START 9613451.2463

9204L071-WES-39788

0044595

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

27 May 1992

MAY 1992 RECEIVED OSM DMO

Ms. Jeanette Duncan
Westinghouse-Hanford
2355 Stevens Drive
200 W/MO-346/T6-08
Richland, WA 99352

Dear Jeanette:

This letter is to inform you of an incorrect client ID number throughout the data packages that was inadvertantly missed. The client ID is shown as B068K9 in the Chemistry package and the correct number should be B062K9. The RFW number is 9204L071.

Please give me a call if you have any questions.

Very truly yours,

ROY F. WESTON, INC.

Deb Hayes for
Josie King
Project Information Analyst
Analytics Division

/clk

Enclosure:

FEB 1996 RECEIVED EDMC

WESTON Analytics Use Only
9204L071

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 2

Client: Westinghouse Hanford
Est. Final Proj. Sampling Date:
Work Order #: 61168-02-01
Project Contact/Phone #:
AD Project Manager: J. King
QC: CLP Del: CLP TAT: 35 day
Date Rec'd: 4/22/92 Date Due: 5/27/92
Account #: WS Hanford

Refrigerator #

Type Container		1		6		Full		3	3		3	3	3	1	1	3
	Liquid	3/6		2AG		1P		1P	1P		1P	1P	1P	1AG	1AG	1P
	Solid					4LTR										
Volume	Liquid	40		250		1LTR		4LTR	4LTR		250	500	125	250	250	500
	Solid					1LTR										
Preservatives		NONE		NONE		none		HNO3	HNO3		H2SO4	none	Frozen	Frozen	Frozen	none

ANALYSES REQUESTED	ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb	Radio Chem		SOL Metal	INORG: Metal	INORG: CN	COD NH3N	TDS TSS PH Alk	Hardness	TOC	TOX	Anion
WESTON Analytics Use Only	062384		060884		ISUB		See Below	TOX See Below		ICP 2.0 NH3N	TDS TSS IPP PALK	IMMS	DOC I	ITOX	ICP ICP-MS ICP IC 353 IC 504

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
001	B06229			W	4/20/92	07:45	✓		✓		✓		✓		✓	✓	✓*		✓
2	B06300					⊥						✓							
3	B06226				4/20/92	08:00	✓		✓		✓		✓		✓	✓	✓*		✓
4	B06227					⊥						✓							
5	B06889					08:00												✓	✓
6	B06286					08:00												⊥	⊥
7	B06228				⊥	N/A													
8	B06301				4/20/92	07:45													
9	B06231				⊥	12:33													
10	B06281			⊥	⊥	07:45		Metals = HSL										⊥	⊥

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem - Gross alpha/Beta, Gamma Scan
SR-90, Total U, U-235/238, Tritium

Project# 92-145, 300-FF-5

Run 1 MS/MSD

Original Rewritten

DATE/REVISIONS:
RAD INFO TO FOLLOW
* — [illegible] Cod/NH3N Bottle to Run Hardness
2. [illegible]
4/30/92 3. Turned to Teledyne
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # 2309 86 3393 2309 86 3467
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or (N)
Hardness [illegible]
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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	4/22/92	11:45 am
	[illegible] 4/22/92		

Relinquished by	Received by	Date	Time
	[illegible] 4/22/93		

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

PH, Arrives out of Hold.

7/91 L372 L373 L375 L377 L378 Ref# none Cooler# SM-35 SM-131 381-596a

9613451.2464 0000002

WESTON Analytics Use Only
9204071

Custody Transfer Record/Lab Work Request

WESTON

Client: Westinghouse Hanford
Est. Final Proj. Sampling Date:
Work Order #: 6168-02-01
Project Contact/Phone #:
AD Project Manager: King
QC: CLP Def: CLP TAT: 35 day
Date Rec'd: 4/22/92 Date Due: 5/27/92
Account #: WS-Hanford

Refrigerator #
Type Container: Liquid / Solid
Volume: Liquid / Solid
Preservatives

ANALYSES REQUESTED →

ORGANIC				INORG			
VOA	BNA	Pest/PCB	Herb	Metal	CN	TOC	TOX

WESTON Analytics Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	TOC	TOX
011								
011 4/22	B062M4			W	4/22/92	0745	✓	✓

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

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) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N

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

Relinquished by	Received by	Date	Time
Emery	[illegible]	4/22/92	11:45 am
	[illegible] 4/22/92		

Relinquished by	Received by	Date	Time
	[illegible] 4/22/92		

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

9613451.2465

EMERY WORLDWIDE

CF Company

SIGNATURE AND TALLY RECORD

60029-48 (8/89) Litho USA

DATE: 04-21-92 SHIPMENT NO.: 250986746 T

SHIPPER: WESTINGHOUSE SHIPPING DEPT (509) 376-6

REFERENCE NO.:

SHIPPER NAME AND ADDRESS

WESTINGHOUSE SHIPPING DEPT (509) 376-6665
G2-06 US DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD COMPANY
2355 STEVENS DRIVE 1163 BUILDING
PO BOX 1970
RICHLAND WA 99352

CONSIGNEE NAME AND ADDRESS

MS PEG BEATY
WESTON
208 WELSH POOL ROAD
LIONVILLE PA 19341

9204071

Pieces	Weight	Description/Marks	Emery Authorization No.
2	105 LBS	WATER SAMPLES W92-0-0166#42 COOLER ID: SML-39 40#;HAMMER 65#	

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

	Name of Person/Company	Transship Point/Destination	Signature of Person Accepting Custody	Time/Date
1.				
2.				
3.				
4.				
5.				
6.	Roger h White	PHL EWW	Roger White	4/22/92
7.	WD SNYDER	PHL	WD Snyder	1615/2
8.	Rich Fitzpatrick	[illegible]	[illegible]	11:25 4/22

SPECIAL HANDLING INSTRUCTIONS

CONSIGNEE COPY

Form of Payment

Check ☐ GBL ☐ FCCOD ☐

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

Shipper's Account Number: 850281585

EMERY WORLDWIDE

A CF Company

UNITED STATES / CANADA: Same Day ☐ AM ☐ Second Day ☐ PM ☐ Saturday Delivery ☐

INTERNATIONAL: Express ☐ Preferred ☐ Standard ☐ Business Document ☐ Customs Clearance ☐ Data ☐

Date: 04-21-92 Origin: PSC Shipment Number: 250986746

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

To:
PEG BEATY
RF WESTON INC
208 WELSH POOL ROAD
LIONVILLE PA Canada ☐

9204071

Tariff Dest. | Check to Shipper $

Hold for Pick Up ☐

EMERY WORLD will accept Cons check with all being assumed Shipper, includ but not limited non-payment, and misrepres

Customer's Reference Numbers: W80230 PC2CA W92-0-0166#42

Zip: 99352

Consignee's Account Number: E 19341-1313

Description	Pcs	L	W	H	Total Pieces	Total Weight in Lbs.
2 COOLER ID: SML-39 40#; HAMMER 65#; WATER SAMPLES W92-0-0166#42	2	26	15	16	2	105

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

Declared Va $

250986746T

OVERNIGHT DELIVERY
SIGNATURE SECURITY SERVICE

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

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

Shipper's Signature X

International Shipments: Commodity Code | Free Domicile ☐

Third Party Account Number: E

International Customs Value | International Insurance

Base Charge | Total Transportation Charges | Collect Charges Advanced at Origin $

B PHL A

Terms and Conditions on Back

9613451.2467 0 0 0 0 0 5

UNITED STATES / CANADA: Same Day; AM; Second Day; PM; Saturday Delivery

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

Check; Cash; Bill to Consignee; Third Party Billing

EMERY WORLDWIDE

A CF Company

Shipper's Account Number: 850281585

Date: 04-20-92 | Origin: PSC | Shipment Number: 250986739

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

To:
MS PEG BEATY
RF WESTON INC
208 WELSH POOL ROAD
LANSDALE PA Canada

Tariff Dest. | Ga

Check to Shipper $

Hold for Pick Up

EMERY WORLDW will accept Consi check with all n being assumed Shipper, includin but not limited t non-payment, fra and misrepresent

Customer's Reference Numbers: 30230 PC2CA W92-0-0166#41

Acct: 99352

E | Consignee's Account Number: 19341-1313

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

Declared Value $

Description	Pcs.	L	W	H	Total Pieces	Total Weight (in Lbs.)
COOLER ID: SML-131 WATER SAMPLES W92-0-0166#41	1	27	16	17	1	75

Remarks: OVERNIGHT DELIVERY SIGNATURE SECURITY SERVICE

Shipper's Signature

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

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

250986739 3

3-PHL-F

International Shipments: Free Domicile; Commodity Code

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

International Customs Value | International Insurance

Charge

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

Terms and Conditions on Back

EMERY WORLDWIDE

A CF Company

SIGNATURE AND TALLY RECORD

60029-46 (8-89) Litho USA

DATE: 04-20-92 SHIPMENT NO.: 250986739
SHIPPER: WESTINGHOUSE SHIPPING DEPT (509) 376-
REFERENCE NO.: W92-0-0166#41

SHIPPER NAME AND ADDRESS
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
02-06 US DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD COMPANY
2355 STEVENS DRIVE 1163 BUILDING
PO BOX 1970
RICHLAND WA 99352

CONSIGNEE NAME AND ADDRESS
MS PEG BEATY
WESTON
208 WELSH POOL ROAD
LANSDALE PA 19341

9204071

Pieces	Weight	Description/Marks	Emery Authorization No.
1	75 LBS	W92-0-0166#41 COOLER ID: SML-131 WATER SAMPLES	

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

	Name of Person/Company	Transship Point/Destination	Signature of Person Accepting Custody	Time/Date
1.				
2.				
3.				
4.				
5.				
6.	[illegible]	[illegible] PHL	[illegible]	[illegible]
7.	W D SNYDER	PHL	W D Snyder	1015/2
8.	Rich [illegible]	[illegible]	[illegible]	11:25 [illegible]

9613451.2468 0 030008

Westinghouse Hanford Company

CHAIN OF CUSTODY 9204L071

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 300-FF-5

Collection Date 4-20-92

Ice Chest No. HAMMER

Field Logbook No. EFL-1006 p. 32 & 33

Bill of Lading/Airbill No. 2509926746 T

Offsite Property No. ~~W92-0-0166-43~~ PMB 4/21/92 W92-0-0166-42

Method of Shipment EMERY

Shipped to ~~TMA~~ Weston PMB 3/4/92

Possible Sample Hazards/Remarks N/A

Sample Identification

B0 6279

1, 1L, P, WATER, ICP/AA METALS & Hg (HNO3) UNFILTERED
3, 40ml, aG, WATER, CLP-VOA
2, 2L, aG, WATER, CLP-PEST/PCB's
1, 250ml, P, WATER, COD/AMMONIA (H2SO4)
1, 500ml, P, WATER, TDS/TSS/pH/ALK
1, 250ml, P, WATER, HARDNESS
1, 500ml, P, WATER, ANIONS(Cl,F,PO4,NO3,SO4)
2, 4L, P, WATER, GROSS ALPHA/BETA, GAMMA SCAN/Sr-90/TOTAL U
U-235/238 (HNO3)
1, 250ml, Gs, WATER, TRITIUM

B0 6300

1, 1L, P, WATER, ICP/AA METALS & Hg (HNO3) FILTERED

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: 4-20-92 1415
Relinquished by:	Received by: [illegible] BWHITTEN	Date/Time: 4-21-92 0725
Relinquished by: [illegible] B. WHITTEN	Received by:	Date/Time: —
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: 4-22-92 1125

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9613451.2469 ... 0000007

Westinghouse Hanford Company	CHAIN OF CUSTODY 9204L071

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 300-FF-5

Collection Date 4/18/92

Ice Chest No. 240 PAB 4/20/92

Field Logbook No. EFL-1006 p.31

Bill of Lading/Airbill No. ~~250986 7393~~ 250986 7393

Offsite Property No. W92- 0-0166-41

Method of Shipment EMERY

Shipped to ~~TMA~~ Weston PHB 3/4/92

Possible Sample Hazards/Remarks N/A

Sample Identification

B062E6

1, 1L, P, WATER, ICP/AA METALS & Hg (HNO3) UNFILTERED
3, 40ml, aG, WATER, CLP-VOA
2, 2L, aG, WATER, CLP-PEST/PCB's
1, 250ml, P, WATER, COD/AMMONIA (H2SO4)
1, 500ml, P, WATER, TDS/TSS/pH/ALK
1, 250ml, P, WATER, HARDNESS
1, 500ml, P, WATER, ANIONS(Cl,F,PO4,NO3,SO4)
2, 4L, P, WATER, GROSS ALPHA/BETA, GAMMA SCAN/Sr-90/TOTAL U
U-235/238 (HNO3)
1, 250ml, Gs, WATER, TRITIUM

B062E7

1, 1L, P, WATER, ICP/AA METALS & Hg (HNO3) FILTERED

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: [illegible]	Received by: relinq to frig.	Date/Time: 4/18/92 @ 1300
Relinquished by:	Received by: PH Butcher PH Butcher	Date/Time: 4/20/92 0715
Relinquished by: PH Butcher PH Butcher	Received by:	Date/Time: —
Relinquished by: Emerson	Received by: [illegible]	Date/Time: 4-22-92 11:25

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

RFW Batch Number: 9204L071 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Report Date: 05/13/92 15:26 Page: 1a

	Cust ID:	B062Z9		B062Z6		B062Z6		B062Z6		VBLK		VBLK BS	
Sample Information	RFW#:	001		003		003 MS		003 MSD		92LVB064-MB1		92LVB064-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	Toluene-d8	101	%	101	%	99	%	97	%	102	%	98	%
	Bromofluorobenzene	93	%	91	%	92	%	88	%	93	%	90	%
	1,2-Dichloroethane-d4	114	%	110	%	110	%	106	%	109	%	110	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		6	B	1	JB	7	B	10	B	3	J	8	B
Acetone		6	JB	10	U	10	U	4	JB	7	J	10	U
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	105	%	107	%	5	U	110	%
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U	5	U	5	U	5	U
Vinyl Acetate		10	U	10	U	10	U	10	U	10	U	10	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	5	U	101	%	100	%	5	U	105	%
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	5	U	102	%	99	%	5	U	105	%
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

9613451.2470

RFW Batch Number: 9204L071 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Page: 1b

Cust ID:	BO62Z9	BO62Z6	BO62Z6	BO62Z6	VBLK	VBLK BS
RFW#:	001	003	003 MS	003 MSD	92LVB064-MB1	92LVB064-MB1
Toluene	5 U	5 U	99 %	97 %	5 U	102 %
Chlorobenzene	5 U	5 U	101 %	99 %	5 U	103 %
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

9413015.2471

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 04-22-92
RFW #: 9204L071, GC/MS VOLATILE
W.O. #: 6168-02-01

NARRATIVE

The set of samples consisted of two (2) water samples collected on 04-18,20-91.

