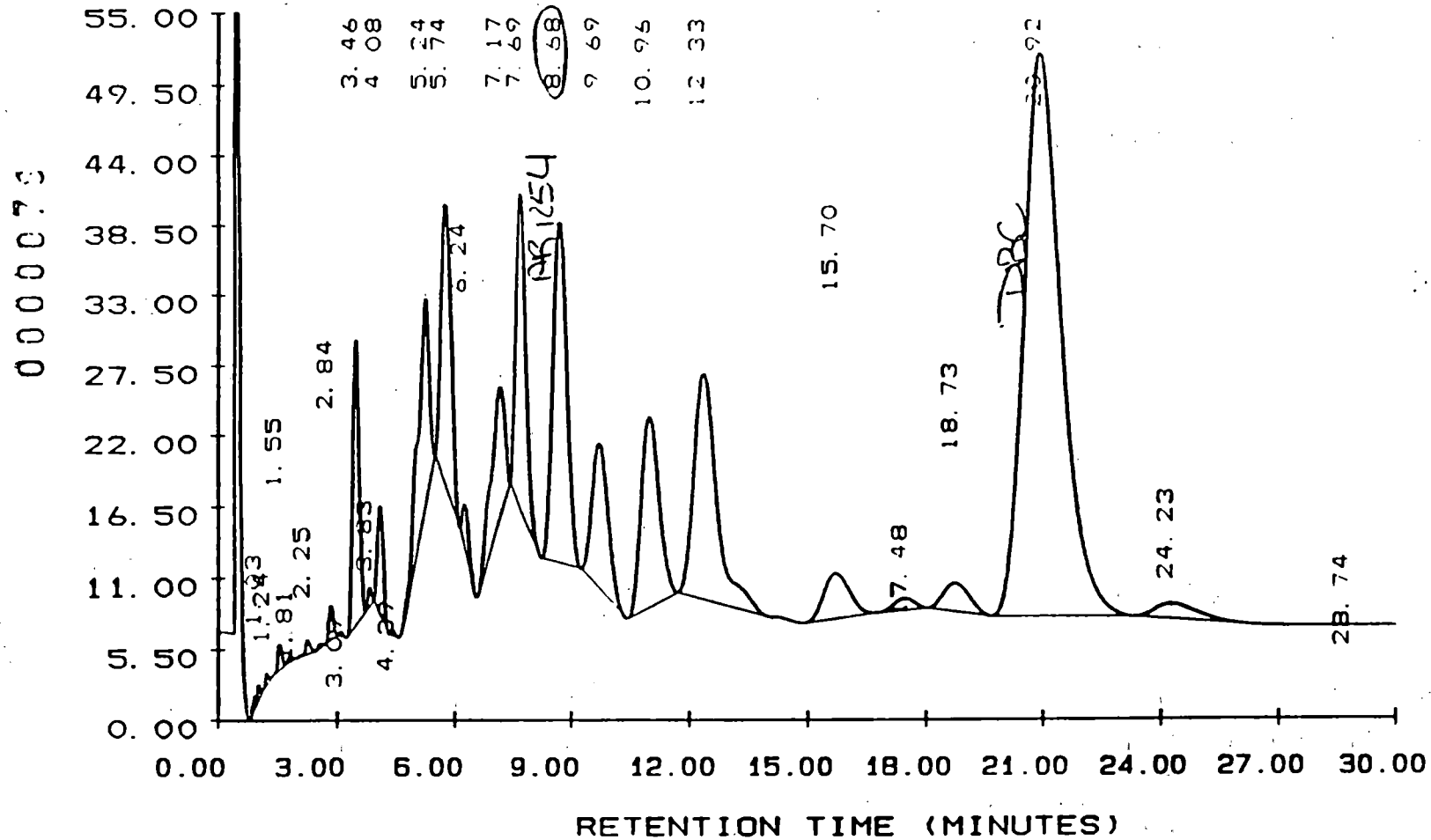
TEST NO. :

METHOD NO. : 13 / 13

INSTRUMENT: 13

DATE TIME: 09/12/91 00:27:37

PAGE NO. : 01



Y MAXIMUM: 40261.

Y MINIMUM: 2337.

START TIME: 0.00

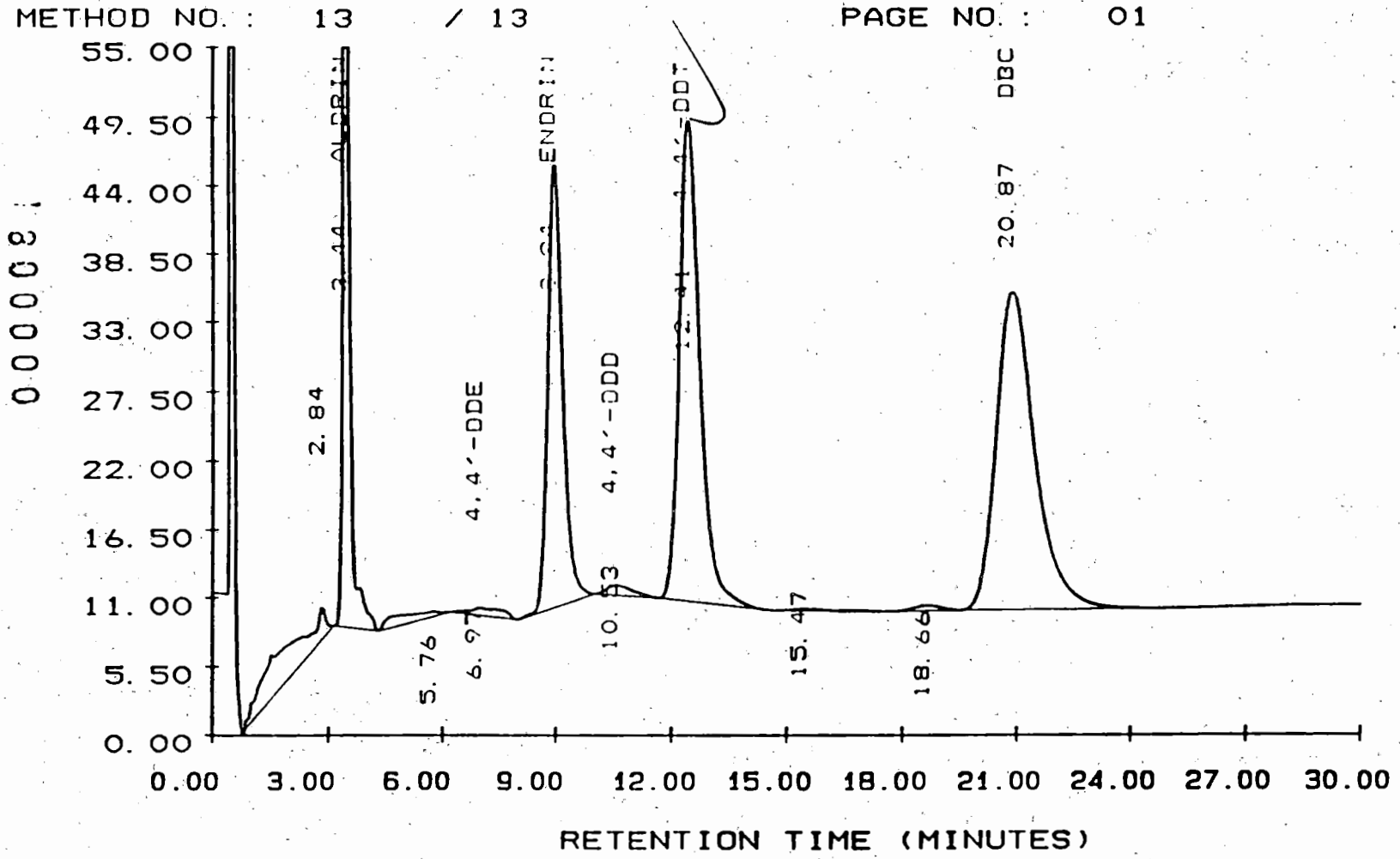
END TIME: 30.00

97135262827

EVALB 19-60

SAMPLE NO. : 09119113 . 19
TEST NO. :
METHOD NO. : 13 / 13

INSTRUMENT: 13
DATE TIME: 09/12/91 04:15:59
PAGE NO. : 01



Y MAXIMUM: 27370.
Y MINIMUM: 1818.

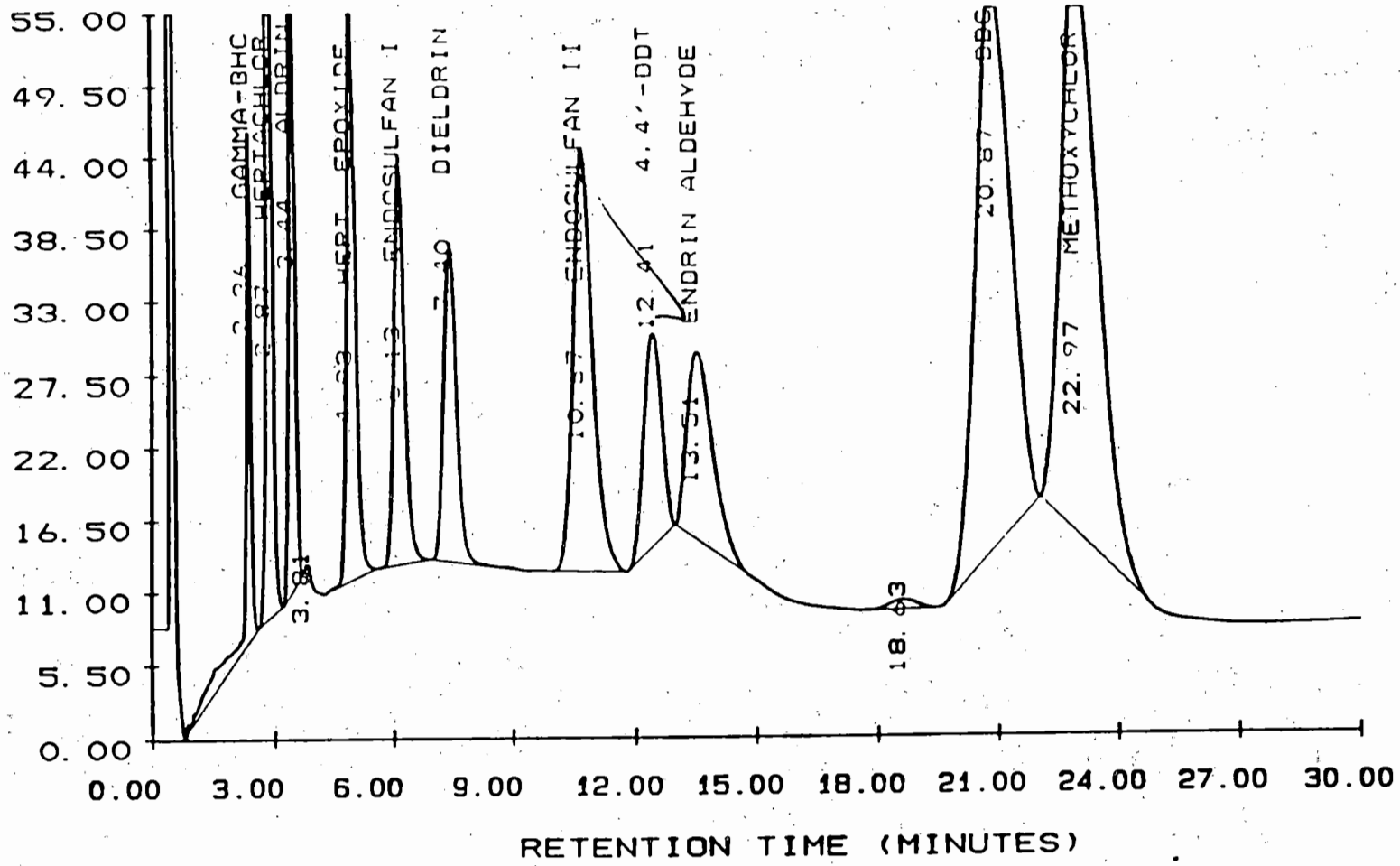
START TIME: 0.00
END TIME: 30.00

9713526.2828

INDA 27-55

SAMPLE NO. : 09119113 . 25
TEST NO. :
METHOD NO. : 13A / 13A

INSTRUMENT: 13
DATE TIME: 09/12/91 07:31:32
PAGE NO. : 01



Y MAXIMUM: 31638.
Y MINIMUM: 2753.

START TIME: 0.00
END TIME: 30.00

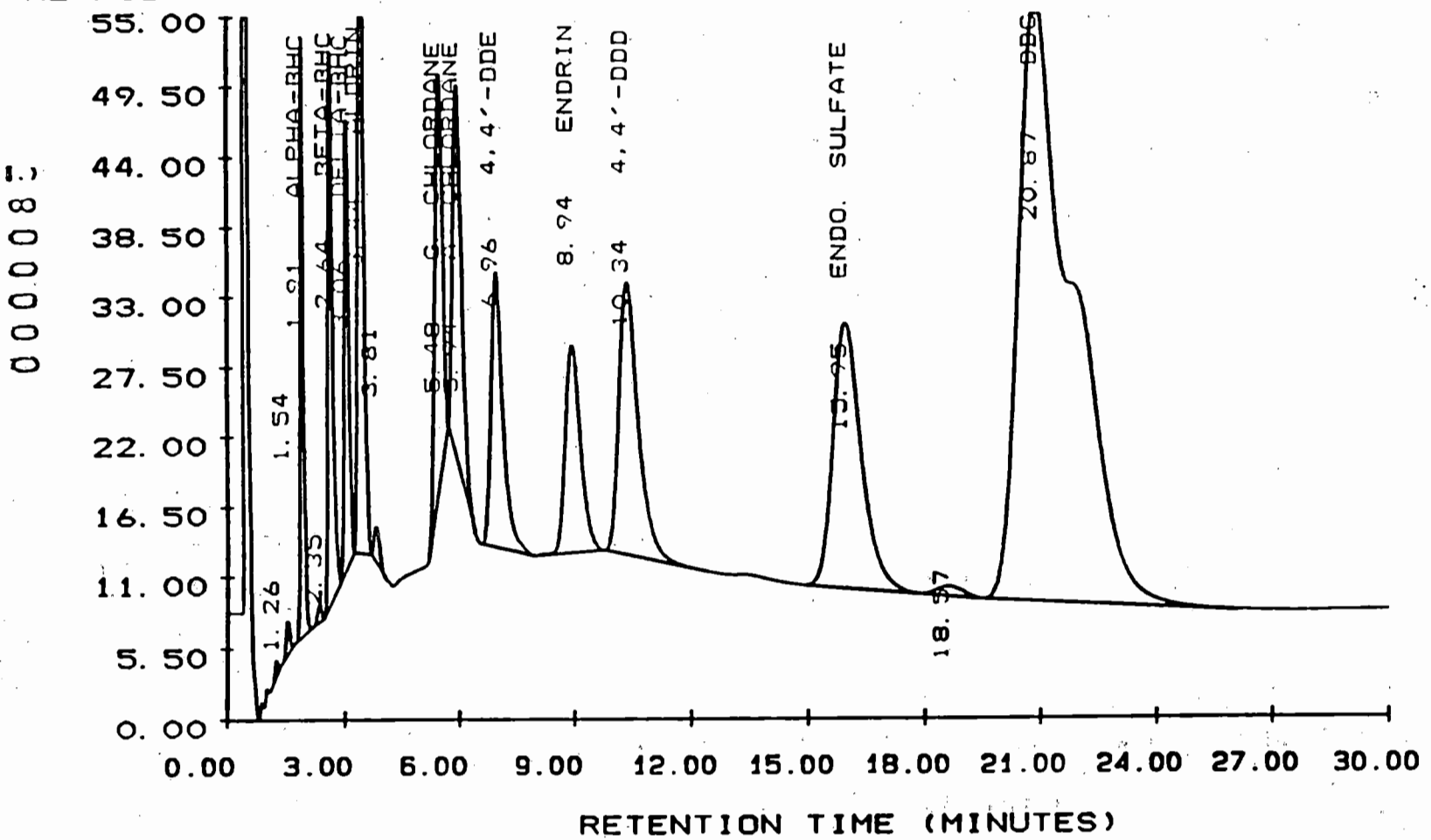
0000083

9713526.2829

INDB 27-56

SAMPLE NO. : 09119113 . 26
TEST NO. :
METHOD NO. : 13B / 13B

INSTRUMENT: 13
DATE TIME: 09/12/91 08:04:06
PAGE NO. : 01



Y MAXIMUM: 31478.
Y MINIMUM: 2808.

START TIME: 0.00
END TIME: 30.00

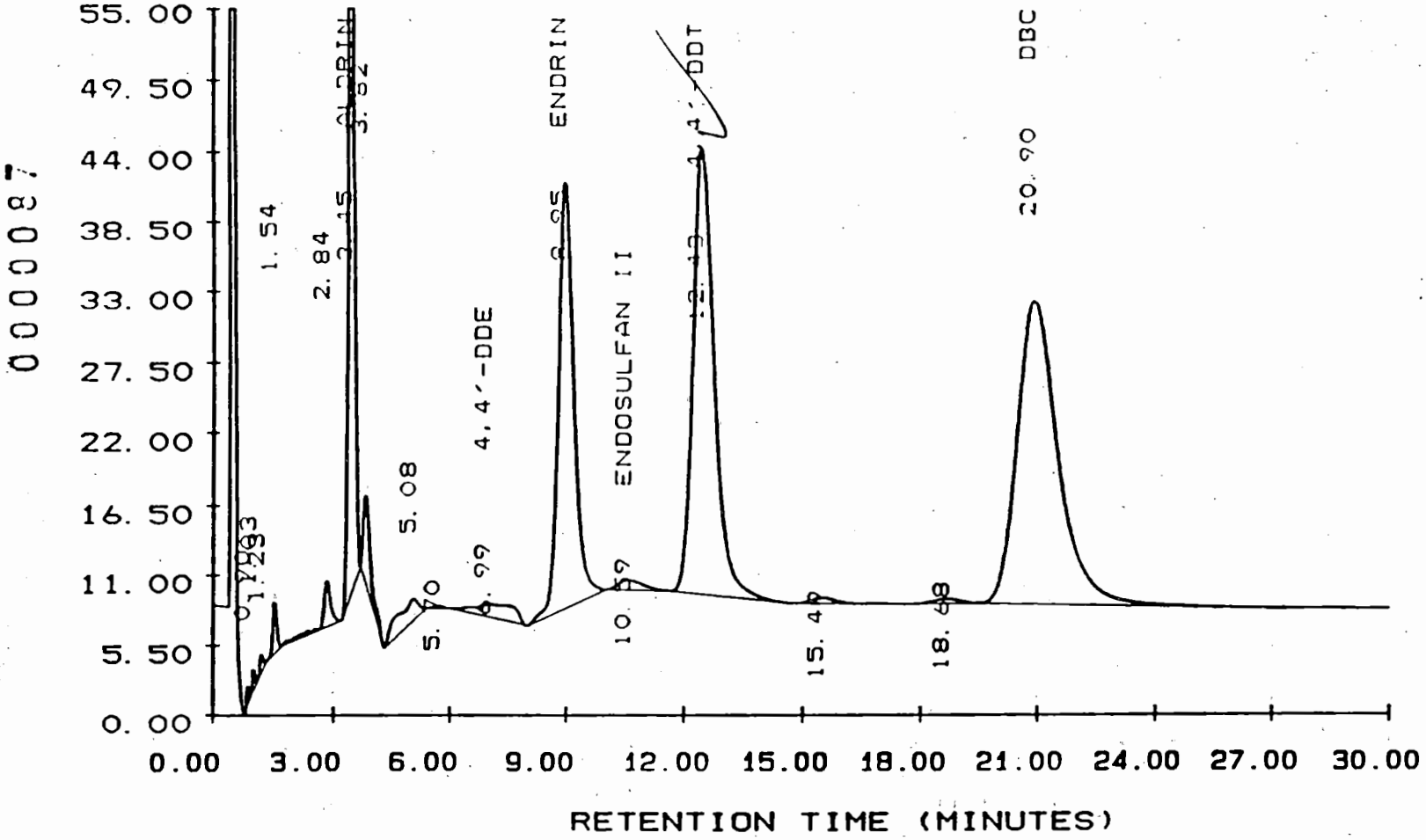
0000008

9713526.2830

EVALB 19-60

SAMPLE NO. : 09119113 . 33
TEST NO. :
METHOD NO. : 13 / 13

INSTRUMENT: 13
DATE TIME: 09/12/91 11:51:34
PAGE NO. : 01



Y MAXIMUM: 31508.
Y MINIMUM: 2559.

START TIME: 0.00
END TIME: 30.00

0000087
97/3526.2931

AR1254 02-271

SAMPLE NO. : 09119113 . 40

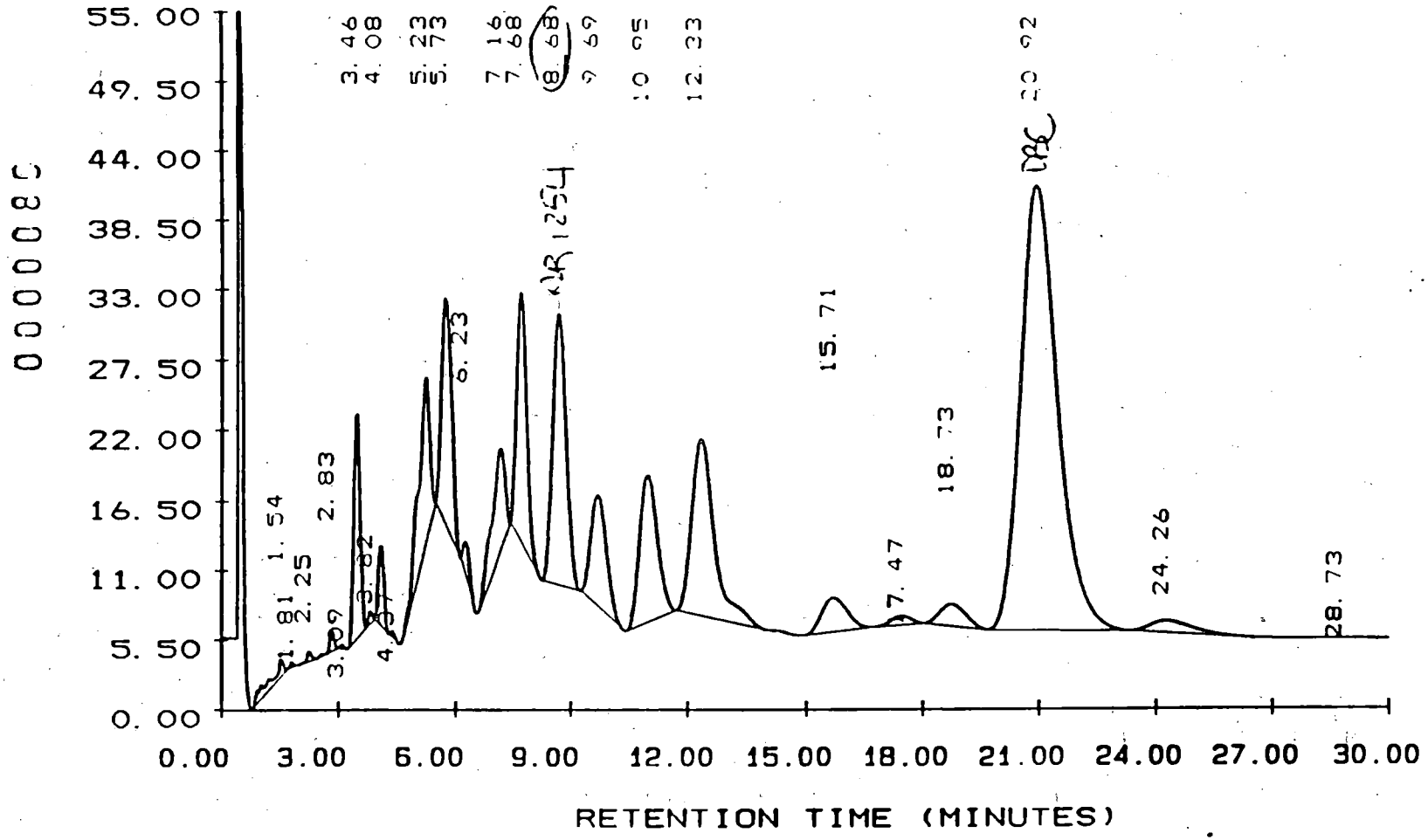
TEST NO. :

METHOD NO. : 13 / 13

INSTRUMENT: 13

DATE TIME: 09/12/91 16:15:07

PAGE NO. : 01



Y MAXIMUM: 46781.

Y MINIMUM: 2507.

START TIME: 0.00

END TIME: 30.00

0000080

9119326.2832

EVALB 19-60

SAMPLE NO. : 09119113 . 47

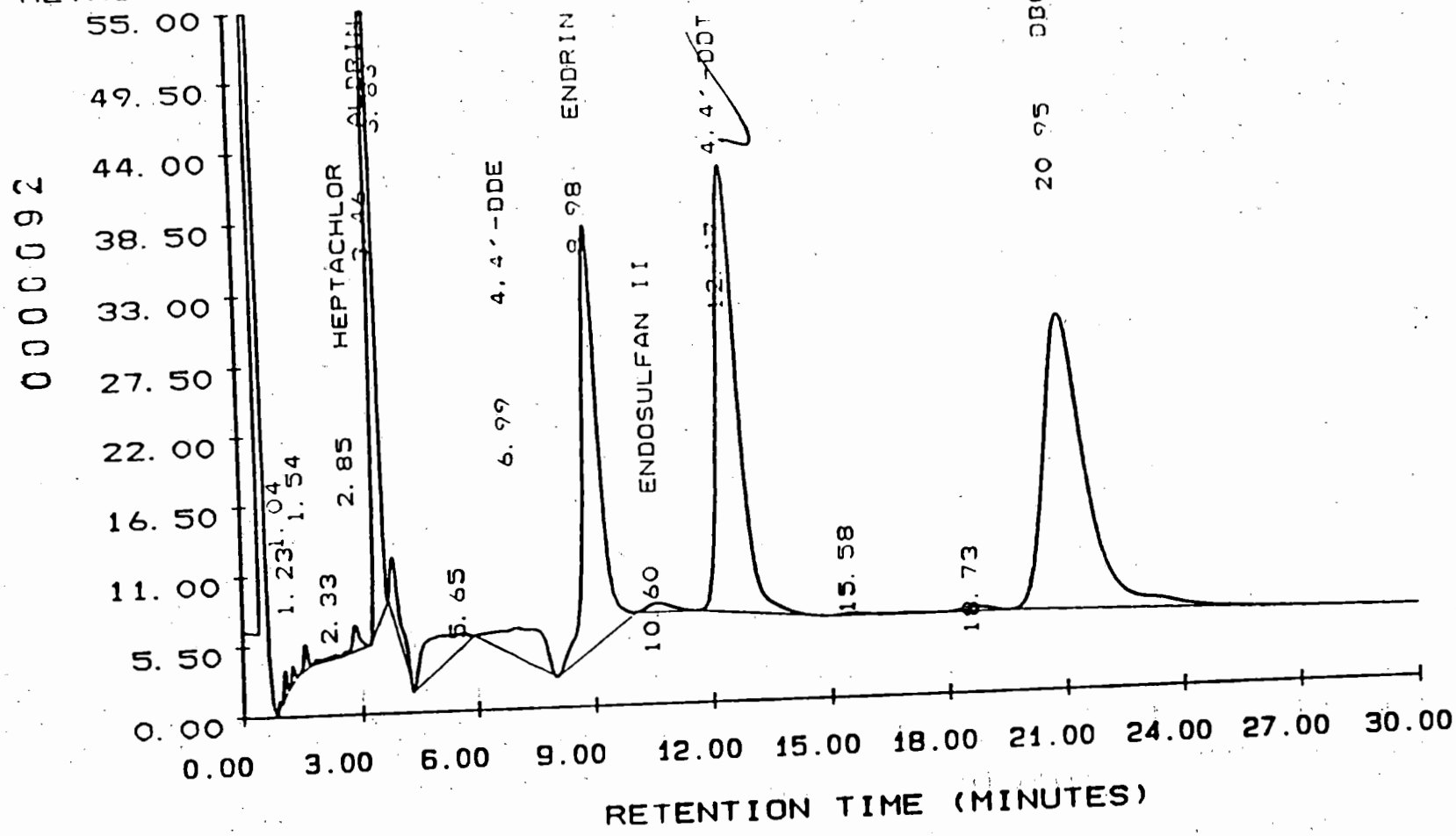
TEST NO. :

METHOD NO. : 13 / 13

INSTRUMENT: 13

DATE TIME: 09/12/91 20:04:56

PAGE NO. : 01



Y MAXIMUM: 34934.

Y MINIMUM: 3290.

START TIME: 0.00

END TIME: 30.00

00000092

9713526.2833

AR1254 02-271

SAMPLE NO. : 09119113 . 54

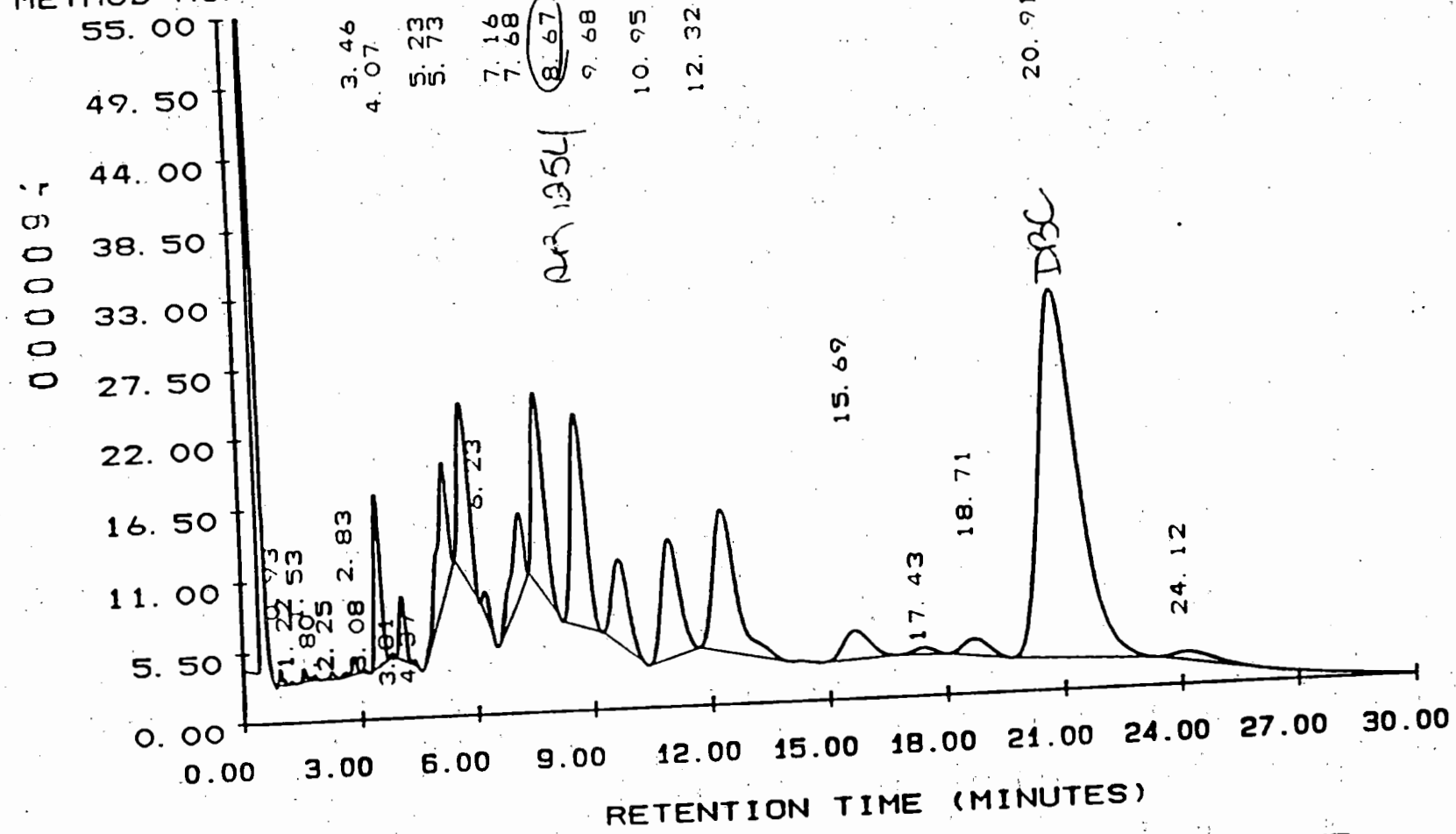
TEST NO. :

METHOD NO. : 13 / 13

INSTRUMENT: 13

DATE TIME: 09/12/91 23:52:24

PAGE NO. : 01



Y MAXIMUM: 52329.

