START

9713520.0908602

11076-WES-1123 1/6

TELEDYNE ISOTOPES
50 VAN BUREN AVENUE
PO BOX 1235
WESTWOOD NJ 07675-1235
(201) 664-7070

WESTON/WESTINGHOUSE/HANFORD

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

FEB 1997 RECEIVED EDMC

MAY 1993 RECEIVED SDLA

Date 4/26/93

TI #'s 11076- 11077

WO # 4-1038

Comments:

There were no unusual occurrences with these samples. The required QC sample analyses were reported as TIQA samples which represent the Teledyne Isotopes in house Quality Assurance samples. TIQA spike target values are reported on table on page numbers 26 & 27.

Contents:

	Procedure #'s	Bench & Work Sheet Pages	Calibration Pages	Tracers/ Carrier Pages
Reports of Analysis		3		
Gamma	PRO-042-5	6	7	
C-O-C		1		
Other	TIQA Spikes	2		

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the laboratory manager or his designee, as verified by the following signature." A. J. Hogan

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 04/21/93

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE
4-1038	LL-1140-F4	04/15/93	04/23/93	1

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

S O I L

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (PCI/GM DRY)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
11076	9304L172-001	R01990	04/08				BE-7	L.T. 2. E-01		04/20			4
							BE-7	9.8 +-13.1E-02		04/20			4
							K-40	1.46+-0.15E 01		04/20			4
							K-40	L.T. 1. E 00		04/20			4
							MN-54	L.T. 3. E-02		04/20			4
							MN-54	4.7 +-15.9E-03		04/20			4
							CO-58	L.T. 2. E-02		04/20			4
							CO-58 -	1.2 +-1.5 E-02		04/20			4
							FE-59	L.T. 6. E-02		04/20			4
							FE-59	5.1 +-34.9E-03		04/20			4
							CO-60	L.T. 2. E-02		04/20			4
							CO-60	1.7 +-13.6E-03		04/20			4
							ZN-65	L.T. 6. E-02		04/20			4
							ZN-65	1.6 +-3.5 E-02		04/20			4
							ZR-95	L.T. 3. E-02		04/20			4
							ZR-95	2.8 +-1.7 E-02		04/20			4
							RU-103	L.T. 3. E-02		04/20			4
							RU-103 -	2.1 +-15.8E-03		04/20			4
							RU-106	L.T. 2. E-01		04/20			4
							RU-106	6.9 +-14.3E-02		04/20			4
							I-131	L.T. 6. E-02		04/20			4
							I-131 -	1.0 +-3.7 E-02		04/20			4
							CS-134	L.T. 3. E-02		04/20			4
							CS-134	3.0 +-1.8 E-02		04/20			4
							CS-137	5.35+-1.56E-02		04/20			4
							CS-137	L.T. 3. E-02		04/20			4
							BA-140	L.T. 4. E-02		04/20			4
							BA-140 -	1.0 +-2.4 E-02		04/20			4
							CE-141	L.T. 4. E-02		04/20			4
							CE-141	8.3 +-23.1E-03		04/20			4
							CE-144	L.T. 1. E-01		04/20			4
							CE-144 -	6.2 +-8.5 E-02		04/20			4

00027.62931 93

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 04/21/93

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE 2
4-1038	LL-1140-F4	04/15/93	04/23/93	