The samples were analyzed according to criteria set forth in CLP SOW 02/88 (Rev. 05/89) for TCL Volatile target compounds on 04-23,24-92.

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

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

2. All surrogate recoveries were within EPA QC limits.

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

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

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

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

Margaret M. Beaty 5/16/92
Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

9613451.2473 0 0 0 0 2 4

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B062Z9

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9204L071-001

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

Lab File ID: B042316

Level: (low/med) LOW

Date Received: 04/22/92

% Moisture: not dec. _____

Date Analyzed: 04/23/92

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

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	6	B
67-64-1	Acetone	6	JB
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

9613451.2474

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B062Z9

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9204L071-001

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

Lab File ID: B042316

Level: (low/med) LOW

Date Received: 04/22/92

% Moisture: not dec. _____

Date Analyzed: 04/23/92

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

9413451.2475

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B062Z6

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9204L071-003

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

Lab File ID: B042317

Level: (low/med) LOW

Date Received: 04/22/92

% Moisture: not dec. _____

Date Analyzed: 04/23/92

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

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	1	JB
67-64-1	Acetone	10	U
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

9613451.2476

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B062Z6

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9204L071-003

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

Lab File ID: B042317

Level: (low/med) LOW

Date Received: 04/22/92

% Moisture: not dec. _____

Date Analyzed: 04/23/92

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

9613451.2477 0000005

Westinghouse Hanford Company

CHAIN OF CUSTODY

QFW 9204L071

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 300-FF-5

Collection Date 4/18/92

Ice Chest No. SML-131

Field Logbook No. EFL-1006 p. 31

Bill of Lading/Airbill No. 3509867393

Offsite Property No. W92- 0-0166-41

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

BO 62K9
1, 250ml, Gs, WATER, TOX
1, 250ml, Gs, WATER, TOC (H2SO4)

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by:	Received by: [illegible]	Date/Time: 4/18/92 1300
Relinquished by:	Received by: [illegible]	Date/Time: [illegible]
Relinquished by: [illegible]	Received by:	Date/Time:
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: 4-22-92 11:05

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9613451.2478 0000007

Westinghouse Hanford Company

CHAIN OF CUSTODY

RFW 9204L071

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 300-FF-5

Collection Date 4-20-92

Ice Chest No. SMC-39

Field Logbook No. EFL-1006 p32 & 33

Bill of Lading/Airbill No. 250986746 T

Offsite Property No. W92-0-0166-42

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

B0 62M4
1, 250ml, Gs, WATER, TOX
1, 250ml, Gs, WATER, TOC (H2SO4)

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: L. D. Walker	Received by:	Date/Time: 4/20/92 1415
Relinquished by:	Received by:	Date/Time: 4/21/92 0715
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time: 4-22-92 11:25

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9613451.2479 0000008

Westinghouse Hanford Company

CHAIN OF CUSTODY CFW 9204L071

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 300-FF-5

Collection Date 4-20-92

Ice Chest No. SMC-39

Field Logbook No. EFL-1006 p. 32 & 33

Bill of Lading/Airbill No. 2509:6746 T

Offsite Property No. W92-0-0166-42

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

B062M1
1, 250ml, Gs, WATER, TOX
1, 250ml, Gs, WATER, TOC (H2SO4)

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: RD Walker L.D. Walker	Received by: [illegible]	Date/Time: 4/20/92 1415
Relinquished by:	Received by: [illegible]	Date/Time: 4/21/92 0715
Relinquished by: [illegible]	Received by:	Date/Time:
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: 4-22-92 11:35

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9613451.2480 0000009

Westinghouse Hanford Company

CHAIN OF CUSTODY

AW 9204L09

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 300-FF-5

Collection Date 4-20-92

Ice Chest No. SML-39

Field Logbook No. EFL-1006, 32

Bill of Lading/Airbill No. 250986746 T

Offsite Property No. W92-0-0066-42

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

BO 6301

1, 250ml, Gs, WATER, TOX

1, 250ml, Gs, WATER, TOC (H2SO4)

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: 4/20/92 1415
Relinquished by:	Received by: [illegible]	Date/Time: 4/21/92 0715
Relinquished by: [illegible] PHButcher	Received by:	Date/Time:
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: 4-22-92 11:25

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

5000-407 (12/90) (EF) WEF061
Chain of Custody

9613451.2481 0000010

Westinghouse Hanford Company

CHAIN OF CUSTODY

9204LC071

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 300-FF-5

Collection Date 4-20-92

Ice Chest No. SML-39

Field Logbook No. EFL-1006 p 32-33

Bill of Lading/Airbill No. 250986746T

Offsite Property No. W92-0-0166-42

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

BO 6251

1, 250ml, Gs, WATER, TOX

1, 250ml, Gs, WATER, TOC (H2SO4)

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: 4/20/92 1415
Relinquished by:	Received by: [illegible]	Date/Time: 4/21/92 0715
Relinquished by: [illegible]	Received by:	Date/Time:
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: 4-22-92 11:25

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9613451.2482 0000011

Westinghouse Hanford Company

CHAIN OF CUSTODY 9204L071

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 300-FF-5

Collection Date 4/18/92

Ice Chest No.

Field Logbook No. EFL-1006 p 31

Bill of Lading/Airbill No. 25C98 7393

Offsite Property No. W92- 0-0166-41

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

B06Z78

1, 250ml, Gs, WATER, TOX

1, 250ml, Gs, WATER, TOC (H2SO4)

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: 4/18/92 1300
Relinquished by:	Received by: [illegible]	Date/Time: [illegible] [illegible]
Relinquished by: [illegible]	Received by:	Date/Time:
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: 4-22-92 11 [illegible]

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9613451.2483 0000012

Westinghouse Hanford Company

CHAIN OF CUSTODY

9204L071

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 300-FF-5

Collection Date 4/18/92

Ice Chest No. SML-131

Field Logbook No. EFL-1006 p.31

Bill of Lading/Airbill No. 2509 367393

Offsite Property No. W92-0-0166-41

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

B0 62K6
1, 250ml, Gs, WATER, TOX
1, 250ml, Gs, WATER, TOC (H2SO4)

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by:	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
Pesticide/PCBs by GC, CLP List

RFW Batch Number: 9204L071 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Report Date: 05/14/92 11:17 Page: 1

	Cust ID:	B062Z9		B062Z6		B062Z6		B062Z6		PBLK		PBLK BS	
Sample Information	RFW#:	001		003		003 MS		003 MSD		92LE0603-MB1		92LE0603-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		2.00		2.00		1.00		2.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate: Di-n-butylchlorendate		96	%	95	%	120	%	119	%	105	%	113	%
			fl		fl		fl		fl		fl		fl
Alpha-BHC		0.050	U	0.052	U	0.20	U	0.20	U	0.050	U	0.10	U
Beta-BHC		0.050	U	0.052	U	0.20	U	0.20	U	0.050	U	0.10	U
Delta-BHC		0.050	U	0.052	U	0.20	U	0.20	U	0.050	U	0.10	U
gamma-BHC (Lindane)		0.050	U	0.052	U	100	%	95	%	0.050	U	80	%
Heptachlor		0.050	U	0.052	U	105	%	105	%	0.050	U	90	%
Aldrin		0.050	U	0.052	U	80	%	80	%	0.050	U	65	%
Heptachlor epoxide		0.050	U	0.052	U	0.20	U	0.20	U	0.050	U	0.10	U
Endosulfan I		0.050	U	0.052	U	0.20	U	0.20	U	0.050	U	0.10	U
Dieldrin		0.10	U	0.10	U	112	%	104	%	0.10	U	94	%
4,4'-DDE		0.10	U	0.10	U	0.40	U	0.40	U	0.10	U	0.20	U
Endrin		0.10	U	0.10	U	120	%	112	%	0.10	U	114	%
Endosulfan II		0.10	U	0.10	U	0.40	U	0.40	U	0.10	U	0.20	U
4,4'-DDD		0.10	U	0.10	U	0.40	U	0.40	U	0.10	U	0.20	U
Endosulfan sulfate		0.10	U	0.10	U	0.40	U	0.40	U	0.10	U	0.20	U
4,4'-DDT		0.10	U	0.10	U	114	%	100	%	0.10	U	86	%
Methoxychlor		0.50	U	0.52	U	2.0	U	2.0	U	0.50	U	1.0	U
Endrin ketone		0.10	U	0.10	U	0.40	U	0.40	U	0.10	U	0.20	U
alpha-Chlordane		0.50	U	0.52	U	2.0	U	2.0	U	0.50	U	1.0	U
gamma-Chlordane		0.50	U	0.52	U	2.0	U	2.0	U	0.50	U	1.0	U
Toxaphene		1.0	U	1.0	U	4.0	U	4.0	U	1.0	U	2.0	U
Aroclor-1016		0.50	U	0.52	U	2.0	U	2.0	U	0.50	U	1.0	U
Aroclor-1221		0.50	U	0.52	U	2.0	U	2.0	U	0.50	U	1.0	U
Aroclor-1232		0.50	U	0.52	U	2.0	U	2.0	U	0.50	U	1.0	U
Aroclor-1242		0.50	U	0.52	U	2.0	U	2.0	U	0.50	U	1.0	U
Aroclor-1248		0.50	U	0.52	U	2.0	U	2.0	U	0.50	U	1.0	U
Aroclor-1254		1.0	U	1.0	U	4.0	U	4.0	U	1.0	U	2.0	U
Aroclor-1260		1.0	U	1.0	U	4.0	U	4.0	U	1.0	U	2.0	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

00009015
9613451.2484

9613451.2485
16A

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 04-22-92
RFW #: 9204L071, PEST/PCB
W.O. #: 6168-02-01

NARRATIVE

The set of samples consisted of two (2) water samples collected on 04-18,20-92.

The samples were extracted on 04-23-92 and analyzed according to criteria set forth in the Contract Laboratory Program for Pesticide and PCB target compounds on 05-07-92.

A modification to the Contract Laboratory Program 02/88 was initiated to include surrogate requirements from Method SW 846. Tetrachloro-m-xylene (TCX) is an early eluting compound which is an additional surrogate added to sample extracts and will be reported when there is an interference with di-n-butylchlorendate (DCB).

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 on the primary column.

2. Continuing calibration criteria were met for all compounds on both the primary and confirmation columns.

   Continuing calibration criteria were exceeded for target compounds analyzed prior to sample extracts. Column maintenance was performed enabling all compounds to be within the 15%/20% continuing calibration criteria and analysis was continued. All samples that required re-analysis were re-analyzed and all criteria were met.

3. Retention time criteria were met for all compounds on both the primary and confirmation columns.

4. All surrogate recoveries were within EPA QC limits.

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

6. All blank spike recoveries were within EPA QC limits.

WESTON
MANAGERS DESIGNERS/CONSULTANTS

7. The blank spike and matrix spike samples required two-fold dilutions to maintain the pesticide concentrations within the linear range of the instrument.

Margaret M. Leahy 5/20/92

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

Date

sma/pcb/04-071pp.cn

9613451.2487 0000024

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B062Z9

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9204L071-001

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 05069203.44

Level: (low/med) LOW

Date Received: 04/22/92

% Moisture: not dec. _____ dec.

Date Extracted: 04/23/92

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 05/07/92

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

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
319-84-6	Alpha-BHC	0.050	U
319-85-7	Beta-BHC	0.050	U
319-86-8	Delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

DER 5/14/92

9613451.2488 0000029

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B062Z6

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9204L071-003

Sample wt/vol: 960 (g/mL) ML Lab File ID: 05069203.45

Level: (low/med) LOW Date Received: 04/22/92

% Moisture: not dec. _____ dec. Date Extracted: 04/23/92

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/07/92

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
319-84-6	Alpha-BHC	0.052	U
319-85-7	Beta-BHC	0.052	U
319-86-8	Delta-BHC	0.052	U
58-89-9	gamma-BHC (Lindane)	0.052	U
76-44-8	Heptachlor	0.052	U
309-00-2	Aldrin	0.052	U
1024-57-3	Heptachlor epoxide	0.052	U
959-98-8	Endosulfan I	0.052	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.52	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.52	U
5103-74-2	gamma-Chlordane	0.52	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.52	U
11104-28-2	Aroclor-1221	0.52	U
11141-16-5	Aroclor-1232	0.52	U
53469-21-9	Aroclor-1242	0.52	U
12672-29-6	Aroclor-1248	0.52	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

DDR 5/14/92

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ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 04-22-92
RFW #: 9204L071
W.O. #: 6168-02-01

INORGANIC NARRATIVE

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

1. All sample holding times as required by 40CFR136 were met with the exceptions of Nitrate by IC, Phosphate by IC and pH which were received past holding time.

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

3. All laboratory control standards (blank spikes) were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

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

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

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

7. Insufficient sample volume precluded matrix QC analysis of Total Organic Halides. As stated in SW846, Method 9020A, results reported are based on duplicate analyses, each requiring 100mL, however, only 250mL of the sample was provided.

8. 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).

05.15.92

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

rls/i04-071

i 11/7/95 M.H.