Y MINIMUM: 3413.

START TIME: 0.00

END TIME: 30.00

000009

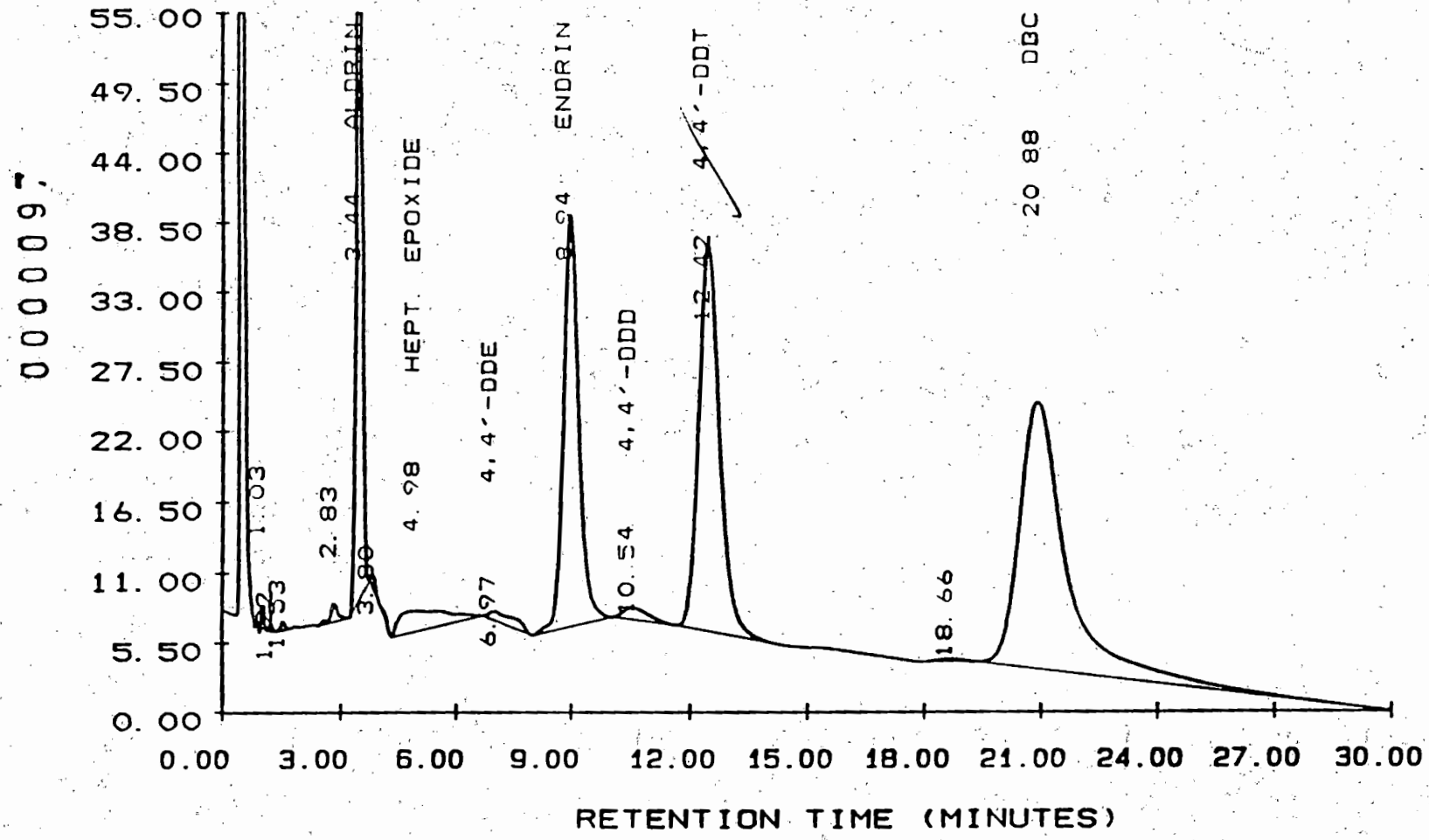
9713526.2834

EVALB 19-60

SAMPLE NO. : 09119113 .61 INSTRUMENT: 13

TEST NO. : DATE TIME: 09/13/91 03:43:23

METHOD NO. : 13 / 13 PAGE NO. : 01



Y MAXIMUM: 34354. START TIME: 0.00

Y MINIMUM: 2446. END TIME: 30.00

000009

9713526.2835

AR1254 02-271

SAMPLE NO. : 09119113 . 68

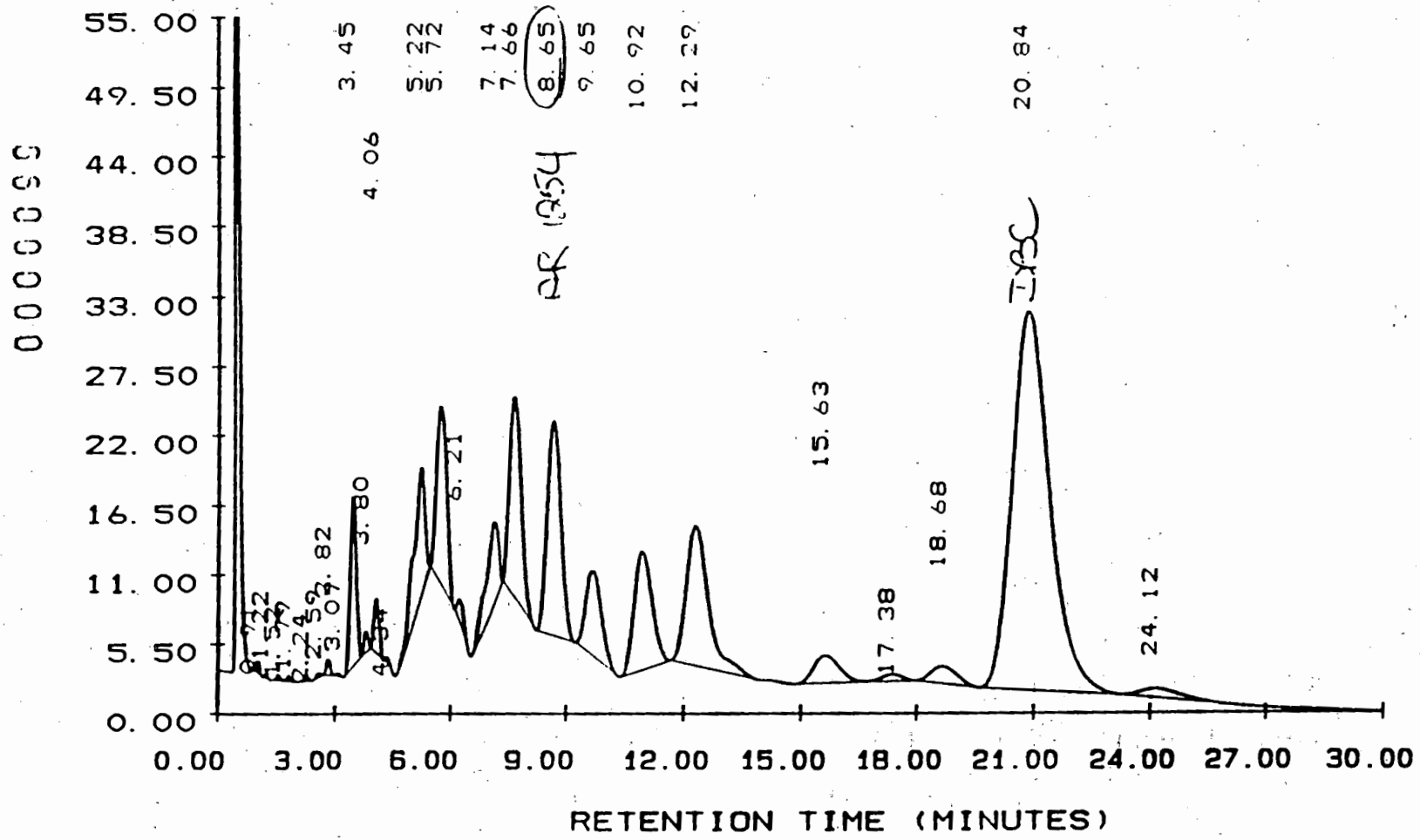
TEST NO. :

METHOD NO. : 13 / 13

INSTRUMENT: 13

DATE TIME: 09/13/91 07:32:24

PAGE NO. : 01



Y MAXIMUM: 50629.

Y MINIMUM: 4249.

START TIME: 0.00

END TIME: 30.00

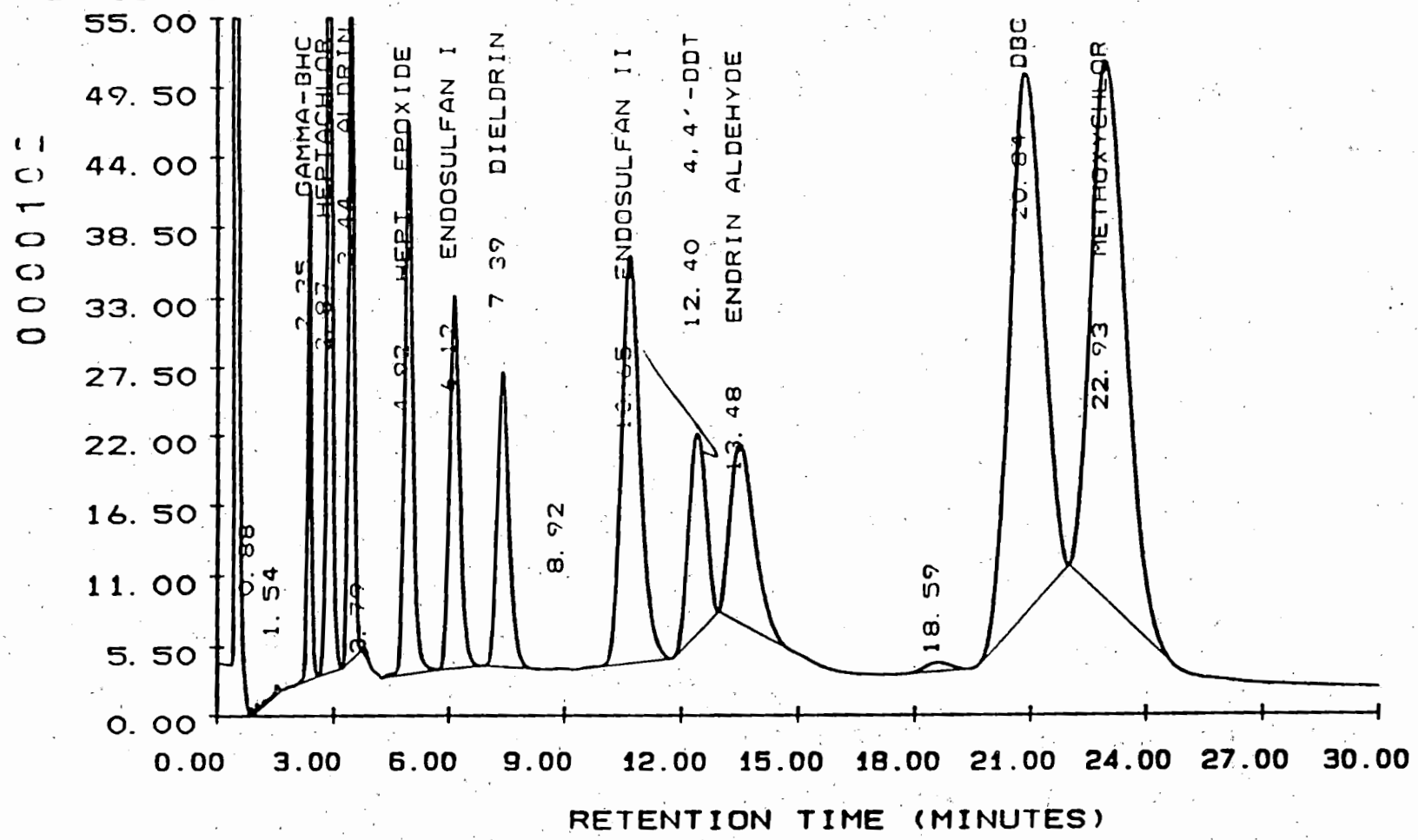
0000000

9713526.2836

INDA 27-55

SAMPLE NO. : 09119113 .69
TEST NO. :
METHOD NO. : 13A / 13A

INSTRUMENT: 13
DATE TIME: 09/13/91 08:25:54
PAGE NO. : 01



Y MAXIMUM: 33230.
Y MINIMUM: 4964.

START TIME: 0.00
END TIME: 30.00

9713526.2837

INDB 27-56

SAMPLE NO. : 09119113 . 70

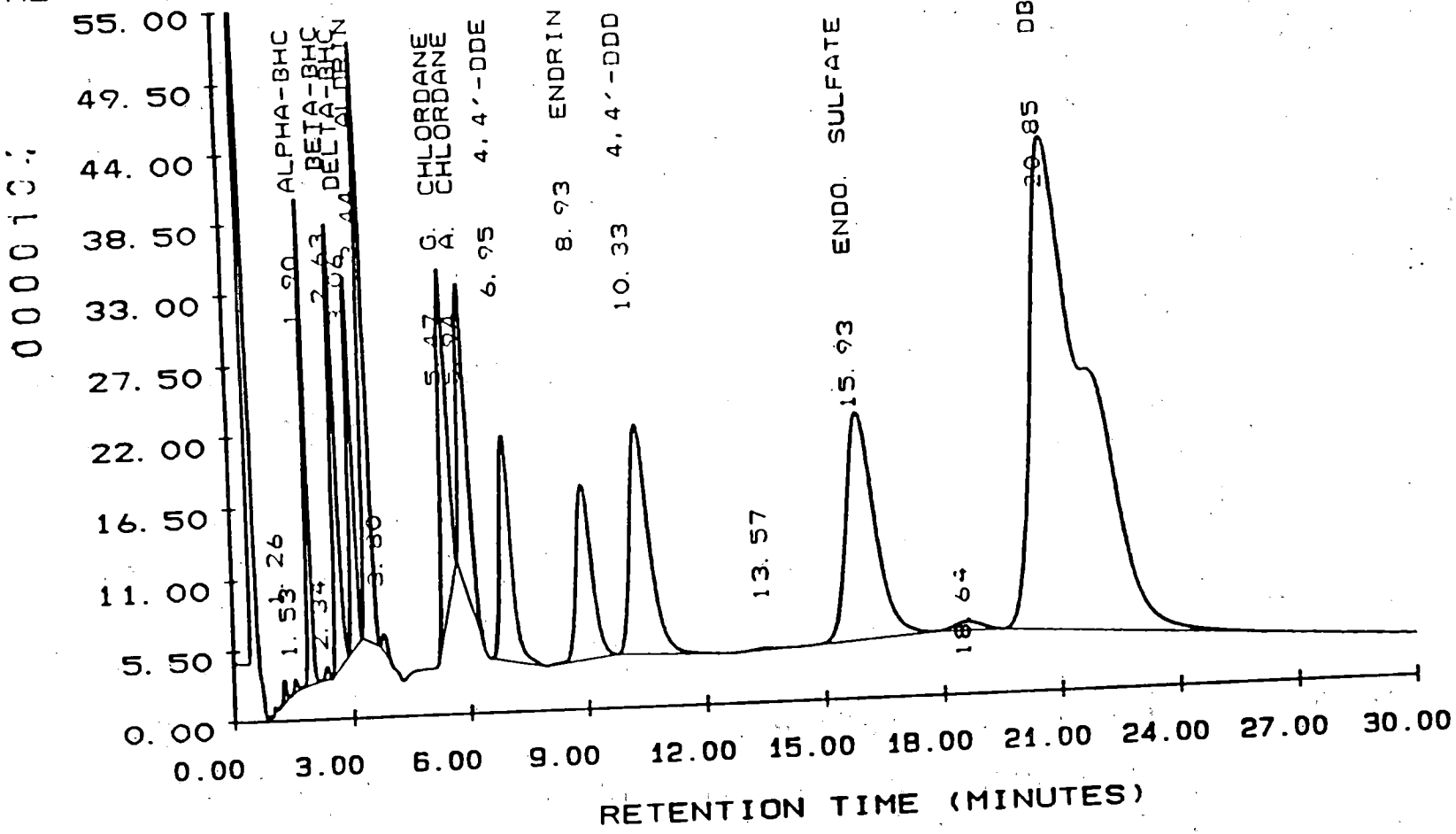
TEST NO. :

METHOD NO. : 13B / 13B

INSTRUMENT: 13

DATE TIME: 09/13/91 08:58:27

PAGE NO. : 01



Y MAXIMUM: 39201.

Y MINIMUM: 4215.

START TIME: 0.00

END TIME: 30.00

9713526.2838

EVALA 16-60

SAMPLE NO. : 09119114 . 01

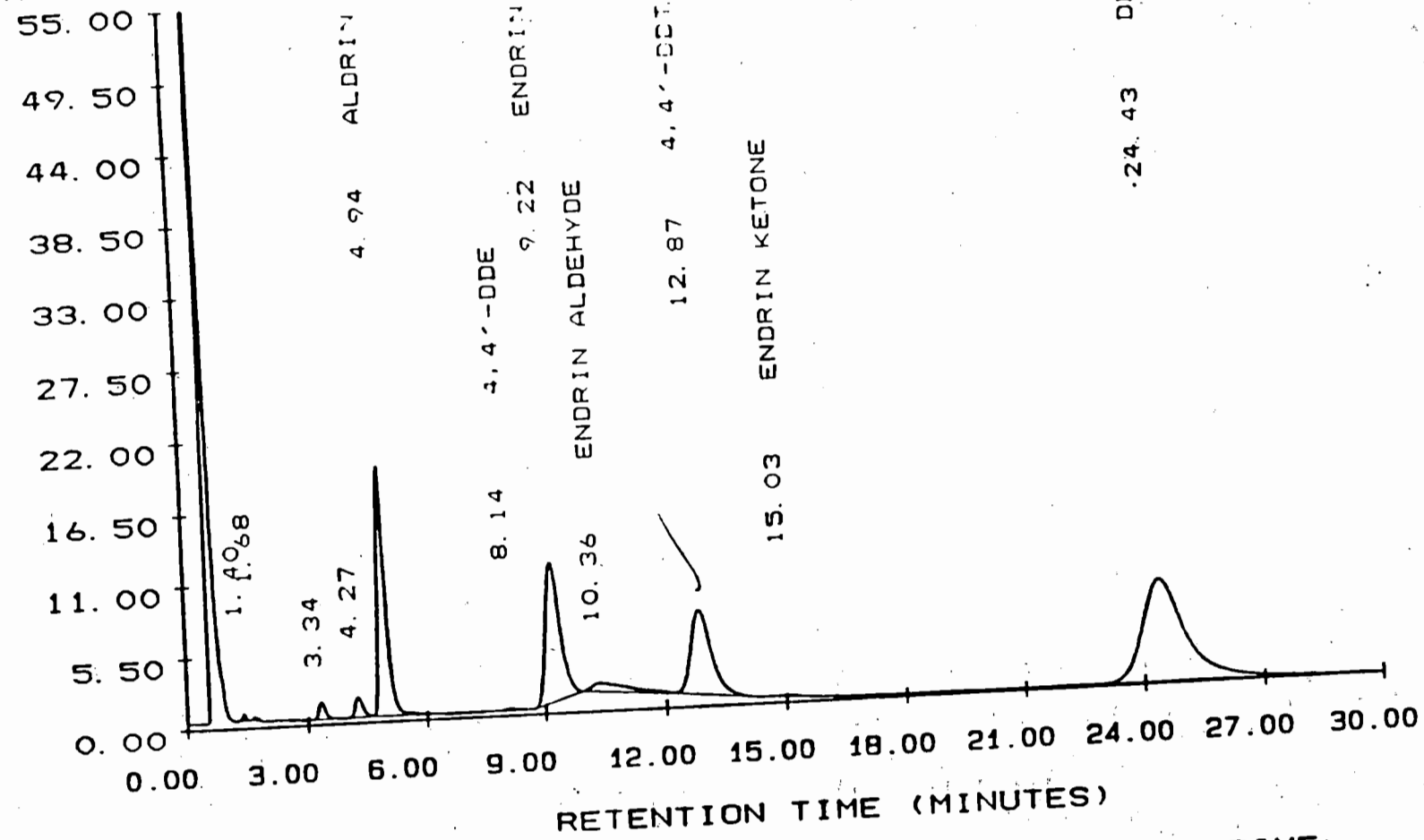
TEST NO. :

METHOD NO. : 14 / 14

INSTRUMENT: 14

DATE TIME: 09/11/91 18:29:08

PAGE NO. : 01



START TIME: 0.00

END TIME: 30.00

Y MAXIMUM: 42088.

Y MINIMUM: 6967.

9713526.2839

EVALB 19-60

SAMPLE NO. : 09119114 . 02

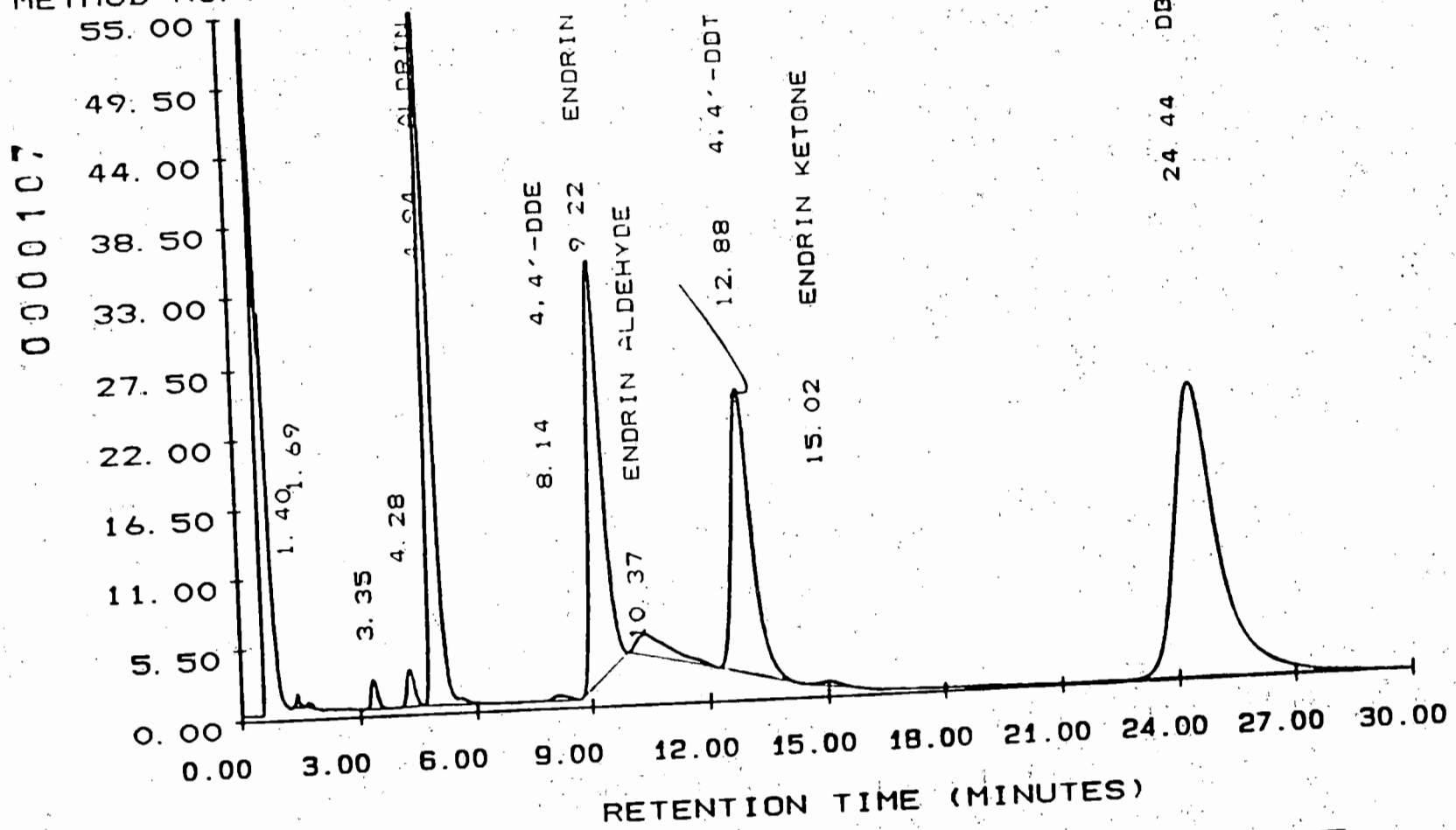
TEST NO. :

METHOD NO. : 14 / 14

INSTRUMENT: 14

DATE TIME: 09/11/91 19:01:25

PAGE NO. : 01



Y MAXIMUM: 27711.

Y MINIMUM: 7094.

START TIME: 0.00

END TIME: 30.00

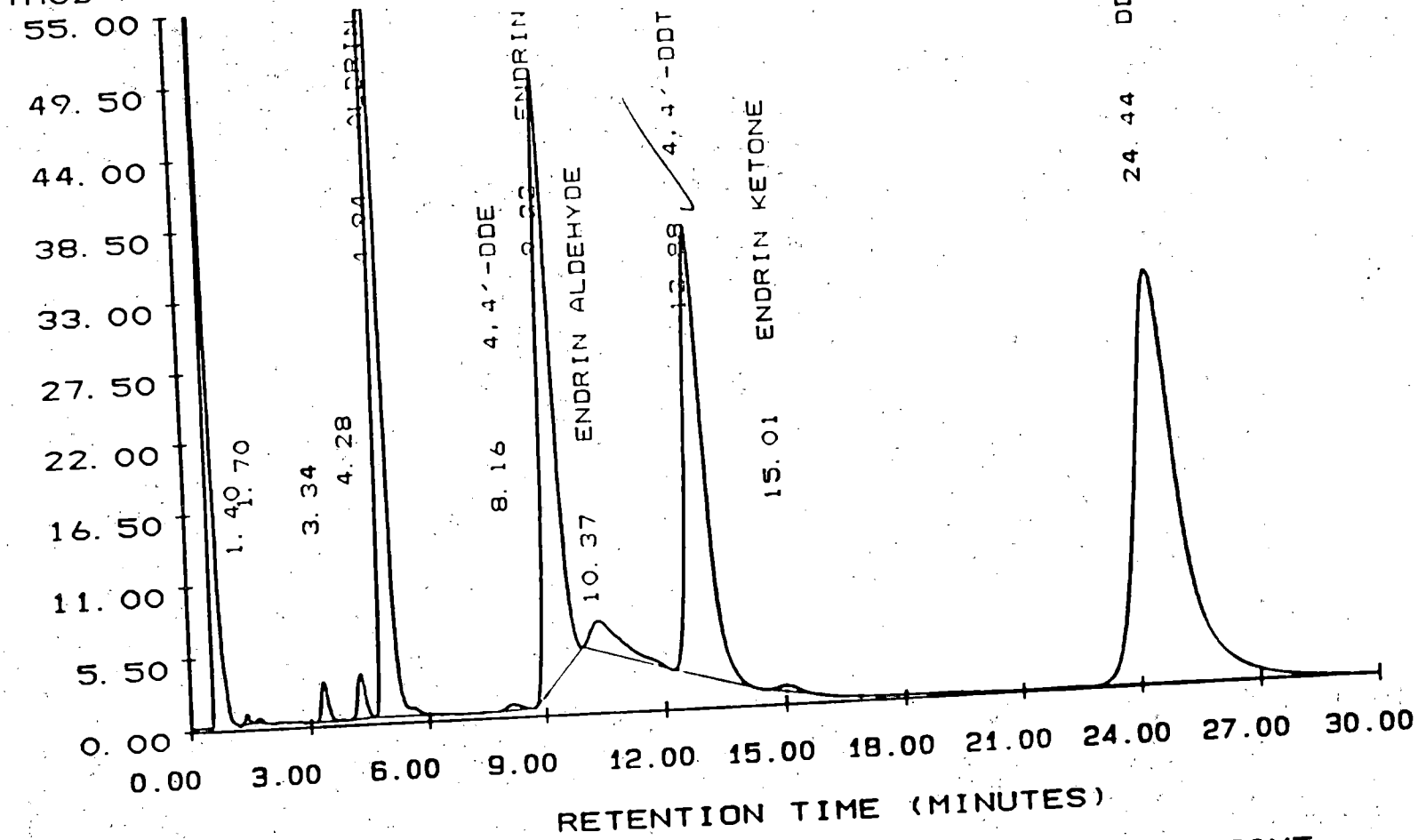
0000107

97 13526.2840

EVALC 18-60

SAMPLE NO. : 09119114 . 03
TEST NO. :
METHOD NO. : 14 / 14

INSTRUMENT: 14
DATE TIME: 09/11/91 19:33:39
PAGE NO. : 01



START TIME: 0.00
END TIME: 30.00

Y MAXIMUM: 29443.
Y MINIMUM: 7144.

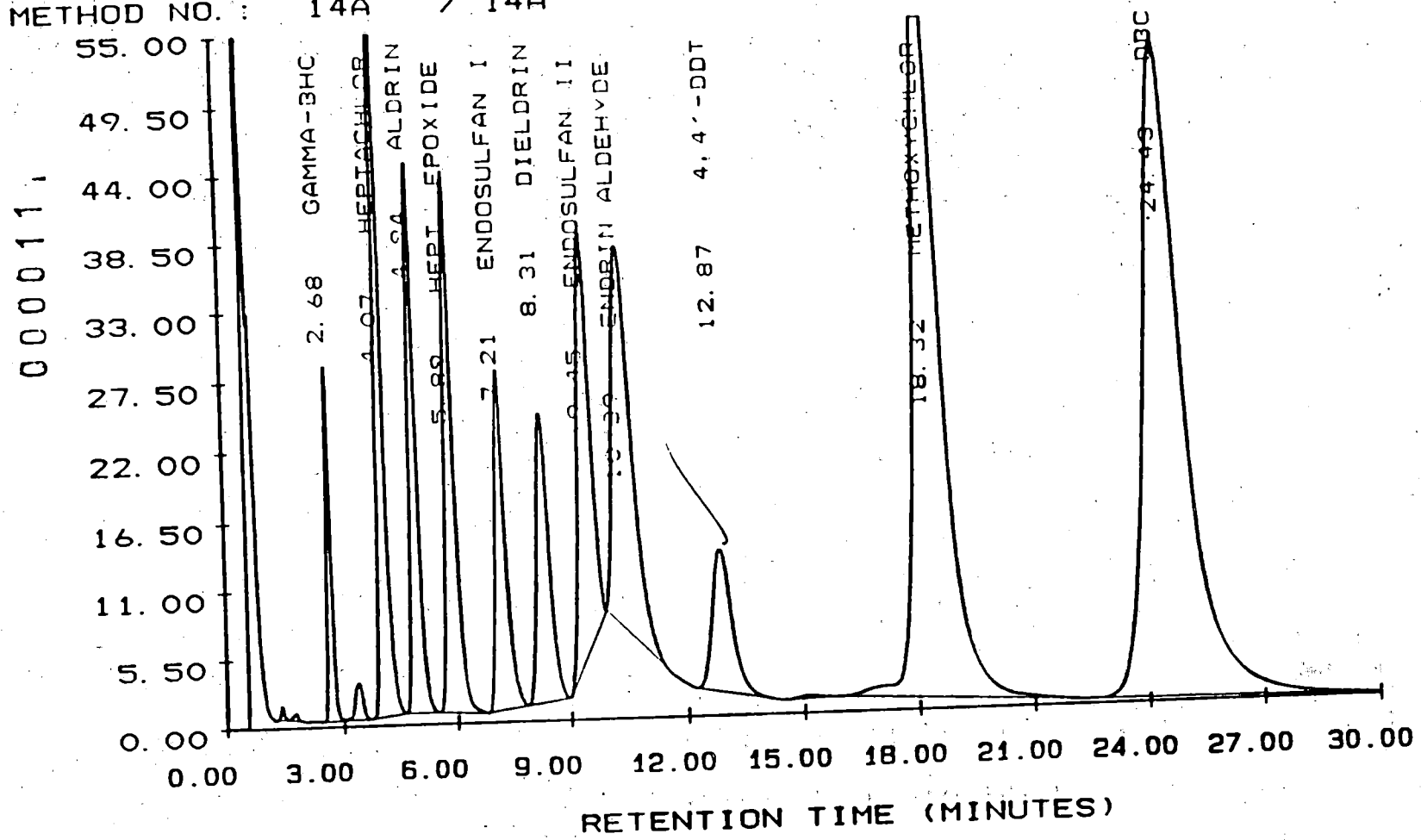
0000103

97 13526.2811

INDA 27-55

SAMPLE NO. : 09119114 . 04
TEST NO. :
METHOD NO. : 14A / 14A

INSTRUMENT: 14
DATE TIME: 09/11/91 20:05:57
PAGE NO. : 01



Y MAXIMUM: 29895.
Y MINIMUM: 7240.