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

S O I L

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	TIME	STOP DATE	TIME	NUCLIDE	ACTIVITY (PCI/GM DRY)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
11076	9304L172-001 B01990		04/08				EU-152	L.T. 7. E-02		04/20			4
							EU-152 -	4.6 +-0.6 E-01		04/20			4
							EU-154	L.T. 8. E-02		04/20			4
							EU-154	1.6 +-49.2E-03		04/20			4
							EU-155	L.T. 8. E-02		04/20			4
							EU-155 -	6.7 +-4.7 E-02		04/20			4
							RA-226	9.89+-2.69E-01		04/20			4
							RA-226	L.T. 5. E-01		04/20			4
							TH-228	6.64+-0.66E-01		04/20			4
							TH-228	L.T. 8. E-02		04/20			4
							TH-234	L.T. 5. E-01		04/20			4
							TH-234	1.8 +-2.9 E-01		04/20			4
11077	9304L172-001DUPB01990		04/08				BE-7	L.T. 3. E-01		04/20			4
							BE-7 -	1.1 +-1.6 E-01		04/20			4
							K-40	1.46+-0.15E 01		04/20			4
							K-40	L.T. 2. E 00		04/20			4
							MN-54	L.T. 3. E-02		04/20			4
							MN-54 -	1.1 +-1.9 E-02		04/20			4
							CO-58	L.T. 3. E-02		04/20			4
							CO-58 -	6.5 +-20.0E-03		04/20			4
							FE-59	L.T. 7. E-02		04/20			4
							FE-59 -	3.5 +-4.5 E-02		04/20			4
							CO-60	L.T. 3. E-02		04/20			4
							CO-60 -	2.1 +-17.8E-03		04/20			4
							ZN-65	L.T. 7. E-02		04/20			4
							ZN-65 -	2.3 +-4.3 E-02		04/20			4
							ZR-95	L.T. 4. E-02		04/20			4
							ZR-95	2.2 +-2.1 E-02		04/20			4
							RU-103	L.T. 3. E-02		04/20			4
							RU-103 -	9.2 +-204.E-04		04/20			4
							RU-106	L.T. 3. E-01		04/20			4

9713529.2904

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 04/21/93

	WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE 3
MRS JOSIE EDWARDS WESTON/WESTINGHOUSE/HANFORD 208 WELSH POOL ROAD PICKERING CREEK INDUSTRIAL PARK LIONVILLE PA 19341-1313	4-1039	LL-1140-54	04/15/93	04/23/93	

S O I L

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	TIME	STOP DATE	TIME	NUCLIDE	ACTIVITY (PCI/GM DRY)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
11077	9304L172-001DUPB01990		04/08				RU-106 -	2.9 +-18.4E-02		04/20			4
							I-131	L.T. 8. E-02		04/20			4
							I-131 -	2.7 +-4.9 E-02		04/20			4
							CS-134	L.T. 4. E-02		04/20			4
							CS-134	8.2 +-22.3E-03		04/20			4
							CS-137	4.91+-1.99E-02		04/20			4
							CS-137	L.T. 4. E-02		04/20			4
							BA-140	L.T. 6. E-02		04/20			4
							BA-140	8.1 +-33.7E-03		04/20			4
							CE-141	L.T. 5. E-02		04/20			4
							CE-141	2.4 +-3.1 E-02		04/20			4
							CE-144	L.T. 2. E-01		04/20			4
							CE-144 -	9.8 +-11.1E-02		04/20			4
							EU-152	L.T. 9. E-02		04/20			4
							EU-152 -	5.4 +-0.7 E-01		04/20			4
							EU-154	L.T. 1. E-01		04/20			4
							EU-154 -	2.4 +-6.2 E-02		04/20			4
							EU-155	L.T. 1. E-01		04/20			4
							EU-155	5.4 +-6.4 E-02		04/20			4
							RA-226	1.03+-0.34E 00		04/20			4
							RA-226	L.T. 7. E-01		04/20			4
							TH-228	6.37+-0.41E-01		04/20			4
							TH-228	L.T. 9. E-02		04/20			4
							TH-234	L.T. 7. E-01		04/20			4
							TH-234	3.5 +-3.9 E-01		04/20			4

LAST PAGE OF REPORT

J Guenther

APPROVED BY J. GUENTHER 04/21/93

SEND 1 COPIES TO WE884S MRS JOSIE EDWARDS

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

9713529.2905

TELEDYNE ISOTOPES

9713529.2906

R2/15/48 QCY. 48 AB9060
Mixed Radionuclide
Gamma-ray reference standard
Nominal Activity 200kBq, 5·4µ(
For laboratory use only POISO

INVENTORY OF CERTIFIED STANDARD

NUCLIDE: Mixed Radionuclide Gamma Ray

PURCHASED FROM: Amersham

M25709

CERTIFICATE NUMBER: QCY.48 R2/15/48 DATE: 1 Feb 1992 (Ref)

