START 9613474.0189 27-101-K25-033

MARTIN MARIETTA
0045188 1

MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2003
OAK RIDGE, TENNESSEE 37831-7440

March 7, 1991

Ms. Joan Kessner
Westinghouse Hanford Company
Office of Sample Management
2344 Stevens Drive
Richland, Washington 99352

Dear Ms. Kessner:

Analytical Results Package on Project 90-027: Underground Storage Tanks Sample Analysis

Attached are the results on the Underground Storage Tanks samples, Project 90-027, received into the Analytical Chemistry Department (ACD) laboratories on December 20, 1990. Also attached are the Chain of Custody records for the samples, a list detailing the protocol utilized in performing these analyses (in accordance with agreements between the OSM and K-25 ACD) and sample identification information.

The results are reported on ACD's AnaLis report format per letter dated December 20, 1990. All data quality objectives were satisified on this project.

The lead analysis on sample 27-102MS, a matrix sample, is incomplete at this time. However, in order that the data deliverables package on the project not be delayed any longer, the remainder of the package is being released. Resolution of this analysis is pending.

Lead

All the required quality control criteria was applied to the samples in the SDG. For this analysis all instrument calibrations (SPCC and CCC) were within acceptance criteria. The internal matrix spike percent recoveries for the TCLP analysis were within acceptance limits. Interference check samples results were within acceptable limits. Replicate analyses were conducted on samples in the SDG and all relative percent deviations were within acceptance limits. All internal controls and check standards run during these analyses were within the acceptance limits. At present the ACD cannot report the lead blank results through the AnaLis database, however it is required according to ACD QA/QC policy that no analysis result be reported for any element which is found in the prep blank above the data reporting limits. The raw data within the QA batch (SDG) for any particular analysis contains the prep blank data and is available upon request.

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Semi-Volatiles: BNA

The samples were not extracted within the prescribed holding time, missing the seven (7) day holding time for extraction by seven (7) days. Once extracted, the samples were analyzed within the prescribed holding time. All surrogate standards criteria were within percent recovery acceptance limits. All DFTPP tune criteria were within acceptance criteria. All "CCC" and "SPCC" components met acceptance criteria for both the initial and continuing calibration check samples. All internal standard areas were within acceptance criteria. All matrix spikes and matrix spike duplicates were within the acceptance requirements.

Volatiles: VOA

All the samples were analyzed within the prescribed holding times. All surrogate standards criteria were within percent recovery acceptance limits. All BFB tune criteria were within acceptance criteria. All CCC and SPCC components met acceptance criteria for both the initial and continuing calibration check sample. All internal standard areas were within acceptance criteria. All matrix spikes and matrix spike duplicates were within the acceptance requirements.

I certify that this data package is in compliance with the terms and conditions of the OSM's revised Statement of Work and letter dated December 20, 1990, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Sincerely,

Deborah L. Amburgey
Program Manager
Hanford Support Program

Clarence R. Kirkpatrick
Program Manager
Waste Management Analysis

Roy W. Morrow
Department Manager
Analytical Chemistry Department (K-25)

Attachments

cc/attach: D.L.Amburgey
S.R.Smith - RC

cc: N.P.Buddin
S.W.Goza
H.H.Sullivan

9613474.0191

PROTOCOL UTILIZED FOR ANALYSES OF
UNDERGROUND STORAGE TANKS SAMPLES
AND SAMPLE IDENTIFICATION FOR
PROJECT 90-027

	Analysis	Protocol
A.	Lead	EPA-7420
B.	Semi-volatiles	BNA (CLP) protocol
C.	Volatiles	VOA (CLP) protocol

Table 1.1 - Sample Identification Table for Project 90-027: Underground Storage Tanks Sample Analysis

Date Sam. Group Rec.	OSM Sample ID	Lab Sample ID	Matrix	Comments
12/20/90	27-101	901226-051	soil	
	27-102	901226-052	soil	
	27-102MS	901226-053	soil	Matrix spike of 901226-052
	27-102MSD	901226-054	soil	Matrix spike duplicate of 901226-052
	27-103	901226-055	soil	
	27-104	901226-056	soil	
	27-105	901226-057	soil	
	27-106	901226-058	soil	
		901227-032	blank	VOA blank for 901226-051 through -055
	27-104MS	901228-029	soil	VOA matrix spike for 901226-056
	27-104MSD	901228-031	soil	VOA matrix spike duplicate for 901226-056
		901231-001	blank	VOA blank for 901226-056 through -058
		910103-263	blank	BNA blank for 901226-051 through -056 and 901226-058

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Oak Ridge K-25 Site
Analytical Chemistry Department
Results of Analyses