9613451.2490

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 05/13/92

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

WESTON BATCH #: 9204L071

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BO62Z9	Alkalinity	180	MG/L	2.0
		Chloride by IC	11.4	MG/L	2.5
		Fluoride by IC	1.3	MG/L	0.50
		Nitrate by IC	0.91	MG/L	0.25
		Chemical Oxygen Demand	5.9	MG/L	5.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	0.25 u	MG/L	0.25
		Hardness	34.0	MG/L	0.10
		Ammonia, as N	0.32	MG/L	0.10
		pH	7.9	PH UNITS	0.010
		Total Dissolved Solids	5.0 u	MG/L	5.0
		Total Suspended Solids	20.0	MG/L	5.0
-003	BO62Z6	Alkalinity	138	MG/L	2.0
		Chloride by IC	7.1	MG/L	0.25
		Fluoride by IC	0.50 u	MG/L	0.50
		Nitrate by IC	0.25 u	MG/L	0.25
		Chemical Oxygen Demand	5.0 u	MG/L	5.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	8.2	MG/L	0.25
		Hardness	40.0	MG/L	0.10
		Ammonia, as N	0.12	MG/L	0.10
		pH	8.0	PH UNITS	0.010
		Total Dissolved Solids	220	MG/L	5.0
		Total Suspended Solids	5.0	MG/L	5.0
-005	BO68K9	Total Organic Carbon	1.0	MG/L	0.50
		Total Organic Halides	8.4	UG/L	5.0
-006	BO62K6	Total Organic Carbon	1.3	MG/L	0.50
		Total Organic Halides	105	UG/L	5.0
-007	BO62Z8	Total Organic Carbon	1.2	MG/L	0.50
		Total Organic Halides	99.2	UG/L	5.0

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ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 05/13/92

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

WESTON BATCH #: 9204L071

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-008	BO6301	Total Organic Carbon	1.1		MG/L	0.50
		Total Organic Halides	16.3		UG/L	5.0
-009	BO62J1	Total Organic Carbon	1.0		MG/L	0.50
		Total Organic Halides	5.0	u	UG/L	5.0
-010	BO62M1	Total Organic Carbon	1.0		MG/L	0.50
		Total Organic Halides	20.4		UG/L	5.0
-011	BO62M4	Total Organic Carbon	8.0		MG/L	0.50
		Total Organic Halides	12.7		UG/L	5.0

vi 11/7/95 M. H.

Roy F. Weston, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD CO. **SAMPLES RECEIVED:** 04/22/92
RFW #: 9204L071
W.O. #: 6168-02-01

METALS NARRATIVE

The set of samples consisted of four (4) water samples collected on 04/18 and 04/20/92.

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 cadmium, chromium, iron, lead, manganese, silver, thallium and zinc. All exceptions are flagged with a "N" on the CLP forms.

7. A seperate post matrix spike was analyzed after the original analysis for iron, cadmium and zinc on sample #9204L071-001. There was insufficient sample to bring the PMS up to volume; the replicate sample was analyzed instead.

8. All duplicate analyses were within the 20% RPD control limit with the exception of zinc. All exceptions are flagged with a "*" on the CLP forms.

WESTON
MANAGERS DESIGNERS/CONSULTANTS

9. 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.

10. 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).

11. Quarterly Detection Limits, ICP Interelement Correction Factors and ICP Linear Ranges for IC3 are included in this package, but does not appear on EDD.

12. The graphite furnace time that appears on form XIV is the time of the first injection. The time that appears on the data is the print time.

13. The run log for file PS0513E is included with the raw data because of printer problems with that file.

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

05.19.92
Date

mlj\ clp-met.nar

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 05/18/92

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

WESTON BATCH #: 9204L071

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	B062Z9	Silver, Total	10.0	u	UG/L	10.0
		Aluminum, Total	200	u	UG/L	200
		Arsenic, Total	10.0	u	UG/L	10.0
		Barium, Total	200	u	UG/L	200
		Beryllium, Total	5.0	u	UG/L	5.0
		Calcium, Total	22700		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	210		UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	1710		UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	5760		UG/L	5000
		Magnesium, Total	7970		UG/L	5000
		Manganese, Total	106		UG/L	15.0
		Sodium, Total	44700		UG/L	5000
		Nickel, Total	105		UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	60.0	u	UG/L	60.0
		Selenium, Total	5.0	u	UG/L	5.0
		Thallium, Total	10.0	u	UG/L	10.0
		Vanadium, Total	50.0	u	UG/L	50.0
		Zinc, Total	60.5		UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 05/18/92

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

WESTON BATCH #: 9204L071

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-002	BC6300	Silver, Soluble	10.0	u	UG/L	10.0
		Aluminum, Soluble	200	u	UG/L	200
		Arsenic, Soluble	10.0	u	UG/L	10.0
		Barium, Soluble	200	u	UG/L	200
		Beryllium, Soluble	5.0	u	UG/L	5.0
		Calcium, Soluble	23200		UG/L	5000
		Cadmium, Soluble	5.0	u	UG/L	5.0
		Cobalt, Soluble	50.0	u	UG/L	50.0
		Chromium, Soluble	10.0	u	UG/L	10.0
		Copper, Soluble	25.0	u	UG/L	25.0
		Iron, Soluble	288		UG/L	100
		Mercury, Soluble	0.20	u	UG/L	0.20
		Potassium, Soluble	6500		UG/L	5000
		Magnesium, Soluble	8390		UG/L	5000
		Manganese, Soluble	78.2		UG/L	15.0
		Sodium, Soluble	47600		UG/L	5000
		Nickel, Soluble	40.0	u	UG/L	40.0
		Lead, Soluble	3.0	u	UG/L	3.0
		Antimony, Soluble	60.0	u	UG/L	60.0
		Selenium, Soluble	50.0	u	UG/L	50.0
		Thallium, Soluble	10.0	u	UG/L	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0
		Zinc, Soluble	22.8		UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 05/18/92

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

WESTON BATCH #: 9204L071

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-003	BO62Z6	Silver, Total	10.0	u	UG/L	10.0
		Aluminum, Total	230		UG/L	200
		Arsenic, Total	10.0	u	UG/L	10.0
		Barium, Total	200	u	UG/L	200
		Beryllium, Total	5.0	u	UG/L	5.0
		Calcium, Total	18700		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	57.4		UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	1030		UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	5350		UG/L	5000
		Magnesium, Total	7010		UG/L	5000
		Manganese, Total	65.0		UG/L	15.0
		Sodium, Total	28700		UG/L	5000
		Nickel, Total	40.0	u	UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	60.0	u	UG/L	60.0
		Selenium, Total	5.0	u	UG/L	5.0
		Thallium, Total	10.0	u	UG/L	10.0
		Vanadium, Total	50.0	u	UG/L	50.0
		Zinc, Total	71.5		UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 05/18/92

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

WESTON BATCH #: 9204L071

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-004	BO62Z7	Silver, Soluble	10.0	u	UG/L	10.0
		Aluminum, Soluble	200	u	UG/L	200
		Arsenic, Soluble	10.0	u	UG/L	10.0
		Barium, Soluble	200	u	UG/L	200
		Beryllium, Soluble	5.0	u	UG/L	5.0
		Calcium, Soluble	20000		UG/L	5000
		Cadmium, Soluble	5.0	u	UG/L	5.0
		Cobalt, Soluble	50.0	u	UG/L	50.0
		Chromium, Soluble	10.0	u	UG/L	10.0
		Copper, Soluble	25.0	u	UG/L	25.0
		Iron, Soluble	118		UG/L	100
		Mercury, Soluble	0.20	u	UG/L	0.20
		Potassium, Soluble	6020		UG/L	5000
		Magnesium, Soluble	7370		UG/L	5000
		Manganese, Soluble	55.8		UG/L	15.0
		Sodium, Soluble	30000		UG/L	5000
		Nickel, Soluble	40.0	u	UG/L	40.0
		Lead, Soluble	3.0	u	UG/L	3.0
		Antimony, Soluble	60.0	u	UG/L	60.0
		Selenium, Soluble	5.0	u	UG/L	5.0
		Thallium, Soluble	10.0	u	UG/L	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0
		Zinc, Soluble	20.0	u	UG/L	20.0

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B062Z9

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP071

Matrix (soil/water): WATER Lab Sample ID: 920407101

Level (low/med): LOW Date Received: 4/22/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	182.00	B		P
7440-36-0	Antimony	36.00	U		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	94.70	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U	N	P
7440-70-2	Calcium	22700.00			P
7440-47-3	Chromium	210.00		N	P
7440-48-4	Cobalt	7.00	U		P
7440-50-8	Copper	15.80	B		P
7439-89-6	Iron	1710.00		N	P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	7970.00			P
7439-96-5	Manganese	106.00		N	P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	105.00			P
7440-09-7	Potassium	5760.00			P
7782-49-2	Selenium	2.00	U	WN	F
7440-22-4	Silver	8.00	U	N	P
7440-23-5	Sodium	44700.00			P
7440-28-0	Thallium	2.00	U	NW	F
7440-62-2	Vanadium	5.00	U		P
7440-66-6	Zinc	60.50		N*	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B06300

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP071

Matrix (soil/water): WATER Lab Sample ID: 920407102

Level (low/med): LOW Date Received: 4/22/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	46.00	U		P
7440-36-0	Antimony	36.00	U		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	97.00	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U	N	P
7440-70-2	Calcium	23200.00			P
7440-47-3	Chromium	7.00	U	N	P
7440-48-4	Cobalt	7.00	U		P
7440-50-8	Copper	7.00	U		P
7439-89-6	Iron	288.00		N	P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	8390.00			P
7439-96-5	Manganese	78.20		N	P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	18.00	U		P
7440-09-7	Potassium	6500.00			P
7782-49-2	Selenium	20.00	U	NW	F
7440-22-4	Silver	8.00	U	N	P
7440-23-5	Sodium	47600.00			P
7440-28-0	Thallium	2.00	U	NW	F
7440-62-2	Vanadium	5.00	U		P
7440-66-6	Zinc	22.80		*N	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B062Z6

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP071

Matrix (soil/water): WATER Lab Sample ID: 920407103

Level (low/med): LOW Date Received: 4/22/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	230.00			P
7440-36-0	Antimony	36.00	U		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	124.00	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U	N	P
7440-70-2	Calcium	18700.00			P
7440-47-3	Chromium	57.40		N	P
7440-48-4	Cobalt	7.00	U		P
7440-50-8	Copper	9.10	B		P
7439-89-6	Iron	1030.00		N	P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	7010.00			P
7439-96-5	Manganese	65.00		N	P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	35.60	B		P
7440-09-7	Potassium	5350.00			P
7782-49-2	Selenium	2.00	U	NW	F
7440-22-4	Silver	8.00	U	N	P
7440-23-5	Sodium	28700.00			P
7440-28-0	Thallium	2.00	U	NW	F
7440-62-2	Vanadium	5.00	U		P
7440-66-6	Zinc	71.50		*N	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B062Z7

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP071

Matrix (soil/water): WATER Lab Sample ID: 920407104

Level (low/med): LOW Date Received: 4/22/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	46.00	U		P
7440-36-0	Antimony	36.00	U		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	132.00	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U	N	P
7440-70-2	Calcium	20000.00			P
7440-47-3	Chromium	7.00	U	N	P
7440-48-4	Cobalt	7.00	U		P
7440-50-8	Copper	7.00	U		P
7439-89-6	Iron	118.00		N	P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	7370.00			P
7439-96-5	Manganese	55.80		N	P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	18.00	U		P
7440-09-7	Potassium	6020.00			P
7782-49-2	Selenium	2.00	U	NW	F
7440-22-4	Silver	8.00	U	N	P
7440-23-5	Sodium	30000.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	5.00	U		P
7440-66-6	Zinc	6.00	U	*N	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

HCRL-WHC/9306-1-12

9613461.2507

E-93-06/2978-50

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

TT #X01436

9204L071-WES-397

Document Title: Prelim. QA Records Weston/Sebedyne Case No: 9204L071

Document Number: HCRL-WHC/9306-L-92-068 Date: 12/17/92

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

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

9613451.2503

HARTCROWSER

Hart Crowser, Inc.
1201 Jadwin Avenue, Suite 204
Richland, WA 99352
FAX 509 946 4203
509 946 4344

Earth and Environmental Technologies

2978-50

December 18, 1992

Mr. Larry Hulstrom
Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

Subject: WHC Order No. MLW-SVV-037106
Task Order No. E-93-06
Preliminary Quality Assurance Record - 300-FF-5 RI/FS
WESTON/TELEDYNE Case Number 9204L071

Dear Mr. Hulstrom:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the 300-FF-5 Operable Unit Remedial Investigation/Feasibility Study (RI/FS). The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated November 6, 1992. The subject data package consisted of two second round groundwater samples submitted for the following radiochemical analyses: gross alpha, gross beta, tritium,strontium 90, total uranium, isotopic uranium, and gamma scan. Both samples were validated. The samples were analyzed by Roy F. Weston, Incorporated/Teledyne Isotopes Radiochemistry Analytical Laboratory according to requirements specified in the Analytical Laboratory Statement of Work issued by WHC. All analytical results, together with the data qualifiers which we have tentatively assigned as a result of our review, are provided in Attachment 4.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives (DQOs) for these analyses were generally not met. Major DQO deficiencies included the absence of information necessary to complete validation including initial calibration information, raw data to recalculate minimum detectable activities (MDAs) and analytical procedures. Other minor data needs have been identified and transmitted to Westinghouse Hanford via normal correspondence.

MAJOR DEFICIENCIES (REJECTED DATA)

All results for this data package were rejected due to the lack of information identified in the DQOs Summary section.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following general trends resulting in the qualification of data from multiple samples have been noted. All qualified data are discussed in Attachments 3 and 5.

Without the information identified above, complete validation could not be done. As a result, additional information regarding qualifications can not yet be given. A preliminary review of the available information and recalculation of values using standard laboratory equations indicates that few additional qualifications will be placed on this information once the needed data is received and reviewed.

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

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
HC#130:RL1557.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9306-L-92-060
HCRL-WHC/9306-T-92-125

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.

Attachment 3 - Summary of Data Qualifications

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

Attachment 4 - As Qualified Data Summary

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

Attachment 5 - Data Review Supporting Documentation

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

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ATTACHMENT 1

Glossary of Data Qualifiers

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.