PURCHASE ORDER NO: 56272 DATE:

DATE	DISPOSITION	COMMENTS	
(I) 2/21/92	Diluted 5.4363 gm to 100 ml using N.441 diluent prepared with 4N HCl. H. Jeter	Primary dilution	JM 3/2
2/28/92	Pipetted 5.00 ml of (I) into labelled counting geometries and filled with N.441 diluent prepared with 4N HCl: 1 Charcoal Filter Geometry; 4 Marinelli (1L) " ; 1 Poly Bottle 150ml " ; 1 Poly Bottle 300ml " H. Jeter	5% of total activity of (I), each	JM 3/2
2/28/92	With A. Skaar, pipetted 1.00 ml of (I) onto fiberglass filter disks (4 standards) and dried. Deposits are approx 1.5" diameter. For AP filter geometry standards H. Jeter	1% of total activity of (I), each	JM 3/2

CERTIFICATE ATTACHED

TELEDYNE ISOTOPES

9713529.2907

INVENTORY OF CERTIFIED STANDARD

NUCLIDE: Mixed Radionuclide Gamma Ray

PURCHASED FROM: Amersham

CERTIFICATE NUMBER: QCY.48 R2/15/48 DATE: 1 Feb 92 (ref)

PURCHASE ORDER NO: 56272 DATE:

DATE	DISPOSITION	COMMENTS
1/13/93	Used 8 aliquots of 3 ml each for gamma check sources (evaporated on filter disks and sealed in plastic). HJ & AS	3% of primary dilution activity for each.
3/24/93	Pipetted 5.00 ml of (I) into a 300 ml poly bottle and filled with N.441 diluent prepared with 4N HCl. H. Peter	300 ml std gamma geometry 5% of total activity of (I).

CERTIFICATE ATTACHED

Amersham International plc
Amersham Laboratories

9713529.2908

NAMAS
CALIBRATION
No. 0146

[redacted]

Description Product code: QCY.48 Solution number: R2/15/48

This mixed radionuclide gamma-ray reference standard consists of a solution in 4M HCl of the ten radionuclides listed below.

Measurement and Accuracy Reference time 1200 GMT on 1 February 1992

Mass of solution: 5.4803 grams Density: 1.076 g/ml at 20°C

Parent radionuclide	Gamma-ray energy (keV)	Gamma-rays per second per gram of solution	Random uncertainty	Systematic uncertainty	Overall uncertainty
Americium-241	59.54	1125	± 0.2 %	± 2.1 %	± 2.3 %
Cadmium-109	88.03	642	± 0.2 %	± 3.0 %	± 3.2 %
Cobalt-57	122.1	585	± 0.1 %	± 1.8 %	± 1.9 %
Cerium-139	165.9	710	± 0.3 %	± 1.2 %	± 1.5 %
Mercury-203	279.2	1991	± 0.3 %	± 2.0 %	± 2.3 %
Tin-113	391.7	2271	± 0.1 %	± 4.5 %	± 4.6 %
Strontium-85	514.0	3896	± 0.3 %	± 1.4 %	± 1.7 %
Caesium-137	661.7	2499	± 0.2 %	± 2.0 %	± 2.2 %
Yttrium-88	898.0	6268	± 0.2 %	± 3.5 %	± 3.7 %
Cobalt-60	1173	3399	± 0.3 %	± 0.4 %	± 0.7 %
Cobalt-60	1333	3402	± 0.3 %	± 0.4 %	± 0.7 %
Yttrium-88	1836	6643	± 0.2 %	± 3.4 %	± 3.6 %

Purity At the reference time the solution also contained the following impurities:

Cadmium-115m less than 2.6 becquerels (0.070 nanocuries) per gram.
Chlorine-36 equal to 16.4 becquerels (0.44 nanocuries) per gram.
Cobalt-56 less than 0.24 becquerels (0.0065 nanocuries) per gram.
Indium-114m equal to 6.0 becquerels (0.16 nanocuries) per gram.