AnaLIS ID: 901226-051 Project: G132 027S Customer Sample ID: 27-101
Customer: KESSNER/ROOS Requisition Number:
Date Sampled: 18-DEC-1990 Date Sample Received: 20-DEC-1990
Sampled By: Date Sample Completed: 27-JAN-1991
Material Description: SOIL [] : Result has been Corrected for Spike

Activ. Number	Procedure No.	Analysis	Result	Units	Analyst	QA File Number	Date Completed
102003	EPA-3050 EPA-7421	Lead	<4.0	ug/g	P BUCKLEY	10123H	27-JAN-1991
132803	EPA-3550	Prep (BNA- SW-846-Sox)	C		JH KREIS	1993	4-JAN-1991

Prep (BNA- SW-846-Sox)

Analyst = JH KREIS
Date Extracted = 3-JAN-1991
Sample Weight Extracted (g) = 10.00
Percent Solids = 100
Calculated Dried Weight (g) = 10.00
Extraction Method = Soxhlet
Extraction Solvent = Methlylene Chloride/Acetone
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 1
Associated Blank = 910103-263

Replicate Results of Analysis

Analysis	Results	Replicate Results	RPD
Lead	<4.0	<4.0	0.0

Program Manager: D. L. Amburgey
Date Approved: 7-FEB-1991

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AnaLIS ID: 901226-051
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >10929
Instrument ID: >5970-3
Authorized By: D. C. Canada

Customer Sample ID: 27-101
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

BNA - Base/Neutral/Acid Compounds (TCL)

Date Extracted/Prepared: 3-JAN-1991
Preparation Procedure Number: EPA-3550
Percent Moisture: 0.0
Percent Moisture (decanted):
Associated Blank: 910103-263
[] : Result has been Corrected for Spike

Date Analyzed: 14-JAN-1991
Analysis Procedure Number: BNA (CLP) NDP
Dilution Factor: 1.0
Analyst: C MEEHAN
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
108-95-2	Phenol	990U	106-47-8	4-Chloroaniline	990U
111-44-4	bis(2-Chloroethyl)ether	990U	87-68-3	Hexachlorobutadiene	990U
95-57-8	2-Chlorophenol	990U	59-50-7	4-Chloro-3-methylphenol	990U
541-73-1	1,3-Dichlorobenzene	990U	91-57-6	2-Methylnaphthalene	990U
106-46-7	1,4-Dichlorobenzene	990U	77-47-4	Hexachlorocyclopentadiene	990U
100-51-6	Benzyl Alcohol	990U	88-06-2	2,4,6-Trichlorophenol	990U
95-50-1	1,2-Dichlorobenzene	990U	95-95-4	2,4,5-Trichlorophenol	4800U
95-48-7	2-Methylphenol	990U	91-58-7	2-Chloronaphthalene	990U
108-60-1	bis(2-Chloroisopropyl)ether	990U	88-74-4	2-Nitroaniline	4800U
106-44-5	4-Methylphenol	990U	131-11-3	Dimethylphthalate	990U
621-64-7	N-Nitroso-di-n-propylamine	990U	208-96-8	Acenaphthylene	990U
67-72-1	Hexachloroethane	990U	99-09-2	3-Nitroaniline	4800U
98-95-3	Nitrobenzene	990U	83-32-9	Acenaphthene	990U
78-59-1	Isophorone	990U	51-28-5	2,4-Dinitrophenol	4800U
88-75-5	2-Nitrophenol	990U	100-02-7	4-Nitrophenol	4800U
105-67-9	2,4-Dimethylphenol	990U	132-64-9	Dibenzofuran	990U
65-85-0	Benzoic Acid	4800U	121-14-2	2,4-Dinitrotoluene	990U
111-91-1	bis(2-Chloroethoxy)methane	990U	606-20-2	2,6-Dinitrotoluene	990U
120-83-2	2,4-Dichlorophenol	990U	84-66-2	Diethylphthalate	990U
120-82-1	1,2,4-Trichlorobenzene	990U	7005-72-3	4-Chlorophenyl-phenylether	990U
91-20-3	Naphthalene	990U	86-73-7	Fluorene	990U

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

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AnaLIS ID: 901226-051
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >10929
Instrument ID: >5970-3
Authorized By: D. C. Canada

Customer Sample ID: 27-101
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

BNA - Base/Neutral/Acid Compounds (TCL)

Date Extracted/Prepared: 3-JAN-1991
Preparation Procedure Number: EPA-3550
Percent Moisture: 0.0
Percent Moisture (decanted):
Associated Blank: 910103-263
[] : Result has been Corrected for Spike

