START 9713512.2013

B097BO-TMA-583 8/2

TMA

0046100

DEC 1993
RECEIVED
SDLA

DEC 1996
RECEIVED
CDMC

WESTINGHOUSE HANFORD COMPANY

Results of Analyses For:

ORGANICS & GENERAL CHEMISTRY
Case No. 10-043
(TMA/ARLI Work Order # A3-10-043)

METALS & NITRATE/NITRITE
Case No. N3-10-085
(TMA/Skinner & Sherman W.O. Nos. S3-10-203 & S3-10-204)

November 22, 1993

TMA Master Work Order N3-10-085

I. PKR

9/13512.2014

Westinghouse Hanford Company

NONCONFORMANCE REPORT

1. Page 1 of 1

2. Preprinted No. 051914

QA Log No. EQA-93-107

3. P. O., W. O., or Job Control No.	4. System/End Use	5. Item/Material	6. Dwg./Spec./Other No.	7. Rev.
N/A	TREATABILITY STUDY	SAMPLE	B09786, B09785	N/A

8. Program/Project/Other	9. Safety Class	10. ASME Code Items
100 AREA TREATABILITY STUDY /93-171	N/A	☐ Yes ☒ No (If yes, notify authorized inspector)

11. Supplier Name/Address	12. Notification of Potential Occurence Required
ANALYTICAL SAMPLING AND MOBILE LABS	☐ Yes ☒ No

13. Code: Lot/Heat/Serial	14. Lot Size	15. Sample	16. Qty. Acc.	17. Inspection Criteria
N/A	2	2	0	☐ Dwg. ☐ Spec. ☐ Insp. Plan ☒ Other WHC 7-7, EII 5.1, REV. 5 SEC 4.1

18. Item	19. Description of Nonconformance (list serial no. where applicable)	22. Disposition, Justification, and Instructions
	AS STATED IN WHC 7-7, EII 5.1, REV 5, SEC. 4.1, THE FIELD TEAM LEADER / COGNIZANT ENGINEER IS RESPONSIBLE FOR CHAIN OF CUSTODY DOCUMENTATION TO ENSURE SAMPLE TRANSFER DOCUMENTATION IS COMPLETE. CONTRARY TO THE ABOVE, SAMPLES WERE SHIPPED THE LAB REQUESTING AMERICIUM 241 ALTHOUGH THIS ANALYSIS DID NOT APPEAR ON THE CHAIN OF CUSTODY / SAMPLE ANALYSIS REQUEST FORMS. THE ANALYSIS WAS REQUESTED ON THE SAMPLE ANALYSIS FORM. THE CHAIN OF CUSTODY WAS BROKEN.	Accept as is. Justification: The attached lab analysis form indicates that the correct analysis for Am-241 was performed on these samples. Typographical errors between the chain of custody and the Sample Analysis Request do not effect the sample's integrity.

20. Originator's Signature	Date	23. Design Document Change Required?
RC SMITH R Clayton Smith	11/5/93	☐ Yes, Doc. No. ____ ☒ No
21. Cognizant QA Manager's Signature	**Date**	**24. Corrective Action Required?**
T. L. Bennington	11/8/93	☐ Yes, No. ____ ☒ No

Disp. App.	25. Cognizant Engineer	Date	26. Technical Rep.	Date	Signature/Org.	Date
	JM Frain	12/6/93	NA		NA	
	QA Engineer GS Corrigan	12-6-93 Date	Signature/Org.	Date	Signature/Org.	Date

Close — 27. Accept 2 Reject 0 Follow on NCR N/A

QA/C Personnel 12-6-93 Date

A-7310-104 (10/91)

9713512.2015 000002A

Westinghouse Hanford Company	CHAIN OF CUSTODY	COC#005032 TMA/NORCAL

Custody Form Initiator C.S. McClellan

Company Contact R.C. Smith / J.M. Frain

Telephone (509) 372-2537

Project Designation/Sampling Locations 100 Area Treatability Study (PLUTO CRIB).

Collection Date 10-13-93

Ice Chest No. SML-88

Field Logbook No. EFL-1107

Bill of Lading/Airbill No. 2519010032

Offsite Property No.

Method of Shipment Over Night Air Express

Shipped to TMA / NORCAL Labs

Possible Sample Hazards/Remarks No hazards detected at time of sampling.

Sample Identification

B097B0 (1) P 250 ml

B097B0 (1) G 1000 ml

B097B0 (1) G 120 ml

B097B0 (1) G 120 ml

PRIORITY TURNAROUND

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
C.S. McClellan	10-14-93	1000	J.E. Darling	10-14-93	1000
J.E. Darling	10-15-93	1440	[illegible]	10-19-93	11:00

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/92) WEF061

9713512.2016 DDDDD2B

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST TMA	COC# 005032

Collector C.S. McClellan SAF 93-171 Date10-13-93

Company Contact R.C. Smith / J.M. Frain Telephone (509)372-2537

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B097B0	S	10-13-93	1320	(1) P 250 ml; ICP/AA Metals; Method CLP
B097B0	S	10-13-93	1320	(1) G 1000 ml; Gamma Scan - to Include; Eu-152, 154, 155; Co-60; Cs-137: Method RC-30. Am-241; Method EP-80, EP-90, EP-91, EP92, EP-93, EP-5. Pu-239/240; Method EP-80, EP-81, EP-5. Sr-90 Method RC-306, RC-303, RC-309, RC-304. Tc-99 Method RC-24, RC-604. U-235/238 Method EP-70, EP-71, EP-05.
B097B0	S	10-13-93	1320	(1) G 120 ml; Anions, F, Cl, SO_4, PO_4 Method EPA 300.0
B097B0	S	10-13-93	1320	(1) G 120 ml; NO_2 - NO_3 Method EPA 353.2

PRIORITY 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 Samples are "PRIORITY TURNAROUND".

Special Handling and/or Storage STORE AT 4°C.

Possible Sample Hazards No Hazards detected at time of sampling.

A-6000-406 (06/91) WEF060

9213512.2017 000002C

Westinghouse Hanford Company	CHAIN OF CUSTODY COC#004409

Custody Form Initiator J.E.Darling

Company Contact R.C.Smith/J.M.Frain

Telephone (509) 372-2537

Project Designation/Sampling Locations 100 Area Treatability Test. (PLUTO CRIB). SAF 93-171

Collection Date 10-12-93

Ice Chest No. SML-88

Field Logbook No. EFL-1107

Bill of Lading/Airbill No. 2519010032

Offsite Property No.

Method of Shipment OVERNIGHT DELIVERY

Shipped to TMA/NORCAL Labs

Possible Sample Hazards/Remarks SAMPLES ARE "PRIORITY TURNAROUND" AND POSSIBLY CONTAIN RADIOACTIVITY.

Sample Identification

B09795 (1) 1000 ml G

B09796 (1) 1000 ml G

B09797 (1) 1000 ml G

B09798 (1) 1000 ml G

PRIORITY TURNAROUND

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
J.E. Darling	10-15-93	1400	[illegible]	10-19-93	11:00

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/92) WEF061

9213512.2018 D000020

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST COC# 004409

Collector J.E.Darling — Date 10-12-93

Company Contact R.C.Smith/J.M.Frain — Telephone (509) 372-2537

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B09795	S	10-12-93	1230	(1) 1000 ml G : Gamma Scan to include; Eu-152,154,155, Co-60, Cs-137, Method RC-30. Am-241, Method EP-80, EP-90, EP-91, EP-92, EP-93, EP-5. Pu-239/240, METHOD EP-80, EP-81, EP-5. Sr-90, METHOD RC-306, RC-303, RC-309, RC-304. Tc-99, METHOD RC-24, RC-604. U-235/238, METHOD EP-70, EP-71, EP-5.
B09796	S	10-12-93	1330	(1) 1000 ml G : Gamma Scan to include; Eu-152,154,155, Co-60, Cs-137, Method RC-30. Am-241, Method EP-80, EP-90, EP-91, EP-92, EP-93, EP-5. Pu-239/240, METHOD EP-80, EP-81, EP-5. Sr-90, METHOD RC-306, RC-303, RC-309, RC-304. Tc-99, METHOD RC-24, RC-604. U-235/238, METHOD EP-70, EP-71, EP-5.
B09797	S	10-12-93	1400	(1) 1000 ml G : Gamma Scan to include; Eu-152,154,155, Co-60, Cs-137, Method RC-30. Am-241, Method EP-80, EP-90, EP-91, EP-92, EP-93, EP-5. Pu-239/240, METHOD EP-80, EP-81, EP-5. Sr-90, METHOD RC-306, RC-303, RC-309, RC-304. Tc-99, METHOD RC-24, RC-604. U-235/238, METHOD EP-70, EP-71, EP-5.
B09798	S	10-12-93	1430	(1) 1000 ml G : Gamma Scan to include; Eu-152,154,155, Co-60, Cs-137, Method RC-30. Am-241, Method EP-80, EP-90, EP-91, EP-92, EP-93, EP-5. Pu-239/240, METHOD EP-80, EP-81, EP-5. Sr-90, METHOD RC-306, RC-303, RC-309, RC-304. Tc-99, METHOD RC-24, RC-604. U-235/238, METHOD EP-70, EP-71, EP-5.

PRIORITY 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 SAMPLES ARE "PRIORITY TURNAROUND".