Remarks Further details, including composition of the solution, methods of measurement, decay scheme assumptions, decay tables and definitions of uncertainties, are given in the data sheet accompanying this certificate.

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving explicit NIST traceability as defined in NCRP58 (1985).

Approved Signatory

G D M Parker

Amersham

This certificate is issued in accordance with the conditions of accreditation granted by the National Measurement Accreditation Service which has assessed the measurement capability of the laboratory and its traceability to recognised national standards and to the units of measurement realised at the corresponding national standards laboratory. Copyright of this certificate is owned jointly by the [illegible] and the issuing laboratory and may not be reproduced other than in full except with the prior written approval of the Head [illegible]

19

9713529.2909

Amersham Corporation
[illegible]
[illegible]
[illegible]

Amersham

TRACEABILITY TO NIST
(NOTE: NIST was formerly the National Bureau of Standards)

This product satisfies the quality assurance requirements of USNRC Regulatory Guide 4.15, Revision 1, February 19, 1979, for achieving NIST traceability, as defined in NCRP 58 (1985), through Amersham's participation in the USCEA/NIST Measurements Assurance Program of the Nuclear Power Industry.

2780048
12/21/88

21

Amersham Corporation
Arlington Hts., IL
(708) 593-6300

FREIGHT ACCOUNT # 5115 | B C
FEDERAL

SHIPPER'S REFERENCE # 663053

STORAGE TEMPERATURE: ROOM TEMP.

WEIGHT: 1 LBS.

DATE: 02/13/92

CUSTOMER SRVC REP: LSK

PACKING LIST NO.: 663053

PRINT TIME: 11:33:19

REQUESTED SHIP DATE: 02/13/92

In Emergency Call (708) 593-6300

SHIP TO 07675 02
TELEDYNE ISOTOPES

50 VAN BUREN AVENUE
WESTWOOD NJ 07675 GMU

ATTN TO PO# 56272

NUCLIDES SHIPPED: CD109 Y88 AM241 SR85 CO60

TOTAL ACTIVITY: .202 MBq / .005 mCi

LICENSE NUMBER: 290005506

CUSTOMER PO #: 56272

CUSTOMER PHONE #: 201/664/7070

CALLER: CLAIR DOBLIN

LABEL REQUIREMENTS: SURVEY C.O

TRANSPORT INDEX:

TYPE "B" PKG REQUIRED? NO

SPECIAL ROUTING: 18

SURVEYOR

SOLD TO 07675 01
TELEDYNE ISOTOPES
ACCOUNTS PAYABLE

50 VAN BUREN AVENUE
WESTWOOD NJ 07675

SEQUENCE NUMBER: 90241

This package conforms to the conditions and limitations specified in 49CFR 173.421 for excepted radioactive material, limited quantity, n.o.s., UN2910

Addresses for ordering in

the United States
Amersham Corporation
2636 S. Clearbrook Drive
Arlington Heights, Illinois
60005 USA
Telephone
Toll free (800) 323-9750
in Alaska, Hawaii, Puerto Rico and Illinois:
(708) 593-6300

Canada
Amersham Canada Limited
1166 South Service Road West
Oakville, Ontario L6L 5T7
Telephone (416) 847-1166
(800) 387-7160 (Ont/Que)
(800) 387-7146 (rest of Canada)

Returns
All products to be returned must have prior authorization from our Customer Service Department. Items manufactured to customers' specifications cannot be returned for credit.

Important information for the End Use Customer contained on the reverse side of this Packing Note

ITEM NO	D/S REQ'D?	STORAGE TEMPERATURE	CATALOG NUMBER	UNIT SIZE	BATCH NUMBER	MSDS CODES (see reverse side for code definitions)	PRODUCT DESCRIPTION	QUANTITY SHIPPED
01		+020	QCY48 NEO	5450 NCI	AB9660	A3 ,B4 ,C1 ,D2 ,E1 ,G2	MIXED RADIONUCLIDE GAMMA-RAY REF.STD. W/CERTIFICATE-NQAR MIX6	1

