START 9213505.2842

B019924-TMA-247

15
2

TMA

0045819

WESTINGHOUSE HANFORD COMPANY

Results of Analyses For:

OCT 1992
RECEIVED
OSM DMD

METALS & HEXAVALENT CHROMIUM
(Skinner & Sherman Work Order S2-09-514)

TMA Master Work Order # N2-09-199

October 13, 1992

NOV 1996
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EDMC

ms
5/13/96

TMA
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

9713505.2843

October 9, 1992

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 September 29, 1992 from TMA/Norcal. The samples were analyzed for the USEPA CLP TAL metals plus Hexavalent Chromium without mercury. The analysis were performed under TMA/Skinner and Sherman work order S209514.

Methodology
The samples were prepared, analyzed and reported in accordance with the USEPA Contract Laboratory Program Statement of Work ILM02. Hexavalent Chromium was extracted by EPA SW-846 Method 3060 and analyzed by EPA SW-846 Method 7197.

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

- The hexavalent chromium and antimony matrix digestion spike recovery exceeded the control limit requirements.

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

Respectfully submitted,

TMA/SKINNER & SHERMAN LABORATORIES, INC.

(for)

David N. Peterson
Assistant Laboratory Manager

9713505.2844

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01924

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

Lab Code: SKINER Case No.: RUSH!!! N&AS No.: SDG No.: B01924

Matrix (soil/water): SOIL Lab Sample ID: 09514-01S

Level (low/med): LOW Date Received: 09/29/92

% 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	34.6	B		P
7440-36-0	Antimony	3.2	U	N	P
7440-38-2	Arsenic	0.45	U		F
7440-39-3	Barium	0.90	U		P
7440-41-7	Beryllium	0.14	U		P
7440-43-9	Cadmium	0.29	U		P
7440-70-2	Calcium	14.5	B		P
7440-47-3	Chromium	0.96	U		P
7440-48-4	Cobalt	0.69	U		P
7440-50-8	Copper	0.75	U		P
7439-89-6	Iron	203			P
7439-92-1	Lead	0.45	B		F
7439-95-4	Magnesium	10.2	B		P
7439-96-5	Manganese	0.86	U		P
7439-97-6	Mercury				NR
7440-02-0	Nickel	0.77	U		P
7440-09-7	Potassium	52.1	U		P
7782-49-2	Selenium	0.82	B		F
7440-22-4	Silver	0.94	U		P
7440-23-5	Sodium	18.8	B		P
7440-28-0	Thallium	0.81	U		F
7440-62-2	Vanadium	0.47	U		P
7440-66-6	Zinc	0.85	B		P
	Cyanide				NR

Color Before: WHITE Clarity Before: Texture: FINE

Color After: WHITE Clarity After: Artifacts:

Comments:

HEXAVALENT CHROMIUM = <0.50 MG/KG

002

WESTINGHOUSE/HANFORD

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01926

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

Lab Code: SKINER Case No.: RUSH!!! N&AS No.: SDG No.: B01924

Matrix (soil/water): SOIL Lab Sample ID: 09514-02S

Level (low/med): LOW Date Received: 09/29/92

% Solids: 97.7

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5230			P
7440-36-0	Antimony	3.2	U	N	P
7440-38-2	Arsenic	1.3	B	S	F
7440-39-3	Barium	43.6			P
7440-41-7	Beryllium	0.14	U		P
7440-43-9	Cadmium	0.30	U		P
7440-70-2	Calcium	4890			P
7440-47-3	Chromium	7.8			P
7440-48-4	Cobalt	6.1	B		P
7440-50-8	Copper	10.8			P
7439-89-6	Iron	12500			P
7439-92-1	Lead	3.0			F
7439-95-4	Magnesium	3960			P
7439-96-5	Manganese	224			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	9.8			P
7440-09-7	Potassium	864	B		P
7782-49-2	Selenium	0.57	U		F
7440-22-4	Silver	0.95	U		P
7440-23-5	Sodium	164	B		P
7440-28-0	Thallium	0.79	U	W	F
7440-62-2	Vanadium	27.9			P
7440-66-6	Zinc	29.1			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES
HEXAVALENT CHROMIUM = <0.50 MG/KG