START TIME: 0.00
END TIME: 30.00

0000011

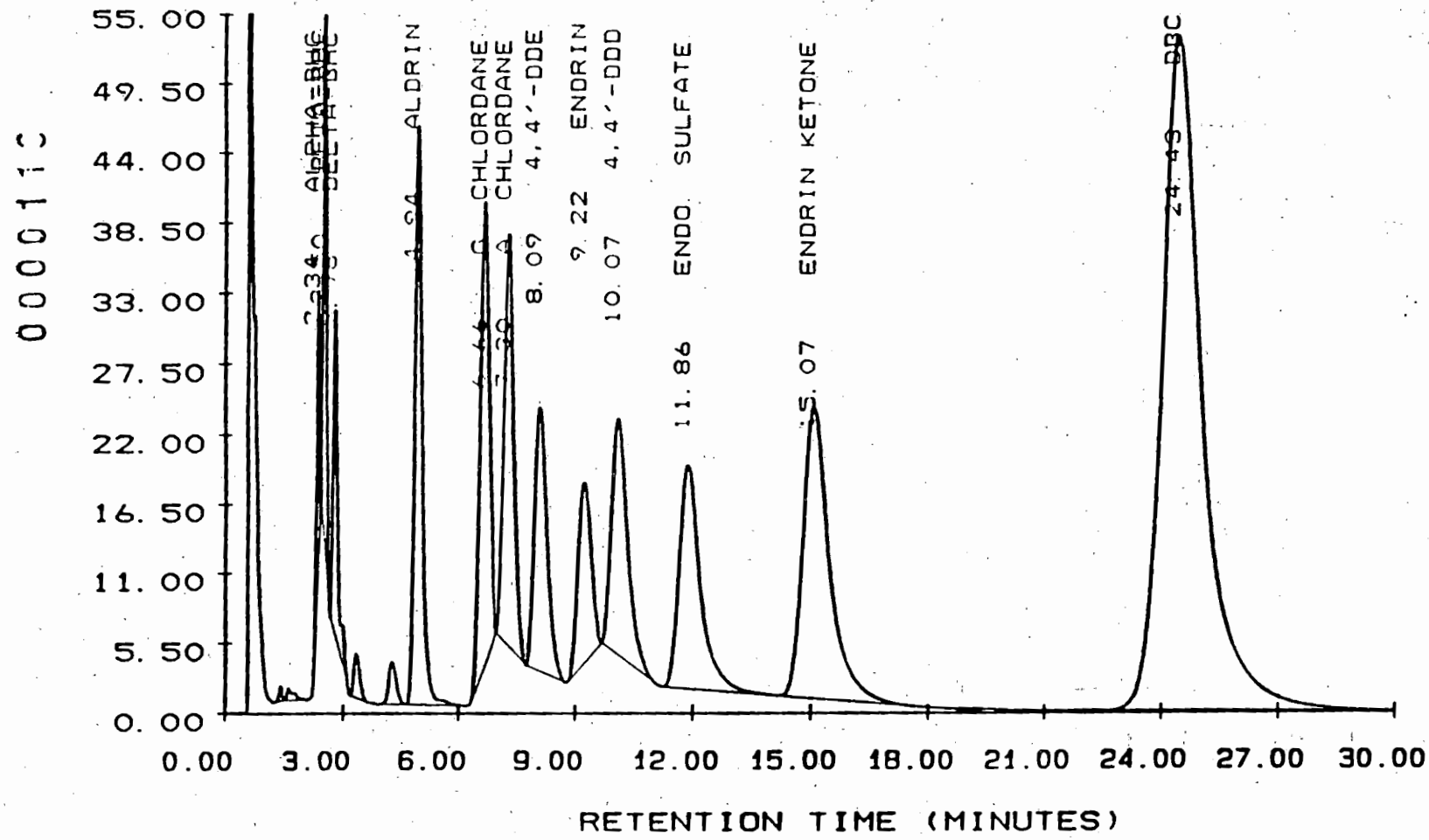
9713526.2842

INDB 27-56

SAMPLE NO. : 09119114 . 05 INSTRUMENT: 14

TEST NO. : DATE TIME: 09/11/91 20:38:33

METHOD NO. : 14B / 14B PAGE NO. : 01



Y MAXIMUM: 29331. START TIME: 0.00

Y MINIMUM: 7227. END TIME: 30.00

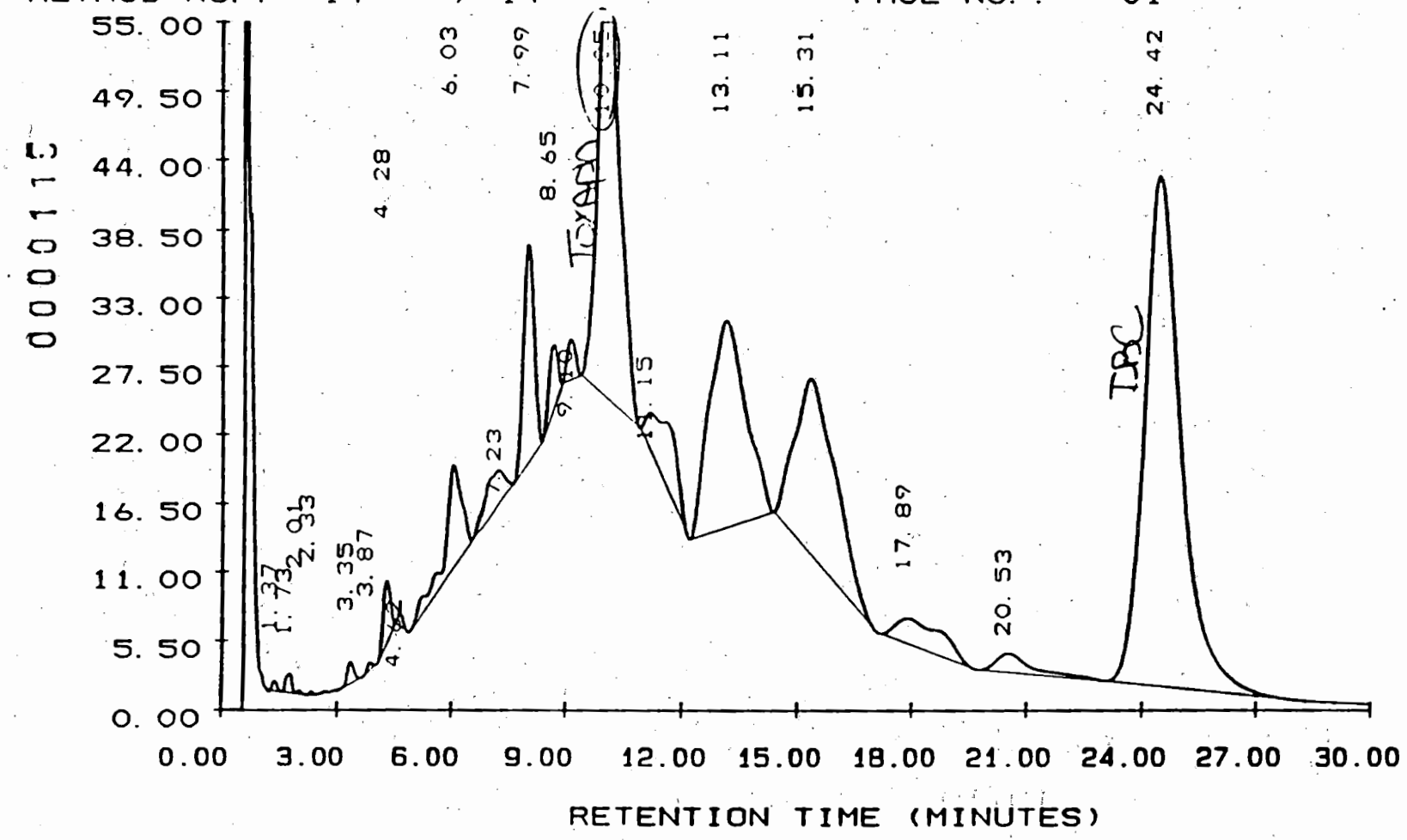
0000113

9713526.2843

TOXAPH 03-270

SAMPLE NO. : 09119114 . 06
TEST NO. :
METHOD NO. : 14 / 14

INSTRUMENT: 14
DATE TIME: 09/11/91 21:11:16
PAGE NO. : 01



Y MAXIMUM: 41150.
Y MINIMUM: 7228.

START TIME: 0.00
END TIME: 30.00

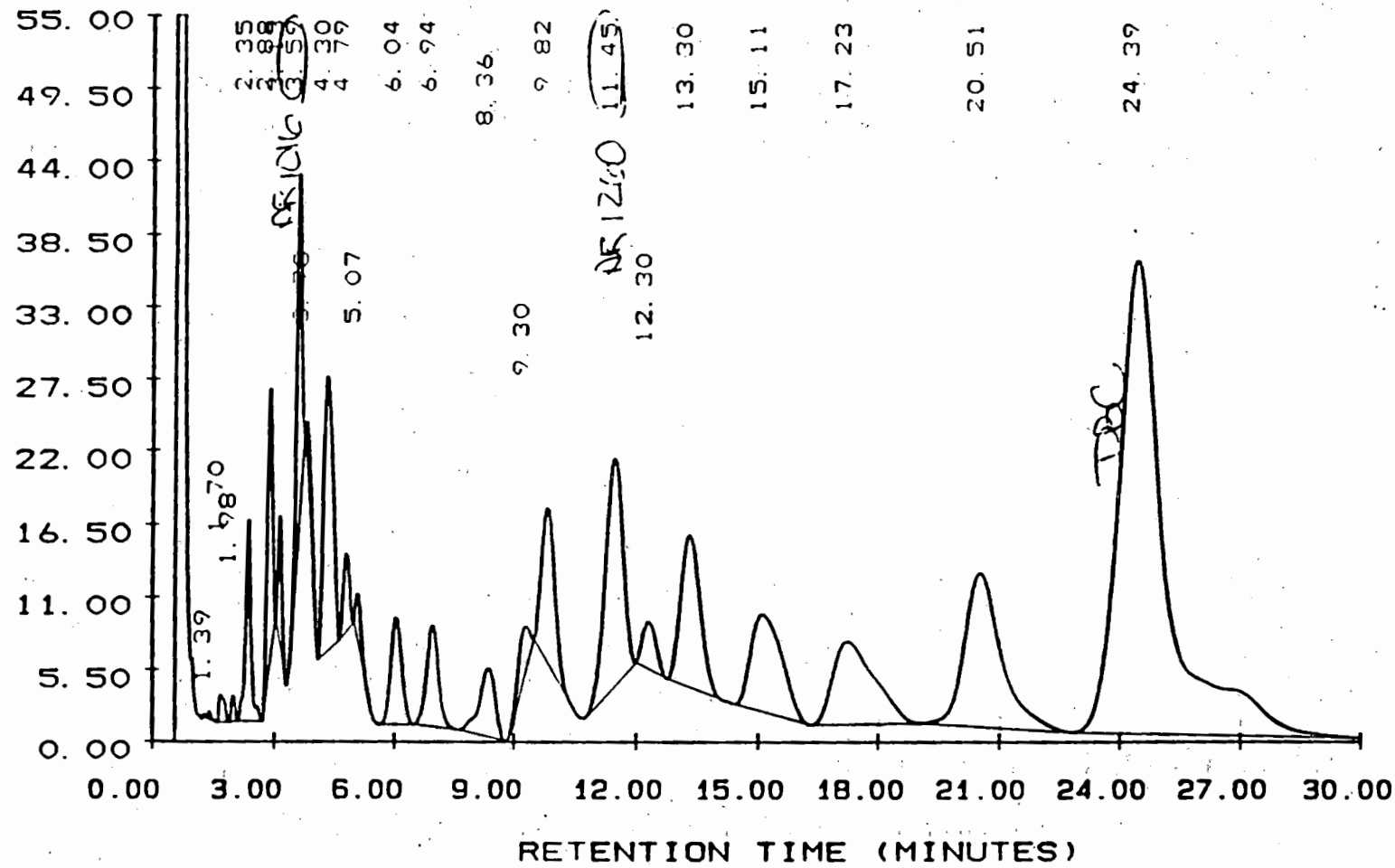
9713526.2844

AR1660 03-52

SAMPLE NO. : 09119114 . 07 INSTRUMENT: 14

TEST NO. : DATE TIME: 09/11/91 21:44:24

METHOD NO. : 14 / 14 PAGE NO. : 01



Y MAXIMUM: 58394. START TIME: 0.00

Y MINIMUM: 7230. END TIME: 30.00

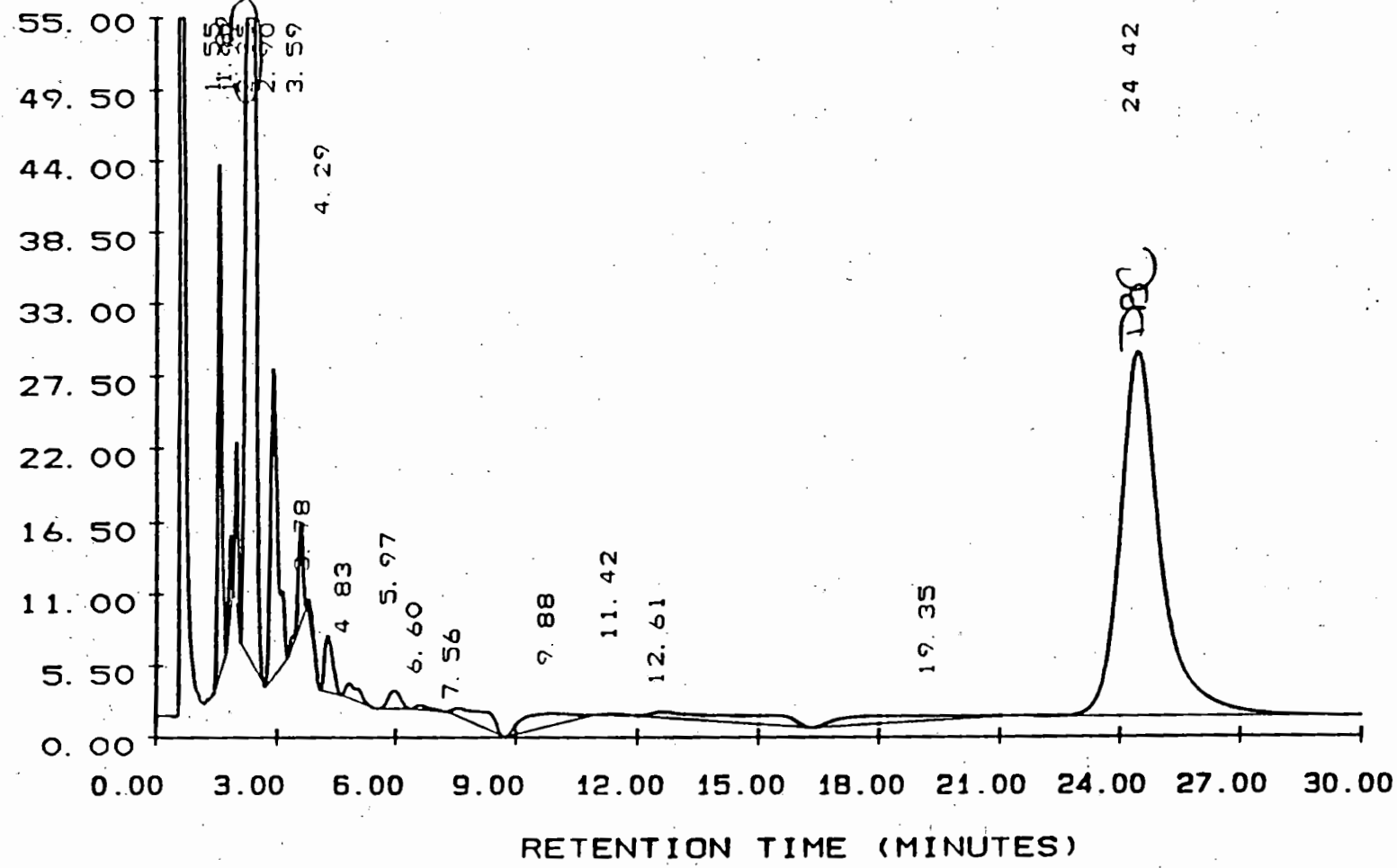
9713526.2845

AR1221 01-280

SAMPLE NO. : 09119114 . 08 INSTRUMENT: 14

TEST NO. : DATE TIME: 09/11/91 22:38:54

METHOD NO. : 14 / 14 PAGE NO. : 01



Y MAXIMUM: 57711. START TIME: 0.00

Y MINIMUM: 5712. END TIME: 30.00

0000012C

9713526.2846

AR1232 03-265

SAMPLE NO. : 09119114 .09

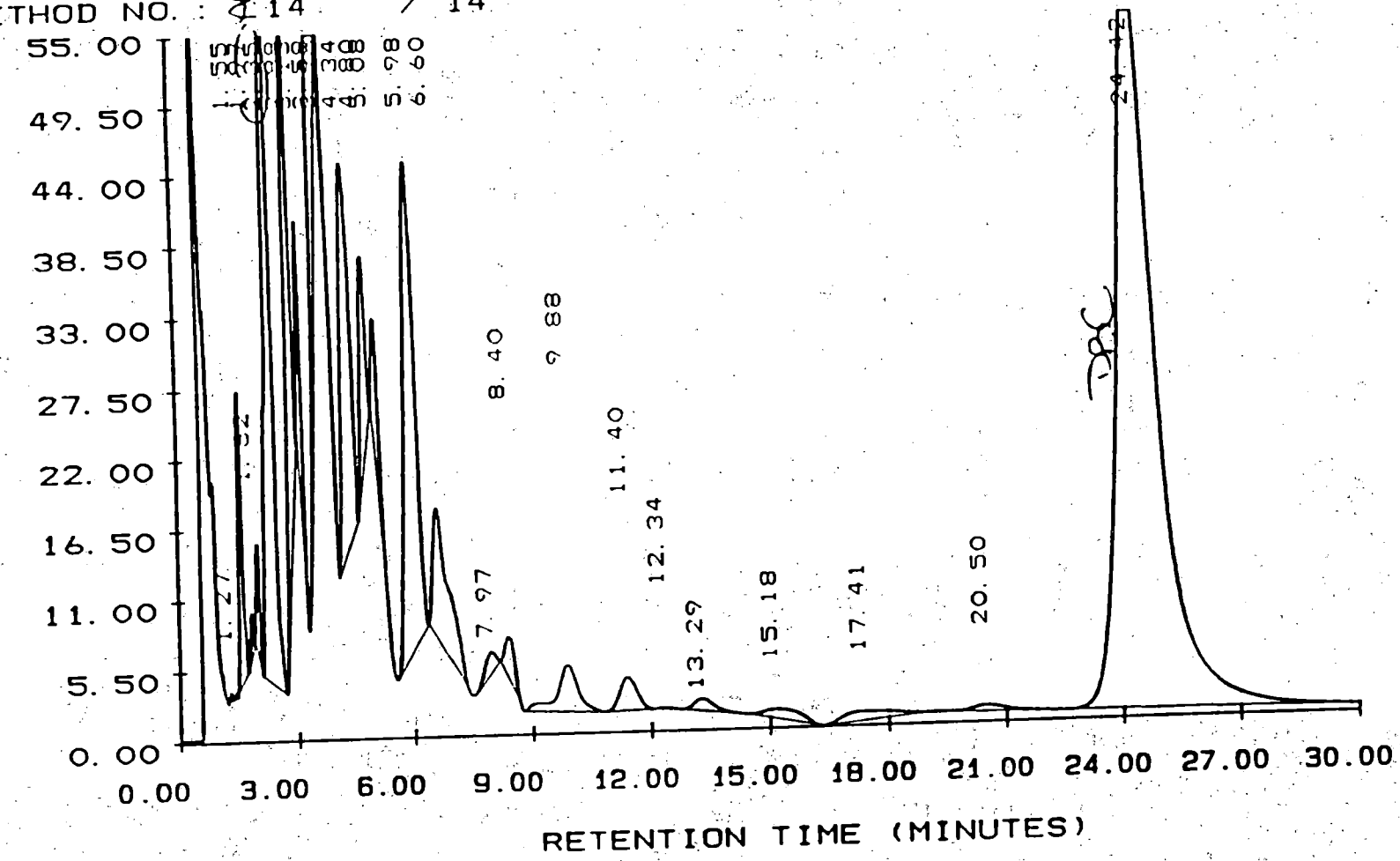
TEST NO. :

METHOD NO. : 14 / 14

INSTRUMENT: 14

DATE TIME: 09/11/91 23:11:38

PAGE NO. : 01



Y MAXIMUM: 46159.

Y MINIMUM: 7108.

START TIME: 0.00

END TIME: 30.00

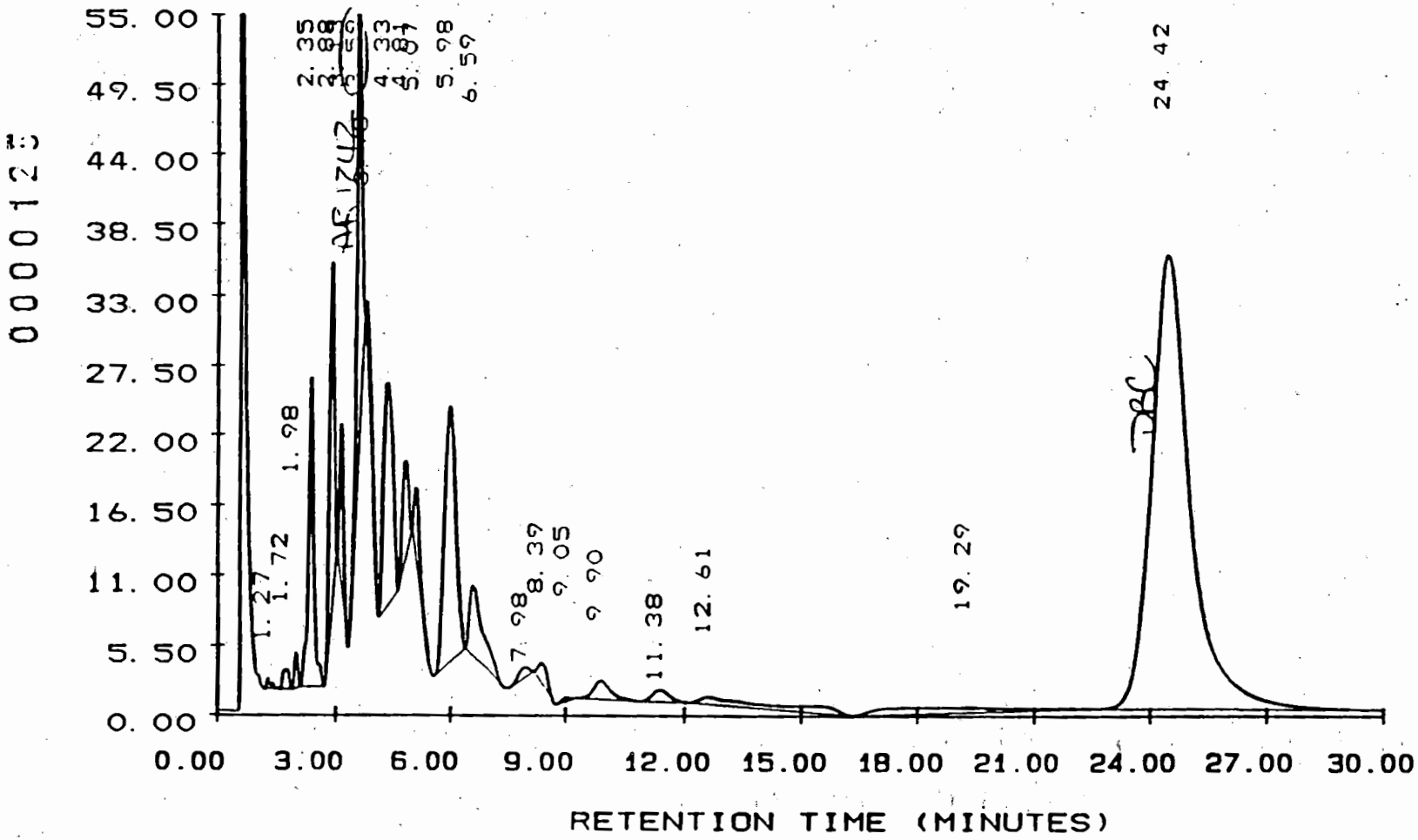
0000122

9713526.2847

AR1242 04-266

SAMPLE NO. : 09119114 . 10
TEST NO. :
METHOD NO. : 14 / 14

INSTRUMENT: 14
DATE TIME: 09/11/91 23:44:54
PAGE NO. : 01



Y MAXIMUM: 46919.
Y MINIMUM: 7007.

START TIME: 0.00
END TIME: 30.00

0000012:
9713526.2848

AR1248 02-277

SAMPLE NO. : 09119114 . 11

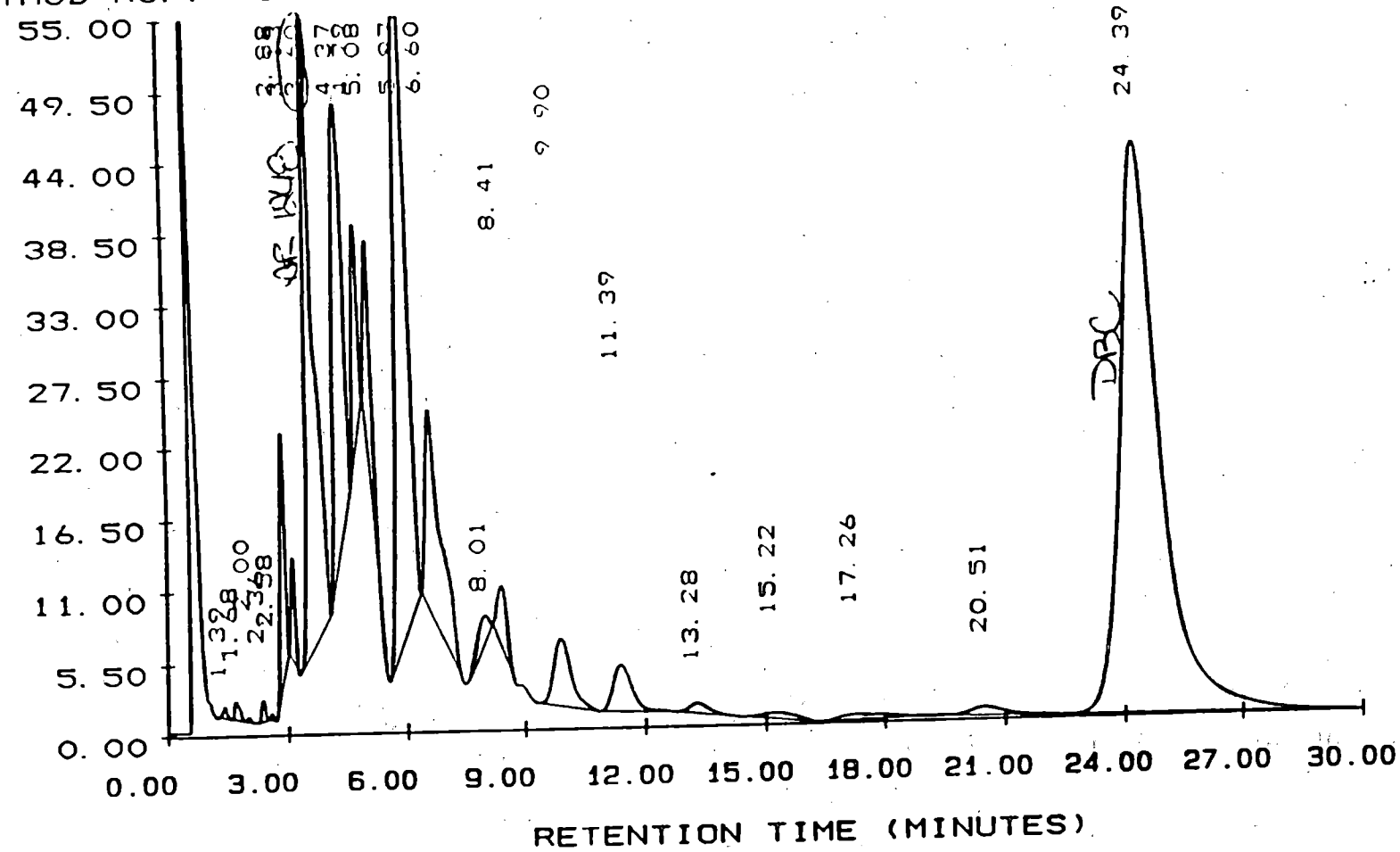
TEST NO. :

METHOD NO. : 14 / 14

INSTRUMENT: 14

DATE TIME: 09/12/91 00:18:02

PAGE NO. : 01



Y MAXIMUM: 44468.

Y MINIMUM: 7064.