SURVEY Cargo Only

MADE WITHIN 15 DAYS OF RECEIPT OF GOODS—

April 8, 1993

SPIKE LEVELS QA SAMPLES (pCi/l)				ACCEPTABLE RANGE (pCi/l)
Isotope	Ref. Date	Ref. Spike Activity	Current Sample Activity	
H-3	5/1/92	1.4 E 04 1.0ml	1.4 ± 0.2 E 04 LS	1.2 - 1.6 E 04
	5/1/92	1.4 E 03 10.0ml	1.4 ± 0.2 E 03 G	1.2 - 1.6 E 03
	5/1/91	5.7 E 02 EMT	4.9 ± 0.8 E 02 EMT	4.1 - 5.7 E 02
Sr-90	1/01/90	4.2 E 01 ENV	3.9 ± 0.6 E 01 ENV	3.3 - 4.5 E 01
	1/01/90	4.2 E 01 IN-P	3.9 ± 0.6 E-07 IN-P*	3.3 -4 .5 E -07*
Sr-89	2/23/93	5.4E 01 ENV	2.9 ± 0.4 E 01 ENV	2.5- 3.3 E 01
	2/23/93	5.4 E 01 IN-P	2.9 ± 0.4 E-07 IN-P*	2.5- 3.3 E -07*
Gr-B**	10/26/92	2.2 E 01 ENV	2.2 ± 0.5 E 01 ENV	1.7 - 2.7 E 01
Gr-B**	10/26/92	2.2 E 01 IN-P	2.2 ± 0.5 E-06 IN-P*	1.7 - 2.7 E -06*
Gr-A***	1/11/93	1.1 E 01 ENV	1.1 ± 0.5 E 01 ENV	0.6 - 1.6 E 01
Gr-A***	1/11/93	1.1 E 01 IN-P	1.1 ± 0.5 E-06 IN-P*	0.6 - 1.6 E -06*
Cs-137	2/1/92	2.16 E 04	2.16 ± 0.3 E 04	1.9 - 2.5 E 04
Ra-226	9/1/91	8.0 E 00	8.0 ± 1.2 E 00	6.8 - 9.2 E 00
Ra-228	11/19/92	1.9 E 01	1.8 ± 0.3 E 01	1.5 - 2.1 E 01
Fe-55	2/16/93	5.1 E 03IN-P+	2.5 ± 0.4 E-06 IN-P*	2.1 - 2.9 E -06*

* uCi/ml
** Cs-137
*** Am-241
\+ based on a 20 ml aliquot
++ based on a 200 ml aliquot

LS - Liquid Scintillation
G - Gas
EMT - Enrichment
ENV - Environmental
IN-P - In-Plant

Note: Cs-137 replaced Eu-154 in 1993 as the gamma spectrometry laboratory spike nuclide. Decay corrected as needed.

 February 18, 1993

SPIKE LEVELS QA SAMPLES (pCi/l)				ACCEPTABLE RANGE (pCi/l)
Isotope	Ref. Date	Ref. Spike Activity	Current Sample Activity	
Tc-99	4/29/92	9.8 E 01	9.8 ± 2.0E 01	0.78 - 1.2 E 02
Ni-63	8/31/92	2.3 E 03 IN-P++	2.3 ± 0.4E-06 IN-P•	1.9 - 2.7 E -06•
C-14	2/28/91	1.2 E 03 IN-P	1.2 ± 0.2 E-06 IN-P•	1.0 - 1.4 E -06•
I-129	10/21/92	6.7 E 01	6.7 ± 1.0 E 01	5.7 - 7.7 E 01
Ni-59	No standard available			
Am-241	1/19/93	5.6 E 02 IN-P	1.9 ± 0.3 E 00	1.6 - 2.2 E 00
Np-237	1/19/93	5.3 E 03 IN-P	1.8 ± 0.3 E 01	1.5 - 2.1 E 01
Pu-239	1/19/93	3.3 E 02 IN-P	1.1 ± 0.2 E 00	0.9- 1.3 E 00
Th-230	1/19/93	4.4 E 03 IN-P	1.5 ± 0.2 E 01	1.3 - 1.7 E 01
U-234	1/19/93	1.9 E 03 IN-P	2.1 ± 0.3 E 00	1.8 - 2.4 E 00
U-238	1/19/93	1.9 E 03 IN-P	2.1 ± 0.3 E 00	1.8 - 2.4 E 00

• uCi/ml
•• Cs-137
••• Am-241
+ based on a 20 ml aliquot
++ based on a 200 ml aliquot

LS - Liquid Scintillation
G - Gas
EMT - Enrichment
ENV - Environmental
IN-P - In-Plant

Note: Cs-137 replaced Eu-154 in 1993 as the gamma spectrometry laboratory spike nuclide. Decay corrected as needed.