9613451.2508

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 08/20/92

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE 1
4-1381	LL-1140-F4	05/01/92	06/03/92	

MS JOSIE KING
WESTON/WESTINGHOUSE/HANFORD
208 WELSH POOL ROAD
PICKERING CREEK INDUSTRIAL PARK
LIONVILLE PA 19341-1313

W A T E R

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (PCI/LITER)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
75133	9204L071-001	B06ZZ9	04/20	0745			GR-A	L.T. 2. E 00		06/23			3
							GR-B	8.6 +-1.8 E 00		06/23			3
							SR-90	L.T. 1. E 00		06/17			3
							TOTAL U	1.9 +-0.3 E-01	UGM/LITER	06/11			3
							TOTAL U	L.T. 5. E-02	UGM/LITER	06/11			3
							GR-A	1.9 +-13.6E-01		06/23			3
							GR-B	L.T. 2. E 00		06/23			3
							SR-90	4.5 +-6.74E-01		06/17			3
							BE-7	L.T. 3. E 02		08/18			4
							K-40	L.T. 1. E 02		08/18			4
							MN-54	L.T. 7. E 00		08/18			4
							CO-58	L.T. 2. E 01		08/18			4
							FE-59	L.T. 8. E 01		08/18			4
							CO-60	L.T. 6. E 00		08/18			4
							ZN-65	L.T. 2. E 01		08/18			4
							ZR-95	L.T. 2. E 01		08/18			4
							RU-103	L.T. 5. E 01		08/18			4
							RU-106	L.T. 7. E 01		08/18			4
							I-131	L.T. 2. E 05		08/18			4
							CS-134	L.T. 7. E 00		08/18			4
							CS-137	L.T. 7. E 00		08/18			4
							BA-140	L.T. 3. E 03		08/18			4
							CE-141	L.T. 1. E 02		08/18			4
							CE-144	L.T. 7. E 01		08/18			4
							EU-152	L.T. 2. E 01		08/18			4
							EU-154	L.T. 2. E 01		08/18			4
							EU-155	L.T. 2. E 01		08/18			4
							RA-226	L.T. 2. E 02		08/18			4
							TH-228	L.T. 1. E 01		08/18			4
							TH-234	L.T. 2. E 02		08/18			4
							H-3	L.T. 2. E 02		05/21			5
							H-3 -	6.3 +-10.0E 01		05/21			5

9613461.2509

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 08/20/92

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE 2
4-1381	LL-1140-F4	05/01/92	06/03/92	

MS JOSIE KING
WESTON/WESTINGHOUSE/HANFORD
208 WELSH POOL ROAD
PICKERING CREEK INDUSTRIAL PARK
LIONVILLE PA 19341-1313

W A T E R

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (PCI/LITER)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
75133	9204L071-001	B062Z9	04/20	0745			U-235	L.T. 8. E-02		08/06			6
							U-238	2.1 +-1.7 E-01		08/06			6
							U-235	5.1 +-51.2E-03		08/06			6
							U-238	L.T. 2. E-01		08/06			6
75134	9204L071-001MS	B062Z9	04/20	0745			GR-A	NOT ANALYZED					3
							GR-B	NOT ANALYZED					3
							SR-90	7.0 +-0.5 E 01		06/11			3
							TOTAL U	1.7 +-0.3 E 01	UGM/LITER	06/11			3
							TOTAL U	L.T. 5. E-02	UGM/LITER	06/11			3
							GR-A	NOT ANALYZED					3
							GR-B	NOT ANALYZED					3
							SR-90	L.T. 2. E 00		06/11			3
							GAMMA	NOT ANALYZED					4
							H-3	1.2 +-0.1 E 03		05/21			5
							H-3	L.T. 2. E 02		05/21			5
							U-235	NOT ANALYZED					6
							U-238	NOT ANALYZED					6
							U-235	NOT ANALYZED					6
							U-238	NOT ANALYZED					6
75135	9204L071-001MSDB062Z9		04/20	0745			GR-A	NOT ANALYZED					3
							GR-B	NOT ANALYZED					3
							SR-90	8.2 +-0.5 E 01		06/28			3
							TOTAL U	L.T. 5. E-02	UGM/LITER	06/11			3
							TOTAL U	1. +-1. E-02	UGM/LITER	06/11			3
							GR-A	NOT ANALYZED					3
							GR-B	NOT ANALYZED					3
							SR-90	L.T. 1. E 00		06/28			3
							GAMMA	NOT ANALYZED					4
							H-3	1.3 +-0.1 E 03		05/21			5
							H-3	L.T. 2. E 02		05/21			5

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TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 08/20/92

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE 3
4-1381	LL-1140-F4	05/01/92	06/03/92	

MS JOSIE KING
WESTON/WESTINGHOUSE/HANFORD
208 WELSH POOL ROAD
PICKERING CREEK INDUSTRIAL PARK
LIONVILLE PA 19341-1313

W A T E R

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (PCI/LITER)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
75135	9204L071-001MSDB06229		04/20	0745			U-235	NOT ANALYZED					6
							U-238	NOT ANALYZED					6
							U-235	NOT ANALYZED					6
							U-238	NOT ANALYZED					6
75136	9204L071-003	B06276	04/18	0800			GR-A	L.T. 2. E 00		06/23			3
							GR-B	1.0 +-0.2 E 01		06/23			3
							SR-90	L.T. 6. E-01		06/11			3
							TOTAL U	6. +-0.9 E-02	UGM/LITER	06/11			3
							TOTAL U	L.T. 5. E-02	UGM/LITER	06/11			3
							GR-A -	2.8 +-8.80E-01		06/23			3
							GR-B	L.T. 2. E 00		06/23			3
							SR-90	2.9 +-3.98E-01		06/11			3
							BE-7	L.T. 2. E 02		08/18			4
							K-40	2.08+-0.49E 02		08/18			4
							MN-54	L.T. 7. E 00		08/18			4
							CO-58	L.T. 2. E 01		08/18			4
							FE-59	L.T. 8. E 01		08/18			4
							CO-60	L.T. 6. E 00		08/18			4
							ZN-65	L.T. 2. E 01		08/18			4
							ZR-95	L.T. 2. E 01		08/18			4
							RU-103	L.T. 5. E 01		08/18			4
							RU-106	L.T. 7. E 01		08/18			4
							I-131	L.T. 2. E 05		08/18			4
							CS-134	L.T. 7. E 00		08/18			4
							CS-137	L.T. 6. E 00		08/18			4
							BA-140	L.T. 4. E 03		08/18			4
							CE-141	L.T. 1. E 02		08/18			4
							CE-144	L.T. 6. E 01		08/18			4
							EU-152	L.T. 2. E 01		08/18			4
							EU-154	L.T. 2. E 01		08/18			4
							EU-155	L.T. 2. E 01		08/18			4

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TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 08/20/92

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE
4-1381	LL-1140-F4	05/01/92	06/03/92	4

MS JOSIE KING
WESTON/WESTINGHOUSE/HANFORD
208 WELSH POOL ROAD
PICKERING CREEK INDUSTRIAL PARK
LIONVILLE PA 19341-1313

W A T E R

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (PCI/LITER)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
75136	9204L071-003	B062Z6	04/18	0800			RA-226	L.T. 1. E 02		08/18			4
							TH-228	L.T. 1. E 01		08/18			4
							TH-234	L.T. 1. E 02		08/18			4
							H-3	L.T. 2. E 02		05/21			5
							H-3 -	4.9 +-9.21E 01		05/21			5
							U-235	L.T. 1. E-01		08/06			6
							U-238	L.T. 2. E-01		08/06			6
							U-235	3.1 +-8.3 E-02		08/06			6
							U-238	6.6 +-15.8E-02		08/06			6

LAST PAGE OF REPORT

APPROVED BY J. GUENTHER 08/20/92

SEND 1 COPIES TO WE884S MS JOSIE KING

2 - GAS LAB. 3 - RADIO CHEMISTRY LAB. 4 - GE(LI) GAMMA SPEC LAB. 5 - TRITIUM GAS/L.S. LAB. 6 - ALPHA SPEC LAB.

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ATTACHMENT 3

Summary of Data Qualifications

Weston 9204L071

Second Round Groundwater Samples

Gross Alpha (CRDL = 3 pCi/l)

Customer I.D. #	Reported Results	Q
B062Z9	< 2	R
B062Z6	< 2	R

Gross Beta (CRDL = 4 pCi/l)

Customer I.D. #	Reported Results	Q
B062Z9	8.60	R
B062Z6	10.00	R

Tritum (CRDL = 400 pCi/l)

Customer I.D. #	Reported Results	Q
B062Z9	< 200	R
B062Z6	< 200	R

Strontium 90 (CRDL = 2 pCi/l)

Customer I.D. #	Reported Results	Q
B062Z9	< 0.1	R
B062Z6	< 0.6	R

Isotopic Uranium

U235 (CRDL = 1 pCi/l)

Customer I.D. #	Reported Results	Q
B062Z9	< 0.08	R
B062Z6	< 0.1	R

U238 (CRDL = 1 pCi/l)

Customer I.D. #	Reported Results	Q
B062Z9	0.210	R
B062Z6	< 0.2	R

Total U (CRDL = 0.1ug/l)

Customer I.D. #	Reported Results	Q
B062Z9	0.19	R
B062Z6	0.06	R

Gamma Spec

Cobalt 60 (CRDL = 25 pCi/l)

Customer I.D. #	Reported Results	Q
B062Z9	< 6	R
B062Z6	< 6	R

Cesium 137 (CRDL = 15 pCi/l)

Customer I.D. #	Reported Results	Q
B062Z9	< 7	R
B062Z6	< 6	R

Thorium 228 (CRDL = Not reported)

Customer I.D. #	Reported Results	Q
B062Z9	< 10	R
B062Z6	< 10	R

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ATTACHMENT 4

As Qualified Data Summary

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 08/20/92

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE 1
4-1381	LL-1140-F4	05/01/92	06/03/92	

MS JOSIE KING
WESTON/WESTINGHOUSE/HANFORD
208 WELSH POOL ROAD
PICKERING CREEK INDUSTRIAL PARK
LIONVILLE PA 19341-1313

WATER

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (PCI/LITER)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
75133	9204L071-001	B06ZZ9	04/20	0745			GR-A	L.T. 2. E 00		06/23			3
							GR-B	8.6 +-1.8 E 00		06/23			3
							SR-90	L.T. 1. E 00		06/17			3
							TOTAL U	1.9 +-0.3 E-01	UGM/LITER	06/11			3
							TOTAL U	L.T. 5. E-02	UGM/LITER	06/11			3
							GR-A	1.9 +-13.6E-01		06/23			3
							GR-B	L.T. 2. E 00		06/23			3
							SR-90	4.5 +-6.74E-01		06/17			3
							BE-7	L.T. 3. E 02		08/18			4
							K-40	L.T. 1. E 02		08/18			4
							MN-54	L.T. 7. E 00		08/18			4
							CO-58	L.T. 2. E 01		08/18			4
							FE-59	L.T. 8. E 01		08/18			4
							CO-60	L.T. 6. E 00		08/18			4
							ZN-65	L.T. 2. E 01		08/18			4
							ZR-95	L.T. 2. E 01		08/18			4
							RU-103	L.T. 5. E 01		08/18			4
							RU-106	L.T. 7. E 01		08/18			4
							I-131	L.T. 2. E 05		08/18			4
							CS-134	L.T. 7. E 00		08/18			4
							CS-137	L.T. 7. E 00		08/18			4
							BA-140	L.T. 3. E 03		08/18			4
							CE-141	L.T. 1. E 02		08/18			4
							CE-144	L.T. 7. E 01		08/18			4
							EU-152	L.T. 2. E 01		08/18			4
							EU-154	L.T. 2. E 01		08/18			4
							EU-155	L.T. 2. E 01		08/18			4
							RA-226	L.T. 2. E 02		08/18			4
							TH-228	L.T. 1. E 01		08/18			4
							TH-234	L.T. 2. E 02		08/18			4
							H-3	L.T. 2. E 02		05/21			5
							H-3	6.3 +-10.0E 01		05/21			5

SAMPLE #

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TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 08/20/92

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE 2
4-1381	LL-1140-F4	05/01/92	06/03/92	

MS JOSIE KING
WESTON/WESTINGHOUSE/HANFORD
208 WELSH POOL ROAD
PICKERING CREEK INDUSTRIAL PARK
LIONVILLE PA 19341-1313

W A T E R

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (PCI/LITER)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
75133	9204L071-001	B062Z9	04/20	0745			U-235	L.T. 8. E-02		08/06			6
							U-238	2.1 +-1.7 E-01		08/06			6
							U-235	5.1 +-51.2E-03		08/06			6
							U-238	L.T. 2. E-01		08/06			6
75134	9204L071-001MS	B062Z9	04/20	0745			GR-A	NOT ANALYZED					3
							GR-B	NOT ANALYZED					3
							SR-90	7.0 +-0.5 E 01		06/11			3
							TOTAL U	1.7 +-0.3 E 01	UGM/LITER	06/11			3
							TOTAL U	L.T. 5. E-02	UGM/LITER	06/11			3
							GR-A	NOT ANALYZED					3
							GR-B	NOT ANALYZED					3
							SR-90	L.T. 2. E 00		06/11			3
							GAMMA	NOT ANALYZED					4
							H-3	1.2 +-0.1 E 03		05/21			5
							H-3	L.T. 2. E 02		05/21			5
							U-235	NOT ANALYZED					6
							U-238	NOT ANALYZED					6
							U-235	NOT ANALYZED					6
							U-238	NOT ANALYZED					6
75135	9204L071-001MSDB062Z9		04/20	0745			GR-A	NOT ANALYZED					3
							GR-B	NOT ANALYZED					3
							SR-90	8.2 +-0.5 E 01		06/28			3
							TOTAL U	L.T. 5. E-02	UGM/LITER	06/11			3
							TOTAL U	1. +-1. E-02	UGM/LITER	06/11			3
							GR-A	NOT ANALYZED					3
							GR-B	NOT ANALYZED					3
							SR-90	L.T. 1. E 00		06/28			3
							GAMMA	NOT ANALYZED					4
							H-3	1.3 +-0.1 E 03		05/21			5
							H-3	L.T. 2. E 02		05/21			5

QC Sample

QC Sample

96 345 2517

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 08/20/92

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE
4-1381	LL-1140-F4	05/01/92	06/03/92	3