Special Handling and/or Storage NONE

Possible Sample Hazards NO HAZARDS DETECTED AT TIME OF SAMPLING.

A-6000-406 (06/91) WEF060

9713512.2019 000002E

Westinghouse Hanford Company	CHAIN OF CUSTODY	COC#005093 TMA/NORCAL

Custody Form Initiator J.E. Darling

Company Contact R.C. Smith / J.M. Frain

Telephone (509) 372-2537

Project Designation/Sampling Locations 100 Area Treatability Study (PLUTO CRIB).

Collection Date 10-18-93

Ice Chest No.

Field Logbook No. EFL-1107

Bill of Lading/Airbill No. 2519010065

Offsite Property No.

Method of Shipment Over Night Air Express

Shipped to TMA / NORCAL Labs

Possible Sample Hazards/Remarks Samples are PRIORITY TURNAROUND.

Sample Identification

B097B6	(1) P 250 ml; ICP / AA Metals
B097B6	(1) G 120 ml; Anions
B097B6	(1) G 120 ml; NO_2 - NO_3
B097B6	(1) G 1000 ml; Gamma Scan to Include;
B097B6	(1) aGs 250 ml; VOA
B097B6	(1) aG 250 ml; Semi-VOA
B097B7	(1) aGs 250 ml; VOA

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
J.E. Darling	10-18-93	1920	[illegible] TMA/NORCAL	10-20-93	11:35

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/92) WEF061

9213512.2020 DOOOOO2F

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST COC# 005093 TMA LABORATORY

Collector J.E. Darling SAF 93-171 Date 10-18-93

Company Contact R.C. Smith / J.M. Frain Telephone (509) 372-2537

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B097B6	S	10-18-93	1200	(1) P 250 ml; ICP / AA Metals: Method CLP
B097B6	S	10-18-93	1200	(1) aGs 250 ml; Method: CLP * VOA
B097B6	S	10-18-93	1200	(1) G 120 ml; Anions: F, Cl, SO_4, PO_4: Method EPA 300.0
B097B6	S	10-18-93	1200	(1) G 120 ml; NO_2 - NO_3: Method EPA 353.2
B097B6	S	10-18-93	1200	(1) G 1000 ml; Gamma Scan - to Include: Eu-152, 154, 155, Co-60, Cs-137: Method RC-30, Ep-80, EP-90, EP-91, EP-92, EP-93, EP-5. Pu-239 / 240, Sr-90: Method EP-80, EP-81, EP-5, RC-306, RC-303, RC-309, RC-304. Tc-99, U-235 / 238: Method RC-24, RC-604, EP-70, EP-71, EP-05.
B097B6	S	10-18-93	1200	(1) aG 250 ml; Semi-VOA: Method CLP
B097B7	S	10-18-93	1215	(1) aGs 250 ml; VOA: Method CLP

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

Field Information SAMPLES ARE PRIORITY TURNAROUND.

Special Handling and/or Storage Store @ 4^0 C.

Possible Sample Hazards Samples should be considered potentially "RADIOACTIVE".

A-6000-406 (06/91) WEF060

9713512.2021 DDDDD2G

Westinghouse Hanford Company	CHAIN OF CUSTODY	COC#005098 TMA/NORCAL

Custody Form Initiator J.E. Darling

Company Contact R.C. Smith / J.M. Frain

Telephone (509) 372-2537

Project Designation/Sampling Locations 100 Area Treatability Study (PLUTO CRIB).

Collection Date 10-18-93

Ice Chest No.

Field Logbook No. EFL-1107

Bill of Lading/Airbill No. 2519010065

Offsite Property No.

Method of Shipment Over Night Air Express

Shipped to TMA / NORCAL Labs

Possible Sample Hazards/Remarks Samples are PRIORITY TURNAROUND. Clean spoils pile, lift #5.

Sample Identification

B097B8	(1) P 250 ml; ICP / AA Metals
B097B8	(1) G 120 ml; Anions
B097B8	(1) G 120 ml; NO_2 - NO_3
B097B8	(1) G 1000 ml; Gamma Scan to Include;

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
J.E. Darling	10-18-93	1920	[illegible] TMA/NORCAL	10-20-93	11:35

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/92) WEF061

9715512.2022 000002H

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST COC# 005098 TMA LABORATORY

Collector J.E. Darling SAF 93-171 Date 10-18-93

Company Contact R.C. Smith / J.M. Frain Telephone (509) 372-2537

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B097B8	S	10-18-93	1345	(1) P 250 ml; ICP / AA Metals: Method CLP
B097B8	S	10-18-93	1345	(1) G 120 ml; Anions: F, Cl, SO_4, PO_4: Method EPA 300.0
B097B8	S	10-18-93	1345	(1) G 120 ml; NO_2 - NO_3: Method EPA 353.2
B097B8	S	10-18-93	1345	(1) G 1000 ml; Gamma Scan - to Include: Eu-152, 154, 155, Co-60, Cs-137: Method RC-30, Ep-80, EP-90, EP-91, EP-92, EP-93, EP-5. Pu-239 / 240, Sr-90: Method EP-80, EP-81, EP-5, RC-306, RC-303, RC-309, RC-304. Tc-99, U-235 / 238: Method RC-24, RC-604, EP-70, EP-71, EP-05.

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

Field Information SAMPLES ARE **PRIORITY TURNAROUND.** Clean spoils pile, lift #5.

Special Handling and/or Storage Store @ 4^0 C.

Possible Sample Hazards Samples should be considered potentially **"RADIOACTIVE".**

A-6000-406 (06/91) WEF060

9713512-2023

SAMPLE LOG-IN SHEET

000004 SL 11/18/93

LAB NAME : TMA/ARLI

PAGE : 1 OF 1

RECEIVED BY (PRINT NAME): D. WHITTAKER

RECEIVED BY (SIGNATURE): D Whittaker

LOG-IN-DATE : 10-20-93

ICE CHEST NO. GW 50 56

REMARKS:

1. Custody Seal(s) Present / Absent* Intact / Broken
2. Custody Seal Nos: _____
3. Chain of Custody Records Present / Absent*
4. Traffic Reports or Packing List Present / Absent*
5. Airbill Airbill Sticker Present / Absent*
6. Airbill No.: 728915403
7. Sample Tags Present / Absent*
8. Sample Tag Numbers Listed / Not Listed on Chain of Custody
9. Sample Condition: Intact / Broken* / Leaking
10. Does information on custody records, traffic reports, and sample tags agree? Yes / No*
11. Date Recieved at Lab: 10-20-93
12. Temp of ice chest 3 °C
13. Time Recieved: 0930

SAMPLE TRANSFER

Fraction: _____

Area #: _____

By: _____

On: _____

EPA SAMPLE #	CORRESPONDING SAMPLE TAG #	CORRESPONDING ASSIGNED LAB #	REMARKS: CONDITION OF SAMPLE SHIPMENT, ETC
	B099J5	A310044	
	B099M7	A310044	
	B099L9	A310044	
	B099J3	A310044	
	B097B0	A310043	

* Contact SMO and attach record of resolution

Reviewed By: _____ Logbook No.: _____

Date: _____ Logbook Page No.: _____

FORM DC-1

9713512.2024

SAMPLE LOG-IN SHEET

000005

LAB NAME : TMA/ARLI

PAGE : 1 OF 1

RECEIVED BY (PRINT NAME): D. WHITAKER

LOG-IN-DATE : 10-21-93

RECEIVED BY (SIGNATURE):

ICE CHEST NO. GW5045

REMARKS:

1. Custody Seal(s) Present / Absent* Intact / Broken
2. Custody Seal Nos:
3. Chain of Custody Records Present / Absent*
4. Traffic Reports or Packing List Present / Absent*
5. Airbill Airbill Sticker Present / Absent*
6. Airbill No.: 7289153513
7. Sample Tags Present / Absent*
8. Sample Tag Numbers Listed / Not Listed on Chain of Custody
9. Sample Condition: Intact / Broken* / Leaking
10. Does information on custody records, traffic reports, and sample tags agree? Yes / No*
11. Date Recieved at Lab: 10-21-93
12. Temp of ice chest 3 °C
13. Time Recieved: 10:00

SAMPLE TRANSFER

Fraction:

Area #:

By:

On:

EPA SAMPLE #	CORRESPONDING SAMPLE TAG #	CORRESPONDING ASSIGNED LAB #	REMARKS: CONDITION OF SAMPLE SHIPMENT, ETC
	B099H5	A310044	
	B099H3	A310044	
	B097B6	A310043	
	B097B7	A310043	
	B097B8	A310043	

* Contact SMO and attach record of resolution

Reviewed By: Logbook No.:

Date: Logbook Page No.:

FORM DC-1

000000

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER 7289153513

7289153513

RECIPIENT'S COPY

1 Date 10-20-93

From (Your Name) Please Print: SAMPLE CONTROL

Your Phone Number (Very Important): (818)335-2[illegible]

Company

Department/Floor No.

Street Address

City

State

ZIP Required

2 To (Recipient's Name) Please Print: CAROLE HARRIS

Recipient's Phone Number (Very Important): (818) 357-3247

Company: TMA/ABLI

Department/Floor No.

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 160 TAYLOR STREET

City: MONROVIA,

State: CA.