29

9713529.2913

WESTON Analytics Use Only

Custody Transfer Record/Lab Work Request

WESTON

Page ___ of ___

Client WESTON/WESTINGHOUSE
Est. Final Proj. Sampling Date
Work Order # 6168-0201-9999
Project Contact/Phone #
AD Project Manager Josie Edwards
QC CLP Del CLP TAT 30 Days
Date Rec'd ___ Date Due ___
Account #

Refrigerator #		
# Type Container	Liquid	VOA
	Solid	
Volume	Liquid	VOA
	Solid	
Preservatives		
ANALYSES REQUESTED →		

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

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	SFE 3 FLOW	RFW #
	B01990			Soil	4/8/93		✓	9304L172-001

Priority T.A.T. = 30 Days!

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem = Gamma SPEC

DATE/REVISIONS:
1
2
3
4
5
6

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
B [illegible]	Fed Ex	4/14/93	6:30am		S. [illegible]	4-15	1200

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

WESTON Analytics Use Only

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

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

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

9713529.2914

Westinghouse Hanford Company	CHAIN OF CUSTODY	004196

Custody Form Initiator S.M.STEELE

Company Contact R.C.SMITH/C.E.HEIDEN

Telephone 509-376-2640

Project Designation/Sampling Locations SAF#930045,ERA,SODIUM DICHROMATE SITE

Collection Date 4/8/93

Ice Chest No.

Field Logbook No. WHC-N-205-22

Bill of Lading/Airbill No.

Offsite Property No.

Method of Shipment BURLINGTON AIR EXPRESS OVERNIGHT

Shipped to R.F.WESTON LABS,LIONVILLE PA.

Possible Sample Hazards/Remarks HAZARDS UNKNOWN, PRIORITY TURNAROUND, RCRA PROTOCOL, SEE SAMPLE ANALYSIS REQUEST FOR INDIVIDUAL BOTTLES AND ANALYSIS.

Sample Identification

B01990 (3)BOTTLES

PRIORITY TURNAROUND

[] Field Transfer of Custody

Chain of Possession

(Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	1510	[illegible]	4-10-93	1510

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

Temp = 6°C

A-6000-407 (12/92) WEF061

0014

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Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector S.M.STEELE Date 4-8-93

Company Contact R.C.SMITH/C.E.HEIDEN Telephone (509) 376-2640

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
BC1990	S	4/8/93	1210	250 ml g /Chromium VI SW-846 7197
				250 ml g/ICP,GFAA Metals,inc.Total Chrome CLP
				1000 ml p/ Gamma Spec. PRO-042-5

TURNAROUND

*Type of Sample

A = Air	L = Liquid	SE = Sediment	T = Tissue	X = Other
DL = Drum Liquids	O = Oil	SL = Sludge	W = Water	
DS = Drum Solids	S = Soil	SO = Solid	WI = Wipe	

Field Information SAF 93-045 SAMPLES ARE PRIORITY TURNAROUND

Special Handling and/or Storage SAMPLES TO BE KEPT AT 4 DEGREE C UNTIL ANALYSIS

Possible Sample Hazards UNKNOWN

A-6000-406 (06/91) WEF060

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 04/21/93

PAGE 2

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE
4-1038	LL-1140-F4	04/15/93	04/23/93