MS JOSIE KING
WESTON/WESTINGHOUSE/HANFORD
208 WELSH POOL ROAD
PICKERING CREEK INDUSTRIAL PARK
LIONVILLE PA 19341-1313

W A T E R

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (PCI/LITER)	NUCL-UNIT-% U/M +	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
75135	9204L071-001MSD806229		04/20	0745			U-235	NOT ANALYZED					6
							U-238	NOT ANALYZED					6
							U-235	NOT ANALYZED					6
							U-238	NOT ANALYZED					6
75136	9204L071-003 B06276		04/18	0800			GR-A	L.T. 2. E 00		06/23			3
							GR-B	1.0 +-0.2 E 01		06/23			3
							SR-90	L.T. 6. E-01		06/11			3
							TOTAL U	6. +-0.9 E-02	UGM/LITER	06/11			3
							TOTAL U	L.T. 5. E-02	UGM/LITER	06/11			3
							GR-A	2.8 +-8.80E-01		06/23			3
							GR-B	L.T. 2. E 00		06/23			3
							SR-90	2.9 +-3.98E-01		06/11			3
							BE-7	L.T. 2. E 02		08/18			4
							K-40	2.08+-0.49E 02		08/18			4
							MN-54	L.T. 7. E 00		08/18			4
							CO-58	L.T. 2. E 01		08/18			4
							FE-59	L.T. 8. E 01		08/18			4
							CO-60	L.T. 6. E 00		08/18			4
							ZN-65	L.T. 2. E 01		08/18			4
							ZR-95	L.T. 2. E 01		08/18			4
							RU-103	L.T. 5. E 01		08/18			4
							RU-106	L.T. 7. E 01		08/18			4
							I-131	L.T. 2. E 05		08/18			4
							CS-134	L.T. 7. E 00		08/18			4
							CS-137	L.T. 6. E 00		08/18			4
							BA-140	L.T. 4. E 03		08/18			4
							CE-141	L.T. 1. E 02		08/18			4
							CE-144	L.T. 6. E 01		08/18			4
							EU-152	L.T. 2. E 01		08/18			4
							EU-154	L.T. 2. E 01		08/18			4
							EU-155	L.T. 2. E 01		08/18			4

9613451.2510

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 08/20/92

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE 4
4-1381	LL-1140-F4	05/01/92	06/03/92	

MS JOSIE KING
WESTON/WESTINGHOUSE/HANFORD
208 WELSH POOL ROAD
PICKERING CREEK INDUSTRIAL PARK
LIONVILLE PA 19341-1313

W A T E R

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (PCI/LITER)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
75136	9204L071-003	R06226	04/18	0800			RA-226	L.T. 1. E 02		08/18			4
							TH-228	L.T. 1. E 01		08/18			4
							TH-234	L.T. 1. E 02		08/18			4
							H-3	L.T. 2. E 02		05/21			5
							H-3 -	4.9 +-9.21E 01		05/21			5
							U-235	L.T. 1. E-01		08/06			6
							U-238	L.T. 2. E-01		08/06			6
							U-235	3.1 +-8.3 E-02		08/06			6
							U-238	6.6 +-15.8E-02		08/06			6

LAST PAGE OF REPORT

APPROVED BY J. GUENTHER 08/20/92

SEND 1 COPIES TO WE884S MS JOSIE KING

2 - GAS LAB. 3 - RADIO CHEMISTRY LAB. 4 - GE(LI) GAMMA SPEC LAB. 5 - TRITIUM GAS/L.S. LAB. 6 - ALPHA SPEC LAB.

9613451.2519

9613451.2520

ATTACHMENT 5

Data Review Supporting Documentation

9613451.2521

Data Package Completeness Checklists

9204L071

~~General note~~ WROMB

No where in package are the Westinghouse sample numbers (i.e. B062Z9 and B062Z6) tied to T.I #s. By comparing dates, it is assumed

B062Z9 is ~~75133~~ WSTHAN.W75133

B062Z6 is ~~75136~~ WSTHAN.W75136

EDT also ties them together

Gross α/β

Supplemental Requirements for Analyses Using Gas Proportional Counters

A.0 Completeness Checklist

Analysis Results

✓ Results Report for Sample Analyses and Reanalyses
✓ Raw Data (Counting Logs, Printouts, Notebook Pages) no Background count Time
✓ Calculation Sheets
✓ Sample Identifications
✓ Detector Identification
✓ Analysis Date and Initials of Analyst
✓ Amounts of Samples Prepared or Counted
✓ Weights of Solids Counted

Initial and Continuing Calibration

✓ Detector Identification continuing no Initial Calibration Information
no Calibration Date(s) and Initials of Analyst control charts only
none Identification of Calibration and Check Standards including Radionuclide, Certification, Expiration Date, and Activity
no Amount of (Check) Standard Used
no Raw Data including Counts and Count Duration for Standards
no Weights of Preparations
✓ Efficiencies Eff. provided for months other than June - no ability to recalculate Eff. listed on sample sheet
NA Weights of Carriers Added, If Applicable
no Results of Statistical Tests Used to Evaluate Instrument Reliability and Efficiency Checks control charts only
no Raw Data of Background Counts and Count Duration control charts
✓ Results of Statistical Test Used to Evaluate Instrument Background on control chart
✓ Control Limits for Check Source and Background Counts on control chart

Blanks

✓ Detector Identification
✓ Date of Analysis
✓ MDA of Method not enough info to recalculate.
NA Amounts of Reagents Used in Blank

Supplemental Requirements for Analyses Using Gas Proportional Counters (Cont.)

Radiometric and Gravimetric Yields

✓ Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
✓ Weights of Precipitates or Solids Counted
NA ~~[illegible]~~ Calculated Recoveries Due to procedure, assumed 100%

Duplicates

N/A per letter from WHC as stated in case narrative

_____ Detector Identification
_____ Date of Analysis
_____ Aliquots of Samples
_____ Weights of Solids Counted
_____ Count Durations
_____ Sample Identifications
_____ Calculated Precision

Laboratory Control Samples

N/A per letter from WHC as stated in case narrative

_____ Detector Identification
_____ Date of Analysis
_____ Calculation of Recoveries
_____ Results of Analyses

SR-90

Supplemental Requirements for Analyses Using ~~Gas Proportional Counters~~

A.0 Completeness Checklist

Analysis Results

✓ Results Report for Sample Analyses and Reanalyses
✓ Raw Data (Counting Logs, Printouts, Notebook Pages)
✓ Calculation Sheets
✓ Sample Identifications
Non ✓ Detector Identification
✓ Analysis Date and Initials of Analyst
✓ Amounts of Samples Prepared or Counted
NA Weights of Solids Counted

Initial and Continuing Calibration

no calibration info

_____ Detector Identification
_____ Calibration Date(s) and Initials of Analyst
_____ Identification of Calibration and Check Standards including Radionuclide, Certification, Expiration Date, and Activity
_____ Amount of (Check) Standard Used
_____ Raw Data including Counts and Count Duration for Standards
_____ Weights of Preparations
_____ Efficiencies
_____ Weights of Carriers Added, If Applicable
_____ Results of Statistical Tests Used to Evaluate Instrument Reliability and Efficiency Checks
_____ Raw Data of Background Counts and Count Duration
_____ Results of Statistical Test Used to Evaluate Instrument Background
_____ Control Limits for Check Source and Background Counts

Blanks

no information

_____ Detector Identification
_____ Date of Analysis
_____ MDA of Method
_____ Amounts of Reagents Used in Blank

Supplemental Requirements for Analyses Using Gas Proportional Counters (Cont.)

Radiometric and Gravimetric Yields

NONE Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
____ Weights of Precipitates or Solids Counted
✓ Calculated Recoveries

Duplicates

ND Detector Identification
✓ Date of Analysis
✓ Aliquots of Samples
NA Weights of Solids Counted
✓ Count Durations
✓ Sample Identifications
ND Calculated Precision

$$\frac{70 - 42}{\frac{70 + 42}{2}} \times 100 = 15.8$$

Laboratory Control Samples

ND Detector Identification
✓ Date of Analysis
ND Calculation of Recoveries
✓ Results of Analyses

$$\frac{80 \text{ pCi/L added}}{70 \text{ pCi/L recovered}} \quad .875 \text{ recovery}$$

~~Tc-99~~ Total Uranium

Supplemental Requirements for Analyses ~~Using Gas Proportional Counters~~

A.0 Completeness Checklist

Analysis Results

✓ Results Report for Sample Analyses and Reanalyses
✓ Raw Data (Counting Logs, Printouts, Notebook Pages)
✓ Calculation Sheets
✓ Sample Identifications
✓ Detector Identification
✓ Analysis Date and Initials of Analyst
✓ Amounts of Samples Prepared or Counted
NA Weights of Solids Counted

Initial and Continuing Calibration NO calibration Information

____ Detector Identification
____ Calibration Date(s) and Initials of Analyst
____ Identification of Calibration and Check Standards including Radionuclide, Certification, Expiration Date, and Activity
____ Amount of (Check) Standard Used
____ Raw Data including Counts and Count Duration for Standards
____ Weights of Preparations
____ Efficiencies
____ Weights of Carriers Added, If Applicable
____ Results of Statistical Tests Used to Evaluate Instrument Reliability and Efficiency Checks
____ Raw Data of Background Counts and Count Duration
____ Results of Statistical Test Used to Evaluate Instrument Background
____ Control Limits for Check Source and Background Counts

Blanks

✓ Detector Identification
✓ Date of Analysis
____ MDA of Method Reported but can not recalulate
✓ Amounts of Reagents Used in Blank.

Supplemental Requirements for Analyses Using Gas Proportional Counters (Cont.)

Radiometric and Gravimetric Yields no Information provided

_____ Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
_____ Weights of Precipitates or Solids Counted
_____ Calculated Recoveries

Duplicates not required per WHC letter

_____ Detector Identification
_____ Date of Analysis
_____ Aliquots of Samples
_____ Weights of Solids Counted
_____ Count Durations
_____ Sample Identifications
_____ Calculated Precision

Laboratory Control Samples cover letter states matrix spike & matrix spike dup. normal according to WHC instructions.

✓ Detector Identification
✓ Date of Analysis
_____ Calculation of Recoveries reported Analysis results only, no comparison to spiked amount
✓ Results of Analyses

Added 18.5 ug/L Recovered 17 ug/L
Recovery = 90.9%

Supplemental Requirements for the Analysis of Tritium Using Liquid Scintillation Counting

F.0 Completeness Checklist

Analysis Results

- ✓ Results Report for Sample Analyses and Reanalyses
- ✓ Raw Data (Gross Counts, Count Duration, Background Count, and Background Count Duration) no
- ✓ Calculation Sheets
- ✓ Sample Identifications
- ✓ Instrument Identification
- ✓ Analysis Date and Analyst Initials
- ✓ Sample Weight

Initial and Continuing Instrument Calibration

- ✓ Instrument Identification
- none Identification of Calibration Standards including Radionuclides, Certification, Issue or Expiration Date and Activity
- ✓ Amount of Standard Used for Calibration
- none Raw Data (Gross Counts, Count Duration, Background Count, and Background Count Duration)
- Results only Counting Efficiency Determination Method and Results
- none Quench Correction Method

Efficiency ~~used for~~ obtained from continuing calibration not same as that used for calculation.

Blanks

- ✓ Instrument Identification
- ✓ Date of Analysis
- ✓ MDA of Method no info to recalculate
- ✓ Amounts of Reagents Used
- none Lot Numbers of Reagents Used
- none Raw Data (Gross Counts, Count Duration, Background Count, Background Count Duration)
- ✓ Tritium Levels in Background Water

Duplicates

- ✓ Instrument Identification
- ✓ Date of Analysis
- ✓ Amounts of Samples
- ~~✓~~ none Amount of Spike for Spiked Duplicates

spike 1.2 E03
Dup 1.3 E03
MDA 2E02
RPD 8%

9613451.2529

not applicable
N/A for this package

Supplemental Requirements for the Analysis of
Pu-241 Using Liquid Scintillation Counting

F.0 Completeness Checklist

Analysis Results

_____ Results Report for Sample Analyses and Reanalyses
_____ Raw Data (Gross Counts, Count Duration, Background Count, and Background Count Duration)
_____ Calculation Sheets
_____ Sample Identifications
_____ Instrument Identification
_____ Analysis Date and Analyst Initials
_____ Sample Weight

Initial and Continuing Instrument Calibration

_____ Instrument Identification
_____ Identification of Calibration Standards including Radionuclides, Certification, Issue or Expiration Date and Activity
_____ Amount of Standard Used for Calibration
_____ Raw Data (Gross Counts, Count Duration, Background Count, and Background Count Duration)
_____ Counting Efficiency Determination Method and Results
_____ Quench Correction Method

Blanks

_____ Instrument Identification
_____ Date of Analysis
_____ MDA of Method
_____ Amounts of Reagents Used
_____ Lot Numbers of Reagents Used
_____ Raw Data (Gross Counts, Count Duration, Background Count, Background Count Duration)
_____ Tritium Levels in Background Water

Duplicates

_____ Instrument Identification
_____ Date of Analysis
_____ Amounts of Samples
_____ Amount of Spike for Spiked Duplicates

9613451.2530

not info Raw Data (Gross Counts, Count Duration, Background Counts, and Background Count Duration)

none

Radiometric Yields

none Amount of Tritium Standard Used for Radiometric Yield Determination

none Radiometric Yield Calculations and Results

Laboratory Control Samples

✓ Sample Identification

✓ Instrument Identification

✓ Date of Analysis

none Calculated Recoveries

✓ Results of Analyses

Reported Analyses results, no comparison
Added 1.5 E03 } 60% Recovery
Results 1.2 E03
MDA 2 E02

F.1 General

Scope

This Appendix provides supplemental information used for validating analytical data from the determination of tritium in water using liquid scintillation counting.

Applicability

The validation criteria in this appendix are intended to be applied in addition to those found in the body of the procedure. In cases where discrepancies exist between the requirements of the procedure and the appendix, the criteria in the appendix shall apply.

F.2 Calibration

Liquid scintillation counting systems are calibrated using NIST traceable external or internal standards. The chemical and physical matrix of the standards should resemble the samples as closely as possible in order to match light emission (scintillation) and quenching properties.

- If the matrix of the standard is not representative of that for the samples, qualify all associated results as estimated, (J).