START TIME: 0.00

END TIME: 30.00

0000127

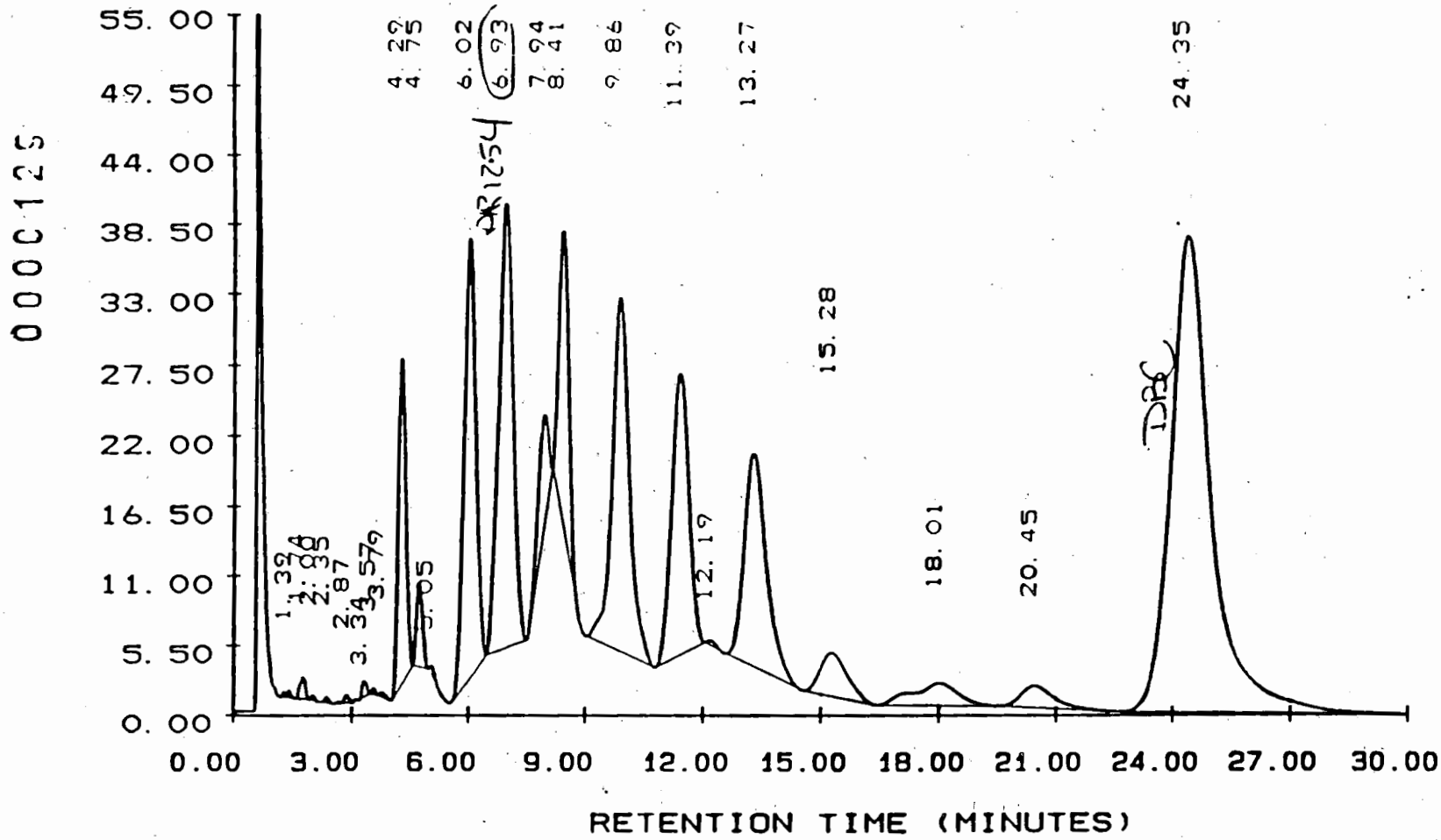
9713526.2849

AR1254 02-271

SAMPLE NO. : 09119114 . 12 INSTRUMENT: 14

TEST NO. : DATE TIME: 09/12/91 00:50:53

METHOD NO. : 14 / 14 PAGE NO. : 01



Y MAXIMUM: 44652. START TIME: 0.00

Y MINIMUM: 7039. END TIME: 30.00

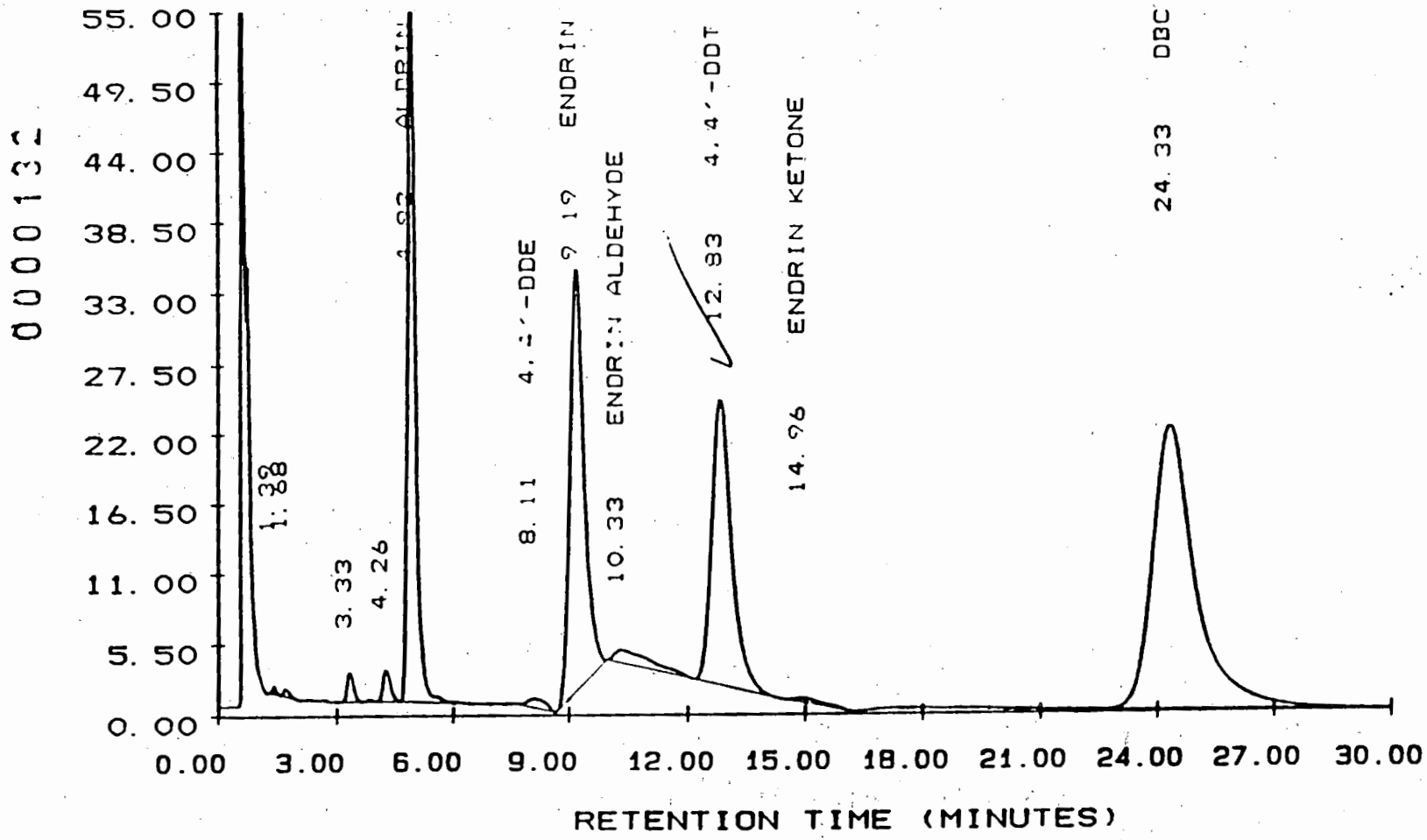
0000C125

97135526.2850

EVALB 19-60

SAMPLE NO. : 09119114 . 19
TEST NO. :
METHOD NO. : 14 / 14

INSTRUMENT: 14
DATE TIME: 09/12/91 04:38:50
PAGE NO. : 01



Y MAXIMUM: 28475.
Y MINIMUM: 6971.

START TIME:
END TIME:

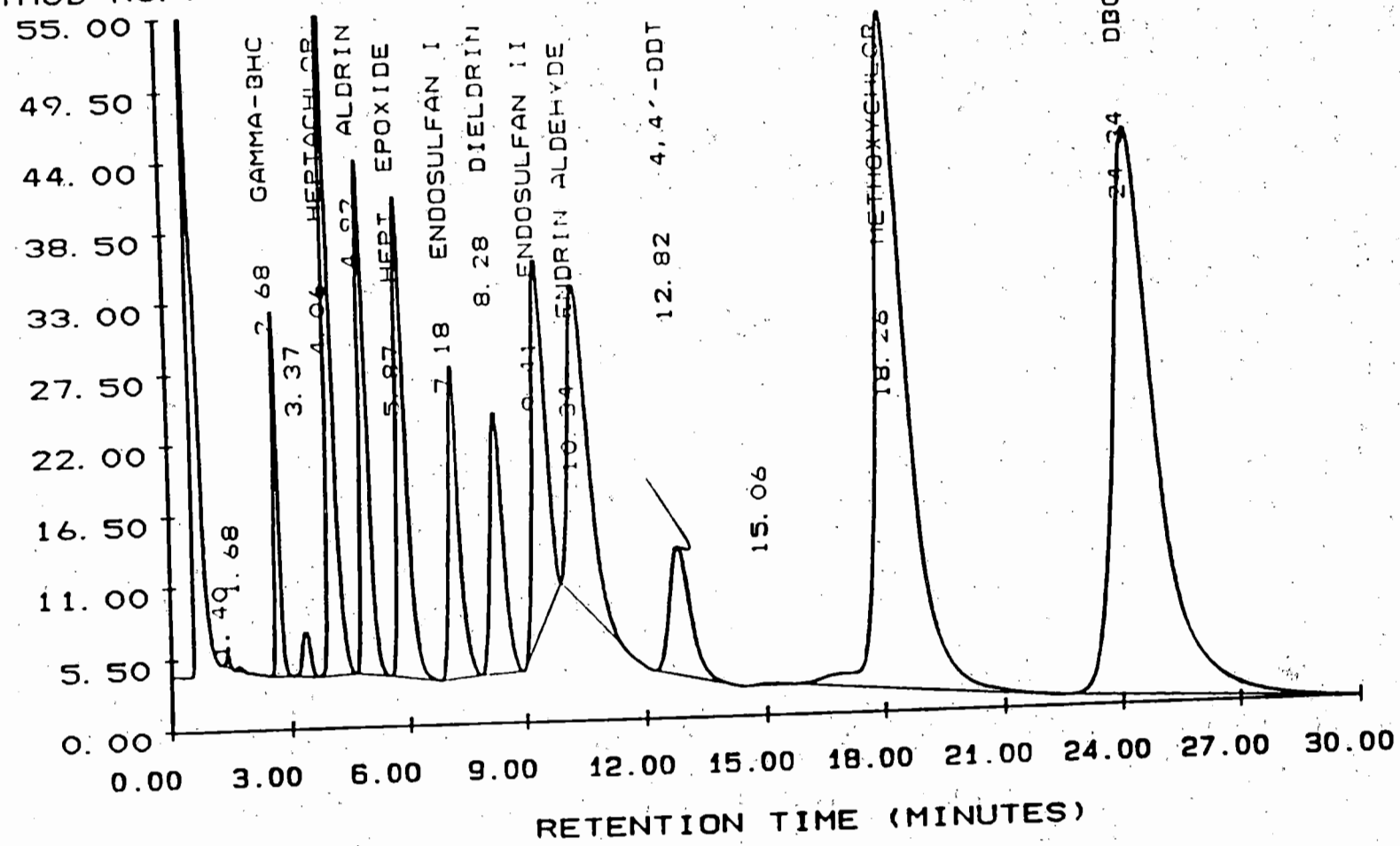
0000132

9713526.2851

INDA 27-55

SAMPLE NO. : 09119114 . 25
TEST NO. :
METHOD NO. : 14A / 14A

INSTRUMENT: 14
DATE TIME: 09/12/91 07:54:16
PAGE NO. : 01



Y MAXIMUM: 31092.
Y MINIMUM: 5259.

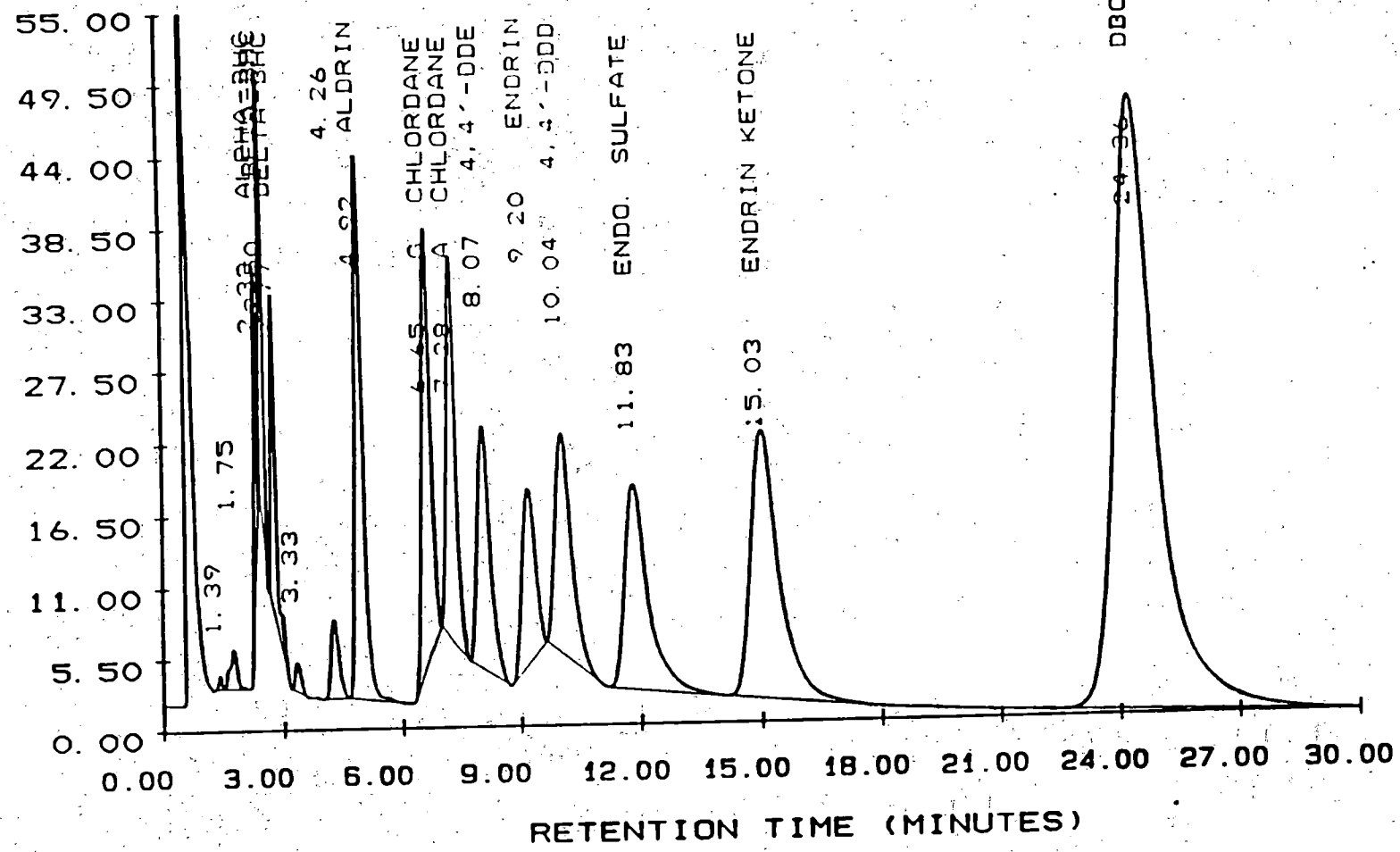
START TIME: 0.00
END TIME: 30.00

9713526.2852

INDB 27-56

SAMPLE NO. : 09119114 . 26
TEST NO. :
METHOD NO. : 14B / 14B

INSTRUMENT: 14
DATE TIME: 09/12/91 08:26:52
PAGE NO. : 01



Y MAXIMUM: 30654.
Y MINIMUM: 6372.

START TIME: 0.00
END TIME: 30.00

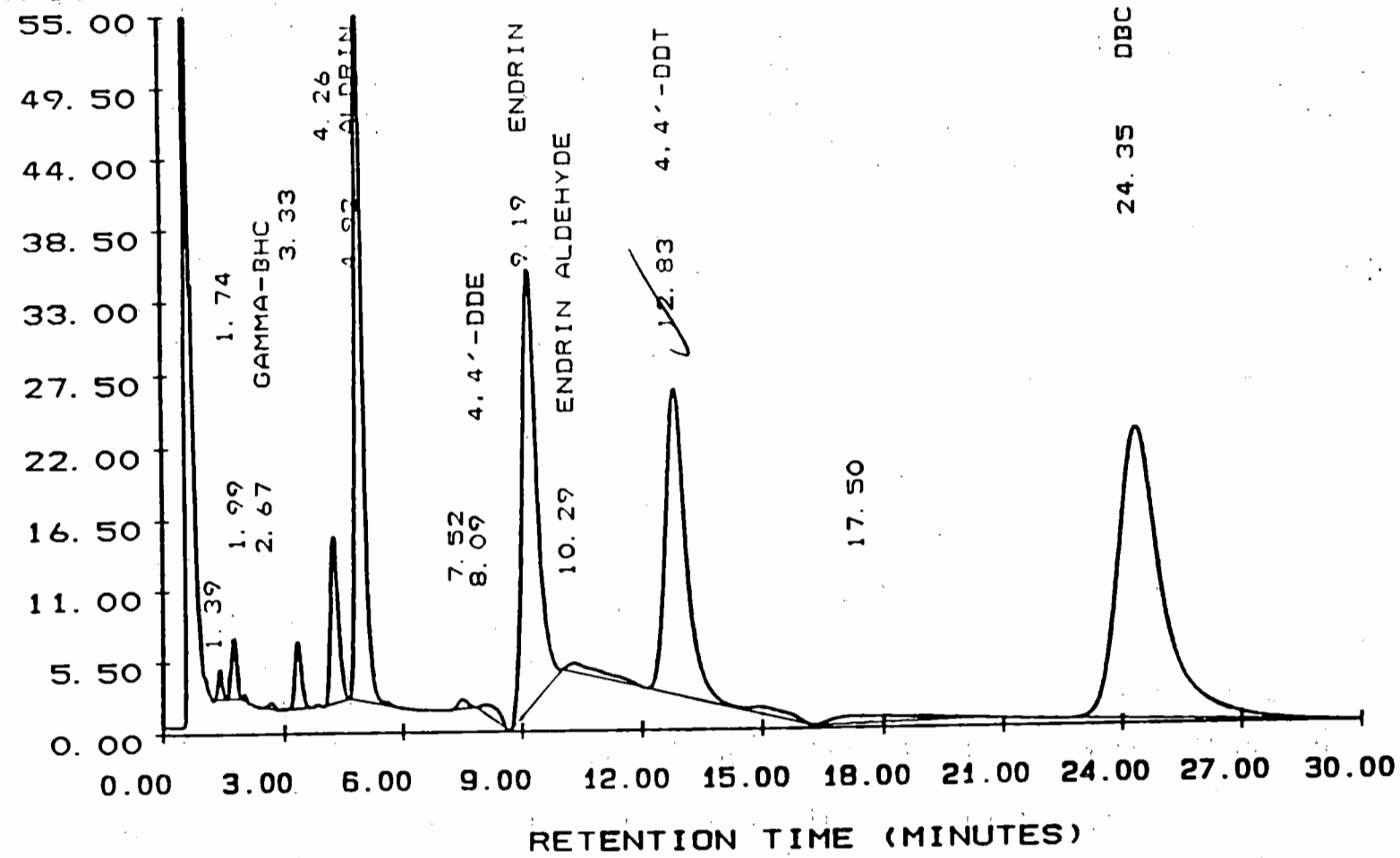
000013C

9713526.2853

EVALB 19-60

SAMPLE NO. : 09119114 . 33
TEST NO. :
METHOD NO. : 14 / 14

INSTRUMENT: 14
DATE TIME: 09/12/91 12:14:01
PAGE NO. : 01



Y MAXIMUM: 30611.
Y MINIMUM: 7039.

START TIME: 0.00
END TIME: 30.00

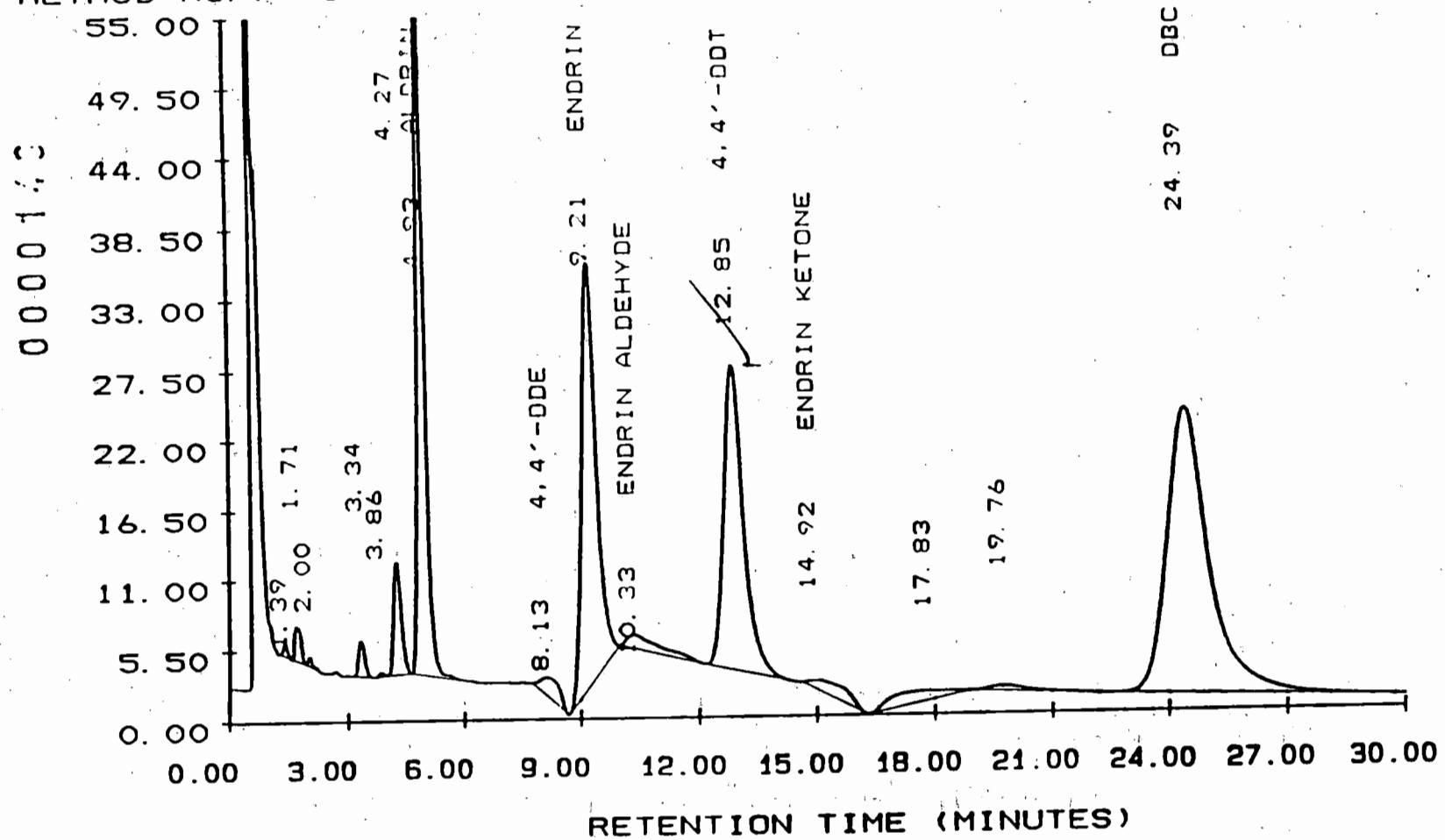
0000013

9713526.2854

EVALB 19-60

SAMPLE NO. : 09119114 47
TEST NO. :
METHOD NO. : 14 / 14

INSTRUMENT: 14
DATE TIME: 09/12/91 20:07:24
PAGE NO. : 01



Y MAXIMUM: 31444.
Y MINIMUM: 6065.

START TIME: 0.00
END TIME: 30.00

00001.3

9713526.2855

AR1254 02-271

SAMPLE NO. : 09119114 . 54

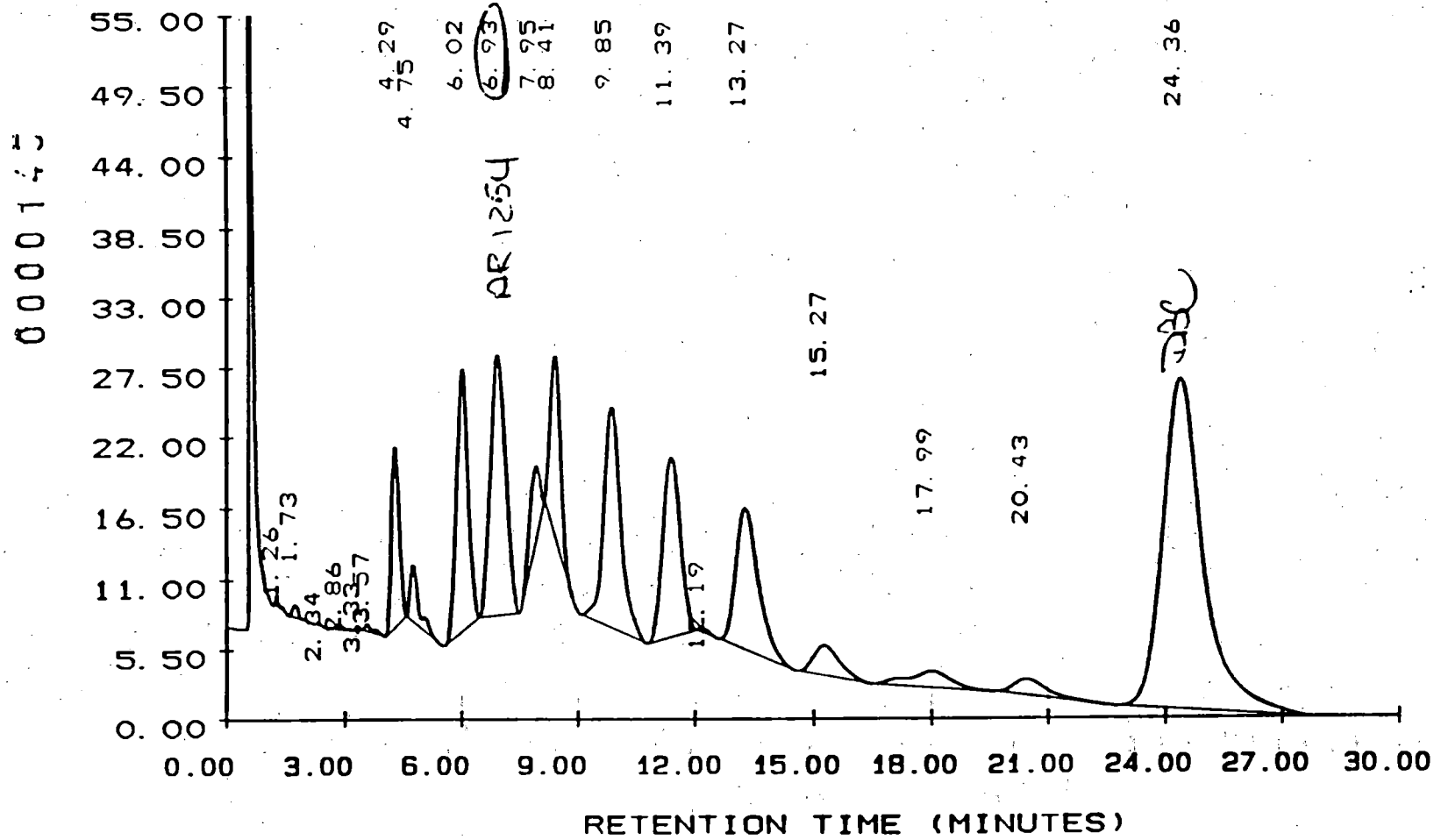
TEST NO. :

METHOD NO. : 14 / 14

INSTRUMENT: 14

DATE TIME: 09/12/91 23:55:26

PAGE NO. : 01



Y MAXIMUM: 54775.

Y MINIMUM: 2.

START TIME: 0.00

END TIME: 30.00

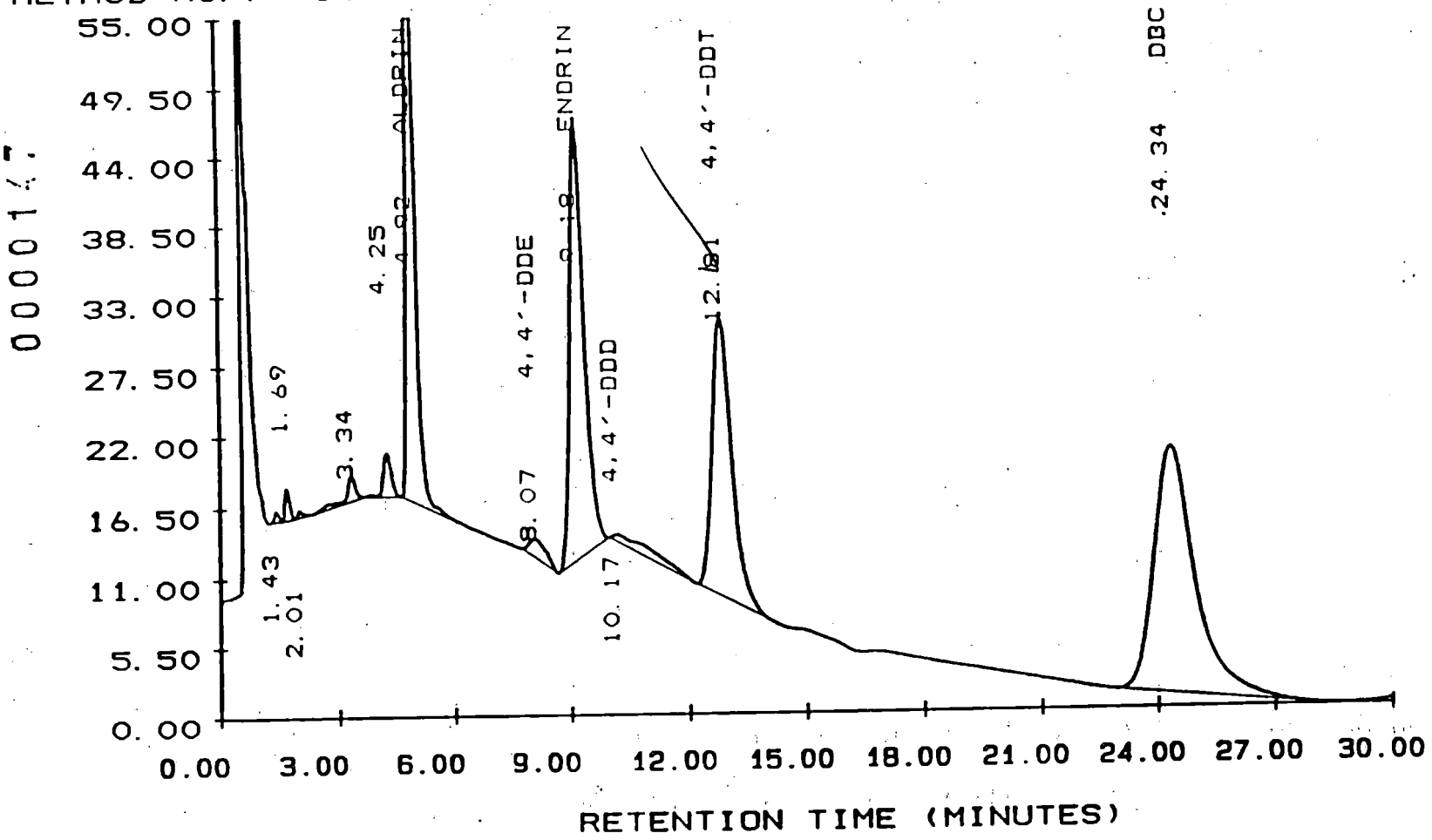
0000117

9713526.2856

EVALB 19-60

SAMPLE NO. : 09119114 .61
TEST NO. :
METHOD NO. : 14 / 14

INSTRUMENT: 14
DATE TIME: 09/13/91 03:47:33
PAGE NO. : 01



Y MAXIMUM: 34532.
Y MINIMUM: 1746.