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

S O I L

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (PCI/GM DRY)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME -. UNITS ASH-WGHT-% *	LAB.
11076	9304L172-001	801990	04/08				EU-152	L.T. 7. E-02	R	04/20			4
							EU-152 -	4.6 +-0.6 E-01		04/20			4
							EU-154	L.T. 8. E-02		04/20			4
							EU-154	1.6 +-49.2E-03		04/20			4
							EU-155	L.T. 8. E-02		04/20			4
							EU-155 -	6.7 +-4.7 E-02		04/20			4
							RA-226	9.89+-2.69E-01		04/20			4
							RA-226	L.T. 5. E-01		04/20			4
							TH-228	6.64+-0.66E-01		04/20			4
							TH-228	L.T. 8. E-02		04/20			4
							TH-234	L.T. 5. E-01		04/20			4
							TH-234	1.8 +-2.9 E-01		04/20			4
11077	9304L172-001DUP	801990	04/08				BE-7	L.T. 3. E-01		04/20			4
							BE-7 -	1.1 +-1.6 E-01		04/20			4
							K-40	1.46+-0.15E 01		04/20			4
							K-40	L.T. 2. E 00		04/20			4
							MN-54	L.T. 3. E-02		04/20			4
							MN-54 -	1.1 +-1.9 E-02		04/20			4
							CO-58	L.T. 3. E-02		04/20			4
							CO-58 -	6.5 +-20.0E-03		04/20			4
							FE-59	L.T. 7. E-02		04/20			4
							FE-59 -	3.5 +-4.5 E-02		04/20			4
							CO-60	L.T. 3. E-02		04/20			4
							CO-60 -	2.1 +-17.8E-03		04/20			4
							ZN-65	L.T. 7. E-02		04/20			4
							ZN-65 -	2.3 +-4.3 E-02		04/20			4
							ZR-95	L.T. 4. E-02		04/20			4
							ZR-95	2.2 +-2.1 E-02		04/20			4
							RU-103	L.T. 3. E-02		04/20			4
							RU-103 -	9.2 +-204.E-04		04/20			4
							RU-106	L.T. 3. E-01		04/20			4

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RJS
12.29.93

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 04/21/93

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE
4-1038	LL-1140-F4	04/15/93	04/23/93	1

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

S O I L

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (PCI/GM DRY)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
11076	9304L172-001	R01990	04/08				BE-7	L.T. 2. E-01	R	04/20			4
							BE-7	8.8 +-13.1E-02		04/20			4
							K-40	1.46+-0.15E 01		04/20			4
							K-40	L.T. 1. E 00		04/20			4
							MN-54	L.T. 3. E-02		04/20			4
							MN-54	4.7 +-15.9E-03		04/20			4
							CO-58	L.T. 2. E-02		04/20			4
							CO-58 -	1.2 +-1.5 E-02		04/20			4
							FE-59	L.T. 6. E-02		04/20			4
							FE-59	5.1 +-34.9E-03		04/20			4
							CO-60	L.T. 2. E-02		04/20			4
							CO-60	1.7 +-13.6E-03		04/20			4
							ZN-65	L.T. 6. E-02		04/20			4
							ZN-65	1.6 +-3.5 E-02		04/20			4
							ZR-95	L.T. 3. E-02		04/20			4
							ZR-95	2.8 +-1.7 E-02		04/20			4
							RU-103	L.T. 3. E-02		04/20			4
							RU-103 -	2.1 +-15.8E-03		04/20			4
							RU-106	L.T. 2. E-01		04/20			4
							RU-106	6.9 +-14.3E-02		04/20			4
							I-131	L.T. 6. E-02		04/20			4
							I-131 -	1.0 +-3.7 E-02		04/20			4
							CS-134	L.T. 3. E-02		04/20			4
							CS-134	3.0 +-1.8 E-02		04/20			4
							CS-137	5.35+-1.56E-02		04/20			4
							CS-137	L.T. 3. E-02		04/20			4
							BA-140	L.T. 4. E-02		04/20			4
							BA-140 -	1.0 +-2.4 E-02		04/20			4
							CE-141	L.T. 4. E-02		04/20			4
							CE-141	9.3 +-23.1E-03		04/20			4
							CE-144	L.T. 1. E-01		04/20			4
							CE-144 -	6.2 +-8.5 E-02		04/20			4

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RJS
12-29-93