9613451.2531

N/A for this package

not Applicable

_____ Raw Data (Gross Counts, Count Duration, Background Counts, and Background Count Duration)

Radiometric Yields

_____ Amount of Tritium Standard Used for Radiometric Yield Determination

_____ Radiometric Yield Calculations and Results

Laboratory Control Samples

_____ Sample Identification

_____ Instrument Identification

_____ Date of Analysis

_____ Calculated Recoveries

_____ Results of Analyses

F.1 General

Scope

This Appendix provides supplemental information used for validating analytical data from the determination of tritium in water using liquid scintillation counting.

Applicability

The validation criteria in this appendix are intended to be applied in addition to those found in the body of the procedure. In cases where discrepancies exist between the requirements of the procedure and the appendix, the criteria in the appendix shall apply.

F.2 Calibration

Liquid scintillation counting systems are calibrated using NIST traceable external or internal standards. The chemical and physical matrix of the standards should resemble the samples as closely as possible in order to match light emission (scintillation) and quenching properties.

- If the matrix of the standard is not representative of that for the samples, qualify all associated results as estimated, (J).

Supplemental Requirements for Analyses Using Alpha Spectroscopy (Cont.)

Duplicates not required per case narrative "according to WHC instructions."

_____ Detector Identification
_____ Date of Analysis
_____ Amounts of Samples Counted
_____ Count Durations
_____ Sample Identifications
_____ Calculated Precision

Radiometric and Gravimetric Yields no information

_____ Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
_____ Weights of Precipitates or Solids Counted
_____ Calculated Recoveries

Laboratory Control Samples not required per case narrative "according to WHC instructions."

_____ Detector Identification
_____ Date of Analysis
_____ Calculation of Recoveries
_____ Results of Analyses

Iso-Pu not applicable for this package

Supplemental Requirements for Analyses Using
Alpha Spectroscopy

Case narrative indicates pages for this.
Sample request does not request Iso-Pu.
No pages in package
Narrative incorrect.

B.0 Completeness Checklist

Analysis Results

_____ Results Report for Sample Analyses and Reanalyses
_____ Raw Data (Spectra, Printouts, Notebook Pages)
_____ Calculation Sheets
_____ Sample Identifications
_____ Detector Identification
_____ Analysis Date and Initials of Analyst
_____ Amounts of Samples Counted (Precipitated or Deposited)

Initial and Continuing Calibration

_____ Detector Identification
_____ Calibration Date(s) and Initials of Analyst
_____ Identification of Calibration and Check Standards including Radionuclide, Certification, Expiration Date, and Activity
_____ Amount of (Check) Standard Used
_____ Raw Data including Spectra or Counts per Channel
_____ Kev/channel
_____ Count Duration for Standards
_____ Efficiencies
_____ Raw Data of Background Counts, Dates Counted, and Duration of Counts

Blanks

_____ Detector Identification
_____ Date of Analysis
_____ MDA of Method
_____ Amounts of Reagents Used in Blank

9613451.2534

Iso-U

Supplemental Requirements for Analyses Using Alpha Spectroscopy

B.0 Completeness Checklist

Analysis Results

- ✓ Results Report for Sample Analyses and Reanalyses
- ✓ Raw Data (Spectra, Printouts, Notebook Pages) none
- ✓ Calculation Sheets
- ✓ Sample Identifications
- ✓ Detector Identification
- ✓ Analysis Date and Initials of Analyst
- ✓ Amounts of Samples Counted (Precipitated or Deposited)

Initial and Continuing Calibration

- ✓ Detector Identification
- none Calibration Date(s) and Initials of Analyst
- none Identification of Calibration and Check Standards including Radionuclide, Certification, Expiration Date, and Activity
- none Amount of (Check) Standard Used
- none Raw Data including Spectra or Counts per Channel
- ✓ Kev/channel
- none Count Duration for Standards
- ✓ Efficiencies
- none Raw Data of Background Counts, Dates Counted, and Duration of Counts

Blanks none

- none Detector Identification
- none Date of Analysis
- ✓ MDA of Method
- none Amounts of Reagents Used in Blank

not applicable for this package

Supplemental Requirements for Analyses Using
Alpha Spectroscopy (Cont.)

Duplicates

_____ Detector Identification
_____ Date of Analysis
_____ Amounts of Samples Counted
_____ Count Durations
_____ Sample Identifications
_____ Calculated Precision

Radiometric and Gravimetric Yields

_____ Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
_____ Weights of Precipitates or Solids Counted
_____ Calculated Recoveries

Laboratory Control Samples

_____ Detector Identification
_____ Date of Analysis
_____ Calculation of Recoveries
_____ Results of Analyses

9613451.2536

Supplemental Requirements for Analyses Using
Gamma Spectroscopy

Gamma D.

C.0 Completeness Checklist

Analysis Results

✓ Results Report for Sample Analyses and Reanalyses
___ Raw Data (Spectra, Printouts of Counts per Channel, Notebook Pages) no notebook pages
✓ Calculation Sheets
✓ Sample Identifications
✓ Detector Identification and Counting Position
✓ Analysis Date and Initials of Analyst
✓ Amounts of Samples Counted

Initial and Continuing Calibration

weekly calibration data for 150 ml geometry
Efficiencies for 150 ml geometry
Sample Quantity listed as 1, results are in pCi/L indicating a 1 liter sample counted vice 150 ml.

✓ Detector Identification
✓ Calibration Date(s) and Initials of Analyst
none Identification of Calibration and Check Standards including Radionuclides, Certification, Expiration Date, and Activity
not provided Amount of (Check) Standard Used
no Raw Data including Counts and Count Duration for Standards
✓ yes Efficiencies and/or Geometry and Matrix Factors
no Raw Data of Background Counts, Count Dates, and Duration of Counts
✓ Kev/Channel
✓ FWHM

Input out of results only

Blanks

✓ Detector Identification
✓ Date of Analysis
✓ MDA of Method ~~Background info not provided to recalculate~~
n/a Amounts of Reagents Used in Blank
✓ Raw Data

Supplemental Requirements for Analyses Using Gamma Spectroscopy (Cont.)

Duplicates

Not required per WHC as stated in Case Narrative

_____ Detector Identification
_____ Date of Analysis
_____ Amounts of Samples
_____ Count Durations
_____ Sample Identifications
_____ Results of Analyses and Calculated Precision
_____ Raw Data

Radiometric and Gravimetric Yields

NA Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
NA Weights of Precipitates or Solids Counted
NA Calculated Recoveries

Laboratory Control Samples

Not required per WHC as stated in Case Narrative

_____ Detector Identification
_____ Date of Analysis
_____ Calculation of Recoveries
_____ Results of Analyses

9613451.2538

not Applicable for this Data Package

Supplemental Requirements for Analyses Using
Gamma Spectroscopy

C.0 Completeness Checklist I-129

Analysis Results

_____ Results Report for Sample Analyses and Reanalyses
_____ Raw Data (Spectra, Printouts of Counts per Channel, Notebook Pages)
_____ Calculation Sheets
_____ Sample Identifications
_____ Detector Identification and Counting Position
_____ Analysis Date and Initials of Analyst
_____ Amounts of Samples Counted

Initial and Continuing Calibration

_____ Detector Identification
_____ Calibration Date(s) and Initials of Analyst
_____ Identification of Calibration and Check Standards including Radionuclides, Certification, Expiration Date, and Activity
_____ Amount of (Check) Standard Used
_____ Raw Data including Counts and Count Duration for Standards
_____ Efficiencies and/or Geometry and Matrix Factors
_____ Raw Data of Background Counts, Count Dates, and Duration of Counts
_____ Kev/Channel
_____ FWHM

Blanks

_____ Detector Identification
_____ Date of Analysis
_____ MDA of Method
_____ Amounts of Reagents Used in Blank
_____ Raw Data

Not Applicable for this data package

Supplemental Requirements for Analyses Using Gamma Spectroscopy (Cont.)

Duplicates

_____ Detector Identification
_____ Date of Analysis
_____ Amounts of Samples
_____ Count Durations
_____ Sample Identifications
_____ Results of Analyses and Calculated Precision
_____ Raw Data

Radiometric and Gravimetric Yields

_____ Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
_____ Weights of Precipitates or Solids Counted
_____ Calculated Recoveries

Laboratory Control Samples

_____ Detector Identification
_____ Date of Analysis
_____ Calculation of Recoveries
_____ Results of Analyses

ENVIRONMENTAL DATA TRANSMITTAL

TRANSMITTAL NUMBER: X01436

DATE PREPARED: September 8, 1992

TO (check one box):	MAILING ADDRESS:	PREPARED BY:
[ ] Environmental Data Management Center [x] Environmental Administrative Records	Westinghouse Hanford Company c/o EDMC, H4-22 P.O. Box 1970 Richland, WA 99352	NAME, AFFILIATION: J. M. Duncan, Westinghouse Hanford Company BUILDING, AREA: MO-028, 200-W MSIN: T6-08 ADDRESS: Richland, WA 99352 PHONE: 3-3351 ORG. TITLE: Office of Sample Management ORG. CODE: 12500

TO BE COMPLETED BY SENDER						EDMC USE ONLY		
ITEM	DATE	ID NUMBER	TITLE/DESCRIPTION	OU	TSD	KEYWORD	DIC	FILE NO.
1	8-21-92		Roy F. Weston, Incorporated/Teledyne Isotopes Radiochemistry Analytical Laboratory Data Package for the 300-FF-5 Project. The OSM data package ID number is 75133-WES-683. The sample data reported is as follows: RFW # SAMPLE 75133 9204L071 B062Z9 75136 9204L071 B062Z6	300-FF-5				

COMMENTS: Data is being transmitted without OSM verification or validation. Data will be validated by an off-site contractor.

RECEIVED BY: Duane Rhymes DATE: 9/8/92

The signature below certifies that the documents submitted by this transmittal have been reviewed and are ready for processing.

SIGNATURE: ZP Janette M. Duncan DATE: 9/8/92

PROCESSED BY: DATE:

9613461.2540

9613451.2541

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

26 August 1992

AUG 1992
RECEIVED
OSM DMO

Ms. Jeanette Duncan
Westinghouse-Hanford
2355 Stevens Drive
200 W/MO-346/T6-08
Richland, WA 99352

Dear Jeanette:

Enclosed are the following Radiochemistry data packages:

9207L857	9207L014	9204L084	9203L640	9201L148	9204L071
9204L988	9204L011	9204L042	9203L780	9111L455	9203L666
9204L872	9203L687	9112L846	9203L827		

Also enclosed are the following Chemistry data packages:

9207L025 - Inorganics
9208L326 - Inorganics and Metals

Please do not hesitate to call if you have any questions.

Very truly yours,

ROY F. WESTON, INC.

Debbie Haydt

Debbie Haydt
Project Information Analyst

/clk

Enclosure:

9613451.2542

WESTON/WESTINGHOUSE/HANFORD

TELEDYNE ISOTOPES

Case Narrative/Cover Sheet for Reports of Analysis and Lab Data

Date 08-21-92

TI #'s 75133 - 75136

WO # 4-1381

RECORD COPY

AUG 1992 RECEIVED OSM DMO

Comments:

The matrix spike and matrix spike duplicate analyses on TI #'s 75134 and 75135 for gamma, uranium, gross alpha and gross beta have been deleted according to instructions by Westinghouse Hanford Company.

The matrix spike analyses on TI # 75134 for total uranium was a normal spike analysis of according to instructions by Westinghouse Hanford Company

The matrix spike duplicate analyses on TI # 75135 for total uranium is a normal blank analysis according to instructions by Westinghouse Hanford Company

Activity for Matrix Spike TI #75134 and Matrix Spike Duplicate TI #75135

Nuclide	Activity pCi/l	Acceptable Range
Strontium-90	80.	68. - 92.
Total Uranium	18.7 ugm/l	15. - 18. ugm/l
Tritium	1.5 E03	1.2 - 1.8 E03

Contents:

Reports of Analysis		4	Pages
Total-U	PRO-032-89	1	Pages
Gross Alpha	PRO-032-1	1	Pages
Gross Beta		-	Pages
Sr-90	PRO-032-16 & 38	6	Pages
Gamma	PRO-042-5	2	Pages
H-3	PRO-052-35	1	Pages
Pu-238-239	PRO-052-32	4	Pages
U-235-238	PRO-052-32	4 -	Pages
Am-241		-	Pages
C-O-C		1	Pages
Other		-	Pages

RADIOCHEMICAL WORK SHEET - GROSS BETA/GROSS ALPHA

CUSTOMER: WWH COLLECTION DATE: See below SAMPLE TYPE: WO

ANALYST: DCT PREPARATION DATE: 6-22-92 ALIQUOT: 500 mls UNITS:

COUNTER: A- G1 COUNT DATE: START 6/23 STOP:

(5) convert to Liters (i.e. 0.5)

SAMPLE NUMBER	ANALYSIS	WEIGHT OF MOUNT (grams)	Sequence Number	N (1) (counts)	ΔT (2) (min)	Bkg. (3) (cpm)	ε (4) Efficiency	VOLUME OR WEIGHT (gms) WET ASH %	ACTIVITY (6) Reported Results B
4/20 75133	gross-β	.2752	13	426	100	1.92	.246		8.6 ± 1.8 E 00
								(7) MDA reported →	L.T. 2. E 00
33	-α			7	100	.06	.048	MDA α	L.T. 2. E 00
								measured Result ~~Reported~~ →	1.9 ± 13.6 E-01
4/18 36	-β	.1751	14	512	100	1.92	.278		1.0 ± 0.2 E 01
									L.T. 2. E 00
36	-α			4	100	.06	.065		L.T. 2. E 00
								-	2.8 ± 8.8 E-01
									. E
									. E

9613451.2543

UNITS: CODE: A

A. Does not list Total Bkg - Cannot check MDA
B. Does not allow recalculation of efficiency

CALC. BY: AE DATE: 6/23

CHECKED BY: [signature] DATE: 6-25

DATE ENTERED: JUN 25 1992

$$\text{Activity} = \frac{(1)/(2) - (3)}{(4) \times 2.22 \times (5)}$$ } same for β & α - use appropriate lines

FORM IWL-3B
Revised 06/15/81

Remilk

RADIOCHEMICAL WORK SHEET

SAMPLE NUMBER	NUCLIDE
75133	Y-90

CUSTOMER WOWH COLLECTION DATE 4/20

MOUNTING DATE 6-16-92 SAMPLE TYPE WO

VOLUME _____ UNITS _____ ALIQUOT 500 mls (5) - convert to Liters

SCAVENGE DATE 6-10-92 TIME 0935 YIELD 100.0 NUCLIDE Y^{90} ASH WT. _____ gms

MILKING DATE 6-16-92 TIME 0855 YIELD (6) 32.8 NUCLIDE Sr^{89} WET WT. _____ gms

ANALYST DCT INGROWTH FACTOR .786 (7) DECAY FACTOR (MILK TO COUNT) .663 (8) ASH WT. / WET WT. (100) = _____ %

Activity = $\frac{(1)-(3)}{(4)(5)(6)(7)(8)\,2.22} \times 100$ = .45

COUNTING Date	Time	COUNTER	(1) N (Counts)	(2) Δt (min)	N/Δt (cpm)	(3) Bkg. (cpm)	A (cpm)	(4) E (eff.)	
6/17	1630	C1	202	800	.253	.22	.03	.38	L.T. 1. E+00
									4.5 ± 6.7 E-01
									K=.16

Decay Factor	INTERVAL Colln to Ct	Ct to Ct

ACTIVITY OR MDL: L.T. 1. E 00

UNITS A CALC. BY KD. DATE 6/18/92

ENTERED JUN 18 1992 CHECKED BY [signature] DATE 6-18

FORM IWL-3A Revised 3/15/81

9613451.2544

* M.S.