START TIME: 0.00
END TIME: 30.00

9713526.2857

AR1254 02-271

SAMPLE NO. : 09119114 . 68

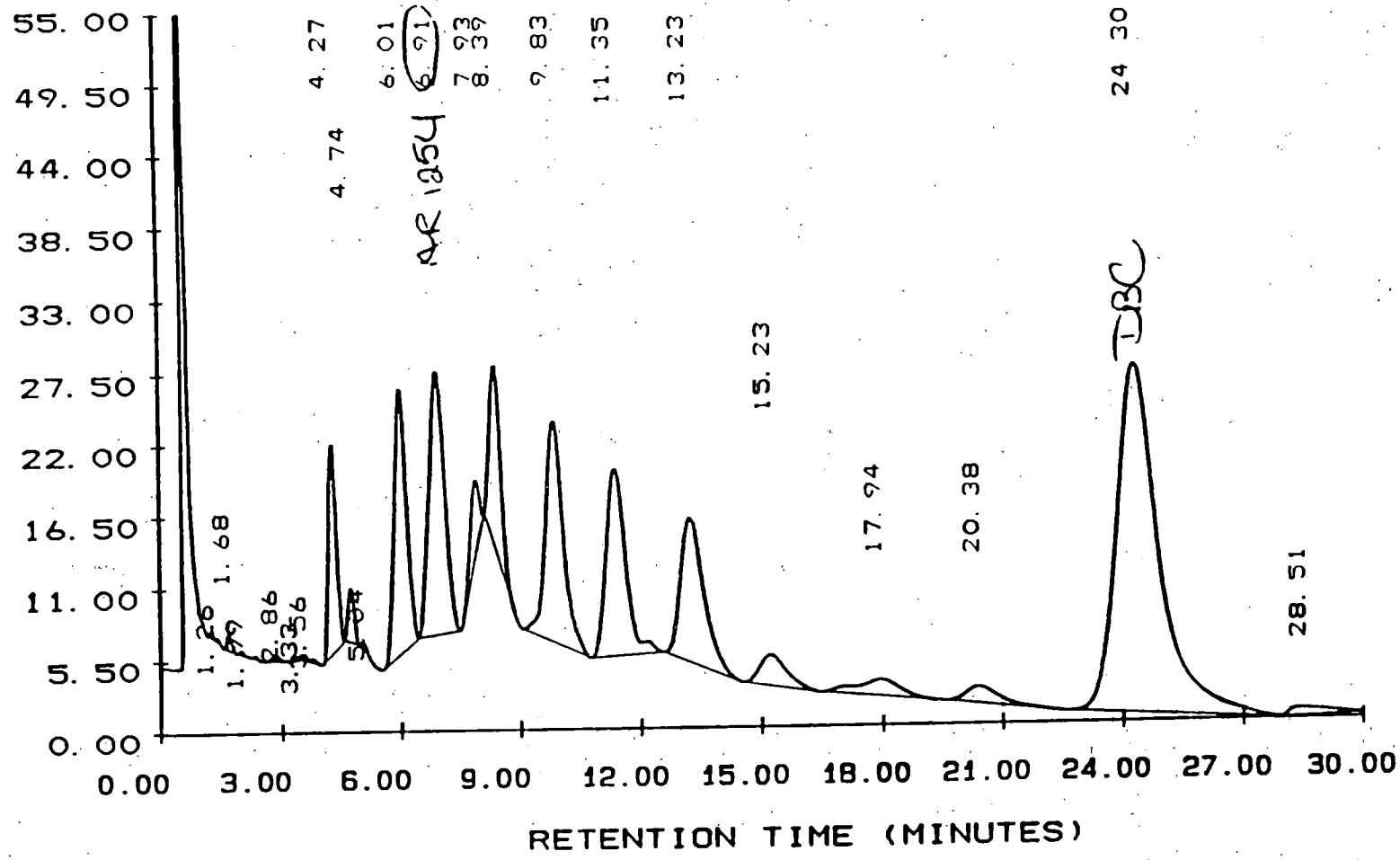
TEST NO. :

METHOD NO. : 14 / 14

INSTRUMENT: 14

DATE TIME: 09/13/91 07:37:36

PAGE NO. : 01



Y MAXIMUM: 56150.

Y MINIMUM: 2334.

START TIME: 0.00

END TIME: 30.00

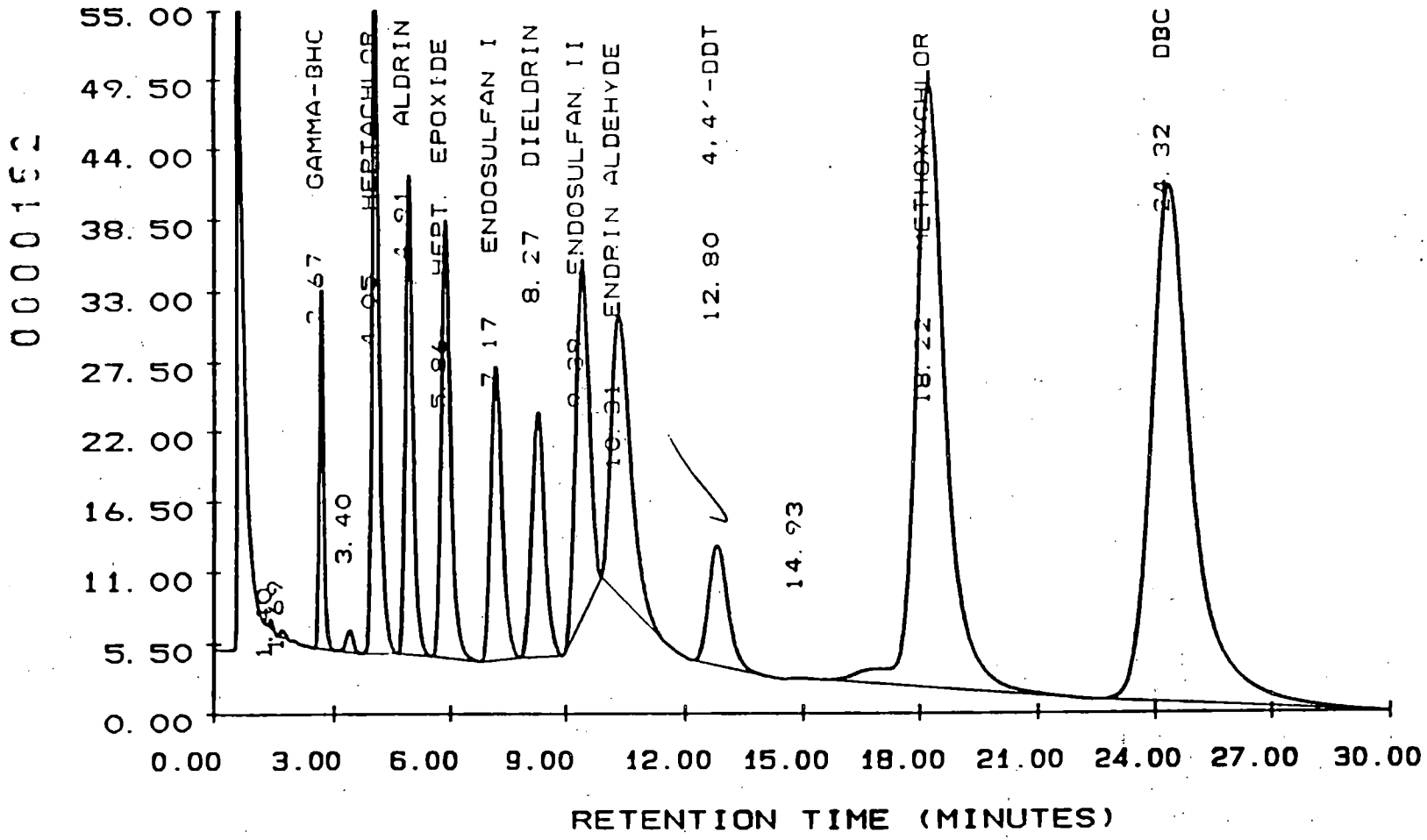
00001145

97136526.2850

INDA 27-55

SAMPLE NO. : 09119114 .69
TEST NO. :
METHOD NO. : 14A / 14A

INSTRUMENT: 14
DATE TIME: 09/13/91 08:28:24
PAGE NO. : 01



Y MAXIMUM: 34863.
Y MINIMUM: 4515.

START TIME: 0.00
END TIME: 30.00

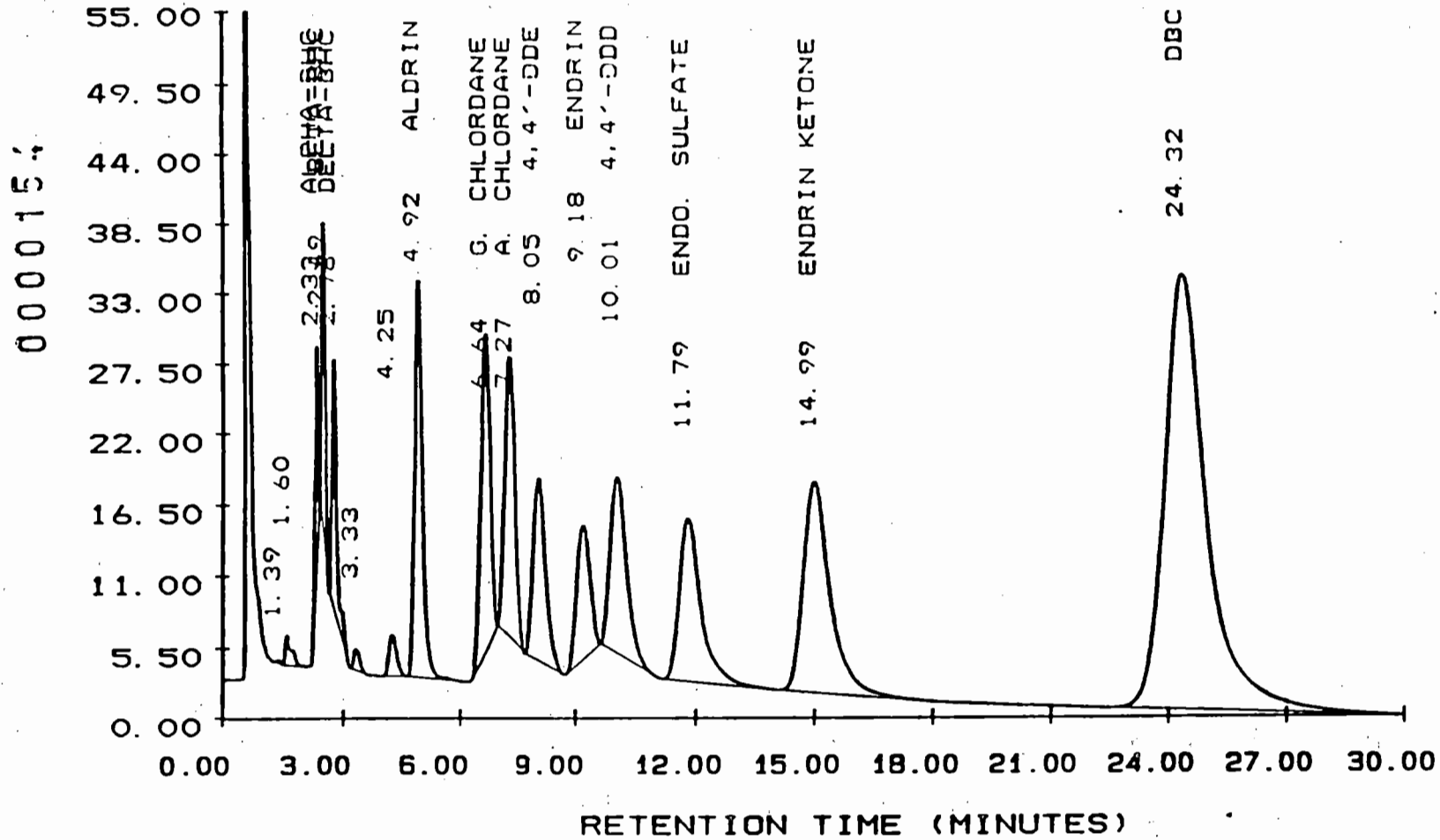
0000152

9713526.2859

INDB 27-56

SAMPLE NO. : 09119114 . 70
TEST NO. :
METHOD NO. : 14B / 14B

INSTRUMENT: 14
DATE TIME: 09/13/91 09:01:03
PAGE NO. : 01



Y MAXIMUM: 42224.
Y MINIMUM: 5252.

START TIME: 0.00
END TIME: 30.00

000015

9713526.2860

9713526.2861

1D 0000163

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

PBLKMS

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LE1064-MB1 BS

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 09119113.36

Level: (low/med) LOW

Date Received: 08/19/91

% Moisture: not dec. 0 dec.

Date Extracted: 08/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 09/12/91

GPC Cleanup: (Y/N) Y pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	
12674-11-2	Aroclor-1016	80	U
11104-28-2	Aroclor-1221	80	U
11141-16-5	Aroclor-1232	80	U
53469-21-9	Aroclor-1242	80	U
12672-29-6	Aroclor-1248	80	U
11097-69-1	Aroclor-1254		S
11096-82-5	Aroclor-1260	160	U

10-3-91

S: SPIKE COMPOUND

FORM 1 PEST

12/88 Rev.

9713526.2862

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: 9108L474 Gen Chem
Document Number:

Date: 10/20/92
Originator: CMR

HCS - WHC/E - 92 15/T ~~1-L05~~

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

9713526 2863

WESTON Analytics Inorganics Section

Date of Prep: 08/27/91
Date of Analysis: 08/27/91
Worksheet: FK
Computer #: DELL-IC
Directory: INORGANICS

Run Batch: 91LIC139
Method: EPA-300
Analyst: FJK
Instrument: DIONEX

CALIB DATA
SLOPE: 2254.1
INTERCEPT: -254.6
CORRELATION COEFF.: 0.999

RFW SAMPLE ID	TEST	INST. ABS	INITIAL RESULT	DILUTION FACTOR	C/D	FINAL RESULT	DETECTION LIMIT 0.25	UNITS	REPLICATE ORIG SAMPLE RESULT	REP % DIFF	SPIKE SPIKE LEVEL ?	SAMPLE SPIKE AMOUNT	% RECOV	LCS AMT LCS ?	% RECOV	SOILS PREP PREP BATCH	INITIAL SAMPLE WT.	FINAL VOL.	% SOLID
91LIC139-MB1	ICFL	0.000	0.000	1	5.0000	0.000 u	2.500	mg/kg								91LIC04	6	30	100.0
91LIC139-MB1	ICFL-S	0.000	20.393	1	5.0000	101.967	2.500	mg/kg	0.000		20	100.000	102.0			91LIC04	6	30	100.0
91BEL424-001	ICFL	0.000	0.000	1	5.1406	0.000 u	2.570	mg/kg								91LIC04	6.47	30	98.2
91BEL424-002	ICFL	0.000	0.000	1	4.6771	0.000 u	2.339	mg/kg								91LIC04	6.972	30	92.0
91BEL474-001	ICFL	0.000	0.000	1	5.0096	0.000 u	2.505	mg/kg								91LIC04	6.317	30	94.8
91BEL474-002	ICFL	0.000	0.000	1	4.7438	0.000 u	2.372	mg/kg								91LIC04	6.685	30	94.6
91BEL474-003	ICFL	0.000	0.000	1	5.1054	0.000 u	2.553	mg/kg								91LIC04	6.285	30	94.7
91BEL483-001	ICFL	0.000	0.000	1	4.9356	0.000 u	2.468	mg/kg								91LIC04	6.557	30	92.7
91BEL483-002	ICFL	0.000	0.000	1	5.6857	0.000 u	2.843	mg/kg								91LIC04	5.962	30	88.5
91BEL505-001	ICFL	0.000	0.000	1	4.6256	0.000 u	2.313	mg/kg								91LIC04	6.618	30	98.0
91BEL505-002	ICFL	0.000	0.000	1	4.7103	0.000 u	2.355	mg/kg								91LIC04	6.369	30	100.0
91BEL554-001	ICFL	0.000	0.000	1	5.4591	0.000 u	2.730	mg/kg								91LIC04	6.645	30	82.7
91BTL176-001	ICFL	0.000	0.000	1	6.7282	0.000 u	3.364	mg/kg								91LIC04	5.985	30	74.5
91BTL176-002	ICFL	0.000	0.000	1	5.3608	0.000 u	2.680	mg/kg								91LIC04	6.381	30	87.7
91LIC139-MB1	ICN02	0.000	0.000	1	5.0000	0.000 u	1.250	mg/kg								91LIC04	6	30	100.0
91LIC139-MB1	ICN02S	0.000	10.504	1	5.0000	52.521	1.250	mg/kg	0.000		10	50.000	105.0			91LIC04	6	30	100.0
91BEL424-001	ICN02	0.000	0.000	1	5.1406	0.000 u	1.285	mg/kg								91LIC04	6.47	30	98.2
91BEL424-002	ICN02	0.000	0.000	1	4.6771	0.000 u	1.169	mg/kg								91LIC04	6.972	30	92.0
91BEL474-001	ICN02	0.000	0.000	1	5.0096	0.000 u	1.252	mg/kg								91LIC04	6.317	30	94.8
91BEL474-002	ICN02	0.000	0.000	1	4.7438	0.000 u	1.186	mg/kg								91LIC04	6.685	30	94.6
91BEL474-003	ICN02	0.000	0.000	1	5.1054	0.000 u	1.276	mg/kg								91LIC04	6.285	30	94.7
91BEL483-001	ICN02	0.000	0.000	1	4.9356	0.000 u	1.234	mg/kg								91LIC04	6.557	30	92.7
91BEL483-002	ICN02	0.000	0.000	1	5.6857	0.000 u	1.421	mg/kg								91LIC04	5.962	30	88.5
91BEL505-001	ICN02	0.000	0.000	1	4.6256	0.000 u	1.156	mg/kg								91LIC04	6.618	30	98.0
91BEL505-002	ICN02	0.000	0.000	1	4.7103	0.000 u	1.178	mg/kg								91LIC04	6.369	30	100.0
91BEL554-001	ICN02	0.000	0.000	1	5.4591	0.000 u	1.365	mg/kg								91LIC04	6.645	30	82.7
91BTL176-001	ICN02	0.000	0.000	1	6.7282	0.000 u	1.682	mg/kg								91LIC04	5.985	30	74.5
91BTL176-002	ICN02	0.000	0.000	1	5.3608	0.000 u	1.340	mg/kg								91LIC04	6.381	30	87.7
91LIC139-MB1	ICN03	0.000	0.000	1	5.0000	0.000 u	1.250	mg/kg								91LIC04	6	30	100.0
91LIC139-MB1	ICN03S	0.000	10.734	1	5.0000	53.670	1.250	mg/kg	0.000		10	50.000	107.3			91LIC04	6	30	100.0
91BEL424-001	ICN03	0.000	0.557	1	5.1406	2.865	1.285	mg/kg								91LIC04	6.47	30	98.2
91BEL424-002	ICN03	0.000	0.342	1	4.6771	1.600	1.169	mg/kg								91LIC04	6.972	30	92.0
91BEL474-001	ICN03	0.000	1.230	1	5.0096	6.162	1.252	mg/kg								91LIC04	6.317	30	94.8
91BEL474-002	ICN03	0.000	0.000	1	4.7438	0.000 u	1.186	mg/kg								91LIC04	6.685	30	94.6
91BEL474-003	ICN03	0.000	0.000	1	5.1054	0.000 u	1.276	mg/kg								91LIC04	6.285	30	94.7
91BEL483-001	ICN03	0.000	0.000	1	4.9356	0.000 u	1.234	mg/kg								91LIC04	6.557	30	92.7
91BEL483-002	ICN03	0.000	0.485	1	5.6857	2.757	1.421	mg/kg								91LIC04	5.962	30	88.5
91BEL505-001	ICN03	0.000	0.295	1	4.6256	1.363	1.156	mg/kg								91LIC04	6.618	30	98.0
91BEL505-002	ICN03	0.000	0.000	1	4.7103	0.000 u	1.178	mg/kg								91LIC04	6.369	30	100.0
91BEL554-001	ICN03	0.000	0.356	1	5.4591	1.945	1.365	mg/kg								91LIC04	6.645	30	82.7
91BEL555-001	ICN03	0.000	4.226	1	5.2169	22.046	1.304	mg/kg								91LIC04	6.19	30	92.9
91BEL555-002	ICN03	0.000	3.149	1	4.9192	15.489	1.230	mg/kg								91LIC04	6.687	30	91.2
91BTL176-001	ICN03	0.000	0.000	1	6.7282	0.000 u	1.682	mg/kg								91LIC04	5.985	30	74.5
91BTL176-002	ICN03	0.000	0.000	1	5.3608	0.000 u	1.340	mg/kg								91LIC04	6.381	30	87.7
91LIC139-MB1	ICP04	0.000	0.000	1	5.0000	0.000 u	1.250	mg/kg								91LIC04	6	30	100.0
91LIC139-MB1	ICP04S	0.000	10.677	1	5.0000	53.385	1.250	mg/kg	0.000		10	50.000	106.8			91LIC04	6	30	100.0
91BEL555-001	ICP04	0.000	0.000	1	5.2169	0.000 u	1.304	mg/kg								91LIC04	6.19	30	92.9
91BEL555-002	ICP04	0.000	0.000	1	4.9192	0.000 u	1.230	mg/kg								91LIC04	6.687	30	91.2
91LIC139-MB1	ICS04	0.000	0.000	1	5.0000	0.000 u	1.250	mg/kg								91LIC04	6	30	100.0
91LIC139-MB1	ICS04S	0.000	10.663	1	5.0000	53.315	1.250	mg/kg	0.000		10	50.000	106.6			91LIC04	6	30	100.0
91BEL424-001	ICS04	0.000	1.025	1	5.1406	5.267	1.285	mg/kg								91LIC04	6.47	30	98.2
91BEL424-002	ICS04	0.000	0.964	1	4.6771	4.509	1.169	mg/kg								91LIC04	6.972	30	92.0
91BEL474-001	ICS04	0.000	1.839	1	5.0096	9.213	1.252	mg/kg								91LIC04	6.317	30	94.8
91BEL474-002	ICS04	0.000	0.953	1	4.7438	4.521	1.186	mg/kg								91LIC04	6.685	30	94.6
91BEL474-003	ICS04	0.000	0.798	1	5.1054	4.035	1.276	mg/kg								91LIC04	6.285	30	94.7

9713526.2864

FFORM1.CSV

IC DATA REVIEW SPREADSHEET

Sample Name	Date and Time	Raw Data File Name	Injection Cycle Number	Dilution Factor
40 PPM	8/27/91 16:24	D:\DATA\082791\rawdatb1.d01	1	1
TEST	8/27/91 16:35	D:\DATA\082791\rawdatb1.d02	2	1
BLANK	8/27/91 16:46	D:\DATA\082791\rawdatb1.d03	3	1
AUTOCAL1	8/27/91 16:57	D:\DATA\082791\rawdatb1.d04	4	1
AUTOCAL2	8/27/91 17:08	D:\DATA\082791\rawdatb1.d05	5	1
AUTOCAL3	8/27/91 17:19	D:\DATA\082791\rawdatb1.d06	6	1
AUTOCAL4	8/27/91 17:30	D:\DATA\082791\rawdatb1.d07	7	1
AUTOCAL5	8/27/91 17:40	D:\DATA\082791\rawdatb1.d08	8	1
AUTOCAL6	8/27/91 17:52	D:\DATA\082791\rawdatb1.d09	9	1
ICV	8/27/91 18:03	D:\DATA\082791\rawdatb1.d10	10	1
CCV	8/27/91 18:14	D:\DATA\082791\rawdatb1.d11	11	1
91LC139-MB1	8/27/91 18:25	D:\DATA\082791\rawdatb1.d12	12	1
91LC139-MB15	8/27/91 18:35	D:\DATA\082791\rawdatb1.d13	13	1
9108L424-001	8/27/91 18:46	D:\DATA\082791\rawdatb1.d14	14	10
9108L424-001	8/27/91 18:57	D:\DATA\082791\rawdatb1.d15	15	1
9108L424-002	8/27/91 19:08	D:\DATA\082791\rawdatb1.d16	16	10
9108L424-002	8/27/91 19:19	D:\DATA\082791\rawdatb1.d17	17	1
9108L474-001	8/27/91 19:29	D:\DATA\082791\rawdatb1.d18	18	10
9108L474-001	8/27/91 19:40	D:\DATA\082791\rawdatb1.d19	19	1
9108L474-002	8/27/91 19:51	D:\DATA\082791\rawdatb1.d20	20	10
9108L474-002	8/27/91 20:02	D:\DATA\082791\rawdatb1.d21	21	1
9108L474-003	8/27/91 20:13	D:\DATA\082791\rawdatb1.d22	22	10
9108L474-003	8/27/91 20:24	D:\DATA\082791\rawdatb1.d23	23	1
CCV	8/27/91 20:34	D:\DATA\082791\rawdatb1.d24	24	1
9108L483-001	8/27/91 20:45	D:\DATA\082791\rawdatb1.d25	25	10
9108L483-001	8/27/91 20:56	D:\DATA\082791\rawdatb1.d26	26	1
9108L483-002	8/27/91 21:07	D:\DATA\082791\rawdatb1.d27	27	10
9108L483-002	8/27/91 21:18	D:\DATA\082791\rawdatb1.d28	28	1
9108L505-001	8/27/91 21:28	D:\DATA\082791\rawdatb1.d29	29	10
9108L505-001	8/27/91 21:39	D:\DATA\082791\rawdatb1.d30	30	1
9108L505-002	8/27/91 21:50	D:\DATA\082791\rawdatb1.d31	31	10
9108L505-002	8/27/91 22:01	D:\DATA\082791\rawdatb1.d32	32	1
9108L554-001	8/27/91 22:12	D:\DATA\082791\rawdatb1.d33	33	10
9108L554-001	8/27/91 22:23	D:\DATA\082791\rawdatb1.d34	34	1
CCV	8/27/91 22:33	D:\DATA\082791\rawdatb1.d35	35	1
9108L555-001	8/27/91 22:44	D:\DATA\082791\rawdatb1.d36	36	10
9108L555-001	8/27/91 22:55	D:\DATA\082791\rawdatb1.d37	37	1
9108L555-002	8/27/91 23:06	D:\DATA\082791\rawdatb1.d38	38	10
9108L555-002	8/27/91 23:17	D:\DATA\082791\rawdatb1.d39	39	1
9107L176-001	8/27/91 23:28	D:\DATA\082791\rawdatb1.d40	40	10
9107L176-001	8/27/91 23:39	D:\DATA\082791\rawdatb1.d41	41	1
9107L176-002	8/27/91 23:49	D:\DATA\082791\rawdatb1.d42	42	10

9713526.2865

FFORM1.CSV

91071176-002	8/28/91 00:00	D:\DATA\082791\rowdatb1.d43	43	1
BLANK	8/28/91 00:11	D:\DATA\082791\rowdatb1.d44	44	1
CCV	8/28/91 0:22	D:\DATA\082791\rowdatb1.d45	45	1

WESTON

% SOL/% MST/% ASH DATA

Log Book # 2342

70S010819 91290155

DATE/INIT.	TEMP TIME IN	TEMP TIME OUT	RFW #	CONTAINER WT	INITIAL WT (Sample & Container)	INITIAL WT SAMPLE	FINAL WT (Sample & Container)	FINAL WT SAMPLE	RESULT
8-19-91 JH	105		006	1.327	7.289		6.830		92.30
8-20-91 JH			007	1.336	7.205		6.834		92.27
			002	1.323	5.24		7.959		89.78
			004	1.337	5.287		5.003		86.76
			004	1.333	6.633		6.154		90.76
			003	1.334	5.554		4.691		78.80
			~~001~~	~~1.330~~	~~5.88~~	spill	8/20/91	JN	
			003	1.323	5.203		4.496		81.78
			003	1.325	12.753		10.529		82.14
			445 - 001	1.319	10.481				
			002	1.317	5.245	Sample's [illegible]	8/19/91 JN		[illegible]
		cip	1108447 001	1.343	6.883		6.748		97.57
			002	1.322	6.366		6.211		96.93
			003	1.320	7.950		7.755		97.06

Balance ID: B-5
Reviewed by: J. Henderson
Date: 8-22-91

RFW21-21-016/H-05/91

97152962866

9713526.2867

WESTON

pH DATA
(Soil pH, Aqueous pH, Corrosivity by pH)

Batch # 91LP4131

Test [illegible]

Worksheet # [illegible]

RFW #/Standard	pH < 7.00	pH > 7.00	SOLID PREP/ COMMENT
	4 = [illegible]	7 = [illegible]	
	7 = 6.94	[illegible]	
	[illegible]	[illegible]	
91[illegible]		7.[illegible]	[illegible]
[illegible]		7.5[illegible]	
[illegible]		8.12	
[illegible]		8.12	
9[illegible]		9.2[illegible]	CLI
91[illegible]		9.2[illegible] ✓	CLI
[illegible]		9.29	
[illegible]		9.33 ✓	✓
		7.[illegible]	
		[illegible]	
	[illegible]	[illegible]	

Logbook # 91[illegible]9

Date: 7-19-91

Analyst: [illegible]

Time: [illegible]

Reviewed by: J Henderson

Date: 8-22-91

RFW 21-21-016/F-12/89

9713526.2868

9108L071 - NH_3 Runs 46, 48, 53 Page 36
Distillation Page 86

WESTON

NH_3-N/TKN ANALYSIS LOG

CAL STD ID: NH_4Cl
SV/CCV STD ID: $(NH_4)_2SO_4$ EOA

NITS: SOIL = mg/kg; WATER = mg/L

NH_3-N/TKN WORKSHEET: NH3 0821 TKN 0821
PREP INFORMATION: 91LAM113 - TKN 114 - NH_3 D 115 - NO_3
BATCH#:
BOOK #/PROJECT #: 2291

START TIME: _____
END TIME: _____

RFW #	pH <2	DISTILL/ DIGEST: STARTING VOL OR WT	ANALYSIS: DILUTION START -> END	RUN ORDER	TIME(T, in min) = (CONC.)	mg/L mg/kg	% SOLIDS COMMENTS
.25 std		undistilled	None	1	T=2-17.3 T=4-19.2 T=3-18.7 T=5-19.2	To Sec curve	
2.0 std				2	T=1-76.7 T=4-79.7 T=2-79.2		
2.0 std				3	T=1-79.3 Sec 2.00 T=2 2.00		
10.0 std				4	T=1 8.96 T=2 9.28 Sec 10.0	~~10~~ 9.28 KDB 8/21/91	Slope 57.0
DI				5	T=1.5.68 T=6.071 T=3.14	<0.10	
.10 std				6	T=3.108 T=5.107	.11	
.20 std				7	T=1.5.185 T=5.184	.18	
1.0 std				8	T=2.945 T=3.959	.96	
2.0 std				9	T=1.1.86 Reset 2.00 T=2 2.00	1.86	
DI				10	T=1.26 T=4.029	<0.10	
.20 std	CV1			11	T=1.173 T=3.194 T=2.189 T=4.194	.194	
DI	CV1			12	T=1.073 F	<0.10	
Distilled Trip Blank		250 DI → 250		13	T=1.081 T=3.102 T=2.101 T=4.109	T=5.110	
Distilled Trip Blank	MDI LCS			14	T=1.066 T=3.101 T=2.092 T=4.103	T=5.103	
0.20 NH_3 std ~~2.0~~ RCB	CV1	Undistilled		15	T=1.179 T=3.191 T=2.189	.191	
4.0 EOA STD		250 DI → 250 1 mL - 1000 ppm EOA		16	~~T=1 4.05 T=3 4.62~~ ~~T=2 4.53~~ Out of tube	RDB 8/	Reran Run 19
4.0 EOA STD	2nd source	250 DI → 250 1 mL - 1000 ppm EOA		17	T=1 3.50 T=3 4.52 T=2 4.49	4.41	Reran Run 20
10.0 NH_3 std		Undistilled		18	T=1 9.87 T=2 10.3 Reset 10.0	10.3	
4.0 EOA STD	MDI	250 DI ~~→ 250~~ 1 mL - 1000 ppm EOA		19	T=1 3.70 T=3 4.51 T=2 4.43 T=4 4.51	4.41	
4.0 EOA STD	~~MDI~~ LCS	~~RDB 8/21/91~~ 250 DI + 1 mL 1000 ppm EOA → 250		20	T=2 4.21 T=3 4.22	4.12	
8.0 EOA STD	MDI	250 DI + 2 mL - 1000 ppm → 250		21	T=1 8.18 T=3 8.43 T=2 8.41	8.33	
10.0 NH_3 std	CV2		✓	22	T=1 10.1 T=2 10.1	10.1	

ANALYST K. Hree DATE 8/21/91 REVIEWED BY J. Kennedy DATE 8-26-91

RFW 21-21-004 / F-06/91

9713526.2869

Hart Crowser
J-2978-40

APPENDIX AB
DATA VALIDATION DOCUMENTATION

Roy F. Weston Laboratories

Data Package 9108L474

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.