ZIP Required: 91016

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): 2340-6406

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address
City
State
ZIP Required

3 PAYMENT 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
- 11 [X] OTHER PACKAGING
- 16 [ ] FEDEX LETTER*
- 12 [ ] FEDEX PAK*
- 13 [ ] FEDEX BOX
- 14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon, No Saturday delivery†)
- 51 [ ] OTHER PACKAGING
- 56 [ ] FEDEX LETTER*
- 52 [ ] FEDEX PAK*
- 53 [ ] FEDEX BOX
- 54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day †)
- 30 [ ] ECONOMY*

* Economy Letter rate not available. Minimum charge: One pound economy rate.

Government Overnight (Restricted for authorized users only)
- 46 [ ] GOV'T LETTER
- 41 [ ] GOV'T PACKAGE

Freight Service (for packages over 150 lbs)
- 70 [ ] OVERNIGHT FREIGHT** (Confirmed reservation required)
- 80 [ ] TWO-DAY FREIGHT**

† Delivery commitment may be later in some areas.
*Declared Value Limit $500.
**Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)
- 1 [ ] HOLD FOR PICK-UP (Fill in Box H)
- 2 [X] DELIVER WEEKDAY
- 3 DELIVER SATURDAY (Extra charge) (Not available to all locations) [ ]
- 4 [ ] DANGEROUS GOODS (Extra charge)
- 5 [ ]
- 6 [ ] DRY ICE Dangerous Goods Shipper's Declaration not required.
  Dry Ice, 9, UN 1845, — X kg. 904 III
- 7 [ ] OTHER SPECIAL SERVICE
- 8 [ ]
- 9 [ ] SATURDAY PICK-UP (Extra charge)
- [ ]
- 12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
1	4.5	
Total 1	Total 4	Total

DIM SHIPMENT (Chargeable Weight) [ ] lbs

X X

Received At
1 [ ] Regular Stop 3 [ ] Drop Box
2 [ ] On-Call Stop 4 [ ] B.S.C 5 [ ] Station

Emp. No. Date

[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold

Street Address

City State Zip

Received By: X

Date/Time Received FedEx Employee Number

7 Release Signature:

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 11/92
PART #137204 FXEM 3/93
FORMAT #155

155

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PRINTED IN U.S.A.

27 SEP 2005

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FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII
USE THE INTERNATIONAL AIRBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON-U.S. LOCATIONS
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE TRACKING NUMBER 7289154036

7 2 8 9 1 5 4 0 3 6

30950 7289154036

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 0941-5760-9

Date: 10-19-93

Your Name/Company Name (Please Print): SAMPLE CONTROL

Your Phone Number (Very Important): 310-235-2633

Department/Floor No.:

Address: TMA /NORCAL

2030 BRIGHT AVE

City: RICHMOND State: CA ZIP Required: 94804

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): 2340-6406

2 To (Recipient's Name) Please Print: CAROLE HARRIS

Recipient's Phone Number (Very Important): 818 357-3247

Company: TMA/ARLI

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 160 TAYLOR STREET

City: MONROVIA State: CA ZIP Required: 91016

3 PAYMENT: X Recipient Fed Ex Acct. No. / Third Party Fed Ex Acct. No. / 4 Bill Credit Card — Fill in Credit Card No. below (req'd.)

Acct. Credit Card No.: Exp. Date:

H IF HOLD FOR PICK UP, Print FEDEX Address Here: Street Address: City: State: ZIP Required:

4 SERVICES (Check only one box)

Priority Overnight: 50 X OTHER PACKAGING; 16 FEDEX LETTER*; 17 FEDEX PAK*; 13 FEDEX BOX; 14 FEDEX TUBE

Standard Overnight: 51 OTHER PACKAGING; 56 FEDEX LETTER*; 57 FEDEX PAK*; 53 FEDEX BOX; 54 FEDEX TUBE

Economy Two-Day: 30 ECONOMY*

Government Overnight: 16 GOVT LETTER; 17 GOVT PAK*

Freight Service: 20 Overnight Freight*; 90 Two Day Freight*

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 HOLD FOR PICK-UP (Fill in Box H)
2 X DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) (Not available to all locations)
4 DANGEROUS GOODS (Extra charge)
5
6 DRY ICE
OTHER SPECIAL SERVICE
SATURDAY PICK-UP
HOLIDAY DELIVERY

6 PACKAGES: 1 WEIGHT in Pounds Only: 1

Total: 1 Total: 38

DIM SHIPMENT (Chargeable Weight): lbs.

Received At: Regular Stop / Drop Box / BSC / On-Call Stop / Station

7 Release Signature

Emp. No. Date

Cash Received
Return Shipment
Third Party Chg. To Del. Chg. To Hold

Street Address

City State Zip

Received By

X

Date/Time Received Fed Ex Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 11/92
PART #137204 FXEM 3/93
FORMAT #155
155
© 1992 92 FEDEX
PRINTED IN U.S.A.

DESTINATION COPY

7289154036

7289154036

97 3512 2026

9713512.2027

000008

TMA/NORCAL
Thermo Analytical Inc.

RADIATION DOSE RATE SURVEY FORM

Date 10/21/93 COMPANY TMA/NORCAL OTHER ORD # 7289153513

Surveyor's Name MARK S. McCray

Model No. HP-210 / ESP-1 Model No. AC-2-7 / ESP-1

Serial No. 210289 / 02619 Serial No. 407726 / 02628

Calibration Date 4/26/93 Calibration Date 9/16/93

Instrument Calibration Factor 0.280 Instrument Calibration Factor 0.192

Sample	Location	HP-210 CPM	HP-210 Factor	HP-210 DPM	AC-2-7 CPM	AC-2-7 Factor	AC-2-7 DPM	Setting or Reading?	Activity pCi/gram or MPA
Background		45.0			0				
Consistency		7,180	0.2772		4,093	0.1504			
Smear GWS045		46.0			5.0			None	
Reported WHT (9) samples each < 500 Ci/gram									

Comments

All OK ✓ Approved MSM

Not OK Date 10/21/93

9713512.2028

000009

TMA/ARLI
The new Analytical Inc.

RADIATION DOSE RATE SURVEY FORM

Date 10/20/93 COMPANY TMA/NORCAL OTHER ORD # 7289154036

Surveyor's Name MARK S. McCray

Model No. HP-210 / ESP-1 Model No. AC-3-7 / ESP-1

Serial Nos. 210289 / 02619 Serial Nos. 407726 / 02628

Calibration Date 4/26/93 Calibration Date 9/16/93

Instrument Calibration Factor 0.280 Instrument Calibration Factor 0.192

Sample	Location	HP-210 CPM	HP-210 Factor	HP-210 DPM	AC-3-7 CPM	AC-3-7 Factor	AC-3-7 DPM	Setting of Breakage?	Activity, pCi/g or pCi/L
Background		36.0			0				
Consistency		7,160	0.2764		4,088	0.1502			
GWS056 Smear GEODE		71.0			9.0 14.0	46.9 72.9		NONE	
Reported WHC (17) samples each <500 pCi/gram									

Comments

All OK ✓ Approved MSM

Not OK Date 10/20/93

GENERAL CHEMISTRY RESULTS

CASE NO. 10-043

Soil Sample #:

B097B0	B097B6
B097B7	B097B8

CASE NARRATIVE

The recovery for the Matrix Spike on sample B097B0 was low for Fluoride and Phosphate. A second spike was extracted and analyzed. The recovery was within +/-20%. The low results are believed to be from matrix interferences. The raw data for both spikes can be found in the raw data section.

No other problems were encountered during sample analysis. All QC results were acceptable.

Maureen Parrish

Maureen Parrish

9713512.2030

TMA Inc. REPORT Work Order # A3-10-043

Received: 10/19/93 Results by Sample 000013

SAMPLE ID B097B0 FRACTION 01A TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 10/13/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	103	mg/kg	4.0
Fluoride	300.0	1.5	mg/kg	0.5
Phosphate	300.0	<2.0	mg/kg	2.0
Sulfate	300.0	32	mg/kg	5

FORM I

9713512.2031

TMA Inc. REPORT Work Order # A3-10-043

Received: 10/19/93

Results by Sample

000014

SAMPLE ID B097B6 FRACTION 02A TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 10/18/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	6.0	mg/kg	1.0
Fluoride	300.0	0.6	mg/kg	0.5
Phosphate	300.0	<2.0	mg/kg	2.0
Sulfate	300.0	7	mg/kg	5

FORM I

9713512.2052

TMA Inc. REPORT Work Order # A3-10-043

Received: 10/19/93 Results by Sample

000015

SAMPLE ID B097B8 FRACTION 04A TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 10/18/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	21.1	mg/kg	1.0
Fluoride	300.0	1.6	mg/kg	0.5
Phosphate	300.0	2.3	mg/kg	2.0
Sulfate	300.0	60	mg/kg	5

FORM I

9713512.2053

~~580000~~ SF 11/19/93

000085

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CASE NO. 10-043

DATA SUMMARY REPORT
ORGANICS

PREPARED BY:

TMA ARLI
160 TAYLOR ST.
MONROVIA CA 91016

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 10-043

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : October 20, 1993

1.0 DESCRIPTION OF CASE :

Two soil samples were analyzed for TCL Organics- Volatiles and Semivolatiles according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision OLM01.8.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B097B6	A3-10-043-02C	SV	SOIL
B097B6 MS	A3-10-043-02D	SV	SOIL
B097B6 MSD	A3-10-043-02E	SV	SOIL
B097B6	A3-10-043-02F	V	SOIL
B097B7	A3-10-043-03A	V	SOIL
B097B7 MS	A3-10-043-03B	V	SOIL
B097B7 MSD	A3-10-043-03C	V	SOIL

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

All of the samples were received intact and properly documented.