003

9713505.2846

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01927

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

Lab Code: SKINER Case No.: RUSH!!! N&AS No.: SDG No.: B01924

Matrix (soil/water): SOIL Lab Sample ID: 09514-03S

Level (low/med): LOW Date Received: 09/29/92

% Solids: 98.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4960			P
7440-36-0	Antimony	3.2	U	N	P
7440-38-2	Arsenic	1.2	B		F
7440-39-3	Barium	42.1			P
7440-41-7	Beryllium	0.14	B		P
7440-43-9	Cadmium	0.29	U		P
7440-70-2	Calcium	4800			P
7440-47-3	Chromium	7.0			P
7440-48-4	Cobalt	5.2	B		P
7440-50-8	Copper	11.3			P
7439-89-6	Iron	11700			P
7439-92-1	Lead	3.1			F
7439-95-4	Magnesium	3570			P
7439-96-5	Manganese	212			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	7.4	B		P
7440-09-7	Potassium	774	B		P
7782-49-2	Selenium	0.60	U	W	F
7440-22-4	Silver	0.93	U		P
7440-23-5	Sodium	162	B		P
7440-28-0	Thallium	0.84	U		F
7440-62-2	Vanadium	25.7			P
7440-66-6	Zinc	28.5			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES
HEXAVALENT CHROMIUM = <0.50 MG/KG
LABORATORY DUPLICATE = <0.50 MG/KG 0.0 %RPD
MATRIX SPIKE = <0.50 MG/KG 0.0 %RECOVERY

004

9213505.2847

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

RECORD COPY

OCT 1992
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OSM DMO

October 5, 1992

SENT BY FEDERAL EXPRESS

Ref. TMA/Norcal N2-09-203-7090

Mr. John Bourgeault
Westinghouse Hanford Company
2355 Stevens Drive
Richland, WA 99352

Dear Mr. Bourgeault:

Enclosed on the Summary Data Section are the gamma scan results for the soil samples from SAF#92-311, sodium dichromate Barrel 100-IV-4 Location, we received 28 September 1992. The QA/QC results are also given in the Summary Data Section. The samples were processed on the rush basis. The Summary Data Including QC's and appendices are found in pages 1 through 93.

Please call if you have any questions concerning this data.

Sincerely,

D. P. Kharkar

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

DPK/jv

Enclosures: Sections 1 and 2
Appendices

ms
5/13/96

TMA

SDG 7090	Client Westinghouse Hanford
Contact Dinkar P. Kharkar	Contract MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

The result of the soil samples from Location 100-IV-4, SAF#92-311, sodium dichromate (TMA/Norcal Group 7090) are reported herein. TMA/Norcal Group 7090 is comprised of the three samples listed on the Chain-of-Custody documents and is identified as Sample 1 through 3.

1.1 CHAINS-OF-CUSTODY

This report includes data from samples delivered under Chain-of-Custody documents Field Logbook No. WHC-N-205-19.

1.2 SAMPLE VOLUME

1000 mL bottles of sample were received for the analyses.

1.3 MISSING SAMPLES

All samples were accounted for in an undamaged condition.

1.4 HOLDING TIMES

The collections were made on 9/24/92 and the 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, a blank, and a replicate. All original analyses were performed with QC samples 7090-4, 5, and 6.

The QC samples were prepared and labelled by the quality control officer. Copies of The QC notebook pages are included in the data package.

2.1 LABORATORY CONTROL SAMPLES

LCS recoveries and the MDA's for the gamma nuclides used in the spike were good.

2.2 BLANKS

MDA's for the gamma nuclides meet the RDL requirement.

SDG 7090 Contact Dinkar P. Kharkar	Client Westinghouse Hanford Contract MBH-SVV-069262

CASE NARRATIVE

2.3 REPLICATES

Results were satisfactory for the replicate analysis. The MDA's of gamma nuclides in the replicate sample were higher due to the small aliquot available for gamma analysis. The MDA's of gamma nuclides in the original sample were below RDL.

3.0 ANALYTICAL NOTES

3.1 Gamma Scan Analyses: Gamma scan analysis did not find positive concentrations of gamma nuclides. The MDA's for ^{59}Fe in samples 7090-2 and 3 were higher than the RDL because of the high Compton background contributed by thorium in the sample.