RADIOCHEMICAL WORK SHEET

SAMPLE NUMBER	NUCLIDE
75134	Y-90

CUSTOMER WWH COLLECTION DATE 4/20

MOUNTING DATE 6-10-92 SAMPLE TYPE WO

VOLUME _____ UNITS _____ ALIQUOT 500 mls

SCAVENGE DATE 5-22-92 TIME 0935 YIELD 100.0 NUCLIDE Y^{90} ASH WT. _____ gms

MILKING DATE 6-10-92 TIME 0935 YIELD 32.3 NUCLIDE Sr^{89} WET WT. _____ gms

ANALYST DCT INGROWTH FACTOR .993 DECAY FACTOR (MILK TO COUNT) .760 ASH WT. / WET WT. (100) = _____ %

Activity = 7.01 E+1

COUNTING Date	Time	COUNTER	N (Counts)	Δt (min)	N/Δt (cpm)	Bkg. (cpm)	A (cpm)	E (eff.)	
6/11	1015	B6	757	100	7.57	.17	7.40	.39	7.0 ± 0.5 E +01
									L.T. 2. E +00
6/13	1000	B6	504	100	5.04				K=25.15

Decay Factor	INTERVAL Colln to Ct	Ct to Ct

4.87 / .598 = 8.14 — pass

ACTIVITY OR MDL
7.0 ± 0.5 E 01

UNITS A CALC. BY KD DATE 6/15/92

ENTERED JUN 16 1992 CHECKED BY [illegible] DATE 6-16

FORM IWL-3A Revised 3/15/81

9613451.2545

As Fast Sr Repeat

RADIOCHEMICAL WORK SHEET

SAMPLE NUMBER	NUCLIDE
7 5 1 3 5	Y-90

CUSTOMER Weston/WSHG HANF COLLECTION DATE 4/30

MOUNTING DATE 6/26/92 SAMPLE TYPE WO

VOLUME _____ UNITS _____ ALIQUOT 500 ml

H. S. D.

SCAVENGE DATE _____ TIME _____ YIELD 75.12 NUCLIDE Y-90 ASH WT. _____ gms

MILKING DATE 6/25/92 TIME 1130 YIELD .0266 NUCLIDE Y-90 WET WT. _____ gms

ANALYST JL INGROWTH FACTOR 1.000 DECAY FACTOR .454 (MILK TO COUNT) ASH WT. / WET WT. (100) = _____ %

COUNTING Date	Time	COUNTER	N (Counts)	Δt (min)	N/Δt (cpm)	Bkg. (cpm)	A (cpm)	E (eff.)	
6/28	1200	D7	1064	100	10.64	.14	10.50	.34	8.2 ± 0.5 E+01
									L.T. 1. E+00
6/30	1006	D7	634	100	6.34				K=90.55

Decay Factor	INTERVAL Colln to Ct	Ct to Ct

6.20 / .610 = 10.16 — pa00 —

ACTIVITY OR MDL
8 . 2 ± 0 . 5 E 0 1

UNITS A CALC. BY KD. DATE 6/30/92

ENTERED 7/1 CHECKED BY gms DATE 7/1/92

FORM IWL-3A Revised 3/15/81

9613451.2546

RADIOCHEMICAL WORK SHEET

SAMPLE NUMBER	NUCLIDE
75136	Y-90

CUSTOMER WWH COLLECTION DATE 4/18

MOUNTING DATE 6-10-92 SAMPLE TYPE WO

VOLUME _____ UNITS _____ ALIQUOT 1000 mls

SCAVENGE DATE 5-22-92 TIME 0935 YIELD 100.0 NUCLIDE Y^{90} ASH WT. _____ gms

MILKING DATE 6-10-92 TIME 0935 YIELD 46.9 NUCLIDE Sr^{89} WET WT. _____ gms

ANALYST DCT INGROWTH FACTOR .993 DECAY FACTOR .760 (MILK TO COUNT) ASH WT. / WET WT. (100) = _____ %

COUNTING Date	COUNTING Time	COUNTER	N (Counts)	Δt (min)	N/Δt (cpm)	Bkg. (cpm)	A (cpm)	E (eff.)	
6/11	1615	B8	24	100	.24	.15	.09	.40	LT 6.E-01
									(2.9 ± 4.0 E-01)
									K=.30

Decay Factor	INTERVAL Colln to Ct	INTERVAL Ct to Ct

ACTIVITY OR MDL
L. T. 6. E-01

UNITS L CALC. BY AL DATE 6/11/92

ENTERED JUN 11 1992 CHECKED BY [signature] DATE 6-11

FORM IWL-3A Revised 3/15/81

96153451.2547

RADIOCHEMICAL WORK SHEET - GROSS BETA/GROSS ALPHA

CUSTOMER WWH COLLECTION DATE _____ SAMPLE TYPE WO

ANALYST KD/HJ PREPARATION DATE _____ ALIQUOT 6 UNITS ml

COUNTER A- Scintrex COUNT DATE: START 6/11/92 STOP _____

SAMPLE NUMBER	ANALYSIS	WEIGHT OF MOUNT (grams)	Sequence Number / Dil.	N (counts) / I	AT (min) / WF	Bkg. (cpm) / WU	VOLUME OR WEIGHT (gms) WET ASH 1%	ACTIVITY
75133	TOTAL U		2:1	0	.021	.176		1.9 ± 0.3 E-01
								LT. 5. E-02
75134		LCS SPIKE	10:1	0	.623	.871		1.7 ± 0.3 E+01
								LT. 5. E-02
75135		BLANK	1:1	0	.005	.274		LT. 5. E-02
								1. ± 1. E-02
75136			2:1	0	.007	.170		6. ± 0.9 E-02
								LT. 5. E-02
								. E
								. E

UNITS pg/L CODE L

CALC. BY KD DATE 6/12/92

CHECKED BY HJ DATE 6/12

DATE ENTERED 6/12/92

FORM IWL-3B
Revised 06/15/81

Customer Weston
Analyst YB
Preparation Date 5/20
Distilled

TRITIUM BY DIRECT COUNT
LIQUID SCINTILLATION

Counter P-2000
Disk

TI No	Type	Mid Count (MM/DD HHMM)	(1) N	(2) At min	(5) VLS ml	(3) Bkg. cpm	(4) Eff.	VT or S gm wet	VT or S gm dry	10 ml H_2O RS/SW gm/aliq	MDA if "L.T" Result
75133	WO	5/21	283	100	10.0	3.14	.22				L.T. 2. E02
Spike 134	|	|	881	|	|	|	.22			Result →	1.2 ± 0.1 E03
Spike 135	|	|	990	|	|	|	.23				1.3 ± 0.1 E03
Dup 136	|	|	288	|	|	|	.24				LT. 2. E02
		secondary Results									
											Actual Result if ~~LT~~ L.T. above
75133	WO										→ -6.3 ± 10.6 E01
134	|										L.T. 2. E02
135	|										~~L.T. 2. E02~~ 1.3 ± 0.1 E03 YB
136	↓										-4.9 ± 9.2 E01

Result Units pCi/l

Activity $\frac{(1)}{(2)} - (3) \times 1000$ / $(5) \times (4) \times 2.22$

Code A

Calc. by YB Date 6/3/92

Checked by [illegible] Date 6/5/92

IWL-39C Issued 07/05/84 Rev. 12/04/91

MDA - can not do - need Bkg Time
Efficiency can not reproduce

9613451.2549

Activity = (8) (7) / (1) (4/2)

TELEDYNE ISOTOPES

ALPHA SPECTROSCOPY DATA

Th-229 _____ ml | U-232 1 ml | CUSTOMER Weston W/H

Am-243 _____ ml | Cm-242 _____ ml | ANALYST QZ

Pu-236 _____ ml | Pu-242 _____ ml | PREP DATE 7/30/92

TI NO. 75133 | SAMPLE TYPE WO | ALIQUOT 150ml (5) (1)

Det.	Det Eff	Nuclide	Mid Count MM/DD/YY HH:MM	Counts	Rt. sec	Spike Counts	Spike Activity pCi	Bkg Counts	Bkg Rt. sec	Results
		Pu-239 Primary								
		Secondary			↓	↓	↓		↓	
		Pu-238 Primary								
		Secondary			↓	↓	↓		↓	
9	20.67	U-238 Primary	8/6 2216	(2) (5) 14	(2) (3) 60,000	(4) (5) 1260	QZ (5) (6) 8 387	(5) (6) 5	(4) (7) 80,000	(8) 2.1 ± 1.7 E-01
		Secondary			↓	↓	↓		↓	L.T. 2. E-01
		U-235 Primary		1				1	MDA	L.T. 8. E-02
		Secondary			↓	↓	↓		↓	5.1 ± 51.2 E-03
		U-234 Primary								
		Secondary			↓	↓	↓		↓	
		U-236 Primary								
		Secondary			↓	↓	↓		↓	
		U-232 Primary								
		Secondary			↓	↓	↓		↓	
		Am-241 Primary								
		Secondary			↓	↓	↓		↓	

Result Units pCi/L | Ash Fraction _____ | Calc. by [signature] | Date 8/10

Code A | Checked by [signature] | Date 8/10/92

TWL 44c Revised 12/05/91

9613451.2550

TELEDYNE ISOTOPES

ALPHA SPECTROSCOPY DATA

Th-229 _____ ml
Am-243 _____ ml
Pu-236 _____ ml

U-232 1 ml
Cm-243 _____ ml
Pu-242 _____ ml

CUSTOMER Weston WM
ANALYST AR
PREP DATE 7/30/92

TI NO. 75136
SAMPLE TYPE WO
ALIQUOT 150 ml

Det.	Det Eff	Nuclide	Bkd Count MM/DD/HHMM	Counts	Rt. sec	Spike Counts	Spike Activity pCi	Bkg Counts	Bkg Rt. sec	Results
		Pu-239 Primary								
		Secondary			↓	↓	↓		↓	
		Pu-238 Primary								
		Secondary			↓	↓	↓		↓	
10	21.29	U-238 Primary	8/6 2216	10	60,000	~~3.87~~ 1265 02	3.87	9	80,000	L.T. 2. E-01
		Secondary			↓	↓	↓		↓	6.6 ± 15.8 E-02
		U 235 Primary		3				2		L.T. 1. E-01
		Secondary			↓	↓	↓		↓	3.1 ± 8.3 E-02
		U 234 Primary								
		Secondary			↓	↓	↓		↓	
		U-236 Primary								
		Secondary			↓	↓	↓		↓	
		U-232 Primary								
		Secondary			↓	↓	↓		↓	
		Am-241 Primary								
		Secondary			↓	↓	↓		↓	

Result Units pCi/L
Code A

Ash Fraction

Calc by [signature] Date 8/10
Checked by [signature] Date 8/10/92

WL 44c Revised 12/05/91

9613451.2551

9613451.2552

MCA #1 - Canberra S100 - U75133.MCA - DET 9 WWH U75133 150ML

Tag Number: 87
Report Group: 9/16
Input: 9 Group: C
Group Size: 512

Readout: Fri 07 Aug 1992 @ 07:44:15
Acquire Started: Thu 06 Aug 1992 @ 13:56:26

Elapsed Live Time: 60000.00 sec.
Elapsed True Time: 60000.19 sec.
Dead Time: 0.00 %

MCA Mode: PHA+ M/R, Inputs: 16, Type: 1520, Mode: Route
Preset Conditions: Live Time = 60000 sec.

Calibration: 0.0000*Ch^2 + 0.008055*Ch + 3.020 MeV

Area Statistics: Background Channels = 4
% Error Sigma = 1.65

REGION OF INTEREST REPORT

ROI #	From(MeV) To (MeV)	Integral CPS	Area %Error	Peak(MeV) FWHM(MeV)
1	4.083	14	-1	4.190
	4.236	0.00	765.07	0.0081
2	4.325	1	1	4.365
	4.445	0.00	165.00	0.0161
3	4.655	10	5	4.780
	4.816	0.00	126.59	0.0161
4	5.162	1260	1233	5.330
	5.404	0.02	4.85	0.0196

9613451.2553

MCA #1 - Canberra S100 - U75136.MCA - DET 10 WWH U75136 150ML

Tag Number: 87
Report Group: 10/16
Input: 10 Group: C
Group Size: 512

Readout: Fri 07 Aug 1992 @ 07:44:16
Acquire Started: Thu 06 Aug 1992 @ 13:56:26

Elapsed Live Time: 60000.00 sec.
Elapsed True Time: 60000.19 sec.
Dead Time: 0.00 %

MCA Mode: PHA+ M/R, Inputs: 16, Type: 1520, Mode: Route
Preset Conditions: Live Time = 60000 sec.