3.2 ANALYSIS

3.2.1 VOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were analyzed by heated purge within the CLP SOW holding times.

All of the QC results were within the limits specified by the EPA CLP SOW.

TUNES :

All BFB tunes were injected directly into the GC/MS instrument.

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the CLP SOW holding times.

All of the QC results were within the limits specified by the EPA CLP SOW.

We 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 in this hardcopy data package and in the computer-readable data submitted on diskette is authorized by the Laboratory Manager or his designee, as verified by the following signatures.

Nicole Roth 11/18/93
Nicole Roth
CLP Program Manager

Nicole Roth for Wida Ang 11/18/93
Organics Supervisor

9713512.2036

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

000088

EPA SAMPLE NO.

B097B6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 10043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A310043-02F

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31025R04

Level: (low/med) LOW Date Received: 10/20/93

% Moisture: not dec. 0 Date Analyzed: 10/25/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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

9713512.2057

1E

000089

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B097B6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 10043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A310043-02F

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31025R04

Level: (low/med) LOW Date Received: 10/20/93

% Moisture: not dec. 0 Date Analyzed: 10/25/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	18.92	7	J
2.	UNKNOWN HYDROCARBON	22.75	5	J
3.	UNKNOWN HYDROCARBON	28.08	12	J

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B097B7

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 10043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A310043-03A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31025R05

Level: (low/med) LOW Date Received: 10/20/93

% Moisture: not dec. 0 Date Analyzed: 10/25/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

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

EPA SAMPLE NO.

B097B7

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 10043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A310043-03A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31025R05

Level: (low/med) LOW Date Received: 10/20/93

% Moisture: not dec. 0 Date Analyzed: 10/25/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	18.95	8	J
2.	UNKNOWN HYDROCARBON	22.75	6	J
3.	UNKNOWN HYDROCARBON	28.08	10	J

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000092

IB

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B097B6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 10043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A310043-02C

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 31025I08

Level: (low/med) LOW Date Received: 10/20/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 10/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/25/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	320	U
111-44-4	bis(2-Chloroethyl)Ether	320	U
95-57-8	2-Chlorophenol	320	U
541-73-1	1,3-Dichlorobenzene	320	U
106-46-7	1,4-Dichlorobenzene	320	U
95-50-1	1,2-Dichlorobenzene	320	U
95-48-7	2-Methylphenol	320	U
108-60-1	2,2'-oxybis(1-Chloropropane)	320	U
106-44-5	4-Methylphenol	320	U
621-64-7	N-Nitroso-Di-n-Propylamine	320	U
67-72-1	Hexachloroethane	320	U
98-95-3	Nitrobenzene	320	U
78-59-1	Isophorone	320	U
88-75-5	2-Nitrophenol	320	U
105-67-9	2,4-Dimethylphenol	320	U
111-91-1	bis(2-Chloroethoxy)Methane	320	U
120-83-2	2,4-Dichlorophenol	320	U
120-82-1	1,2,4-Trichlorobenzene	320	U
91-20-3	Naphthalene	320	U
106-47-8	4-Chloroaniline	320	U
87-68-3	Hexachlorobutadiene	320	U
59-50-7	4-Chloro-3-Methylphenol	320	U
91-57-6	2-Methylnaphthalene	320	U
77-47-4	Hexachlorocyclopentadiene	320	U
88-06-2	2,4,6-Trichlorophenol	320	U
95-95-4	2,4,5-Trichlorophenol	780	U
91-58-7	2-Chloronaphthalene	320	U
88-74-4	2-Nitroaniline	780	U
131-11-3	Dimethylphthalate	320	U
208-96-8	Acenaphthylene	320	U
99-09-2	3-Nitroaniline	780	U
83-32-9	Acenaphthene	320	U
51-28-5	2,4-Dinitrophenol	780	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B097B6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 10043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A310043-02C

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 31025I08

Level: (low/med) LOW Date Received: 10/20/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 10/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/25/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	780	U
132-64-9	Dibenzofuran	320	U
121-14-2	2,4-Dinitrotoluene	320	U
606-20-2	2,6-Dinitrotoluene	320	U
84-66-2	Diethylphthalate	320	U
7005-72-3	4-Chlorophenyl-phenylether	320	U
86-73-7	Fluorene	320	U
100-01-6	4-Nitroaniline	780	U
534-52-1	4,6-Dinitro-2-methylphenol	780	U
86-30-6	N-Nitrosodiphenylamine (1)	320	U
101-55-3	4-Bromophenyl-phenylether	320	U
118-74-1	Hexachlorobenzene	320	U
87-86-5	Pentachlorophenol	780	U
85-01-8	Phenanthrene	320	U
120-12-7	Anthracene	320	U
86-74-8	Carbazole	320	U
84-74-2	Di-n-Butylphthalate	340	B
206-44-0	Fluoranthene	320	U
129-00-0	Pyrene	320	U
85-68-7	Butylbenzylphthalate	320	U
91-94-1	3,3'-Dichlorobenzidine	320	U
56-55-3	Benzo(a)Anthracene	320	U
117-81-7	bis(2-Ethylhexyl)Phthalate	320	U
218-01-9	Chrysene	320	U
117-84-0	Di-n-Octyl Phthalate	320	U
205-99-2	Benzo(b)Fluoranthene	320	U
207-08-9	Benzo(k)Fluoranthene	320	U
50-32-8	Benzo(a)Pyrene	320	U
193-39-5	Indeno(1,2,3-cd)Pyrene	320	U
53-70-3	Dibenz(a,h)Anthracene	320	U
191-24-2	Benzo(g,h,i)Perylene	320	U

(1) - Cannot be separated from Diphenylamine

EPA SAMPLE NO.

B097B6

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 10043 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A310043-02C

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 31025I08

Level: (low/med) LOW Date Received: 10/20/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 10/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/25/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	5.37	98	BJ
2.	UNKNOWN HYDROCARBON	5.90	1200	J
3.	UNKNOWN HYDROCARBON	22.25	490	J
4.	UNKNOWN HYDROCARBON	22.47	65	J
5.	HEXANEDIOIC ACID ESTER	24.55	98	BJ

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TMA

Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.

QUALITY ENVIRONMENTAL SERVICES

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Report for

TMA/Norcal

WORK ORDER #S310204

Scientific Services Since 1922

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.
300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

9713512.2044

 Skinner&Sherman REPORT Work Order # S3-10-204

Received: 10/20/93 Results by Sample

SAMPLE ID B097B0 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 10/13/93 Category SOIL

NITR_S 7.76
mg N/kg

SAMPLE ID B097B6 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 10/18/93 Category SOIL

NITR_S <2.47
mg N/kg

SAMPLE ID B097B8 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 10/18/93 Category SOIL

NITR_S <2.49
mg N/kg

SAMPLE ID B097B8D SAMPLE # 03 FRACTIONS: B
Date & Time Collected 10/18/93 Category SOIL

NITR_S <2.49
mg N/kg

SAMPLE ID B097B8S SAMPLE # 03 FRACTIONS: C
Date & Time Collected 10/18/93 Category SOIL

NITR_S 23.2
mg N/kg

SAMPLE ID LCSS SAMPLE # 04 FRACTIONS: A
Date & Time Collected not specified Category SOIL

NITR_S 2.15
mg N/L

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc., retains ownership of this report until all fees submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Samples are not analyzed in accordance with New York State protocol unless indicated. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc., will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.
300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-2200
1-800-4 LAB TEST FAX (617) 890-3883

9713512.2045

Received: 10/20/93

Test Methodology

TEST CODE NITR S NAME Nitrate/Nitrite in Soils

The sample was extracted with deionized water and analyzed in accordance with Method for Chemical Analysis of Water and Wastes EPA-600/4-79-020, March 1979, Method 353.2 (modified)

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc., retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Samples are not analyzed in accordance with New York State protocol unless indicated. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc., will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.
300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

TMA 9713512.2046
Thermo Analytical Inc.

Skinner & Sherman Labs., Inc.
300 Second Avenue
Post Office Box 521
Waltham, MA 02254-0521
(617) 890-7200
FAX (617) 890-3883

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DEC 1993
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SDLA

October 29, 1993

TMA/NORCAL
2030 Wright Avenue
Richmond, CA 94804
Attention: Dan Stuermer

Quality Control Narrative

Scope
Three (3) soil samples were submitted to TMA/Skinner & Sherman Laboratories, Inc. on October 20 and 21, 1993 from TMA/Norcal. The samples were analyzed for the USEPA CLP metals. The analyses were performed under TMA/Skinner and Sherman work order S310203.

Methodology
The samples were prepared, analyzed and reported in accordance with the USEPA Contract Laboratory Program Statement of Work ILM02.

Discussion
All quality control requirements were met for the samples with the following exceptions:

The matrix spike recovery for antimony exceeded the control limit requirement.