9713526.2871

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.

9713526.2872

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

9713526.2873

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/04/91

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

WESTON BATCH #: 9108L474

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	B010P0	% Solids	97.6		%	0.10
		Fluoride by IC	2.5	u	MG/KG	2.5
		Nitrite by IC	1.3	u	MG/KG	1.3
		Nitrate by IC	6.2		MG/KG	1.3
		Sulfate by IC	9.2		MG/KG	1.3
		Ammonia, as N	1.3	u	MG/KG	1.3
		pH	9.3		PH UNITS	0.010
-002	B010P3	% Solids	96.9		%	0.10
		Fluoride by IC	2.4	u	MG/KG	2.4
		Nitrite by IC	1.2	u	MG/KG	1.2
		Nitrate by IC	1.2	u	MG/KG	1.2
		Sulfate by IC	4.5		MG/KG	1.2
		Ammonia, as N	1.3	u	MG/KG	1.3
		pH	9.3		PH UNITS	0.010
-003	B010P5	% Solids	97.1		%	0.10
		Fluoride by IC	2.6	u	MG/KG	2.6
		Nitrite by IC	1.3	u	MG/KG	1.3
		Nitrate by IC	1.3	u	MG/KG	1.3
		Sulfate by IC	4.0		MG/KG	1.3
		Ammonia, as N	1.3	u	MG/KG	1.3
		pH	9.3		PH UNITS	0.010

9713526.2874

ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9103L474	REVIEWER: MS	DATE: 6/2/92	PAGE___OF___
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
pH	J(+), UJ(-)	B010P0, B010P3, B010P5	exceeded holding time

9713526.2876

ATTACHMENT 4

As Qualified Data Summary

9713526.2877

ATTACHMENT 5

Data Review Supporting Documentation

9713526.2878

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/04/91

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

WESTON BATCH #: 9108L474

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	BO10P0	% Solids	97.6		%	0.10
		Fluoride by IC	2.5	u	MG/KG	2.5
		Nitrite by IC	1.3	u	MG/KG	1.3
		Nitrate by IC	6.2		MG/KG	1.3
		Sulfate by IC	9.2		MG/KG	1.3
		Ammonia, as N	1.3	u	MG/KG	1.3
		pH	9.3	J	PH UNITS	0.010
-002	BO10P3	% Solids	96.9		%	0.10
		Fluoride by IC	2.4	u	MG/KG	2.4
		Nitrite by IC	1.2	u	MG/KG	1.2
		Nitrate by IC	1.2	u	MG/KG	1.2
		Sulfate by IC	4.5		MG/KG	1.2
		Ammonia, as N	1.3	u	MG/KG	1.3
		pH	9.3	J	PH UNITS	0.010
-003	BO10P5	% Solids	97.1		%	0.10
		Fluoride by IC	2.6	u	MG/KG	2.6
		Nitrite by IC	1.3	u	MG/KG	1.3
		Nitrate by IC	1.3	u	MG/KG	1.3
		Sulfate by IC	4.0		MG/KG	1.3
		Ammonia, as N	1.3	u	MG/KG	1.3
		pH	9.3	J	PH UNITS	0.010

exceeded holding time
A.C.
6/2/92

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: Westinghouse / Hanford	REVIEWER: KAC	DATE: 4/29/92
LABORATORY: Roy F. Weston	CASE: 9108L474	SDG:
SAMPLES/MATRIX:		
B010P0 } Soil		
B010P3 } Soil		
B010P5 } 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	X		
Cover Page		X	
Traffic Reports/Chain-of-Custody	X		
Sample Analysis Data Report Forms	X		
Standards Data	X		
QC Summary			
Blanks Summary Report Forms	X		
Spike Sample Recovery Report Forms	X		
Duplicate Sample Analysis Report Forms	X		
Laboratory Control Sample Report Forms	X		
Raw Data			
Ion Chromatograph Chromatograms	X		
TOC and TOX Instrument Printouts			X
Laboratory Bench Sheets pH, NH_3-N	X		
Additional Data			
Laboratory Sample Preparation Logs NH_3-N only		X	
Instrument Run Logs	X		
Internal Laboratory Chain-of-Custory		X	
Percent Solids Analysis Records	X		
Reduction Formulae		X	
Chemist Notebook Pages		X	

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

None submitted

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.

COMMENTS (attach additional sheets as necessary):

* Ammonia for sample B010B3 should be reported as non-detect 1.3U

9713526.2884

THIS PAGE INTENTIONALLY
LEFT BLANK

HOLDING TIME SUMMARY - FORM B-1

9108L474

SDG: ~~HH~~	REVIEWER:	DATE:	PAGE___OF___
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
			% solids / Aqueous / pH / Mthd	% solids / Aqueous / pH / Mthd	% solids / Aqueous / pH / Mthd	% solids / Aqueous / pH / Mthd	pH
PC1010	Gamma	5/1/91	5/7	5/7	4	1	) ( ) ( )
PC1013							
PC1015							

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 91C5L474	REVIEWER: JS	DATE: 6/2/93	PAGE ____ OF ____		
COMMENTS:					
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT:			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
	Initial calib.	✓			

9713526.2806
WHC-SD-EN-SPP-002, Rev. 1

CALIBRATION DATA SUMMARY - FORM B-2

SDG:	REVIEWER:	DATE:		PAGE____OF____	
COMMENTS:					
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT:			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER

9713526.0087

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 9108L474	REVIEWER: AC	DATE: 6/2/92	PAGE_____OF_____
COMMENTS:			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	SAMPLES AFFECTED	QUALIFIER
Blank/10	All blank contamination detected	—			—	—	—
Field Blank:	None	—			—	—	—

DRAFT

7/91

0713526.2000

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9125147H	REVIEWER: HS	DATE: 1/2/92	PAGE____OF____	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
Blank 10	All recoveries within limits 95.6-107%		—	—
LCSSC			—	—
Blank 1C				

PRECISION DATA SUMMARY - FORM B-5

SDG: MCBL474	REVIEWER AK	DATE: 1/2/92	PAGE___OF___
COMMENTS:			

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
Ammonia	Blank IC	Blank IC	1/6	difference	
	BCICS3	BCICS5			
Sulfate	4.5	4.0	11.8		
Ammonia	1.3	1.311	1.1		
pH	9.3	9.3	0		

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: Westinghouse / Hanford	REVIEWER: KAC	DATE: 4/29/92
LABORATORY: Roy F. Weston	CASE: 9108L474	SDG:
SAMPLES/MATRIX:		
B010P0		
B010P3	Soil	
B010P5		

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	X		
Cover Page		X	
Traffic Reports/Chain-of-Custody	X		
Sample Analysis Data Report Forms	X		
Standards Data	X		
QC Summary			
Blanks Summary Report Forms	X		
Spike Sample Recovery Report Forms	X		
Duplicate Sample Analysis Report Forms	X		
Laboratory Control Sample Report Forms	X		
Raw Data			
Ion Chromatograph Chromatograms	X		
TOC and TOX Instrument Printouts			X
Laboratory Bench Sheets pH, NH_3-N	X		
Additional Data			
Laboratory Sample Preparation Logs NH_3-N only		X	
Instrument Run Logs	X		
Internal Laboratory Chain-of-Custory		X	
Percent Solids Analysis Records	X		
Reduction Formulae		X	
Chemist Notebook Pages		X	

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

None submitted

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.

COMMENTS (attach additional sheets as necessary):

* Amounts for sample points shall be specified as non-direct / 3W

9713526.2896

THIS PAGE INTENTIONALLY
LEFT BLANK

9713526.2897

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: 91086474 METALS
Document Number:

Date: 10/20/92
Originator: CMR

HCS - WHC/E - 92 15/T ~~1-068~~

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

9713526.2898

OCT 1991
RECEIVED
DATA RECEIPT

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

DATE RECEIVED: 08/16/91 RFW LOT # :9108L474

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B010P0						
SILVER, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
SILVER, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
SILVER, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
ALUMINUM, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
ALUMINUM, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
ALUMINUM, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
ARSENIC, TOTAL	001	S	91L1631	08/15/91	08/26/91	08/27/91
ARSENIC, TOTAL	001 REP	S	91L1631	08/15/91	08/26/91	08/27/91
ARSENIC, TOTAL	001 MS	S	91L1631	08/15/91	08/26/91	08/27/91
BARIUM, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
BARIUM, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
BARIUM, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
BERYLLIUM, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
BERYLLIUM, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
BERYLLIUM, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
CALCIUM, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
CALCIUM, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
CALCIUM, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
CADMIUM, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
CADMIUM, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
CADMIUM, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
COBALT, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
COBALT, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
COBALT, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
CHROMIUM, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
CHROMIUM, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
CHROMIUM, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
COPPER, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
COPPER, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
COPPER, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
IRON, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
IRON, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
IRON, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
MERCURY, TOTAL	001	S	91C246	08/15/91	08/23/91	08/26/91
POTASSIUM, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
POTASSIUM, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
POTASSIUM, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91

9713526.2899

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

DATE RECEIVED: 08/16/91 RFW LOT # :9108L474

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
MAGNESIUM, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
MAGNESIUM, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
MANGANESE, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
MANGANESE, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
MANGANESE, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
SODIUM, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
SODIUM, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
SODIUM, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
NICKEL, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
NICKEL, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
NICKEL, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
LEAD, TOTAL	001	S	91L1631	08/15/91	08/26/91	08/27/91
LEAD, TOTAL	001 REP	S	91L1631	08/15/91	08/26/91	08/27/91
LEAD, TOTAL	001 MS	S	91L1631	08/15/91	08/26/91	08/27/91
ANTIMONY, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
ANTIMONY, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
ANTIMONY, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
SELENIUM, TOTAL	001	S	91L1631	08/15/91	08/26/91	08/30/91
SELENIUM, TOTAL	001 REP	S	91L1631	08/15/91	08/26/91	08/30/91
SELENIUM, TOTAL	001 MS	S	91L1631	08/15/91	08/26/91	08/30/91
THALLIUM, TOTAL	001	S	91L1631	08/15/91	08/26/91	08/27/91
THALLIUM, TOTAL	001 REP	S	91L1631	08/15/91	08/26/91	08/27/91
THALLIUM, TOTAL	001 MS	S	91L1631	08/15/91	08/26/91	08/27/91
VANADIUM, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
VANADIUM, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
VANADIUM, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
ZINC, TOTAL	001	S	91L1632	08/15/91	08/26/91	10/21/91
ZINC, TOTAL	001 REP	S	91L1632	08/15/91	08/26/91	10/21/91
ZINC, TOTAL	001 MS	S	91L1632	08/15/91	08/26/91	10/21/91
B010P3						
SILVER, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
ALUMINUM, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
ARSENIC, TOTAL	002	S	91L1631	08/15/91	08/26/91	08/27/91
BARIUM, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
BERYLLIUM, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
CALCIUM, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
CADMIUM, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91

9713526.2900

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

DATE RECEIVED: 08/16/91 RFW LOT # :9108L474

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COBALT, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
CHROMIUM, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
COPPER, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
IRON, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
MERCURY, TOTAL	002	S	91C246	08/15/91	08/23/91	08/26/91
POTASSIUM, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
MAGNESIUM, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
MANGANESE, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
SODIUM, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
NICKEL, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
LEAD, TOTAL	002	S	91L1631	08/15/91	08/26/91	08/27/91
ANTIMONY, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
SELENIUM, TOTAL	002	S	91L1631	08/15/91	08/26/91	08/30/91
THALLIUM, TOTAL	002	S	91L1631	08/15/91	08/26/91	08/27/91
VANADIUM, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
ZINC, TOTAL	002	S	91L1632	08/15/91	08/26/91	10/21/91
B010P5						
SILVER, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
ALUMINUM, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
ARSENIC, TOTAL	003	S	91L1631	08/15/91	08/26/91	08/27/91
BARIUM, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
BERYLLIUM, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
CALCIUM, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
CADMIUM, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
COBALT, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
CHROMIUM, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
COPPER, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
IRON, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
MERCURY, TOTAL	003	S	91C246	08/15/91	08/23/91	08/26/91
POTASSIUM, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
MAGNESIUM, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
MANGANESE, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
SODIUM, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
NICKEL, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
LEAD, TOTAL	003	S	91L1631	08/15/91	08/26/91	08/27/91
ANTIMONY, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
SELENIUM, TOTAL	003	S	91L1631	08/15/91	08/26/91	08/30/91
THALLIUM, TOTAL	003	S	91L1631	08/15/91	08/26/91	08/27/91

9713526.2901

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

DATE RECEIVED: 08/16/91 RFW LOT # :9108L474

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91
ZINC, TOTAL	003	S	91L1632	08/15/91	08/26/91	10/21/91

LAB QC:

SILVER LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
ALUMINUM LABORTORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
BARIUM LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
BERYLLIUM LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
CALCIUM LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
CADMIUM LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
COBALT LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
CHROMIUM LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
COPPER LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
IRON LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
POTASSIUM LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
MAGNESIUM LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
MANGANESE LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
SODIUM LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
NICKEL LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
ANTIMONY LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
VANADIUM LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
ZINC LABORATORY	LC1 BS	S	91L1632	N/A	08/26/91	10/21/91
SILVER LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
ALUMINUM LABORTORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
BARIUM LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
BERYLLIUM LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
CALCIUM LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
CADMIUM LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
COBALT LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
CHROMIUM LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
COPPER LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
IRON LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
POTASSIUM LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
MAGNESIUM LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
MANGANESE LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
SODIUM LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
NICKEL LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
ANTIMONY LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
VANADIUM LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91

9713526.2902

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

DATE RECEIVED: 08/16/91 RFW LOT # :9108L474

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC LABORATORY	LC2 BS	S	91L1632	N/A	08/26/91	10/21/91
SILVER, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
ALUMINUM, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
BARIUM, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
BERYLLIUM, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
CALCIUM, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
CADMIUM, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
COBALT, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
CHROMIUM, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
COPPER, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
IRON, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
POTASSIUM, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
MAGNESIUM, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
MANGANESE, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
SODIUM, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
NICKEL, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
ANTIMONY, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
VANADIUM, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
ZINC, TOTAL	MB1	S	91L1632	N/A	08/26/91	10/21/91
ARSENIC LABORATORY	LC1 BS	S	91L1631	N/A	08/26/91	08/27/91
LEAD LABORATORY	LC1 BS	S	91L1631	N/A	08/26/91	08/27/91
SELENIUM LABORATORY	LC1 BS	S	91L1631	N/A	08/26/91	08/30/91
THALLIUM LABORATORY	LC1 BS	S	91L1631	N/A	08/26/91	08/27/91
ARSENIC LABORATORY	LC2 BS	S	91L1631	N/A	08/26/91	08/27/91
LEAD LABORATORY	LC2 BS	S	91L1631	N/A	08/26/91	08/27/91
SELENIUM LABORATORY	LC2 BS	S	91L1631	N/A	08/26/91	08/30/91
THALLIUM LABORATORY	LC2 BS	S	91L1631	N/A	08/26/91	08/27/91
ARSENIC, TOTAL	MB1	S	91L1631	N/A	08/26/91	08/27/91
LEAD, TOTAL	MB1	S	91L1631	N/A	08/26/91	08/27/91
SELENIUM, TOTAL	MB1	S	91L1631	N/A	08/26/91	08/30/91
THALLIUM, TOTAL	MB1	S	91L1631	N/A	08/26/91	08/27/91
MERCURY LABORATORY	LC1 BS	S	91C246	N/A	08/23/91	08/26/91
MERCURY LABORATORY	LC2 BS	S	91C246	N/A	08/23/91	08/26/91
MERCURY, TOTAL	MB1	S	91C246	N/A	08/23/91	08/26/91
MERCURY, TOTAL	MB2	S	91C246	N/A	08/23/91	08/26/91

9713526.2903

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 :

9713526.2904

WESTON

USEPA CONTRACT LABORATORY PROGRAM
DATA QUALIFIER DESCRIPTIONS
INORGANIC ANALYSIS SOW NO. 787

CONCENTRATION QUALIFIERS:

B = INDICATES THAT THE REPORTED VALUE IS LESS THAN THE CRDL BUT GREATER THAN THE IDL.

U = INDICATES THAT THE ANALYTE WAS ANALYZED FOR BUT NOT DETECTED.

QUALIFIERS:

E = THE REPORTED VALUE IS ESTIMATED BECAUSE OF THE PRESENCE OF INTERFERENCE.

M = DUPLICATE INJECTION PRECISION NOT MET.

N = SPIKED SAMPLE RECOVERY NOT WITHIN CONTROL LIMITS.

S = THE REPORTED VALUE WAS DETERMINED BY THE METHOD OF STANDARD ADDITIONS (MSA).

W = POST DIGESTION SPIKE FOR FURNACE AA ANALYSIS IS OUT OF CONTROL LIMITS (85-125%) WHILE SAMPLE ABSORBANCE IS LESS THAN 50% OF SPIKE ABSORBANCE.

* = DUPLICATE ANALYSIS NOT WITHIN CONTROL LIMITS.

+ = CORRELATION COEFFICIENT FOR THE MSA IS LESS THAN 0.995.

METHOD:

P = ICP
A = FLAME AA
F = FURNACE AA
CV = MANUAL COLD VAPOR AA.
AV = AUTOMATED COLD VAPOR AA.
AS = SEMI-AUTOMATED SPECTROPHOTOMETRIC
C = MANUAL SPECTROPHOTOMETRIC
T = TITRIMETRIC
NR = NOT REQUIRED

9713526.2905

INTRODUCTION

		PAGE
	CHAIN OF CUSTODY	1
	CASE NARRATIVE	4
	DATA SUMMARY	7
I.	INORGANIC ANALYSIS DATA PACKAGE	17
	A. COVER PAGE	
	B. INORGANIC ANALYSIS SHEET (FORM 1)	
	C. INITIAL AND CONTINUING CALIBRATION VERIFICATION (FORM 2A)	
	D. CRDL STANDARD FOR AA AND ICP (FORM 2B)	
	E. BLANKS (FORM 3)	
	F. ICP INTERFERENCE CHECK SAMPLE (FORM 4)	
	G. SPIKE SAMPLE RECOVERY (FORM 5A)	
	H. POST DIGEST SPIKE SAMPLE RECOVERY (FORM 5B)	
	I. DUPLICATES (FORM 6)	
	J. LABORATORY CONTROL SAMPLES (FORM 7)	
	K. STANDARD ADDITION RESULTS (FORM 8)	
	L. ICP SERIAL DILUTIONS (FORM 9)	
	M. INSTRUMENT DETECTION LIMITS (QUARTERLY) (FORM 10)	
	N. ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY) (FORM 11)	
	O. ICP LINEAR RANGE (QUARTERLY) (FORM 12)	
	P. PREPARATION LOG (FORM 13)	
	Q. ANALYSIS RUN LOG (FORM 14)	
II.	RAW DATA	63
	A. METALS BY ICP	64
	B. FLAME AA	N/A
	C. FURNACE AA	95
	D. MERCURY	172
	E. CYANIDE	N/A
	F. RARE EARTHS	N/A
III.	DIGESTION LOG	185

9713526.2906

0000007

CHAIN OF CUSTODY

WESTON Analytics Use Only
9108L474

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse Hanford/J.D.Fancher
Est. Final Proj. Sampling Date:
Work Order #: 6168-02-01-0600
Project Contact/Phone #: JD Fancher (509) 376-2081
AD Project Manager: Jane King
QC: CLP Del: CLP TAT: 35
Date Rec'd: 8-16-91 Date Due: 9-20-91
Account #: WS-HANFORD

Refrigerator #		1		5			5																
#/Type Container	Liquid	1G		1G																			
	Solid						1G						1G										
Volume	Liquid																						
	Solid	125ml		500ml			500ml						500ml										
Preservatives		—					—						—										
ANALYSES REQUESTED →		ORGANIC											INORG										
		VOA	BNA	Pest/PCB	Herb		500 ml 1		500 ml 2		125 ml 3		Metal	CN	NH3	Anions	Pb						

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)	Matrix	Date Collected	VOA	BNA	Pest/PCB	Herb		500 ml 1		500 ml 2		125 ml 3		Metal	CN	NH3	Anions	Pb				
						Cd/H		PCB					Cl/Br/SO4				MHSLTA		IN/H3	Cl/Br	IM				
S - Soil	001	B010P0		Soil	8/15/91	X		X			X		X		X		X		X	X	X				
SE - Sediment	002	B010P3		Soil	8/15/91	X		X			X		X		X		X		X	X	X				
SO - Solid	003	P010P5		Soil	8/15/91	X		X			X		X		X		X		X	X	X				
SL - Sludge																									
W - Water																									
O - Oil																									
A - Air																									
DS - Drum Solids																									
DL - Drum Liquids																									
L - EP/TCLP Leachate																									
WI - Wipe																									
X - Other																									
F - Fish																									

ANALYSES REQUESTED: ANIONS = ICFL, ICSO4, ICNO2, ICNO3

1) PCB's; CLP Metals; Ammonium; Anions by IC (F, SO4, NO2, NO3); pH

2) Gross Alpha; Gross Beta; Co-60; Sr-90; Cs-137; U-235; U-238

3) CLP VOA

Special Instructions:

Project No. 91-016 (300-FF-1)

See WHC Chain of Custody

DATE/REVISIONS:

8/19/91 1 Radiochem subbed to Teledyne

2

3

4

5

6

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Emery	[illegible]	8-16-91	12:20				
	[illegible]	8-16-91			[illegible]	8-16-91	

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

WESTON Analytics Use Only

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

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N

RFW 21-21-001/A-8/90 L372 L373 L375 L377 L378 Ref# Cooler# 381-596a

0000000

9213526.2907

9713526.2908

0000003

BFW# 91081474

Item/Reason	Relinquished by	Received by	Date	Time
PCB(S)	P Sergen	P Pullen	8/19/91	10:10a
MS VOA	P Sergen	W Holtzfus	8/19/91	1180
PCB(S)	P Pullen	P Sergen	8/20/91	3:30p
NH3	P Sergen	R Brown	8/21/91	800
NH3	[illegible]		8/23	8:30
metals-Hg	S Berlio	J. Jeffrey Welch	8/26/91	1200
metals return	J. Jeffrey Welch	S Berlio	8/27/91	09:00
Amino	S Berlio	F Kruger	8/27/91	9:30
Amino	F Kruger	S Berlio	8/27/91	9:00

9713526.2909

0000007

CASE NARRATIVE

Roy F. Weston, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 08/16/91
RFW #: 9108L474
W.O. #: 6168-02-01-0000

METALS NARRATIVE

The set of samples consisted of three (3) soil samples collected on 08/15/91.

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, Pb and Mn. All corresponding samples were flagged with an "N" according to CLP protocol.

7. All duplicate analyses were within the 20% RPD control limit.

8. 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.

WESTON

9. 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).

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

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

10.24.91
Date

pas\ clp-met.nar

9713526.2912

DATA SUMMARY

9713526.2913

0000008

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/23/91

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

WESTON BATCH #: 9108L474

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	BO10P0	Silver, Total	1.8	u	MG/KG	1.8
		Aluminum, Total	3590		MG/KG	36.2
		Arsenic, Total	1.9	u	MG/KG	1.9
		Barium, Total	65.2		MG/KG	36.2
		Beryllium, Total	0.91	u	MG/KG	0.91
		Calcium, Total	4970		MG/KG	906
		Cadmium, Total	0.91	u	MG/KG	0.91
		Cobalt, Total	9.1	u	MG/KG	9.1
		Chromium, Total	5.9		MG/KG	1.8
		Copper, Total	14.5		MG/KG	4.5
		Iron, Total	14200		MG/KG	18.1
		Mercury, Total	0.10	u	MG/KG	0.10
		Potassium, Total	906	u	MG/KG	906
		Magnesium, Total	3130		MG/KG	906
		Manganese, Total	241		MG/KG	2.7
		Sodium, Total	906	u	MG/KG	906
		Nickel, Total	7.8		MG/KG	7.2
		Lead, Total	3.3		MG/KG	0.56
		Antimony, Total	10.9	u	MG/KG	10.9
		Selenium, Total	0.93	u	MG/KG	0.93
		Thallium, Total	1.9	u	MG/KG	1.9
		Vanadium, Total	20.1		MG/KG	9.1
		Zinc, Total	25.4		MG/KG	3.6

9713526.2914

0000009

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/23/91

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

WESTON BATCH #: 9108L474

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-002	B010P3	Silver, Total	2.0	u	MG/KG	2.0
		Aluminum, Total	2570		MG/KG	40.8
		Arsenic, Total	2.0	u	MG/KG	2.0
		Barium, Total	55.5		MG/KG	40.8
		Beryllium, Total	1.0	u	MG/KG	1.0
		Calcium, Total	5860		MG/KG	1020
		Cadmium, Total	1.0	u	MG/KG	1.0
		Cobalt, Total	10.2	u	MG/KG	10.2
		Chromium, Total	2.0	u	MG/KG	2.0
		Copper, Total	11.0		MG/KG	5.1
		Iron, Total	12800		MG/KG	20.4
		Mercury, Total	0.10	u	MG/KG	0.10
		Potassium, Total	1020	u	MG/KG	1020
		Magnesium, Total	2530		MG/KG	1020
		Manganese, Total	178		MG/KG	3.1
		Sodium, Total	1020	u	MG/KG	1020
		Nickel, Total	8.2	u	MG/KG	8.2
		Lead, Total	2.1		MG/KG	0.59
		Antimony, Total	12.3	u	MG/KG	12.3
		Selenium, Total	0.99	u	MG/KG	0.99
		Thallium, Total	2.0	u	MG/KG	2.0
		Vanadium, Total	15.7		MG/KG	10.2
		Zinc, Total	20.2		MG/KG	4.1

9713526.2915

0000010

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/23/91

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

WESTON BATCH #: 9108L474

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-003	B010P5	Silver, Total	2.0	u	MG/KG	2.0
		Aluminum, Total	2320		MG/KG	40.1
		Arsenic, Total	2.0	u	MG/KG	2.0
		Barium, Total	49.6		MG/KG	40.1
		Beryllium, Total	1.0	u	MG/KG	1.0
		Calcium, Total	5610		MG/KG	1000
		Cadmium, Total	1.0	u	MG/KG	1.0
		Cobalt, Total	10.0	u	MG/KG	10.0
		Chromium, Total	2.0	u	MG/KG	2.0
		Copper, Total	10.5		MG/KG	5.0
		Iron, Total	12200		MG/KG	20.0
		Mercury, Total	0.10	u	MG/KG	0.10
		Potassium, Total	1000	u	MG/KG	1000
		Magnesium, Total	2390		MG/KG	1000
		Manganese, Total	171		MG/KG	3.0
		Sodium, Total	1000	u	MG/KG	1000
		Nickel, Total	8.0	u	MG/KG	8.0
		Lead, Total	1.6		MG/KG	0.60
		Antimony, Total	12.0	u	MG/KG	12.0
		Selenium, Total	0.99	u	MG/KG	0.99
		Thallium, Total	2.0	u	MG/KG	2.0
		Vanadium, Total	16.4		MG/KG	10.0
		Zinc, Total	19.5		MG/KG	4.0

9713526.2916

000001

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/23/91

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

WESTON BATCH #: 9108L474

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
BLANK1	91L1632-MB1	Silver, Total	2.0	u	MG/KG	2.0
		Aluminum, Total	40.0	u	MG/KG	40.0
		Barium, Total	40.0	u	MG/KG	40.0
		Beryllium, Total	1.0	u	MG/KG	1.0
		Calcium, Total	1000	u	MG/KG	1000
		Cadmium, Total	1.0	u	MG/KG	1.0
		Cobalt, Total	10.0	u	MG/KG	10.0
		Chromium, Total	2.0	u	MG/KG	2.0
		Copper, Total	5.0	u	MG/KG	5.0
		Iron, Total	20.0	u	MG/KG	20.0
		Potassium, Total	1000	u	MG/KG	1000
		Magnesium, Total	1000	u	MG/KG	1000
		Manganese, Total	3.0	u	MG/KG	3.0
		Sodium, Total	1000	u	MG/KG	1000
		Nickel, Total	8.0	u	MG/KG	8.0
		Antimony, Total	12.0	u	MG/KG	12.0
		Vanadium, Total	10.0	u	MG/KG	10.0
		Zinc, Total	4.0	u	MG/KG	4.0
BLANK1	91L1631-MB1	Arsenic, Total	2.0	u	MG/KG	2.0
		Lead, Total	0.60	u	MG/KG	0.60
		Selenium, Total	1.0	u	MG/KG	1.0
		Thallium, Total	2.0	u	MG/KG	2.0
BLANK1	91C246-MB1	Mercury, Total	0.10	u	MG/KG	0.10
BLANK2	91C246-MB2	Mercury, Total	0.10	u	MG/KG	0.10

9713526.2917

0000012

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/23/91

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

WESTON BATCH #: 9108L474

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	BO10P0	Silver, Total	8.5	1.8 u	9.0	94.4
		Aluminum, Total	4070	3590	361	132
		Arsenic, Total	6.3	1.9 u	7.3	86.3
		Barium, Total	384	65.2	361	88.3
		Beryllium, Total	7.8	0.91u	9.0	86.7
		Calcium, Total	8760	4970	4520	83.9
		Cadmium, Total	7.4	0.91u	9.0	82.2
		Cobalt, Total	84.2	9.1 u	90.3	93.2
		Chromium, Total	36.3	5.9	36.1	84.2
		Copper, Total	50.0	14.5	45.1	78.7
		Iron, Total	13500	14200	181	-390.
		Potassium, Total	4730	906 u	4520	105
		Magnesium, Total	7120	3130	4520	88.4
		Manganese, Total	272	241	90.3	33.6
		Sodium, Total	4590	906 u	4520	102
		Nickel, Total	84.6	7.8	90.3	85.0
		Lead, Total	7.9	3.3	3.6	128
		Antimony, Total	60.0	10.9 u	90.3	66.4
		Selenium, Total	1.6	0.93u	1.8	88.9
		Thallium, Total	8.5	1.9 u	9.1	93.4
		Vanadium, Total	95.7	20.1	90.3	83.7
		Zinc, Total	102	25.4	90.3	84.4

9713526.2918

0000014

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/23/91

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9108L474

WORK ORDER: 6168-02-01-0000

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
LCS2	91L1632-LC2	Silver, LCS	83.3	94.0	12.1
		Aluminum, LCS	104	102	1.4
		Barium, LCS	102	101	1.3
		Beryllium, LCS	98.9	97.7	1.2
		Calcium, LCS	103	102	1.1
		Cadmium, LCS	99.4	96.6	2.9
		Cobalt, LCS	99.9	98.8	1.1
		Chromium, LCS	99.4	98.5	0.91
		Copper, LCS	98.2	97.6	0.61
		Iron, LCS	102	100	0.99
		Potassium, LCS	103	100	2.9
		Magnesium, LCS	102	101	1.2
		Manganese, LCS	99.8	98.6	1.2
		Sodium, LCS	103	102	1.2
		Nickel, LCS	101	99.9	1.3
		Antimony, LCS	104	103	0.77
		Vanadium, LCS	102	100	1.5
		Zinc, LCS	101	100	0.60
LCS2	91L1631-LC2	Arsenic, LCS	91.7	90.0	1.9
		Lead, LCS	108	112	3.6
		Selenium, LCS	95.7	96.0	0.31
		Thallium, LCS	104	102	1.4
LCS2	91C246-LC2	Mercury, LCS	104	104	0.096