V

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TMA NORCAL

REPORTING GROUP 7090

N209203-06

B01924

REPLICATE

SDG 7090

Contact Dinkar Kharkar

Client Westinghouse Hanford

Contract MBH-SVV-069262

REPLICATE		ORIGINAL			
Lab sample id	N209203-06	Lab sample id	N209203-01	Client sample id	B01924
Dept sample id	7090-006	Dept sample id	7090-001	Matrix	SOIL
		Received	09/28/92	Collected	09/24/92
				Chain of custody id	003032

PARAMETER	REPLICATE pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST	ORIGINAL pCi/G	2σ ERR (COUNT)	MDA pCi/G	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
GAMMA SCAN ANALYTES													
Potassium 40	U		1.6		U	GAM	0.31	0.21			135	310	
Iron 59	U		0.32	0.050	U	GAM	U		0.037	U	-		
Chromium 51	U		0.62		U	GAM	U		0.16	U	-		
Cobalt 60	U		0.12	0.050	U	GAM	U		0.026	U	-		
Zinc 65	U		0.20		U	GAM	U		0.035	U	-		
Ruthenium 106	U		0.70		U	GAM	U		0.17	U	-		
Cesium 134	U		0.11		U	GAM	U		0.025	U	-		
Cesium 137	U		0.094	0.050	U	GAM	U		0.018	U	-		
Europium 152	U		0.13	0.10	U	GAM	U		0.044	U	-		
Europium 154	U		0.089	0.10	U	GAM	U		0.029	U	-		
Radium 226	U		0.17	0.10	U	GAM	0.12	0.041			34	187	
Thorium 228	0.12	0.090				GAM	0.12	0.025			0	121	
Thorium 232	U		0.34		U	GAM	0.086	0.079			119	289	

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-REP
Version 2.17
Report date 10/05/92

9713505.2851

TMA NORCAL

REPORTING GROUP 7090

N209203-01

DATA SHEET

B01924

SDG	7090	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209203-01	Client sample id	B01924
Dept sample id	7090-001	Matrix	SOIL
Received	09/28/92	Collected	09/24/92
		Chain of custody id	003032

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	0.31	0.21				GAM
Iron 59		U		0.037	0.050	U	GAM
Chromium 51	14392-02-0	U		0.16		U	GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Zinc 65	17982-39-3	U		0.035		U	GAM
Ruthenium 106	13967-48-1	U		0.17		U	GAM
Cesium 134	17967-70-9	U		0.025		U	GAM
Cesium 137	10045-97-3	U		0.018	0.050	U	GAM
Europium 152	14683-23-9	U		0.044	0.10	U	GAM
Europium 154	15585-10-1	U		0.029	0.10	U	GAM
Radium 226	13982-67-7	0.12	0.041		0.10		GAM
Thorium 228	14274-82-9	0.12	0.025				GAM
Thorium 232	7440-29-1	0.086	0.079				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.17
Report date	10/05/92

9713505.2852

TMA NORCAL

REPORTING GROUP 7090

N209203-02

DATA SHEET

B01926

SDG	7090	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209203-02	Client sample id	B01926
Dept sample id	7090-002	Matrix	SOIL
Received	09/28/92	Collected	09/24/92
		Chain of custody id	003032

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	14	0.93				GAM
Iron 59		U		0.13	0.050	U	GAM
Chromium 51	14392-02-0	U		0.26		U	GAM
Cobalt 60	10198-40-0	U		0.045	0.050	U	GAM
Zinc 65	17982-39-3	U		0.11		U	GAM
Ruthenium 106	13967-48-1	U		0.30		U	GAM
Cesium 134	17967-70-9	U		0.034		U	GAM
Cesium 137	10045-97-3	U		0.038	0.050	U	GAM
Europium 152	14683-23-9	U		0.069	0.10	U	GAM
Europium 154	15585-10-1	U		0.051	0.10	U	GAM
Radium 226	13982-67-7	0.41	0.068		0.10		GAM
Thorium 228	14274-82-9	0.61	0.045				GAM
Thorium 232	7440-29-1	0.64	0.16				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.17
Report date	10/05/92

9713505.2853

TMA NORCAL

REPORTING GROUP 7090

N209203-03

DATA SHEET

B01927

SDG	7090	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N209203-03	Client sample id	B01927
Dept sample id	7090-003	Matrix	SOIL
Received	09/28/92	Collected	09/24/92
		Chain of custody id	003032

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	14	0.86				GAM
Iron 59		U		0.11	0.050	U	GAM
Chromium 51	14392-02-0	U		0.31		U	GAM
Cobalt 60	10198-40-0	U		0.042	0.050	U	GAM
Zinc 65	17982-39-3	U		0.097		U	GAM
Ruthenium 106	13967-48-1	U		0.30		U	GAM
Cesium 134	17967-70-9	U		0.041		U	GAM
Cesium 137	10045-97-3	U		0.037	0.050	U	GAM
Europium 152	14683-23-9	U		0.083	0.10	U	GAM
Europium 154	15585-10-1	U		0.055	0.10	U	GAM
Radium 226	13982-67-7	0.46	0.072		0.10		GAM
Thorium 228	14274-82-9	0.63	0.057				GAM
Thorium 232	7440-29-1	0.68	0.16				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.17
Report date	10/05/92