Please feel free to call if there are any questions concerning this package.

Respectfully submitted,

TMA/SKINNER & SHERMAN LABORATORIES, INC.

Steven Provencal

Steven R. Provencal
Lead Chemist

9713512.2047

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

B097B0

INORGANIC ANALYSIS DATA SHEET

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N3-10-085SAS No.: SDG No.: B097B0

Matrix (soil/water): SOIL Lab Sample ID: 10203-01S

Level (low/med): LOW Date Received: 10/21/93

% Solids: 98.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5270			P
7440-36-0	Antimony	2.4	U	N	P
7440-38-2	Arsenic	1.8	B		P
7440-39-3	Barium	44.6			P
7440-41-7	Beryllium	0.21	B		P
7440-43-9	Cadmium	0.25	U		P
7440-70-2	Calcium	4290			P
7440-47-3	Chromium	8.1			P
7440-48-4	Cobalt	6.3	B		P
7440-50-8	Copper	15.0			P
7439-89-6	Iron	12100			P
7439-92-1	Lead	2.7			P
7439-95-4	Magnesium	3770			P
7439-96-5	Manganese	226			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	8.7			P
7440-09-7	Potassium	855	B		P
7782-49-2	Selenium	0.58	B		P
7440-22-4	Silver	0.49	U		P
7440-23-5	Sodium	213	B		P
7440-28-0	Thallium	0.30	U		P
7440-62-2	Vanadium	31.3			P
7440-66-6	Zinc	30.2			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

2

9713512.2048

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B097B6

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N3-10-085SAS No.: SDG No.: B097B0

Matrix (soil/water): SOIL Lab Sample ID: 10203-02S

Level (low/med): LOW Date Received: 10/21/93

% Solids: 99.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	50.6			P
7440-36-0	Antimony	2.5	U	N	P
7440-38-2	Arsenic	0.53	B		P
7440-39-3	Barium	0.23	U		P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	0.25	U		P
7440-70-2	Calcium	20.0	B		P
7440-47-3	Chromium	0.41	U		P
7440-48-4	Cobalt	0.51	U		P
7440-50-8	Copper	1.9	B		P
7439-89-6	Iron	216			P
7439-92-1	Lead	0.56	U		P
7439-95-4	Magnesium	7.7	B		P
7439-96-5	Manganese	0.63	B		P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	0.66	U		P
7440-09-7	Potassium	13.3	U		P
7782-49-2	Selenium	0.54	U		P
7440-22-4	Silver	0.51	U		P
7440-23-5	Sodium	24.1	B		P
7440-28-0	Thallium	0.31	U		P
7440-62-2	Vanadium	1.1	U		P
7440-66-6	Zinc	1.8	B		P
	Cyanide				NR

Color Before: WHITE Clarity Before: Texture: FINE

Color After: WHITE Clarity After: Artifacts:

Comments:

3

9713512.2049

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B097B8

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N3-10-085SAS No.: SDG No.: B097B0

Matrix (soil/water): SOIL Lab Sample ID: 10203-03S

Level (low/med): LOW Date Received: 10/21/93

% Solids: 97.2

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6900			P
7440-36-0	Antimony	2.6	U	N	P
7440-38-2	Arsenic	1.8	B		P
7440-39-3	Barium	99.5			P
7440-41-7	Beryllium	0.27	B		P
7440-43-9	Cadmium	0.26	U		P
7440-70-2	Calcium	4540			P
7440-47-3	Chromium	9.8			P
7440-48-4	Cobalt	8.1	B		P
7440-50-8	Copper	14.7			P
7439-89-6	Iron	15200			P
7439-92-1	Lead	4.2			P
7439-95-4	Magnesium	4330			P
7439-96-5	Manganese	291			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	10.2			P
7440-09-7	Potassium	1130			P
7782-49-2	Selenium	0.56	U		P
7440-22-4	Silver	0.53	B		P
7440-23-5	Sodium	209	B		P
7440-28-0	Thallium	0.32	U		P
7440-62-2	Vanadium	39.1			P
7440-66-6	Zinc	34.0			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

4

9713512.2050

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
P. O. Box 4040
Richmond, CA 94804-0040
(510) 235-2633 Fax No. (510) 235-0438

NOV 1993
RECEIVED
SDLA

November 1, 1993

Ref. TMA/Norcal N3-10-087-7277

Ms. Briana Colley
Westinghouse Hanford Company
2355 Stevens Drive
MSIN H4-23
345 Hills Street/3000 Area
Richland, WA 99352

Dear Ms. Colley:

Enclosed is the data report for the five soil samples from location 100 Area Treatability Study (Pluto Crib) we received October 19, 1993. Results are given for strontium-90, technetium-99, isotopic uranium, isotopic plutonium, americium-241, and gamma scan analyses. The samples were analyzed on a rush basis. The data package is numbered pages 1 to 62, and 62a through 367.

Please call if you have any questions concerning this data.

Sincerely,

D.P. Kharkar

Dinkar P. Kharkar, Ph.D.
Manager, Nuclear Programs

DPK/jv

Enclosure: Data Package

SDG: 7277
Contact: Dinkar Kharkar

TMA NORCAL

REPORTING GROUP 7277

Client: Westinghouse Hanford
Contract: MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

TMA/Norcal Sample Delivery Group 7277 is comprised of the samples listed on the chain-of-custody documents below. This sample group was processed under the Westinghouse Hanford Company Statement of Work P.O. MBH-SVV-069262.

1.1 Chains-of-Custody

This report includes data for the five soil samples from location 100 Area Treatability Study (Pluto Crib) delivered under Chain-of-Custody documents #004409 and 005032.

1.2 Sample Volume

One 1000 mL plastic bottle of each sample was received for the analyses. An adequate volume of each of the samples was not received to obtain the required detection limit for the duplicate gamma scan.

1.3 Missing Samples

There were no missing samples.

1.4 Holding Times

The samples were collected on October 12 and 13, 1993 and sample processing was initiated within 180 days of collection.

2.0 QUALITY CONTROL

The internal quality control consisted of one sample each of a laboratory control sample, a blank, and a replicate. All original analyses were performed with QC samples 7277-06 through 7277-08.

The QC samples were prepared by the Quality Control Department. Copies of the QC notebook pages are included in this data package.

2.1 Laboratory Control Samples

The LCS recoveries for all nuclides were acceptable. The MDA's of the results for all analyses met the RDL's.

2.2 Reagent Blanks

The MDA's of the results for all analyses met the RDL's.

2.0 QUALITY CONTROL (cont'd)

2.3 Duplicates

Results were satisfactory for all duplicate analyses except for technetium-99 where the relative percent difference between the original result and its duplicate was 182%. The samples were counted three times and the weighted average of the three counts was used to calculate the result. It appears that the difference in the results may be due to sample inhomogeneity. The MDA's of the results of the gamma nuclides for the duplicate of sample BO97B0 were higher than the RDL due to insufficient sample available for analyses.

3.0 ANALYSIS NOTES

3.1 Strontium-90 Analyses

The average yield for eight analyses was (86 ± 4)%. The lowest yield was 83% and the highest was 88%. The average MDA was (0.8 ± 0.1) pCi/g. Strontium-90 activity above the RDL was not found in any of the samples. The strontium-90 error was underlined for samples BO9797 and BO9798 because they were larger than both the MDA and the result implying that the MDA may not be a good estimate of the "real" minimum detectable activity.

3.2 Technetium-99 Analyses

The average yield for eight analyses was (52 ± 18)%. The lowest yield was 36% and the highest was 66%. The average MDA was (0.3 ± 0.09) pCi/g. Technetium-99 activity above the RDL was found in sample BO97B0. However, the duplicate of the sample did not contain technetium-99.

3.3 Isotopic Uranium Analyses

The average yield for eight analyses was (52 ± 20)%. The lowest yield was 34% and the highest was 66%. The average MDA was (0.1 ± 0.2) pCi/g. Uranium-233/234 and uranium-238 activity above the RDL was found in samples BO9798 and BO97B0.

3.4 Isotopic Plutonium Analyses

The average yield for eight analyses was (59 ± 30)%. The lowest yield was 40% and the highest was 80%. The average MDA was (0.05 ± 0.02) pCi/g. Plutonium-239/240 activity above the RDL was found in sample BO9796. The MDA of the results for plutonium-238 for sample BO9798 was above the RDL due to a high background on the detector in the region of interest.

3.0 ANALYSIS NOTES (cont'd)

3.5 Americium-241 Analyses

The average yield for eight analyses was (58 ± 10)%. The lowest yield was 50% and the highest yield was 66%. The average MDA was (0.04 ± 0.03) pCi/g. Americium-241 activity above the RDL was not found in any of the samples. The MDA of the result for sample BO9798 was above the RDL due to a high background on the counter in the region of interest.

3.6 Gamma Scan Analyses

Gamma scan analyses found cesium-137 activity and natural ^{40}K, ^{226}Ra, ^{228}Ra, ^{228}Th, and ^{232}Th activity in all of the samples.