9713526.2919

0000015

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/23/91

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	91L1632-LC1	Silver, LCS	83.3	100	MG/KG	83.3
		Aluminum, LCS	1040	1000	MG/KG	104
		Barium, LCS	1030	1000	MG/KG	102
		Beryllium, LCS	49.5	50.0	MG/KG	98.9
		Calcium, LCS	5130	5000	MG/KG	103
		Cadmium, LCS	49.7	50.0	MG/KG	99.4
		Cobalt, LCS	499	500	MG/KG	99.9
		Chromium, LCS	99.4	100	MG/KG	99.4
		Copper, LCS	245	250	MG/KG	98.2
		Iron, LCS	1020	1000	MG/KG	102
		Potassium, LCS	5140	5000	MG/KG	103
		Magnesium, LCS	5120	5000	MG/KG	102
		Manganese, LCS	150	150	MG/KG	99.8
		Sodium, LCS	5170	5000	MG/KG	103
		Nickel, LCS	405	400	MG/KG	101
		Antimony, LCS	624	600	MG/KG	104
		Vanadium, LCS	508	500	MG/KG	102
		Zinc, LCS	202	200	MG/KG	101
LCS2	91L1632-LC2	Silver, LCS	94.0	100	MG/KG	94.0
		Aluminum, LCS	1020	1000	MG/KG	102
		Barium, LCS	1010	1000	MG/KG	101
		Beryllium, LCS	48.9	50.0	MG/KG	97.7
		Calcium, LCS	5080	5000	MG/KG	102
		Cadmium, LCS	48.3	50.0	MG/KG	96.6
		Cobalt, LCS	494	500	MG/KG	98.8
		Chromium, LCS	98.5	100	MG/KG	98.5
		Copper, LCS	244	250	MG/KG	97.6
		Iron, LCS	1000	1000	MG/KG	100
		Potassium, LCS	5000	5000	MG/KG	100
		Magnesium, LCS	5060	5000	MG/KG	101
		Manganese, LCS	148	150	MG/KG	98.6
		Sodium, LCS	5110	5000	MG/KG	102
		Nickel, LCS	400	400	MG/KG	99.9
		Antimony, LCS	619	600	MG/KG	103
		Vanadium, LCS	500	500	MG/KG	100
		Zinc, LCS	200	200	MG/KG	100
LCS1	91L1631-LC1	Arsenic, LCS	5.5	6.0	MG/KG	91.7
		Lead, LCS	6.5	6.0	MG/KG	108

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/23/91

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	91L1631-LC1	Selenium, LCS	5.7	6.0	MG/KG	95.7
		Thallium, LCS	6.2	6.0	MG/KG	104
LCS2	91L1631-LC2	Arsenic, LCS	5.4	6.0	MG/KG	90.0
		Lead, LCS	6.7	6.0	MG/KG	112
		Selenium, LCS	5.8	6.0	MG/KG	96.0
		Thallium, LCS	6.1	6.0	MG/KG	102
LCS1	91C246-LC1	Mercury, LCS	13.2	12.7	MG/KG	104
LCS2	91C246-LC2	Mercury, LCS	13.2	12.7	MG/KG	104

9713526.2921

I. INORGANIC ANALYSES DATA PACKAGE

A. COVER PAGE

B. INORGANIC ANALYSIS SHEET (FORM 1)

C. INITIAL AND CONTINUING CALIBRATION VERIFICATION (FORM 2A)

D. CRDL STANDARD FOR AA AND ICP (FORM 2B)

E. BLANKS (FORM 3)
   1. INITIAL CALIBRATION BLANK
   2. CONTINUING CALIBRATION BLANK
   3. PREPARATION BLANK

F. ICP INTERFERENCE CHECK SAMPLE (FORM 4)

G. SPIKE SAMPLE RECOVERY (FORM 5A)

H. POST DIGEST SPIKE SAMPLE RECOVERY (FORM 5B)

I. DUPLICATES (FORM 6)

J. LABORATORY CONTROL SAMPLES (FORM 7)

K. STANDARD ADDITION RESULTS (FORM 8)

L. ICP SERIAL DILUTIONS (FORM 9)

M. HOLDING TIMES (FORM 10)

N. INSTRUMENT DETECTION LIMITS (QUARTERLY) (FORM 11)

O. ICP INTERELEMENT CORRECTION FACTORS (QUARTERLY) (FORM 12)

P. ICP LINEAR RANGE (QUARTERLY) (FORM 13)

9713526.2922

0000018

U. S. EPA - CLP

COVER PAGE - INORGANIC ANALYSIS DATA PACKAGE

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

SOW No.: 03/90

EPA Sample No.	Lab Sample ID
B010P0	910847401
B010P0D	910847401R
B010P0S	910847401S
B010P3	910847402
B010P5	910847403

Were ICP interelement corrections applied?	Yes/No	YES ✓
Were ICP background corrections applied?	Yes/No	YES ✓
If yes, were raw data generated before application of background corrections?	Yes/No	NO ✓

Comments:

CMR

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

Signature: Somnath Basuthakur Name: SOM N. BASUTHAKUR

Date: 10.24.91 Title: UNIT-LEADER

9713526.2923

0000022

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.: CLP474

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) CCV1	Continuing Calibration Found	Continuing Calibration %R(1) CCV2	M
Aluminum	5000.0	5129.60	102.6	5000.0	5068.80	101.4	5045.10	100.9	P
Antimony	3000.0	2871.20	95.7	3000.0	2855.00	95.2	2945.60	98.2	P
Arsenic	40.0	43.60	109.0	40.0	40.20	100.5	39.60	99.0	F
Barium	5000.0	5050.10	101.0	5000.0	5003.40	100.1	5085.70	101.7	P
Beryllium	250.0	246.10	98.4	250.0	243.60	97.4	248.00	99.2	P
Cadmium	250.0	253.70	101.5	250.0	245.10	98.0	231.10	92.4	P
Calcium	25000.0	25644.10	102.6	25000.0	25463.60	101.9	25627.40	102.5	P
Chromium	500.0	487.40	97.5	500.0	487.40	97.5	495.90	99.2	P
Cobalt	2500.0	2471.70	98.9	2500.0	2435.70	97.4	2426.90	97.1	P
Copper	1250.0	1266.80	101.3	1250.0	1252.30	100.2	1254.00	100.3	P
Iron	5000.0	4939.50	98.8	5000.0	4922.40	98.4	4970.50	99.4	P
Lead	40.0	40.70	101.8	40.0	40.60	101.5	42.80	107.0	F
Magnesium	25000.0	25227.30	100.9	25000.0	25051.30	100.2	25103.00	100.4	P
Manganese	750.0	737.10	98.3	750.0	728.80	97.2	727.50	97.0	P
Mercury	5.0	4.84	96.8	5.0	4.83	96.6	4.79	95.8	CV
Nickel	2000.0	1946.80	97.3	2000.0	1950.90	97.5	1999.00	100.0	P
Potassium	25000.0	25173.60	100.7	25000.0	24876.00	99.5	25024.80	100.1	P
Selenium	40.0	39.80	99.5	40.0	39.00	97.5	37.00	92.5	F
Silver	500.0	479.30	95.9	500.0	468.70	93.7	462.60	92.5	P
Sodium	25000.0	25228.60	100.9	25000.0	25193.90	100.8	25687.90	102.8	P
Thallium	40.0	41.40	103.5	40.0	41.20	103.0	42.90	107.2	F
Vanadium	2500.0	2572.10	102.9	2500.0	2532.60	101.3	2514.10	100.6	P
Zinc	1000.0	992.80	99.3	1000.0	989.40	98.9	1011.80	101.2	P
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

03/90

9713526.2924

0000023

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.: CLP474

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) CCV3	Continuing Calibration Found	Continuing Calibration %R(1) CCV4	M
Aluminum				5000.0	4869.60	97.4			P
Antimony				3000.0	2823.90	94.1			P
Arsenic				40.0	38.00	95.0	39.60	99.0	F
Barium				5000.0	4887.40	97.7			P
Beryllium				250.0	236.00	94.4			P
Cadmium				250.0	232.10	92.8			P
Calcium				25000.0	24618.10	98.5			P
Chromium				500.0	475.70	95.1			P
Cobalt				2500.0	2310.40	92.4			P
Copper				1250.0	1201.60	96.1			P
Iron				5000.0	4787.80	95.8			P
Lead				40.0	40.10	100.2	40.40	101.0	F
Magnesium				25000.0	24264.90	97.1			P
Manganese				750.0	693.70	92.5			P
Mercury				5.0	4.85	97.0	NA ~~4.79~~	~~95.8~~	CV
Nickel				2000.0	1931.70	96.6			P
Potassium				25000.0	24413.20	97.7			P
Selenium				40.0	37.10	92.8	NA ~~38.60~~	~~96.5~~	F
Silver				500.0	451.90	90.4			P
Sodium				25000.0	25423.20	101.7			P
Thallium				40.0	41.10	102.8	38.70	96.8	F
Vanadium				2500.0	2384.80	95.4			P
Zinc				1000.0	980.30	98.0			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.: CLP474

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) CCV5	Continuing Calibration Found	Continuing Calibration %R(1) CCV6	M
Aluminum									NR
Antimony									NR
Arsenic				40.0	39.50	98.8			F
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury				NA ~~5.0~~	~~4.81~~	~~96.2~~	~~4.80~~	~~96.0~~	CV
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium				40.0	38.60	96.5			F
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.: CLP474

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									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury				~~5.0~~	~~4.77~~	~~95.4~~	NA		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

9713526.2927

000002E

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.: CLP474

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	135.70	113.1	141.00	117.5
Arsenic	10.0	3.40	34.0					
Barium								
Beryllium				10.0	10.30	103.0	10.60	106.0
Cadmium				10.0	12.40	124.0	11.70	117.0
Calcium								
Chromium				20.0	20.50	102.5	20.70	103.5
Cobalt				100.0	105.10	105.1	100.90	100.9
Copper				50.0	54.80	109.6	54.50	109.0
Iron								
Lead	3.0	4.00	133.3					
Magnesium								
Manganese				30.0	31.10	103.7	31.50	105.0
Mercury								
Nickel				80.0	82.40	103.0	84.10	105.1
Potassium								
Selenium	5.0	4.70	94.0					
Silver				20.0	22.20	111.0	21.30	106.5
Sodium								
Thallium	10.0	1.50	15.0					
Vanadium				100.0	105.80	105.8	106.20	106.2
Zinc				40.0	46.00	115.0	48.10	120.2

FORM II (PART 2) - IN

03/90

9713526.2928

0000027

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.: CLP474

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	10.0	U	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	.2	U	.2	U	.2	U	.2	U	.100	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	3.5	B	2.0	U	6.2	B	.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	6.5	B	1.200	U	P
Cyanide											NR

FORM III - IN 03/90

✓ amk

9713526.2929

0000028

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.: CLP474

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~~ 4	C	~~2~~ 5	C	~~3~~ 6	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic			2.0	U	2.0	U					F
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead			2.0	U							F
Magnesium											NR
Manganese											NR
Mercury			NA ~~.2~~	~~U~~	NA ~~.2~~	~~U~~	NA ~~.2~~	~~U~~	.100	U	CV
Nickel											NR
Potassium											NR
Selenium			NA ~~2.0~~	~~U~~							F
Silver											NR
Sodium											NR
Thallium			2.0	U	4.7	B					F
Vanadium											NR
Zinc											NR
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.: CLP474

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											NR
Magnesium											NR
Manganese											NR
Mercury			~~.2~~	~~U~~	NX						CV
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR

9713526.2931

0000030

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.: CLP474

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	%R	Final Found Sol. A	Final Found Sol. AB	%R
Aluminum	507020	497420	473755	483560.7	97.2	467231	472149.1	94.9
Antimony		0	-82	-34.0		-78	-45.0	
Arsenic								
Barium		518	38	511.4	98.7	38	506.3	97.7
Beryllium		486	0	440.9	90.7	0	424.5	87.3
Cadmium		990	0	902.2	91.1	0	874.9	88.4
Calcium	486400	482440	467896	479543.4	99.4	463944	469037.4	97.2
Chromium		471	-4	424.9	90.2	-2	422.9	89.8
Cobalt		480	7	440.7	91.8	8	420.1	87.5
Copper		474	-2	458.8	96.8	5	445.4	94.0
Iron	189880	187220	172333	176092.6	94.1	172590	173950.9	92.9
Lead								
Magnesium	483500	476880	484388	494921.3	103.8	478779	483839.9	101.5
Manganese		0	10	447.7		-6	411.5	
Mercury								
Nickel		915	-12	831.1	90.8	-8	838.2	91.6
Potassium		0	-16	-310.0		115	-150.0	
Selenium								
Silver		1075	13	955.8	88.9	15	910.9	84.7
Sodium		0	169	169.9		170	183.6	
Thallium								
Vanadium		460	11	462.7	100.6	19	450.8	98.0
Zinc		973	4	892.0	91.7	8	893.4	91.8

FORM IV - IN 03/90

9713526.2932

0000031

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B010P0S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 97.6

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	60.0000		3.6240	U	90.30	66.4	N	P
Arsenic	75-125	6.3000		.6700	B	7.30	77.1		F
Barium	75-125	384.1001		65.2000		361.20	88.3		P
Beryllium	75-125	7.8000		.2700	B	9.00	83.7		P
Cadmium	75-125	7.4000		.5436	U	9.00	82.2		P
Calcium									NR
Chromium	75-125	36.3000		5.9000		36.10	84.2		P
Cobalt	75-125	84.2000		8.4000	B	90.30	83.9		P
Copper	75-125	50.0000		14.5000		45.10	78.7		P
Iron									NR
Lead	75-125	7.9000		3.3000		3.60	127.8	N	F
Magnesium									NR
Manganese	75-125	271.6001		241.3000		< 1/2 sample value 90.30	33.6	N	P
Mercury									NR
Nickel	75-125	84.6000		7.8000		90.30	85.0		P
Potassium									NR
Selenium	75-125	1.6000		.3700	U	1.80	88.9		F
Silver	75-125	8.5000		1.4000	B	9.00	78.9		P
Sodium									NR
Thallium	75-125	8.5000		.5400	~~B~~ U	9.10	87.5		F
Vanadium	75-125	95.7000		20.1000		90.30	83.7		P
Zinc	75-125	101.6000		25.4000		90.30	84.4		P
Cyanide									NR

Comments:

9713526.2933

0000032

U.S. EPA - CLP

5B

POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B010P0A

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

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		37.50	B	127.20		120.0	-74.8		P
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese		1331.50		2492.90		2600.0	-44.7		P
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

Comments:

FORM V (Part 2) - IN

✓ mk

9713526.2934

0000033

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B010P0D

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

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

% Solids for Sample: 97.6 % Solids for Duplicate: 97.6

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	%RPD	Q	M
Aluminum		3593.8000		3272.0000		9.4		P
Antimony		3.6240	U	3.6860	U			P
Arsenic	1.9	.6700	B	.8500	B	23.7		F
Barium	36.2	65.2000		55.8000		15.5		P
Beryllium	.9	.2700	B	.3100	B	13.8		P
Cadmium		.5436	U	.5529	U			P
Calcium	906.0	4971.3980		4413.6990		11.9		P
Chromium	1.8	5.9000		4.4000		29.1		P
Cobalt	9.1	8.4000	B	7.8000	B	7.4		P
Copper	4.5	14.5000		12.6000		14.0		P
Iron		14198.4000		13726.5000		3.4		P
Lead		3.3000		3.3000		0.0		F
Magnesium	906.0	3132.7000		2773.5000		12.2		P
Manganese		241.3000		201.3000		18.1		P
Mercury								NR
Nickel	7.2	7.8000		6.2000	B	22.9		P
Potassium	906.0	584.0000	B	554.3999	B	5.2		P
Selenium		.3700	U	.3624	U			F
Silver		1.8120	U	1.8430	U			P
Sodium	906.0	237.8000	B	239.6000	B	.8		P
Thallium	1.9	.5400	~~B~~ U	.8300	B	~~42.3~~		F
Vanadium	9.1	20.1000		20.6000		2.5		P
Zinc		25.4000		23.0000		9.9		P
Cyanide								NR

FORM VI - IN

03/90

✓ all OK

9713526.2935

0000034

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.: CLP474

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	1035.9		800.0	1200.0	103.6
Antimony				600.0	623.8		480.0	720.0	104.0
Arsenic				6.0	5.5		4.8	7.2	91.7
Barium				1000.0	1025.4		800.0	1200.0	102.5
Beryllium				50.0	49.5		40.0	60.0	99.0
Cadmium				50.0	49.7		40.0	60.0	99.4
Calcium				5000.0	5132.5		4000.0	6000.0	102.6
Chromium				100.0	99.4		80.0	120.0	99.4
Cobalt				500.0	499.3		400.0	600.0	99.9
Copper				250.0	245.4		200.0	300.0	98.2
Iron				1000.0	1015.1		800.0	1200.0	101.5
Lead				6.0	6.5		4.8	7.2	108.3
Magnesium				5000.0	5120.4		4000.0	6000.0	102.4
Manganese				150.0	149.7		120.0	180.0	99.8
Mercury				12.7	13.2		10.2	15.2	103.9
Nickel				400.0	404.8		320.0	480.0	101.2
Potassium				5000.0	5143.8		4000.0	6000.0	102.9
Selenium				6.0	5.7		4.8	7.2	95.0
Silver				100.0	83.3		80.0	120.0	83.3
Sodium				5000.0	5165.8		4000.0	6000.0	103.3
Thallium				6.0	6.2		4.8	7.2	103.3
Vanadium				500.0	507.7		400.0	600.0	101.5
Zinc				200.0	201.6		160.0	240.0	100.8
Cyanide									

FORM VII - IN

03/90

9713526.2936

0000035

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.: CLP474

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	1021.8		800.0	1200.0	102.2
Antimony				600.0	619.1		480.0	720.0	103.2
Arsenic				6.0	5.4		4.8	7.2	90.0
Barium				1000.0	1012.3		800.0	1200.0	101.2
Beryllium				50.0	48.9		40.0	60.0	97.8
Cadmium				50.0	48.3		40.0	60.0	96.6
Calcium				5000.0	5075.2		4000.0	6000.0	101.5
Chromium				100.0	98.5		80.0	120.0	98.5
Cobalt				500.0	493.9		400.0	600.0	98.8
Copper				250.0	244.0		200.0	300.0	97.6
Iron				1000.0	1004.6		800.0	1200.0	100.5
Lead				6.0	6.7		4.8	7.2	111.7
Magnesium				5000.0	5061.0		4000.0	6000.0	101.2
Manganese				150.0	147.9		120.0	180.0	98.6
Mercury				12.7	13.2		10.2	15.2	103.9
Nickel				400.0	399.7		320.0	480.0	99.9
Potassium				5000.0	5001.7		4000.0	6000.0	100.0
Selenium				6.0	5.8		4.8	7.2	96.7
Silver				100.0	94.0		80.0	120.0	94.0
Sodium				5000.0	5107.4		4000.0	6000.0	102.1
Thallium				6.0	6.1		4.8	7.2	101.7
Vanadium				500.0	500.2		400.0	600.0	100.0
Zinc				200.0	200.5		160.0	240.0	100.2
Cyanide									

FORM VII - IN

03/90

9713526.2937

0000037

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

B010P0L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

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

Concentration Units: ug/L

run-reported IDL	Analyte	Initial Sample Result (I) >50xIDL?	C	Serial Dilution Result (S)	C	% Difference	Q	M
91	Aluminum	✓ 19833.60		19142.00		3.5 ✓		P
20	Antimony	20.00	U	100.00	U			P
2	Arsenic							NR
16	Barium	~~360.00~~		344.00	B	~~4.4~~		P
1	Beryllium	1.50	B	5.00	U	~~100.0~~		P
3	Cadmium	3.00	U	15.00	U			P
63	Calcium	✓ 27435.80		26840.51		2.2 ✓		P
6	Chromium	32.50		35.00	B	~~7.7~~		P
10	Cobalt	46.50	B	50.00	U	~~100.0~~		P
10	Copper	80.10		173.50		~~116.6~~		P
46	Iron	✓ ~~78357.88~~		75964.50		3.1 ✓		P
2	Lead							NR
87	Magnesium	✓ 17288.80		16912.50	B	2.2 ✓		P
2	Manganese	✓ 1331.50		1288.00		3.3 ✓		P
.2	Mercury							NR
11	Nickel	43.10		55.00	U	~~100.0~~		P
862	Potassium	3223.10	B	4310.00	U	~~100.0~~		P
2	Selenium							NR
10	Silver	10.00	U	50.00	U			P
110	Sodium	1312.50	B	1243.00	B	~~5.3~~		P
2	Thallium							NR
8	Vanadium	111.00		114.50	B	~~3.2~~		P
6	Zinc	140.00		220.00		~~57.1~~		P

FORM IX - IN

03/90

✓

MK

9713526.2958

0000038

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.: CLP474

ICP ID Number: IC1 Date: 10/01/91

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	91	83.0	P
Antimony	206.80		60	20	18.0	P
Arsenic			10	2		
Barium	493.40		200	16	16.0	P
Beryllium	313.00		5	1	1.0	P
Cadmium	228.80		5	3	2.0	P
Calcium	317.90		5000	63	63.0	P
Chromium	267.70		10	6	4.0	P
Cobalt	228.60		50	10	5.0	P
Copper	324.70		25	10	6.0	P
Iron	259.90		100	46	46.0	P
Lead			3	2		
Magnesium	279.00		5000	87	87.0	P
Manganese	257.60		15	2	2.0	P
Mercury			0.2	.2		NR
Nickel	231.60		40	11	8.0	P
Potassium	766.40		5000	862	862.0	P
Selenium			5	2		
Silver	328.00		10	10	3.0	P
Sodium	588.90		5000	110	110.0	P
Thallium			10	2		
Vanadium	292.40		50	8	7.0	P
Zinc	213.80		20	6	6.0	P

These do not match IDL reported

Used IDLs from blank summary for qual

dmk

Comments:

FORM X - IN

03/90

9713526.2939

0000039

U.S. EPA - CLP

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Roy F. Weston, Inc. Contract:

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

ICP ID Number: IC2 Date: 07/01/91

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	237.30		200.0	96.0	P
Antimony	206.80		60.0	55.0	P
Arsenic					
Barium	230.40		200.0	8.0	P
Beryllium	313.00		5.0	1.0	P
Cadmium	214.40		5.0	4.0	P
Calcium	393.40		5000.0	81.0	P
Chromium	205.60		10.0	4.0	P
Cobalt	228.60		50.0	8.0	P
Copper	324.80		25.0	6.0	P
Iron	238.20		100.0	11.0	P
Lead	220.30		90.0	22.0	P
Magnesium	279.60		5000.0	119.0	P
Manganese	257.60		15.0	3.0	P
Mercury					
Nickel	221.60		40.0	10.0	P
Potassium	769.90		5000.0	551.0	P
Selenium					
Silver	328.10		10.0	7.0	P
Sodium	589.50		5000.0	108.0	P
Thallium					
Vanadium	292.40		50.0	10.0	P
Zinc	213.90		20.0	4.0	P

These do not match IDL reported.

Used IDL from blank summary for quals. ✓ AMZ

Comments:

FORM X - IN

9713526.2940

0000040

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.: CLP474

ICP ID Number: Date:

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		
Antimony			60		
Arsenic			10		
Barium			200		
Beryllium			5		
Cadmium			5		
Calcium			5000		
Chromium			10		
Cobalt			50		
Copper			25		
Iron			100		
Lead			3		
Magnesium			5000		
Manganese			15		
Mercury			0.2		
Nickel			40		
Potassium			5000		
Selenium			5		
Silver			10		
Sodium			5000		
Thallium			10		
Vanadium			50		
Zinc			20		

Comments:

9713526.2941

0000047

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.: CLP474

ICP ID Number: Date: 10/01/91

Flame AA ID Number:

Furnace AA ID Number: AA1

Analyte	Wave-length (nm)	Back ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		
Antimony			60		
Arsenic			10		
Barium			200		
Beryllium			5		
Cadmium			5		
Calcium			5000		
Chromium			10		
Cobalt			50		
Copper			25		
Iron			100		
Lead			3		
Magnesium			5000		
Manganese			15		
Mercury			0.2		NR
Nickel			40		
Potassium			5000		
Selenium	196.00	BZ	5	2.0	F
Silver			10		
Sodium			5000		
Thallium			10		
Vanadium			50		
Zinc			20		

Comments:

Same comment as before. CMK

FORM X - IN 03/90

9713526.2942

0000048

U.S. EPA - CLP

11A

ICP Interelement Correction Factors (Annually)

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

ICP ID Number: IC1 Date: 9/03/91

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg	AS
Aluminum	308.20	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.80	0.0000000	0.0000000	.0002000	0.0000000	0.0000000
Arsenic						
Barium	493.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.00	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	228.80	0.0000000	0.0000000	0.0000000	0.0000000	-.0005000
Calcium	317.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.70	0.0000000	0.0000000	.0000800	0.0000000	0.0000000
Cobalt	228.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.70	0.0000000	0.0000000	-.0001000	0.0000000	0.0000000
Iron	259.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead						
Magnesium	279.00	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.60	0.0000000	0.0000000	-.0007000	0.0000000	0.0000000
Mercury						
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium						
Silver	328.00	0.0000000	0.0000000	-.0002600	0.0000000	0.0000000
Sodium	588.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium						
Vanadium	292.40	0.0000000	0.0000000	.0008000	0.0000000	0.0000000
Zinc	213.80	0.0000000	0.0000000	.0002000	0.0000000	0.0000000

Comments:

FORM XI (Part 1) - IN

03/90

ok

9713526.2943

0000047

U.S. EPA - CLP

12

ICP Linear Ranges (Quarterly)

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

ICP ID Number: IC1 Date: 7/01/91

Analyte	Integ. Time (sec.)	Concentration (ug/L)	M
Aluminum	3.30	1000000.0	
Antimony	3.30	60000.0	
Arsenic			NR
Barium	3.30	200000.0	
Beryllium	3.30	50000.0	
Cadmium	3.30	25000.0	
Calcium	3.30	1000000.0	
Chromium	3.30	50000.0	
Cobalt	3.30	200000.0	
Copper	3.30	12500.0	
Iron	3.30	500000.0	
Lead			NR
Magnesium	3.30	1000000.0	
Manganese	3.30	100000.0	
Mercury			NR
Nickel	3.30	200000.0	
Potassium	3.30	1000000.0	
Selenium			NR
Silver	3.30	10000.0	
Sodium	3.30	1000000.0	
Thallium			NR
Vanadium	3.30	50000.0	
Zinc	3.30	150000.0	

all samples within linear range

Comments:

FORM XII - IN

03/90

9713526.2944

0000049

U.S. EPA - CLP

13

PREPARATION LOG

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

Lab Code: WESTON Case No.: WEST SAS No: SDG No.: CLP474

Method: F

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
BO10P0	8/26/91	1.11	200
BO10P0D	8/26/91	1.13	200
BO10P0S	8/26/91	1.13	200
BO10P3	8/26/91	1.05	200
BO10P5	8/26/91	1.04	200
LCSS131	8/26/91	1.00	200
LCSS231	8/26/91	1.00	200
PBS131	8/26/91	1.00	200

FORM XIII - IN 03/90

9713526.2945

000048

U.S. EPA - CLP

13

PREPARATION LOG

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

Lab Code: WESTON Case No.: WEST SAS No: SDG No.: CLP474

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
BO10P0	8/26/91	1.13 ~~1.13~~ ~~1.14~~	200
BO10P0D	8/26/91	1.11 ~~1.11~~ ~~1.15~~	200
BO10P0S	8/26/91	1.14	200
BO10P3	8/26/91	1.02	200
BO10P5	8/26/91	1.03	200
LCSS132	8/26/91	1.00	200
LCSS232	8/26/91	1.00	200
PBS132	8/26/91	1.00	200

FORM XIII - IN 03/90

WESTON

[redacted] DIGESTION RECORD [redacted]

DATE 8-26-91 DIGESTION BATCH # 91L1631 [redacted]

COMP. DATE 8-26-91 TYPE OF PREP: AA METHOD CLP

PARAMETERS 9s, Se, Pb, TL CLIENT westinghouse

TYPE OF ANALYSIS Total LOGBOOK # 2363 MATRIX soil

REW #	SPIKE INFO	INT. WT/VOL	FIN VOL	% SOL	pH<2>	TEXTURE CRSE	TEXTURE FINE	COLOR/APPEAR B/CR	COLOR/APPEAR T/CY	OTHER	ARTIFACTS YES	ARTIFACTS NO
91081461			200ml									
001		1.150		98.70			✓	✓				
91081474												
001		1.108		97.57			✓	✓				
001R		1.131					✓	✓				
001S	2ml AA MATRIX spike.	1.129		AAP 8-26-91			✓	✓				
002		1.049	1.129	96.93			✓	✓				
003		1.038		97.06			✓	✓				
91081505												
001		1.174		98.80			✓	✓				
002		1.124		98.82			✓	✓				
91L1631												
MB1												
LC1	2ml AA LCS.											
LC2												

AAP 8-26-91

COMMENTS:

REVIEWED BY Kathleen McNulty 8-26-91

REW# 21 21 001/C 01/91

9713526.2946

WESTON

[redacted] DIGESTION RECO[redacted]

DATE 8-26-91 DIGESTION BATCH # 91L1632 ANALYST [redacted]

COMP. DATE 8-26-91 TYPE OF PREP: ICP METHOD CLP

PARAMETERS HSL CLIENT Westinghouse

TYPE OF ANALYSIS Total LOGBOOK # 2363 MATRIX Soil

RFW #	SPIKE INFO	INT. WT/VOL	FIN VOL	%SOL	pH<2>	TEXTURE CRSE	TEXTURE FINE	COLOR/APPEAR B/CR	COLOR/APPEAR T/CY	OTHER	ARTIFACTS YES	ARTIFACTS NO
91081461			200ml									
003		1.163		98.70			✓	✓				
91081474												
001		1.131		97.57			✓	✓				
001R		1.112		97.57			✓	✓				
001S	2ml ICCP A-B, RFW A-1,	1.135					✓	✓				
002		1.018		96.93			✓	✓				
003		1.029		97.06			✓	✓				
91081505												
001		1.164		98.80			✓	✓				
002		1.124		98.82			✓	✓				
91L1632												
MB1												
LC1	2ml ICV, 1,2,3,4A-B, S											
LC2												

AAP 8-26-91

COMMENTS:

REVIEWED BY Kathleen McMahon 8-26-91

10 W# 21 21 001/C 03 91

WESTON

% SOL/% MST/% ASH DATA

Log Book # 2342

70Sol0819 91Z90515S

DATE/INIT.	TEMP TIME IN	TEMP TIME OUT	RFW #	CONTAINER WT	INITIAL WT (Sample & Container)	INITIAL WT SAMPLE	FINAL WT (Sample & Container)	FINAL WT SAMPLE	RESULT
8-19-91 JH	105		91Z90434 006	1.327	7.289		6.830		92.30
8-20-91 JH			008	1.335	7.295		6.834		92.27
			002	1.323	8.714		7.959		89.78
			004	1.337	5.587		5.003		86.26
			008	1.333	6.633		6.154		90.26
			91Z90449 010	1.334	5.594		4.691		78.80
			~~011~~	~~1.330~~	~~5.86~~	Spill	8/20/91 JH.		
			012	1.323	5.203		4.496		81.78
			013	1.325	12.530		10.529		82.14
			91Z90445 001	1.349	10.481	Sample's dried on jar	8/19/91 JH		92.11
			002	1.317	8.245				
		CLP	91Z90474 001	1.323	6.883		6.748		97.57 ✓
			002	1.322	6.366		6.211		96.93 ✓
			003	1.320	7.950		7.755		97.06 ✓