Calibration: 0.0000*Ch^2 + 0.007994*Ch + 2.980 MeV

Area Statistics: Background Channels = 4
% Error Sigma = 1.65

REGION OF INTEREST REPORT

ROI #	From(MeV) To (MeV)	Integral CPS	Area %Error	Peak(MeV) FWHM(MeV)
1	4.083	10	-5	4.098
	4.211	0.00	116.56	343349.0313
2	4.339	3	1	4.419
	4.435	0.00	185.54	343349.0313
3	4.659	9	9	4.691
	4.811	0.00	55.00	0.0106
4	5.139	1265	1245	5.323
	5.386	0.02	4.79	0.0200

9613451.2554

:URAL PRODUCT

:LIDE	ENERGY	AREA (1)	BKGND	%ABN (3)	%EFF (2)	PCI/UT (5)	ERR-2SIGMA(1SIG%)
40	1460.85	130.	53.	11.0*	8.535E-01	2.084E 2	4.921E 1(11.8%)
-228	238.60	59.	870.	49.0*	3.061E 00	6.653E 0	9.587E 0(72.0%)
	583.10	0.	0.	31.0	0.000E-01	0.000E 0	0.000E 0(*****%)

INIMUM DETECTABLE ACTIVITY REPORT
(REV.07,2/85,AWS; REV 08,3/85,HWJ-TELEDYNE)

4.66 SIGMA

:LIDE	ENERGY	EFF*B.I. (7)	BKGN (6)	MIN PCI/UT (8)	DECAY	NET	PCI/UT	ERR-2SIG
-7	477.6	2.0142E-03	213.	2.48E 02	4.8968E 00	4.	1.46E 01	1.50E 02
40	1460.8	9.3899E-04	472.	1.62E 02	1.0000E 00	82.	1.30E 02	7.27E 01
-54	834.8	1.2927E-02	103.	7.26E 00	1.3223E 00	-13.	-2.00E 00	4.55E 00
-58	810.8	1.3078E-02	87.	1.64E 01	3.2775E 00	-23.	-8.65E 00	1.06E 01
-59	1099.3	5.9029E-03	94.	7.51E 01	6.5320E 00	6.	9.97E 00	4.48E 01
-60	1332.5	9.1390E-03	58.	6.09E 00	1.0451E 00	-6.	-1.03E 00	3.00E 00
-65	1115.5	5.2760E-03	73.	1.60E 01	1.4115E 00	-15.	-6.03E 00	1.02E 01
-95	765.9	1.3781E-02	117.	2.02E 01	3.6779E 00	-3.	-1.20E 00	1.23E 01
-103	497.0	1.6710E-02	195.	4.96E 01	8.4771E 00	-16.	-1.22E 01	3.07E 01
-106	621.8	1.5762E-03	152.	6.89E 01	1.2594E 00	2.	2.40E 00	4.17E 01
131	364.5	1.9548E-02	285.	2.23E 05	3.6838E 04	-17.	-4.81E 04	1.37E 05
-134	795.8	1.1787E-02	106.	6.84E 00	1.1198E 00	-3.	-4.28E-01	4.19E 00
-137	661.6	1.3026E-02	131.	6.20E 00	1.0077E 00	15.	1.74E 00	3.65E 00
-140	1596.4	7.6729E-03	38.	4.21E 03	7.4819E 02	-7.	-1.02E 03	2.68E 03
-141	145.4	1.6804E-02	515.	1.23E 02	1.3009E 01	-18.	-2.09E 01	7.53E 01
-144	134.0	3.6943E-03	534.	5.89E 01	1.3459E 00	14.	7.66E 00	3.55E 01
-152	344.3	6.0971E-03	228.	1.76E 01	1.0177E 00	-60.	-1.50E 01	1.14E 01
-154	1274.5	3.1737E-03	72.	1.92E 01	1.0277E 00	-14.	-6.61E 00	1.15E 01
-155	86.5	6.7436E-03	513.	2.46E 01	1.0479E 00	-261.	-6.09E 01	1.54E 01
-226	186.0	1.3353E-03	530.	1.21E 02	1.0002E 00	-42.	-4.74E 01	7.06E 01
-228	238.6	1.4999E-02	507.	1.19E 01	1.1291E 00	50.	5.60E 00	6.70E 00
-234	92.8	1.1179E-03	565.	1.49E 02	1.0002E 00	-54.	-7.24E 01	8.85E 01

$$\text{Activity} \quad \frac{\frac{(1)}{(4)}}{\frac{(3)}{100} \times \frac{(2)}{100} \times .037} = (5)$$

for comparison

$$\text{MDA} \quad \frac{4.66\sqrt{\frac{(6)}{(4)}}}{(7) \times .037} = (8)$$

for comparisons

```
*************** 18 AUG 1992  3:09:56 PM  ****************
*****************************************************************

W H

AMPLE DATE:  18APR92  800:00
AMPLE IDENTIFICATION:  WSTHAN.W75136
YPE OF SAMPLE:  WO
AMPLE QUANTITY:   1.000000          UNITS:  A
AMPLE GEOMETRY:  MARINELLI
FFICIENCY FILE NAME:  EFF.D2MARI
*************************************************************
                                   *
CQUISITION DATE: 18AUG92  845:00 * FWHM(1332)          2.440
RESET TIME(LIVE):     86400. SEC  * SENSITIVITY:        5.000
LAPSED REAL TIME:     18016. SEC  * SHAPE PARAMETER : 10.0 %
LAPSED LIVE TIME:     18000. SEC  * NBR ITERATIONS:    10.
                                   *
*************************************************************
                                   *
ETECTOR: DET. 6015   ADC2          * LIBRARY:NUCL.LIBM
ATE CALIBRATED:  20MAR92 1200:00 * ENERGY TOLERANCE:  2.000KV
EV/CHNL:        1.0000000          * HALF LIFE RATIO:  20.00
FFSET:          0.0000000 KEV      * ABUNDANCE LIMIT:  85.00%
                                   *
*************************************************************
```

4

ENERGY WINDOW 40.00 TO 2000.00

PK	IT	ENERGY	AREA	BKGND	FWHM	CHANNEL	LEFT	PW	CTS/SEC	%ERR	FIT
1	0	74.28	420.	1161.	1.66	74.28	70	9	2.33E-02	15.5	
2	0	238.70	145.	870.	2.43	238.70	234	9	8.07E-03	37.6	
3	0	349.94	156.	505.	1.56	349.94	345	10	8.69E-03	28.4	
4	0	510.30	626.	480.	3.24	510.30	505	12	3.48E-02	7.9	
5	0	608.32	133.	259.	2.04	608.32	605	9	7.41E-03	23.7	
6	0	846.49	33.	174.	1.90	846.49	843	8	1.86E-03	70.2	
7	0	1120.26	58.	98.	1.53	1120.26	1115	9	3.22E-03	35.2	
8	0	1461.09	476.	53.	3.14	1461.09	1456	14	2.64E-02	5.9	
9	0	1764.43	70.	54.	2.82	1764.43	1758	12	3.90E-03	24.9	

PEAK SEARCH COMPLETED (REV 15.5)

See Reverse for Activity Equation

9613451.2555

URAL PRODUCT

LIDE	ENERGY	AREA	BKGND	%ABN	%EFF	PCI/UT	ERR-2SIGMA(1SIG%)
0	1460.85	17.	18.	11.0*	4.301E-01	5.289E 1	4.646E 1(43.9%)
-226	185.99	104.	560.	4.0*	2.383E 00	1.637E 2	1.102E 2(33.7%)

INIMUM DETECTABLE ACTIVITY REPORT
(REV.07,2/85,AWS; REV 08,3/85,HWJ-TELEDYNE)

4.66 SIGMA

LIDE	ENERGY	EFF*B.I.	BKGN	MIN PCI/UT	DECAY	NET	PCI/UT	ERR-2SIG
-7	477.6	1.1688E-03	82.	2.59E 02	4.7717E 00	3.	1.84E 01	1.55E 02
0	1460.8	4.7330E-04	62.	1.16E 02	1.0000E 00	2.	6.70E 00	5.43E 01
-54	834.8	6.9921E-03	25.	6.59E 00	1.3163E 00	-2.	-5.65E-01	4.10E 00
-58	810.8	7.0995E-03	25.	1.58E 01	3.2148E 00	-5.	-3.40E 00	1.01E 01
-59	1099.3	3.0837E-03	28.	7.61E 01	6.3354E 00	6.	1.85E 01	4.35E 01
-60	1332.5	4.6600E-03	15.	6.07E 00	1.0443E 00	-2.	-6.73E-01	3.82E 00
-65	1115.5	2.7511E-03	18.	1.51E 01	1.4036E 00	1.	7.66E-01	9.00E 00
-95	765.9	7.5348E-03	43.	2.19E 01	3.6007E 00	6.	4.31E 00	1.28E 01
-103	497.0	9.6475E-03	74.	5.11E 01	8.1871E 00	10.	1.27E 01	2.99E 01
-106	621.8	8.8468E-04	43.	6.51E 01	1.2547E 00	-4.	-8.52E 00	4.05E 01
31	364.5	1.1746E-02	119.	2.02E 05	3.1039E 04	-10.	-3.97E 04	1.25E 05
-134	795.8	6.4138E-03	31.	6.79E 00	1.1177E 00	0.	0.00E-01	4.13E 00
-137	661.6	7.2540E-03	50.	6.87E 00	1.0076E 00	12.	2.50E 00	3.90E 00
-140	1596.4	3.8247E-03	8.	3.48E 03	6.7173E 02	-7.	-1.85E 03	2.53E 03
-141	145.4	1.2895E-02	423.	1.39E 02	1.2476E 01	-7.	-1.02E 01	8.49E 01
-144	134.0	2.9161E-03	459.	6.89E 01	1.3394E 00	30.	2.07E 01	4.11E 01
-152	344.3	3.6891E-03	120.	2.11E 01	1.0174E 00	-16.	-6.63E 00	1.33E 01
-154	1274.5	1.6274E-03	15.	1.71E 01	1.0272E 00	0.	0.00E-01	1.03E 01
-155	86.5	6.6652E-03	423.	2.26E 01	1.0471E 00	-72.	-1.70E 01	1.43E 01
226	186.0	9.5109E-04	434.	1.53E 02	1.0002E 00	12.	1.88E 01	8.67E 01
-228	238.6	9.7816E-03	302.	1.40E 01	1.1268E 00	-7.	-1.26E 00	7.86E 00
-234	92.8	1.0620E-03	579.	1.59E 02	1.0002E 00	-69.	-9.74E 01	9.01E 01

```
*****************************************************************
**************  18 AUG 1992  3:07:51 PM   *****************
*****************************************************************

H

PLE DATE:  20APR92  745:00
PLE IDENTIFICATION:  WSTHAN.W75133
E OF SAMPLE:  WO
PLE QUANTITY:   1.000000          UNITS:  A
PLE GEOMETRY:  MARINELLI
ICIENCY FILE NAME:  EFF.D1MARI
*****************************************************************
                                    *
UISITION DATE: 18AUG92  845:00 * FWHM(1332)          2.440
SET TIME(LIVE):     86400. SEC  * SENSITIVITY:        5.000
PSED REAL TIME:     18019. SEC  * SHAPE PARAMETER : 10.0 %
PSED LIVE TIME:     18000. SEC  * NBR ITERATIONS:    10.
                                    *
*****************************************************************
                                    *
ECTOR: DET. 1057   ADC1           * LIBRARY:NUCL.LIBM
E CALIBRATED:  20MAR92 1200:00 * ENERGY TOLERANCE:  2.000KV
/CHNL:       1.0000000            * HALF LIFE RATIO:  20.00
SET:         0.0000000 KEV        * ABUNDANCE LIMIT:  85.00%
                                    *
*****************************************************************
```

ENERGY WINDOW 40.00 TO 2000.00

IT	ENERGY	AREA	BKGND	FWHM	CHANNEL	LEFT	PW	CTS/SEC	%ERR	FIT
0	92.62	173.	842.	1.99	92.62	89	8	9.60E-03	30.1	
0	185.33	206.	560.	4.05	185.33	182	8	1.14E-02	22.2	
0	238.71	93.	384.	1.27	238.71	236	7	5.19E-03	36.0	
0	351.86	72.	226.	1.82	351.86	348	9	4.01E-03	40.2	
0	510.26	196.	166.	3.85	510.26	506	10	1.09E-02	14.4	
0	609.25	59.	57.	1.91	609.25	606	8	3.28E-03	28.3	
0	1169.76	83.	46.	15.03	1169.76	1160	25	4.63E-03	29.3	
0	1461.65	65.	18.	3.96	1461.65	1455	15	3.59E-03	23.9	
0	1952.49	16.	17.	2.89	1952.49	1947	10	8.66E-04	60.6	

PEAK SEARCH COMPLETED (REV 15.5)

WESTON Analytics Use Only

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of ____

Client: WESTON
Est. Final Proj. Sampling Date:
Work Order #: 6168-02-01-0000
Project Contact/Phone #:
AD Project Manager: Jessie Kuiz / D. Thomas
QC: Chp Del: Chp TAT: 35 Day
Date Rec'd: 4/22/92 Date Due: 5-27-92
Account #:

Refrigerator #																		
#/Type Container	Liquid					2 1L												
	Solid																	
Volume	Liquid					4 1L												
	Solid																	
Preservatives						HNO3												
ANALYSES REQUESTED →		ORGANIC				Radio Chem			INORG									
		VOA	BNA	Pest/PCB	Herb				Metal	CN								
		WESTON Analytics Use Only																
						(1)												

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected														
	B062Z9			W	4-20-92	07:45					✓			Ref	92044	071	-001			
	B062Z6			L	4-18-92	08:00					✓					-1	-003			

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

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

Special Instructions:
Radio Chem (1) = Gross alpha/Beta, Gamma Scan, Sr-90, total U, U-235/238, Tritium

(1) MS/MSD Required

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
J. Kuiz	Fed-X	~~4/22/92~~	~~11:45 AM~~		A. Jordan	5-1-92	1200
		4-30-92	6:30 pm				

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) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

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

COC Record Present Upon Sample Rec't Y or N

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

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

9613451-2556