9713512.2054

N310087-02

TMA NORCAL
REPORTING GROUP 7277

DATA SHEET

B09795

SDG	7277	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310087-02	Client sample id	B09795
Dept sample id	7277-002	Location/Matrix	100 Area Treat. SOLID
Received	10/19/93	Collected	10/12/93
% moisture	2.0	Chain of Custody/SAS no	004409 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.46	0.24	0.8	2	U	Y
Technetium 99	14133-76-7	0.22	0.10	0.2	0.5	J	TC
Uranium 233/234		0.25	0.071	0.06	0.3	J	U
Uranium 235	15117-96-1	0.009	0.028	0.05	0.3	U	U
Uranium 238	7440-61-1	0.22	0.063	0.04	0.3	J	U
Plutonium 238	13981-16-3	0.003	0.018	0.04	0.05	U	PU
Plutonium 239/240		0.045	0.024	0.03	0.05	J	PU
Americium 241	14596-10-2	0.005	0.022	0.04	0.05	U	AM
GAMMA SCAN ANALYTES							
Sodium 22	13966-32-0	U		0.05		U	GAM
Potassium 40	13966-00-2	16	1.1				GAM
Manganese 54	13966-31-9	U		0.05		U	GAM
Iron 59	14596-12-4	U		0.1	0.05	U	GAM
Cobalt 58	13981-38-9	U		0.04		U	GAM
Cobalt 60	10198-40-0	U		0.05	0.05	U	GAM
Niobium 94	14681-63-1	U		0.05		U	GAM
Ruthenium 103	13968-53-1	U		0.06		U	GAM
Ruthenium 106	13967-48-1	U		0.5		U	GAM
Tin 113	13966-06-8	U		0.07		U	GAM
Cesium 134	13967-70-9	U		0.05		U	GAM
Cesium 137	10045-97-3	3.4	0.12		0.05		GAM
Cerium 144	14762-78-8	U		0.2		U	GAM
Europium 152	14683-23-9	U		0.1	0.1	U	GAM
Europium 154	15585-10-1	U		0.07	0.1	U	GAM
Europium 155	14391-16-3	U		0.1		U	GAM
Radium 226	13982-63-3	0.41	0.098				GAM
Radium 228	15262-20-1	0.67	0.24				GAM
Thorium 228	14274-82-9	0.55	0.059				GAM

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

9713512.2055

TMA NORCAL
REPORTING GROUP 7277

N310087-02

DATA SHEET, cont

B09795

SDG	7277	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310087-02	Client sample id	B09795
Dept sample id	7277-002	Location/Matrix	100 Area Treat. SOLID
Received	10/19/93	Collected	10/12/93
% moisture	2.0	Chain of Custody/SAS no	004409 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 232	7440-29-1	0.67	0.24				GAM

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N310087-02	Y	7277-002		1.00 g	10/26/93	10/29/93	DPK
N310087-02	TC	7277-002		2.00 g	10/27/93	10/28/93	DPK
N310087-02	U	7277-002		1.00 g	10/27/93	10/28/93	DPK
N310087-02	PU	7277-002		1.00 g	10/27/93	10/28/93	DPK
N310087-02	AM	7277-002		1.00 g	10/27/93	10/28/93	DPK
N310087-02	GAM	7277-002		759 g	10/20/93	10/27/93	DPK

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

9713512.2056

TMA NORCAL
REPORTING GROUP 7277

N310087-03

B09796

DATA SHEET

SDG	7277	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310087-03	Client sample id	B09796
Dept sample id	7277-003	Location/Matrix	100 Area Treat. SOLID
Received	10/19/93	Collected	10/12/93
% moisture	3.3	Chain of Custody/SAS no	004409 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Strontium 90	10098-97-2	1.7	0.36	0.9	2	J	Y
Technetium 99	14133-76-7	0.086	0.068	0.2	0.5	U	TC
Uranium 233/234		0.21	0.053	0.03	0.3	J	U
Uranium 235	15117-96-1	0.012	0.016	0.03	0.3	U	U
Uranium 238	7440-61-1	0.17	0.046	0.02	0.3	J	U
Plutonium 238	13981-16-3	-0.005	0.018	0.04	0.05	U	PU
Plutonium 239/240		0.090	0.028	0.02	0.05		PU
Americium 241	14596-10-2	0.007	0.026	0.04	0.05	U	AM
GAMMA SCAN ANALYTES							
Sodium 22	13966-32-0	U		0.05		U	GAM
Potassium 40	13966-00-2	14	0.99				GAM
Manganese 54	13966-31-9	U		0.05		U	GAM
Iron 59	14596-12-4	U		0.1	0.05	U	GAM
Cobalt 58	13981-38-9	U		0.05		U	GAM
Cobalt 60	10198-40-0	U		0.05	0.05	U	GAM
Niobium 94	14681-63-1	U		0.04		U	GAM
Ruthenium 103	13968-53-1	U		0.1		U	GAM
Ruthenium 106	13967-48-1	U		0.7		U	GAM
Tin 113	13966-06-8	U		0.1		U	GAM
Cesium 134	13967-70-9	U		0.08		U	GAM
Cesium 137	10045-97-3	21	0.29		0.05		GAM
Cerium 144	14762-78-8	U		0.5		U	GAM
Europium 152	14683-23-9	U		0.2	0.1	U	GAM
Europium 154	15585-10-1	U		0.1	0.1	U	GAM
Europium 155	14391-16-3	U		0.2		U	GAM
Radium 226	13982-63-3	0.64	0.15				GAM
Radium 228	15262-20-1	0.63	0.22				GAM
Thorium 228	14274-82-9	0.71	0.13				GAM

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

9713512.2057

TMA NORCAL
REPORTING GROUP 7277

N310087-03

DATA SHEET, cont

B09796

SDG	7277	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310087-03	Client sample id	B09796
Dept sample id	7277-003	Location/Matrix	100 Area Treat. SOLID
Received	10/19/93	Collected	10/12/93
% moisture	3.3	Chain of Custody/SAS no	004409 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 232	7440-29-1	0.63	0.22				GAM

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N310087-03	Y	7277-003		1.00 g	10/26/93	10/29/93	DPK
N310087-03	TC	7277-003		2.00 g	10/27/93	10/28/93	DPK
N310087-03	U	7277-003		1.00 g	10/27/93	10/28/93	DPK
N310087-03	PU	7277-003		1.00 g	10/27/93	10/28/93	DPK
N310087-03	AM	7277-003		1.00 g	10/27/93	10/28/93	DPK
N310087-03	GAM	7277-003		705 g	10/20/93	10/27/93	DPK

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

9713512.2058

N310087-04

TMA NORCAL
REPORTING GROUP 7277

DATA SHEET

B09797

SDG	7277	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310087-04	Client sample id	B09797
Dept sample id	7277-004	Location/Matrix	100 Area Treat SOLID
Received	10/19/93	Collected	10/12/93
% moisture	3.4	Chain of Custody/SAS no	004409 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0	1.6	0.8	2	U	Y
Technetium 99	14133-76-7	0.11	0.13	0.3	0.5	U	TC
Uranium 233/234		0.22	0.068	0.05	0.3	J	U
Uranium 235	15117-96-1	0.025	0.020	0.04	0.3	U	U
Uranium 238	7440-61-1	0.25	0.069	0.04	0.3	J	U
Plutonium 238	13981-16-3	-0.016	0.018	0.04	0.05	U	PU
Plutonium 239/240		0.005	0.009	0.02	0.05	U	PU
Americium 241	14596-10-2	0.003	0.016	0.03	0.05	U	AM
GAMMA SCAN ANALYTES							
Sodium 22	13966-32-0	U		0.04		U	GAM
Potassium 40	13966-00-2	14	0.85				GAM
Manganese 54	13966-31-9	U		0.04		U	GAM
Iron 59	14596-12-4	U		0.08	0.05	U	GAM
Cobalt 58	13981-38-9	U		0.03		U	GAM
Cobalt 60	10198-40-0	U		0.04	0.05	U	GAM
Niobium 94	14681-63-1	U		0.03		U	GAM
Ruthenium 103	13968-53-1	U		0.03		U	GAM
Ruthenium 106	13967-48-1	U		0.3		U	GAM
Tin 113	13966-06-8	U		0.04		U	GAM
Cesium 134	13967-70-9	U		0.06		U	GAM
Cesium 137	10045-97-3	0.58	0.056		0.05		GAM
Cerium 144	14762-78-8	U		0.2		U	GAM
Europium 152	14683-23-9	U		0.08	0.1	U	GAM
Europium 154	15585-10-1	U		0.05	0.1	U	GAM
Europium 155	14391-16-3	U		0.1		U	GAM
Radium 226	13982-63-3	0.43	0.076				GAM
Radium 228	15262-20-1	0.62	0.17				GAM
Thorium 228	14274-82-9	0.57	0.042				GAM

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

9713512.2059

TMA NORCAL
REPORTING GROUP 7277

N310087-04

DATA SHEET, cont

B09797

SDG	7277	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310087-04	Client sample id	B09797
Dept sample id	7277-004	Location/Matrix	100 Area Treat SOLID
Received	10/19/93	Collected	10/12/93
% moisture	3.4	Chain of Custody/SAS no	004409 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 232	7440-29-1	0.62	0.17				GAM

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N310087-04	Y	7277-004		1.00 g	10/26/93	10/28/93	DPK
N310087-04	TC	7277-004		2.01 g	10/27/93	10/28/93	DPK
N310087-04	U	7277-004		1.00 g	10/27/93	10/28/93	DPK
N310087-04	PU	7277-004		1.00 g	10/27/93	10/28/93	DPK
N310087-04	AM	7277-004		1.00 g	10/27/93	10/28/93	DPK
N310087-04	GAM	7277-004		704 g	10/20/93	10/27/93	DPK