FORM OF PAYMENT

Check ☐ GBL ☐ FCCOD ☐

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

E Shipper's Account Number: 8502815585

EMERY WORLDWIDE — A CF Company

SERVICES **

UNITED STATES / CANADA: Same Day (Extra Charges) ☐ AM ☐ PM ☐ Second Day ☐ Saturday Delivery ☒

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

Date	Origin	Shipment Number
09-25-92	PSC	252156790 6

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

To:
DELORES SANCHEZ
TMA/NORCAL
2030 WRIGHT AVENUE
RICHMOND CA
Canada ☐
Hold for Pick Up ☐

Tariff Dest. | Gateway

Check for Shipper $

EMERY WORLDWIDE will accept Consignee's check with all risks being assumed by Shipper, including but not limited to non-payment, fraud and misrepresentation.

Customer's Reference Numbers: W12410 P3CIJ W92-0-0648#7 97352

E Consignee's Account Number: 94804

Description	Pcs.	L	W	H	Total Pieces	Total Weight (In Lbs.)
1 COOLER SML#273 SAMPLES B01924, B01926, B01927	1	17	16	7	1	70#

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

Declared Value $

2521567906

Remarks: SATURDAY DELIVERY

Shipper's Signature: [signature] 9/25/92

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

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

International Shipments: Free Domicile ☐ Commodity Code

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

International Customs Value | International Insurance

Base Charge

Total Transportation Charges

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

1-OAK-SA

Terms and Conditions on Back.

9/25/92 2855 0 7

9213505.2855

Westinghouse Hanford Company

CHAIN OF CUSTODY 003032

Custody Form Initiator L.GUERRA /R. ARNOLD

Company Contact K.N. POOL / C.E. HEIDEN Telephone 376-2640

Project Designation/Sampling Locations SAF#92-311 Collection Date 9-24-92

SODIUM DICHROMATE BARREL. LOCATION 100-IU-4

Ice Chest No. SMC-273 Field Logbook No. WHC-N-205-19

Bill of Lading/Airbill No. 252 156 7906 Offsite Property No.

Method of Shipment SAMPLE DOUBLE-BAGGED PLACED IN WET ICE. AIR FRIEGHT.

Shipped to TMA / RICHMOND CA 94804

Possible Sample Hazards/Remarks UNKNOWN

SEE SAMPLES ANALYSIS REQUEST FOR INDIVIDUAL CONTAINERS AND ANALYSIS.

Sample Identification

B01924 (3) BOTTLES

B01926 (3) BOTTLES

B01927 (3) BOTTLES

PRIORITY TURNAROUND

9-25-92

9-25-92

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
L.GUERRA	Kermit Blum	9-28-92 0800 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time: 0 629
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * Received @ TMA / NORCAL 9-26-92 ; opened 9-28-92 KB

A-6000-407 (12/90)

9713505.2856

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

COC # 03032

Collector L.GUERRA / R. ARNOLD Date 9-24-92

Company Contact K.N.POOL / C.E. HEIDEN Telephone (509) 376-2640

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Requested	
B01924	S	9-24-92	10:05	(1) 250ml (G) Cr+6	(SW-846 7179)
				(1) 250ml (G) ICP/GFAA METALS	(CLP)
				(1) 1000ml (G) GAMMA SPEC.	(RC-30)
B01926			10:21	(1) 250ml (G) Cr+6	(SW-846 7179)
				(1) 250ml (G) ICP/GFAA METALS	(CLP)
				(1) 1000ml (G) GAMMA SPEC.	(RC-30)
B01927			10:21	(1) 250ml (G) Cr+6	(SW-846 7179)
				(1) 250ml (G) ICP/GFAA METALS	(CLP)
				(1) 1000ml (G) GAMMA SPEC.	(RC-30)
TOTAL	BOTTLES		(9)		

9-25-92

*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#92-311 SODIUM DICHROMATE BARREL. LOCATION 100IU-4

Special Handling and/or Storage SAMPLES TO BE KEPT COOLED TO 4°C PRIOR TO ANALYSIS.

Possible Sample Hazards NON-DETECTABLE WITH FIELD INSTRUTMENT.

0 030

A-6000-406 (06/91)