Balance ID: B-5
Reviewed by: J. Henderson
Date: 9-22-91

RFW21-21-016/H-05/91

00001183

9713526.2948

13

9713526.2949

0000051

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.: CLP474

Instrument ID Number: AA6 Method: F

Start Date: 8/27/91 End Date: 8/27/91

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	118				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																					
ZZZZZZ	1.00																										
ZZZZZZ	1.00																										
CCV2	1.00					X																					
CCB2	1.00					X																					
PBS131	1.00					X																					
PBS131A	1.00		106.5			X																					
LCSS131	1.00					X																					
LCSS131A	1.00		109.0			X																					
LCSS231	1.00					X																					
LCSS231A	1.00		111.5			X																					
ZZZZZZ	1.00																										
ZZZZZZ	1.00																										
ZZZZZZ	1.00																										
ZZZZZZ	1.00																										
CCV3	1.00					X																					
CCB3	1.00					X																					
ZZZZZZ	1.00																										
ZZZZZZ	1.00																										
BO10P0	1.00					X																					
BO10P0A	1.00		91.5	✓		X																					
BO10P0D	1.00					X																					
BO10P0DA	1.00		88.0			X																					

FORM XIV - IN 03/90

✓ CMR

9713526.2950

0000052

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.: CLP474

Instrument ID Number: AA6 Method: F

Start Date: 8/27/91 End Date: 8/27/91

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
BO10P0S	1.00					X																					
ZZZZZZ	1.00																										
BO10P3	1.00					X																					
BO10P3A	1.00		88.0			X																					
CCV4	1.00					X																					
CCB4	1.00					X																					
BO10P5	1.00					X																					
BO10P5A	1.00		88.5			X																					
CCV5	1.00					X																					
CCB5	1.00	646				X																					
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										

FORM XIV - IN 03/90

9713526.2951

0000053

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.: CLP474

Instrument ID Number: HG1 Method: CV

Start Date: 8/26/91 End Date: 8/26/91

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	1436																X									
S0.5	1.00	1438																X									
S1	1.00	1440																X									
S2	1.00	1442																X									
S5	1.00	1445																X									
S10	1.00	1447																X									
ICV1	1.00	1449																X									
ICB1	1.00	1452																X									
ZZZZZZ	1.00	1454																									
PBS146	1.00	1456																X									
PBS246	1.00	1457																X									
LCSS146	5.00	1459																X									
LCSS246	5.00	1502																X									
ZZZZZZ	1.00	1504																									
ZZZZZZ	1.00	1506																									
ZZZZZZ	1.00	1508																									
ZZZZZZ	1.00	1510																									
ZZZZZZ	1.00	1512																									
CCV1	1.00	1514																X									
CCB1	1.00	1516																X									
ZZZZZZ	1.00	1518																									
ZZZZZZ	1.00	1520																									
ZZZZZZ	1.00	1522																									
ZZZZZZ	1.00	1523																									
ZZZZZZ	1.00	1526																									
ZZZZZZ	1.00	1527																									
ZZZZZZ	1.00	1529																									
ZZZZZZ	1.00	1531																									
ZZZZZZ	1.00	1533																									
ZZZZZZ	1.00	1535																									
CCV2	1.00	1537																X									
CCB2	1.00	1539																X									

FORM XIV - IN 03/90

9713526.2952

0000057

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.: CLP474

Instrument ID Number: HG1 Method: CV

Start Date: 8/26/91 End Date: 8/26/91

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
ZZZZZZ	1.00	1541																									
ZZZZZZ	1.00	1543																									
BO10P0	1.00	1544																X									
BO10P3	1.00	1546																X									
BO10P5	1.00	1548																X									
ZZZZZZ	1.00	1550																									
ZZZZZZ	1.00	1552																									
ZZZZZZ	1.00	1553																									
ZZZZZZ	1.00	1555																									
ZZZZZZ	1.00	1557																									
CCV3	1.00	1559																X									
CCB3	1.00	1601																X									
ZZZZZZ	1.00	1603																									
ZZZZZZ	1.00	1605																									
ZZZZZZ	1.00	1607																									
ZZZZZZ	1.00	1609																									
ZZZZZZ	1.00	1610																									
ZZZZZZ	1.00	1612																									
ZZZZZZ	1.00	1614																									
ZZZZZZ	1.00	1616																									
ZZZZZZ	1.00	1618																									
ZZZZZZ	1.00	1620																									
CCV4	1.00	1622																X									
CCB4	1.00	1624																X									
ZZZZZZ	5.00	1626																									
ZZZZZZ	5.00	1628																									
ZZZZZZ	1.00	1630																									
ZZZZZZ	1.00	1632																									
ZZZZZZ	1.00	1634																									
ZZZZZZ	1.00	1636																									
ZZZZZZ	1.00	1638																									
ZZZZZZ	1.00	1640																									

✓ cmr

9713526.2953

0000055

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.: CLP474

Instrument ID Number: HG1 Method: CV

Start Date: 8/26/91 End Date: 8/26/91

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
ZZZZZZ	1.00	1642																									
ZZZZZZ	1.00	1644																									
CCV5	1.00	1646																X									
CCB5	1.00	1648																X									
ZZZZZZ	1.00	1650																									
ZZZZZZ	1.00	1652																									
ZZZZZZ	1.00	1654																									
ZZZZZZ	1.00	1656																									
ZZZZZZ	1.00	1657																									
ZZZZZZ	1.00	1659																									
ZZZZZZ	1.00	1701																									
ZZZZZZ	1.00	1703																									
ZZZZZZ	1.00	1705																									
ZZZZZZ	1.00	1707																									
CCV6	1.00	1709																X									
CCB6	1.00	1712																X									
ZZZZZZ	1.00	1713																									
ZZZZZZ	1.00	1715																									
ZZZZZZ	1.00	1717																									
ZZZZZZ	1.00	1719																									
ZZZZZZ	1.00	1721																									
ZZZZZZ	1.00	1723																									
ZZZZZZ	1.00	1725																									
ZZZZZZ	1.00	1727																									
CCV7	1.00	1729																X									
CCB7	1.00	1731																X									
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										

NA

NA

NA

FORM XIV - IN 03/90

NA

✓ cmr

9713526.2954

0000056

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.: CLP474

Instrument ID Number: AA3 Method: F

Start Date: 8/27/91 End Date: 8/27/91

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
SO	1.00	1636													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												
PBS131	1.00														X												
PBS131A	1.00		93.0												X												
LCSS131	1.00														X												
LCSS131A	1.00		83.0												X												
LCSS231	1.00														X												
LCSS231A	1.00		76.0												X												
ZZZZZZ	1.00																										
ZZZZZZ	1.00																										
ZZZZZZ	1.00																										
ZZZZZZ	1.00																										
CCV2	1.00														X												
CCB2	1.00														X												
ZZZZZZ	1.00																										
ZZZZZZ	1.00																										
BO10P0	1.00														X												
BO10P0A	1.00		99.5												X												
BO10P0D	1.00														X												
BO10P0DA	1.00		97.0												X												
BO10P0S	1.00														X												
ZZZZZZ	1.00																										
ZZZZZZ	1.00																										
ZZZZZZ	1.00																										

FORM XIV - IN 03/90

9713526.2955

0000057

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.: CLP474

Instrument ID Number: AA3 Method: F

Start Date: 8/27/91 End Date: 8/27/91

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
CCV3	1.00			–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–
CCB3	1.00			–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–
BO10P3	1.00			–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–
BO10P3A	1.00		96.0	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–
BO10P5	1.00			–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–
BO10P5A	1.00		98.0	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–
CCV4	1.00			–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–
CCB4	1.00	1926		–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

FORM XIV - IN 03/90

9713526.2956

0000058

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.: CLP474

Instrument ID Number: AA1 Method: F

Start Date: 8/30/91 End Date: 8/30/91

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	2128		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	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	–	–	–	–	–	–
PBS131	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
PBS131A	1.00		103.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
LCSS131	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
LCSS131A	1.00		108.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
LCSS231	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
LCSS231A	1.00		103.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
ZZZZZZ	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ZZZZZZ	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BO10P0	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
BO10P0A	1.00		96.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
CCV2	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
CCB2	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
BO10P0D	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
BO10P0DA	1.00		98.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
BO10P0S	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
ZZZZZZ	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–
BO10P3	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
BO10P3A	1.00		93.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
BO10P5	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
BO10P5A	1.00		97.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
ZZZZZZ	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ZZZZZZ	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

9713526.2957

0000059

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.: CLP474

Instrument ID Number: AA1 Method: F

Start Date: 8/30/91 End Date: 8/30/91

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
CCV3	1.00																				X						
CCB3	1.00																				X						
ZZZZZZ	1.00																										
ZZZZZZ	1.00																										
CCV4	1.00																				X						
CCB4	1.00	28																			X						
N/A	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										

9713526.2958

U.S. EPA - CLP 000060

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.: CLP474

Instrument ID Number: AA2 Method: F

Start Date: 8/27/91 End Date: 8/27/91

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	1828		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	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	-	-	-
PBS131 ✓	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
PBS131A	1.00		93.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
LCSS131 ✓	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
LCSS131A	1.00		84.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
LCSS231 ✓	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
LCSS231A	1.00		92.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
ZZZZZZ	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZ	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZ	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZ	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCV2	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
CCB2	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
ZZZZZZ	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZ	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BO10P0	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
BO10P0A	1.00		83.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
BO10P0D	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
BO10P0DA	1.00		101.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
BO10P0S	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
ZZZZZZ	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BO10P3	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
BO10P3A	1.00		86.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-

9713526.2959

U.S. EPA 000061

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.: CLP474

Instrument ID Number: AA2 Method: F

Start Date: 8/27/91 End Date: 8/27/91

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
CCV3	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
CCB3	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
BO10P5	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
BO10P5A	1.00		109.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
CCV4	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
CCB4	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
PBS131	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
PBS131A	1.00		100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
ZZZZZZ	10.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ZZZZZZ	10.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BO10P0	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
BO10P0A	1.00		97.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
BO10P3	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
BO10P3A	1.00		100.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
CCV5	1.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
CCB5	1.00	2226		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	0.00			–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

FORM XIV - IN 03/90

9713526.2960

000062

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.: CLP474

Instrument ID Number: IC1 Method: P

Start Date: 10/21/91 End Date: 10/21/91

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	0.00	1018		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
S1	0.00	1020			X	-		X	X		X	X	X	X	-		X	-	X		-	X		-	X	X	-
S2	0.00	1023		X		-	X			X					-	X		-		X	-		X	-			-
ICV1	1.00	1023		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
ICB1	1.00	1026		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
✓ ICSA	1.00	1029		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
✓ ICSAB	1.00	1031		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
✓ CRI	1.00	1034			X	-		X	X		X	X	X		-		X	-	X		-	X		-	X	X	-
CCV1	1.00	1036		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
CCB1	1.00	1039		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
PBS132	1.00	1041		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
LCSS132	1.00	1045		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
LCSS232	1.00	1047		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
ZZZZZZ	1.00	1050				-									-			-			-			-			-
ZZZZZZ	1.00	1053		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BO10P0	1.00	1055		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
BO10P0L	5.00	1058		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
BO10P0D	1.00	1101		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
BO10P0S	1.00	1110			X	-	X	X	X	-	X	X	X		-		X	-	X		-	X		-	X	X	-
BO10P0A	1.00	1125		-	X	-				-				-	-	-	X	-		-	-		-	-			-
CCV2	1.00	1128		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
CCB2	1.00	1130		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
BO10P3	1.00	1132		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
BO10P5	1.00	1136		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
ZZZZZZ	1.00	1138				-									-			-			-			-			-
✓ ICSA	1.00	1141		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
✓ ICSAB	1.00	1143		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
✓ CRI	1.00	1145			X	-		X	X		X	X	X		-		X	-	X		-	X		-	X	X	-
CCV3	1.00	1148		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
CCB3	1.00	1151		X	X	-	X	X	X	X	X	X	X	X	-	X	X	-	X	X	-	X	X	-	X	X	-
	0.00																										
	0.00			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

9713526.2961

II. RAW DATA

A. METALS BY ICP

B. FLAME AA

C. FURNACE AA

D. MERCURY

E. CYANIDE

F. RARE EARTHS

9713526.2962

METALS BY ICP

9713526.2963

0000086

Analysis Report Mon 10-21-91 10:57:48 AM page 1

Method: HSLONLY Sample Name: 9108L474-001 Operator: MLD
Run Time: 10/21/91 10:55:58
Comment:
Mode: CONC Corr. Factor: 1

Elem	Ag3281	Al3082	Ba4934	Be3130	Ca3179	Cd2288	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	7.524	19830.	360.0	1.476	27440.	1.270	46.50
SDev	.635	89.	2.5	.000	57.	.952	.43
%RSD	8.444	.4476	.6809	.0000	.2092	75.00	.9213
#1	7.917	19890.	362.1	1.476	27480.	1.270	46.00
#2	7.865	19880.	360.6	1.476	27460.	2.222	46.75
#3	6.791	19730.	357.3	1.476	27370.	.3175	46.75

Elem	Cr2677	Cu3247	Fe2599	K-7664	Mg2790	Mn2576	Na5889
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	32.53	80.14	78360.	3223.	17290.	1331.	1312.
SDev	1.94	.93	318.	200.	81.	5.	12.
%RSD	5.976	1.155	.4053	6.218	.4688	.3732	.8800
#1	30.37	79.07	78630.	3041.	17340.	1336.	1300.
#2	33.07	80.69	78430.	3190.	17330.	1332.	1323.
#3	34.15	80.65	78010.	3438.	17200.	1326.	1314.

Elem	Ni2316	Sb2068	V-2924	Zn2138	Pb2203
Units	ppb	ppb	ppb	ppb	ppb
Avge	43.07	-12.52	111.0	140.0	18.00
SDev	2.91	4.92	.5	1.9	3.56
%RSD	6.766	-39.31	.4243	1.327	19.78
#1	44.75	-8.368	111.1	142.1	19.90
#2	44.75	-17.95	111.3	139.3	13.89
#3	39.70	-11.23	110.4	138.6	20.21

9713526.2964

Data file: AS082730.DAT

0000102

	As ug/L
91L1631-LC2	
Mean Conc.	27.0
% RSD	0.27
Recovery	111.%
Mean Abs.	0.176
9108L505-001	
Mean Conc.	20.2
% RSD	0.68
Recovery	100.%
Mean Abs.	0.132
9108L505-002	
Mean Conc.	8.9
% RSD	0.78
Recovery	94.7%
Mean Abs.	0.058
CCV	
Mean Conc.	38.0
% RSD	1.27
Recovery	
Mean Abs.	0.248
CCB	
Mean Conc.	0.2
% RSD	8.68
Recovery	
Mean Abs.	0.001
9108L461-003	
Mean Conc.	4.0
% RSD	10.66
Recovery	89.8%
Mean Abs.	0.026
9108L474-001	
Mean Conc.	3.6
% RSD	6.54
Recovery	91.5%
Mean Abs.	0.024
9108L474-001R	
Mean Conc.	4.7
% RSD	7.40
Recovery	88.0%
Mean Abs.	0.031
9108L474-001S	
Mean Conc.	34.7
% RSD	0.24
Recovery	89.8%
Mean Abs.	0.226

Analyst\Date: RSR 8-27-91 Rev'd by\Date: PMP 08/28/91

9713526.2965

APPENDIX U
DATA VALIDATION DOCUMENTATION

Roy F. Weston Laboratories

Data Package 9108L474

Metals 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.

9713526.2967

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.

9713526.2968

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

9713526.2969

0000019

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B010P0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

Matrix (soil/water): SOIL Lab Sample ID: 910847401

Level (low/med): LOW Date Received: 8/16/91

% Solids: 97.6

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3590.00			P
7440-36-0	Antimony	3.62	U	N	P
7440-38-2	Arsenic	.67	B		F
7440-39-3	Barium	65.20			P
7440-41-7	Beryllium	.27	B		P
7440-43-9	Cadmium	.54	U		P
7440-70-2	Calcium	4970.00			P
7440-47-3	Chromium	5.90			P
7440-48-4	Cobalt	8.40	B		P
7440-50-8	Copper	14.50			P
7439-89-6	Iron	14200.00			P
7439-92-1	Lead	3.30		N	F
7439-95-4	Magnesium	3130.00			P
7439-96-5	Manganese	241.00		N	P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	7.80			P
7440-09-7	Potassium	584.00	B		P
7782-49-2	Selenium	.37	U		F
7440-22-4	Silver	1.81	U		P
7440-23-5	Sodium	238.00	B		P
7440-28-0	Thallium	.54	B		F
7440-62-2	Vanadium	20.10			P
7440-66-6	Zinc	25.40			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713526.2970

0000020

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B010P3

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

Matrix (soil/water): SOIL Lab Sample ID: 910847402

Level (low/med): LOW Date Received: 8/16/91

% Solids: 96.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2570.00			P
7440-36-0	Antimony	4.08	U	N	P
7440-38-2	Arsenic	.55	B		F
7440-39-3	Barium	55.50			P
7440-41-7	Beryllium	.20	U		P
7440-43-9	Cadmium	.61	U		P
7440-70-2	Calcium	5860.00			P
7440-47-3	Chromium	1.80	B		P
7440-48-4	Cobalt	6.90	B		P
7440-50-8	Copper	11.00			P
7439-89-6	Iron	12800.00			P
7439-92-1	Lead	2.10		N	F
7439-95-4	Magnesium	2530.00			P
7439-96-5	Manganese	178.00		N	P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	4.70	B		P
7440-09-7	Potassium	385.00	B		P
7782-49-2	Selenium	.40	U		F
7440-22-4	Silver	2.04	U		P
7440-23-5	Sodium	219.00	B		P
7440-28-0	Thallium	.40	U		F
7440-62-2	Vanadium	15.70			P
7440-66-6	Zinc	20.20			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713526.2971

0000021

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B010P5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

Matrix (soil/water): SOIL Lab Sample ID: 910847403

Level (low/med): LOW Date Received: 8/16/91

% Solids: 97.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2320.00			P
7440-36-0	Antimony	4.01	U	N	P
7440-38-2	Arsenic	.56	B		F
7440-39-3	Barium	49.60			P
7440-41-7	Beryllium	.30	B		P
7440-43-9	Cadmium	.60	U		P
7440-70-2	Calcium	5610.00			P
7440-47-3	Chromium	1.90	B		P
7440-48-4	Cobalt	6.60	B		P
7440-50-8	Copper	10.50			P
7439-89-6	Iron	12200.00			P
7439-92-1	Lead	1.60		N	F
7439-95-4	Magnesium	2390.00			P
7439-96-5	Manganese	171.00		N	P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	4.20	B		P
7440-09-7	Potassium	401.00	B		P
7782-49-2	Selenium	.40	U		F
7440-22-4	Silver	2.00	U		P
7440-23-5	Sodium	199.00	B		P
7440-28-0	Thallium	.40	U		F
7440-62-2	Vanadium	16.40			P
7440-66-6	Zinc	19.50			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713526.2972

ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

9108L474

SDG: CLP474	REVIEWER: CMR	DATE: 5/20/92	PAGE 1 OF 1
COMMENTS: LEVEL 4			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Thallium	U	B010P0	<5xBL
Antimony	UJ	B010P0, B010P3, B010P5	MS ; PS
Lead	J	↓ ↓ ↓	MS
Manganese	J		MS; PS

9713526.2974

ATTACHMENT 4

As Qualified Data Summary

9713526.2975

0000019

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B010P0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

Matrix (soil/water): SOIL Lab Sample ID: 910847401

Level (low/med): LOW Date Received: 8/16/91

% Solids: 97.6

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	3590.00			P	
7440-36-0	Antimony	3.62	U	N J	P	MS ; PS
7440-38-2	Arsenic	.67	B		F	
7440-39-3	Barium	65.20			P	
7440-41-7	Beryllium	.27	B		P	
7440-43-9	Cadmium	.54	U		P	
7440-70-2	Calcium	4970.00			P	
7440-47-3	Chromium	5.90			P	
7440-48-4	Cobalt	8.40	B		P	
7440-50-8	Copper	14.50			P	
7439-89-6	Iron	14200.00			P	
7439-92-1	Lead	3.30		N J	F	MS
7439-95-4	Magnesium	3130.00			P	
7439-96-5	Manganese	241.00		N J	P	MS ; PS
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	7.80			P	
7440-09-7	Potassium	584.00	B		P	
7782-49-2	Selenium	.37	U		F	
7440-22-4	Silver	1.81	U		P	
7440-23-5	Sodium	238.00	B		P	
7440-28-0	Thallium	.54	B	u	F	<5xBL
7440-62-2	Vanadium	20.10			P	
7440-66-6	Zinc	25.40			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713526.2976

0000026

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B010P3

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

Matrix (soil/water): SOIL Lab Sample ID: 910847402

Level (low/med): LOW Date Received: 8/16/91

% Solids: 96.9

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	2570.00			P	
7440-36-0	Antimony	4.08	U	N J	P	MS; PS
7440-38-2	Arsenic	.55	B		F	
7440-39-3	Barium	55.50			P	
7440-41-7	Beryllium	.20	U		P	
7440-43-9	Cadmium	.61	U		P	
7440-70-2	Calcium	5860.00			P	
7440-47-3	Chromium	1.80	B		P	
7440-48-4	Cobalt	6.90	B		P	
7440-50-8	Copper	11.00			P	
7439-89-6	Iron	12800.00			P	
7439-92-1	Lead	2.10		N J	F	MS
7439-95-4	Magnesium	2530.00			P	
7439-96-5	Manganese	178.00		N J	P	MS; PS
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	4.70	B		P	
7440-09-7	Potassium	385.00	B		P	
7782-49-2	Selenium	.40	U		F	
7440-22-4	Silver	2.04	U		P	
7440-23-5	Sodium	219.00	B		P	
7440-28-0	Thallium	.40	U		F	
7440-62-2	Vanadium	15.70			P	
7440-66-6	Zinc	20.20			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713526.2977

0000021

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B010P5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP474

Matrix (soil/water): SOIL Lab Sample ID: 910847403

Level (low/med): LOW Date Received: 8/16/91

% Solids: 97.1

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	2320.00			P	
7440-36-0	Antimony	4.01	U	N J	P	ms; ps
7440-38-2	Arsenic	.56	B		F	
7440-39-3	Barium	49.60			P	
7440-41-7	Beryllium	.30	B		P	
7440-43-9	Cadmium	.60	U		P	
7440-70-2	Calcium	5610.00			P	
7440-47-3	Chromium	1.90	B		P	
7440-48-4	Cobalt	6.60	B		P	
7440-50-8	Copper	10.50			P	
7439-89-6	Iron	12200.00			P	
7439-92-1	Lead	1.60		N J	F	ms
7439-95-4	Magnesium	2390.00			P	
7439-96-5	Manganese	171.00		N J	P	ms; ps
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	4.20	B		P	
7440-09-7	Potassium	401.00	B		P	
7782-49-2	Selenium	.40	U		F	
7440-22-4	Silver	2.00	U		P	
7440-23-5	Sodium	199.00	B		P	
7440-28-0	Thallium	.40	U		F	
7440-62-2	Vanadium	16.40			P	
7440-66-6	Zinc	19.50			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713526.2978

ATTACHMENT 5

Data Review Supporting Documentation

HOLDING TIME SUMMARY - FORM B-I

9108L474

SDG: CLP474	REVIEWER: CMR	DATE: 5/20/92	PAGE 1 OF 1
COMMENTS: LEVEL 4			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B010P0	Hg-CVAA	8/15/92	8/~~26~~ 23/92 CMR	8/26/92	8 days	3 days	none
B010P3	↓	↓	↓	↓	↓	↓	↓
B010P5	↓	↓	↓	↓	↓	↓	↓
All other analyses were completed within the 6 month holding time window. CMR							

9213526.2979

CALIBRATION DATA SUMMARY - FORM B-2

9108L474

SDG: CLP474	REVIEWER: CMR	DATE: 5/20/92	PAGE 1 OF 1
COMMENTS: LEVEL 4			
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT:	

	CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
ICAL ①	all corr. coeff. are acceptable. CMR					
ICV ②	all ICV are acceptable. CMR					
CCV ③	all CCV are acceptable. CMR					

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: CLP474	REVIEWER: CMR	DATE: 5/20/92	PAGE 1 OF 1
COMMENTS: LEVEL 4			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
CCB1	Thallium	3.5			ug/L	—		all	—
CCB3	↓	6.2			↓	31.0		↓	U B010P0
CCB5	↓	4.7			↓			↓	—
CCB3	Zinc	6.5			↓	32.5		↓	none

9213526.2981

9108L474

ACCURACY DATA SUMMARY - FORM B-4

SDG: CLP474	REVIEWER: CMR	DATE: 5/20/92	PAGE 1 OF 1	
COMMENTS: LEVEL 4				
SAMPLE ID	**COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER REQUIRED**
① CRDLSTD.	Arsenic	34%	all	none
↓	Lead	133%	↓	↓
	Thallium	15%		
② B010PO5A (matrix spike)	antimony	66%	all	UJ
↓	lead	128%	↓	J
	manganese	34%		J
③ B010PO A (post dig. spike)	antimony	75%	all	UJ
↓	manganese	45%	↓	J
④ LCS → both LCS	samples were acceptable. CMR			
⑤ there were no MSAs.	CMR			

9213526.2982

PRECISION DATA SUMMARY - FORM B-5

9108L474

SDG: CLP474	REVIEWER CMR	DATE: 5/20/92	PAGE 1 OF 1
COMMENTS: LEVEL 4			

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
LAB DUP ① ~~antimony~~ CMR all lab duplicate precision acceptable.					
~~lead~~ CMR		CMR			
~~manganese~~ CMR					
FIELD DUP ② all field duplicate precision is acceptable.					
Calculations are attached.					
	CMR				
All ICP serial dilution %D's are acceptable, <10%.					
		CMR			

9713526.2083
WHC-SD-EN-SPP-002, Rev. 1

CALCULATION SUMMARY - FORM B-6

91084474

SDG: CLP474	REVIEWER: CMR	DATE: 5/20/92	PAGE 1 OF 8

COMMENTS:

percent solids

B010P0	B010P3	B010P5
% moisture:		
$\frac{6.883-6.748}{6.883-1.323} * 100 = 2.43$	$\frac{6.366-6.211}{6.366-1.322} * 100 = 3.07$	$\frac{7.950-7.755}{7.950-1.32} * 100 = 2.94$
% solids:	% solids =	% solids =
$100 - 2.43 = 97.57$ ✓	96.93 ✓	97.06

B010P0

Al $19830 * \frac{0.2}{1.131} * \frac{1}{.976} = 3590$ ✓

Ca $27440 * \frac{0.2}{1.131} * \frac{1}{.976} = 4970$ ✓

Fe $78360 * \frac{0.2}{1.131} * \frac{1}{.976} = 14200$ ✓

Zn $140 * \frac{0.2}{1.131} * \frac{1}{.976} = 25.4$ ✓

As $3.6 * \frac{.2}{1.108} * \frac{1}{.976} = 0.67$ ✓

similar calculations were used to check additional values.

CMR

9713526.2985

Calculations

HARTCROWSER

Page 1 of 2

Job No. 2978-40

Project Westinghouse 300FF1

Date 5/20/92

Calculations for Level 4 - 9108L474

Made by CMRussell

Run Logs

As 8/27/91 → ~~MS, LCS~~, PBS131, LCSS131, LCSS231 — 4 stds + blank ✓, all samples ✓, all QC ✓, all anal spike OK ✓ — 1 ICV ✓, 5 CCV ✓

Hg 8/26/91 → PBS146, LCS146, LCSS246 — 5 stds + blank ✓, PBS + LCS, no ms or dup — 1 ICV, 3 CCV

Pb 8/27/91 → PBS131, LCSS131, LCSS231 — 4 stds + blank, all samples, all QC, all anal spike OK ✓ — 1 ICV, 4 CCV

Se 8/30/91 → PBS131, LCSS131, LCSS231 — 4 stds + blank, all samples, all QC, all anal spike OK ✓ — 1 ICV, 3 CCV

Tl 8/27/91 → PBS131, LCSS131, LCSS231 — 4 stds + blank, all samples — 1 ICV, 5 CCV

B010PD Anal spike 83% ← ~~OK~~

Dup 102% ✓ ← This ~~normal~~ ~~QC~~ ?

rerun 97.5% ← ~~previous dup?~~

∴ normal

PBS131 run 2x for no reason

B010P3 run 2x for no reason

ICP 10/21/91 → 1 std + blank ✓ — 1 ICV, 3 CCV

PBS132, LCSS132, LCSS232 — all samples ✓, all QC ✓

Recycled Paper

9713526.2986

Calculations

HARTCROWSER

Page 2 of 2

Job No. 2978-40

Project Westinghouse 300FF1

Date 5/20/92

Calculations for Level 4 - 9108L474

Made by CM Russell

Field Duplicates

	B010P3	B010P5	±2x CRDL	>5x CRDL		%RPD
Al	2570	2320	—	✓	250/2445 =	10.2
Sb	4.08 UJ	4.01 UJ	—	—		
As	0.55	0.56	±4.0 ✓	—		
Ba	55.5	49.6	±80.0 ✓	—		
Be	0.20 U	0.30	—	—		
Cd	0.61 U	0.60 U	—	—		
Ca	5860	5610	—	✓	250/5735 =	4.36
Cr	1.80	1.90	±4.0 ✓	—		
Co	6.90	6.60	±20.0 ✓	—		
Cu	11.0	10.5	±10.0 ✓	—	600/12500 =	4.8
Fe	12800	12200	—	✓		
Pb	2.10 J	1.60 J	±1.20 ✓	—		
Mg	2530	2390	±2000 ✓	—	7/174.5 =	4.0
Mn	178 J	171	—	✓		
Hg	0.10 U	0.10 U	—	—		
Ni	4.70	4.20	±16.0 ✓	—		
K	386	401	±2000 ✓	—		
Se	0.40 U	0.40 U	—	—		
Ag	2.04 U	2.00 U	—	—		
Na	219	199	±2000 ✓	—		
Tl	0.40 U	0.40 U	—	—		
V	15.7	16.4	±20 ✓	—	0.7/19.85 =	3.5
Zn	20.2	19.5	—	✓		

All field dups are acceptable.

CMR

Recycled Paper

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: Westinghouse / Hanford	REVIEWER: KAC	DATE: 4/28/92
LABORATORY: Ray F. Weston	CASE: 9108L474	SDG: CLP 474
SAMPLES/MATRIX:		
B010P0		
B010P3	Soil	
B010P5		
	B010P3 and B010P5 are field duplicates. CMK	

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	X		
Cover Page	X		
Traffic Reports	X		
Sample Data			
Inorganic Analysis Data Sheets	X		
Standards Data			
Initial and Continuing Calibration Verification	X		
CRDL Standard for AA and ICP	X		
QC Summary			
Blanks	X		
ICP Interference Check Summary	X		
Spike Sample Recovery	X		
Post-Digestion Spike Sample Recovery	X		
Duplicate	X		
Laboratory Control Sample	X		
Standard Addition Results	X		
ICP Serial Dilutions	X		
Instrument Detection Limits (Missing sheet for Hg)	X		
ICP Interelement Correction Factors	X		
ICP Linear Ranges	X		
Preparation Log	X		
Analysis Run Log	X		
Raw Data			
ICP Raw Data	X		
Furnace AA Raw Data	X		
Mercury Raw Data	X		
Cyanide Raw Data			X
Additional Data			
Internal laboratory chain-of-custody		X	
Laboratory Sample Preparation Records	X		

Data Package Item	Present?: Yes	No	N/A
Percent Solids Analysis Records	X		
Reduction Formulae			X
Instrument Run Logs			X
Chemist Notebook Pages			X

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):

Case narrative → ① 3/90 SOW

② matrix spike Sb, Pb, Mn } exceeded ✓ confirmed.

Cross Reference

Westinghouse Sample	Lab Sample
B010P0	9108L47401
B010P0D	01R
B010P0S	01S
B010P3	02
B010P5	03