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

9713512.2060

TMA NORCAL
REPORTING GROUP 7277

N310087-05

DATA SHEET

B09798

SDG	7277	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310087-05	Client sample id	B09798
Dept sample id	7277-005	Location/Matrix	100 Area Treat. SOLID
Received	10/19/93	Collected	10/12/93
% moisture	3.6	Chain of Custody/SAS no	004409 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.80	2.2	0.8	2	J	Y
Technetium 99	14133-76-7	0.027	0.088	0.3	0.5	U	TC
Uranium 233/234		0.37	0.14	0.1	0.3		U
Uranium 235	15117-96-1	0.056	0.056	0.1	0.3	U	U
Uranium 238	7440-61-1	0.48	0.15	0.09	0.3		U
Plutonium 238	13981-16-3	-0.010	0.032	0.07	0.05	U	PU
Plutonium 239/240		0.038	0.026	0.02	0.05	J	PU
Americium 241	14596-10-2	0.006	0.034	0.06	0.05	U	AM
GAMMA SCAN ANALYTES							
Sodium 22	13966-32-0	U		0.05		U	GAM
Potassium 40	13966-00-2	17	0.92				GAM
Manganese 54	13966-31-9	U		0.04		U	GAM
Iron 59	14596-12-4	U		0.09	0.05	U	GAM
Cobalt 58	13981-38-9	U		0.04		U	GAM
Cobalt 60	10198-40-0	U		0.04	0.05	U	GAM
Niobium 94	14681-63-1	U		0.04		U	GAM
Ruthenium 103	13968-53-1	U		0.04		U	GAM
Ruthenium 106	13967-48-1	U		0.4		U	GAM
Tin 113	13966-06-8	U		0.05		U	GAM
Cesium 134	13967-70-9	U		0.04		U	GAM
Cesium 137	10045-97-3	2.6	0.092		0.05		GAM
Cerium 144	14762-78-8	U		0.2		U	GAM
Europium 152	14683-23-9	U		0.08	0.1	U	GAM
Europium 154	15585-10-1	U		0.05	0.1	U	GAM
Europium 155	14391-16-3	U		0.1		U	GAM
Radium 226	13982-63-3	0.42	0.093				GAM
Radium 228	15262-20-1	0.59	0.18				GAM
Thorium 228	14274-82-9	0.59	0.048				GAM

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

9713512.2061

TMA NORCAL
REPORTING GROUP 7277

N310087-05

DATA SHEET, cont

B09798

SDG	7277	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310087-05	Client sample id	B09798
Dept sample id	7277-005	Location/Matrix	100 Area Treat. SOLID
Received	10/19/93	Collected	10/12/93
% moisture	3.6	Chain of Custody/SAS no	004409 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 232	7440-29-1	0.59	0.18				GAM

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N310087-05	Y	7277-005		1.00 g	10/26/93	10/28/93	DPK
N310087-05	TC	7277-005		2.00 g	10/27/93	10/28/93	DPK
N310087-05	U	7277-005		1.00 g	10/27/93	10/28/93	DPK
N310087-05	PU	7277-005		1.00 g	10/27/93	10/28/93	DPK
N310087-05	AM	7277-005		1.00 g	10/27/93	10/28/93	DPK
N310087-05	GAM	7277-005		679 g	10/20/93	10/27/93	DPK

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

9715512.2062

N310087-01

TMA NORCAL
REPORTING GROUP 7277

DATA SHEET

B097B0

SDG	7277	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310087-01	Client sample id	B097B0
Dept sample id	7277-001	Location/Matrix	100 Area Treat. SOLID
Received	10/19/93	Collected	10/13/93
% moisture	28.3	Chain of Custody/SAS no	005032 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.089	0.21	0.8	2	U	Y
Technetium 99	14133-76-7	1.5	0.17	0.3	0.5		TC
Uranium 233/234		0.43	0.091	0.06	0.3		U
Uranium 235	15117-96-1	0.029	0.029	0.04	0.3	U	U
Uranium 238	7440-61-1	0.46	0.092	0.03	0.3		U
Plutonium 238	13981-16-3	-0.007	0.024	0.05	0.05	U	PU
Plutonium 239/240		0.005	0.015	0.03	0.05	U	PU
Americium 241	14596-10-2	0.034	0.031	0.05	0.05	U	AM
GAMMA SCAN ANALYTES							
Sodium 22	13966-32-0	U		0.05		U	GAM
Potassium 40	13966-00-2	12	0.92				GAM
Manganese 54	13966-31-9	U		0.04		U	GAM
Iron 59	14596-12-4	U		0.09	0.05	U	GAM
Cobalt 58	13981-38-9	U		0.04		U	GAM
Cobalt 60	10198-40-0	U		0.05	0.05	U	GAM
Niobium 94	14681-63-1	U		0.04		U	GAM
Ruthenium 103	13968-53-1	U		0.04		U	GAM
Ruthenium 106	13967-48-1	U		0.3		U	GAM
Tin 113	13966-06-8	U		0.04		U	GAM
Cesium 134	13967-70-9	U		0.05		U	GAM
Cesium 137	10045-97-3	0.33	0.054		0.05		GAM
Cerium 144	14762-78-8	U		0.2		U	GAM
Europium 152	14683-23-9	U		0.08	0.1	U	GAM
Europium 154	15585-10-1	U		0.06	0.1	U	GAM
Europium 155	14391-16-3	U		0.1		U	GAM
Radium 226	13982-63-3	0.48	0.084				GAM
Radium 228	15262-20-1	0.72	0.19				GAM
Thorium 228	14274-82-9	0.52	0.048				GAM

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

9713512.2063

TMA NORCAL
REPORTING GROUP 7277

N310087-01

DATA SHEET, cont

B097B0

SDG	7277	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310087-01	Client sample id	B097B0
Dept sample id	7277-001	Location/Matrix	100 Area Treat. SOLID
Received	10/19/93	Collected	10/13/93
% moisture	28.3	Chain of Custody/SAS no	005032 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 232	7440-29-1	0.72	0.19				GAM

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N310087-01	Y	7277-001		1.00 g	10/26/93	10/28/93	DPK
N310087-01	TC	7277-001		2.01 g	10/27/93	10/28/93	DPK
N310087-01	U	7277-001		1.00 g	10/27/93	10/28/93	DPK
N310087-01	PU	7277-001		1.00 g	10/27/93	10/28/93	DPK
N310087-01	AM	7277-001		1.00 g	10/27/93	10/28/93	DPK
N310087-01	GAM	7277-001		761 g	10/20/93	10/27/93	DPK

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

9713512.2064

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
P. O. Box 4040
Richmond, CA 94804-0040
(510) 235-2633 Fax No. (510) 235-0438

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November 1, 1993

Ref. TMA/Norcal N3-10-096-7278

Ms. Briana Colley
Westinghouse Hanford Company
2355 Stevens Drive
MSIN H4-23
345 Hills Street/3000 Area
Richland, WA 99352

Dear Ms. Colley:

Enclosed is the data report for the two soil samples from location 100 Area Treatability Study (Pluto Crib) we received October 20, 1993. Results are given for strontium-90, technetium-99, isotopic uranium, isotopic plutonium, americium-241, and gamma scan analyses. The samples were analyzed on a rush basis. The data package is numbered pages 1 through 287.

Please call if you have any questions concerning this data.

Sincerely,

D.P. Kharkar

Dinkar P. Kharkar, Ph.D.
Manager, Nuclear Programs

DPK/jv

Enclosure: Data Package

SDG: 7278
Contact: Dinkar Kharkar

TMA NORCAL

REPORTING GROUP 7278

Client: Westinghouse Hanford
Contract: MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

TMA/Norcal Sample Delivery Group 7278 is comprised of the samples listed on the chain-of-custody documents below. This sample group was processed under the Westinghouse Hanford Company Statement of Work P.O. MBH-SVV-069262.

1.1 Chains-of-Custody

This report includes data for the two soil samples from location 100 Area Treatability Study (Pluto Crib) delivered under Chain-of-Custody documents #005093 and 005098.

1.2 Sample Volume

One 1000 mL plastic bottle containing the samples were received for the analyses. An adequate volume of each of the samples was not received to obtain the required detection limit for the duplicate gamma scan.

1.3 Missing Samples

There were no missing samples.

1.4 Holding Times

The samples were collected on October 18, 1993 and sample processing was initiated within 180 days of collection.

2.0 QUALITY CONTROL

The internal quality control consisted of one sample each of a laboratory control sample, a blank, and a replicate. All original analyses were performed with QC samples 7207-03 through 7207-05.

The QC samples were prepared by the Quality Control Department. Copies of the QC notebook pages are included in this data package.

2.1 Laboratory Control Samples

The LCS recoveries for all nuclides were acceptable. The MDA's of the results for all analyses met the RDL's except for plutonium-238, plutonium-239/240, and iron-59. The high MDA's for plutonium-238 and 239/240 were due to a combination of low chemical yield and low detector efficiency. The MDA for iron-59 was high due to a high counter background.

2.0 QUALITY CONTROL (cont'd)

2.2 Reagent Blanks

The MDA's of the results for all analyses met the RDL's except for plutonium-238 and plutonium-239/240 due to the combination of a low chemical yield and a low detector efficiency. The error for strontium-90 was underlined because it was greater than both the MDA and the result implying that the MDA may not be a good estimate of the "real" minimum detectable activity.

2.3 Duplicates

Results were satisfactory for all duplicate analyses. The MDA's of the results for plutonium-238 and plutonium-239/240 for the original sample BO97B6 and its duplicate were higher than the RDL due to the combination of a low chemical yield and a low detector efficiency. The MDA's of gamma nuclides for the duplicate of sample BO97B6 were higher than the RDL's due to small sample aliquot available for analysis.

3.0 ANALYSIS NOTES

3.4 Strontium-90 Analyses

The average yield for five analyses was (89 ± 6)%. The lowest yield was 84% and the highest was 92%. The average MDA was (0.8 ± 0.09) pCi/g. Strontium-90 activity above the RDL was not found in either of the samples. The strontium-90 error was underlined for sample BO97B8 because it was larger than both the MDA and the result implying that the MDA may not be a good estimate of the "real" minimum detectable activity.

3.5 Technetium-99 Analyses

The average yield for five analyses was (42 ± 10)%. The lowest yield was 35% and the highest was 47%. The average MDA was (0.4 ± 0.1) pCi/g. Technetium-99 activity above the RDL was not found in either sample.

3.3 Isotopic Uranium Analyses

The average yield for five analyses was (49 ± 23)%. The lowest yield was 34% and the highest was 62%. The average MDA was (0.1 ± 0.1) pCi/g. Uranium-233/234 and uranium-238 activity above the RDL was found in sample BO97B8.

3.3 Isotopic Plutonium Analyses

The average yield for five analyses was (35 ± 22)%. The lowest yield was 22% and the highest was 48%. The average MDA was (0.1 ± 0.1) pCi/g. Plutonium activity above the RDL was not found in either sample. The MDA's of the results for both samples were above the RDL due to the combination of low chemical yields and low detector efficiencies.

3.0 ANALYSIS NOTES (cont'd)

3.7 Americium-241 Analyses

The average yield for five analyses was (59 ± 21)%. The lowest yield was 49% and the highest yield was 76%. The average MDA was (0.02 ± 0.009) pCi/g. Americium-241 activity above the RDL was not found in either sample.

3.8 Gamma Scan Analyses

Gamma scan analysis found cesium-137 activity in sample BO97B8. Natural of ^{40}K, ^{226}Ra, ^{228}Ra, ^{228}Th, and ^{232}Th activity was found in both the samples. The MDA of the result for ^{59}Fe for sample BO97B8 was higher than the RDL due to a high detector background.

9713512.2068

N310096-01

TMA NORCAL
REPORTING GROUP 7278

DATA SHEET

B097B6

SDG	7278	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310096-01	Client sample id	B097B6
Dept sample id	7278-001	Location/Matrix	100 Area Treat. SOLID
Received	10/20/93	Collected	10/18/93
% moisture	0.0	Chain of Custody/SAS no	005093 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.045	0.17	0.8	2	U	Y
Technetium 99	14133-76-7	0.073	0.14	0.4	0.5	U	TC
Uranium 233/234		0.062	0.069	0.1	0.3	U	U
Uranium 235	15117-96-1	0	0.017	0.06	0.3	U	U
Uranium 238	7440-61-1	0.14	0.070	0.05	0.3	J	U
Plutonium 238	13981-16-3	-0.010	0.083	0.2	0.05	U	PU
Plutonium 239/240		-0.010	0.062	0.1	0.05	U	PU
Americium 241	14596-10-2	0	0.014	0.03	0.05	U	AM
GAMMA SCAN ANALYTES							
Sodium 22	13966-32-0	U		0.03		U	GAM
Potassium 40	13966-00-2	0.58	0.25				GAM
Manganese 54	13966-31-9	U		0.02		U	GAM
Iron 59	14596-12-4	U		0.05	0.05	U	GAM
Cobalt 58	13981-38-9	U		0.02		U	GAM
Cobalt 60	10198-40-0	U		0.03	0.05	U	GAM
Niobium 94	14681-63-1	U		0.02		U	GAM
Ruthenium 103	13968-53-1	U		0.02		U	GAM
Ruthenium 106	13967-48-1	U		0.2		U	GAM
Tin 113	13966-06-8	U		0.02		U	GAM
Cesium 134	13967-70-9	U		0.02		U	GAM
Cesium 137	10045-97-3	U		0.02	0.05	U	GAM
Cerium 144	14762-78-8	U		0.1		U	GAM
Europium 152	14683-23-9	U		0.05	0.1	U	GAM
Europium 154	15585-10-1	U		0.03	0.1	U	GAM
Europium 155	14391-16-3	U		0.06		U	GAM
Radium 226	13982-63-3	0.095	0.048				GAM
Radium 228	15262-20-1	0.13	0.082				GAM
Thorium 228	14274-82-9	0.14	0.047				GAM

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

9713512.2069

TMA NORCAL
REPORTING GROUP 7278

N310096-01

DATA SHEET, cont

B097B6

SDG	7278	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310096-01	Client sample id	B097B6
Dept sample id	7278-001	Location/Matrix	100 Area Treat. SOLID
Received	10/20/93	Collected	10/18/93
% moisture	0.0	Chain of Custody/SAS no	005093 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 232	7440-29-1	0.13	0.082				GAM

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N310096-01	Y	7278-001		1.00 g	10/26/93	10/28/93	DPK
N310096-01	TC	7278-001		2.07 g	10/28/93	10/29/93	DPK
N310096-01	U	7278-001		1.00 g	10/27/93	10/28/93	DPK
N310096-01	PU	7278-001		1.00 g	10/27/93	10/28/93	DPK
N310096-01	AM	7278-001		1.00 g	10/27/93	10/28/93	DPK
N310096-01	GAM	7278-001		730 g	10/25/93	10/28/93	DPK

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

9713512.2070

N310096-02

TMA NORCAL
REPORTING GROUP 7278

DATA SHEET

B097B8

SDG	7278	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310096-02	Client sample id	B097B8
Dept sample id	7278-002	Location/Matrix	100 Area Treat. SOLID
Received	10/20/93	Collected	10/18/93
% moisture	2.7	Chain of Custody/SAS no	005098 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0	1.6	0.8	2	U	Y
Technetium 99	14133-76-7	0.11	0.13	0.4	0.5	U	TC
Uranium 233/234		0.44	0.10	0.06	0.3		U
Uranium 235	15117-96-1	0.037	0.037	0.05	0.3	U	U
Uranium 238	7440-61-1	0.55	0.12	0.06	0.3		U
Plutonium 238	13981-16-3	0.016	0.032	0.06	0.05	U	PU
Plutonium 239/240		0.016	0.032	0.06	0.05	U	PU
Americium 241	14596-10-2	0.014	0.014	0.02	0.05	U	AM
GAMMA SCAN ANALYTES							
Sodium 22	13966-32-0	U		0.04		U	GAM
Potassium 40	13966-00-2	14	0.81				GAM
Manganese 54	13966-31-9	U		0.04		U	GAM
Iron 59	14596-12-4	U		0.09	0.05	U	GAM
Cobalt 58	13981-38-9	U		0.03		U	GAM
Cobalt 60	10198-40-0	U		0.04	0.05	U	GAM
Niobium 94	14681-63-1	U		0.03		U	GAM
Ruthenium 103	13968-53-1	U		0.04		U	GAM
Ruthenium 106	13967-48-1	U		0.3		U	GAM
Tin 113	13966-06-8	U		0.04		U	GAM
Cesium 134	13967-70-9	U		0.04		U	GAM
Cesium 137	10045-97-3	0.14	0.042		0.05		GAM
Cerium 144	14762-78-8	U		0.2		U	GAM
Europium 152	14683-23-9	U		0.08	0.1	U	GAM
Europium 154	15585-10-1	U		0.06	0.1	U	GAM
Europium 155	14391-16-3	U		0.1		U	GAM
Radium 226	13982-63-3	0.62	0.084				GAM
Radium 228	15262-20-1	0.77	0.19				GAM
Thorium 228	14274-82-9	0.93	0.069				GAM

DATA SHEETS
Page 3
SUMMARY DATA SECTION
Page 16

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93

TMA NORCAL
REPORTING GROUP 7278

N310096-02

DATA SHEET, cont

B097B8

SDG	7278	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N310096-02	Client sample id	B097B8
Dept sample id	7278-002	Location/Matrix	100 Area Treat. SOLID
Received	10/20/93	Collected	10/18/93
% moisture	2.7	Chain of Custody/SAS no	005098 RUSH

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 232	7440-29-1	0.77	0.19				GAM

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N310096-02	Y	7278-002		1.00 g	10/26/93	10/28/93	DPK
N310096-02	TC	7278-002		2.07 g	10/27/93	10/28/93	DPK
N310096-02	U	7278-002		1.00 g	10/27/93	10/28/93	DPK
N310096-02	PU	7278-002		1.00 g	10/27/93	10/28/93	DPK
N310096-02	AM	7278-002		1.00 g	10/27/93	10/28/93	DPK
N310096-02	GAM	7278-002		820 g	10/25/93	10/28/93	DPK

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	11/01/93