Date Analyzed: 14-JAN-1991
Analysis Procedure Number: BNA (CLP) NDP
Dilution Factor: 1.0
Analyst: C MEEHAN
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
100-01-6	4-Nitroaniline	4800U	53-70-3	Dibenz(a,h)anthracene	990U
534-52-1	4,6-Dinitro-2-methylphenol	4800U	191-24-2	Benzo(g,h,i)perylene	990U
86-30-6	N-Nitrosodiphenylamine	990U			
101-55-3	4-Bromophenyl-phenylether	990U			
118-74-1	Hexachlorobenzene	990U			
87-86-5	Pentachlorophenol	4800U			
85-01-8	Phenanthrene	990U			
120-12-7	Anthracene	990U			
84-74-2	Di-n-butylphthalate	360 JB			
206-44-0	Fluoranthene	990U			
129-00-0	Pyrene	990U			
85-68-7	Butylbenzylphthalate	990U			
91-94-1	3,3'-Dichlorobenzidine	2000U			
56-55-3	Benzo(a)anthracene	990U			
117-81-7	bis(2-Ethylhexyl)phthalate	180 JB			
218-01-9	Chrysene	990U			
117-84-0	Di-n-octylphthalate	990U			
205-99-2	Benzo(b)fluoranthene	990U			
207-08-9	Benzo(k)fluoranthene	990U			
50-32-8	Benzo(a)pyrene	990U			
193-39-5	Indeno(1,2,3-cd)pyrene	990U			

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

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1

AnaLIS ID: 901226-051
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >07744
Instrument ID: 70-2
Authorized By: D. C. Canada

Customer Sample ID: 27-101
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

VOA - Volatile Organic Compounds (TCL)

Date Extracted/Prepared:
Preparation Procedure Number:
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 901227-032

Date Analyzed: 27-DEC-1990
Analysis Procedure Number: VOA (CLP) NDP
Dilution Factor: 1.0
Analyst: LM POTTER
QA File Number: NA

[] : Result has been Corrected for Spike

CAS		ug/Kg	CAS		ug/Kg
74-87-3	Chloromethane	10U	79-00-5	1,1,2-Trichloroethane	5U
74-83-9	Bromomethane	10U	71-43-2	Benzene	5U
75-01-4	Vinyl Chloride	10U	10061-02-6	trans-1,3-Dichloropropene	5U
75-00-3	Chloroethane	10U	75-25-2	Bromoform	5U
75-09-2	Methylene Chloride	5U	108-10-1	4-Methyl-2-pentanone	10U
67-64-1	Acetone	32 B	591-78-6	2-Hexanone	10U
75-15-0	Carbon Disulfide	5U	127-18-4	Tetrachloroethene	5U
75-35-4	1,1-Dichloroethene	5U	79-34-5	1,1,2,2-Tetrachloroethane	5U
75-34-3	1,1-Dichloroethane	5U	108-88-3	Toluene	5U
540-59-0	1,2-Dichloroethene (total)	5U	108-90-7	Chlorobenzene	5U
67-66-3	Chloroform	5U	100-41-4	Ethylbenzene	5U
107-06-2	1,2-Dichloroethane	5U	100-42-5	Styrene	5U
78-93-3	2-Butanone	18 B	1330-20-7	Xylene (total)	5U
71-55-6	1,1,1-Trichloroethane	5U			
56-23-5	Carbon Tetrachloride	5U			
108-05-4	Vinyl Acetate	10U			
75-27-4	Bromodichloromethane	5U			
78-87-5	1,2-Dichloropropane	5U			
10061-01-5	cis-1,3-Dichloropropene	5U			
79-01-6	Trichloroethene	5U			
124-48-1	Dibromochloromethane	5U			

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

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Oak Ridge K-25 Site
Analytical Chemistry Department
Results of Analyses

AnaLIS ID: 901226-052 Project: G132 027S Customer Sample ID: 27-102
Customer: KESSNER/ROOS Requisition Number:
Date Sampled: 18-DEC-1990 Date Sample Received: 20-DEC-1990
Sampled By: Date Sample Completed: 27-JAN-1991
Material Description: SOIL [] : Result has been Corrected for Spike

Activ. Number	Procedure No.	Analysis	Result	Units	Analyst	QA File Number	Date Completed
102003	EPA-3050 EPA-7421	Lead	5.8	ug/g	P BUCKLEY	10123H	27-JAN-1991
132803	EPA-3550	Prep (BNA- SW-846-Sox)	C		JH KREIS	1993	4-JAN-1991

Prep (BNA- SW-846-Sox)

Analyst = JH KREIS
Date Extracted = 3-JAN-1991
Sample Weight Extracted (g) = 10.30
Percent Solids = 92.5
Calculated Dried Weight (g) = 9.53
Extraction Method = Soxhlet
Extraction Solvent = Methlylene Chloride/Acetone
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 1
Associated Blank = 910103-263

Spike Recovery Data

Analysis	Amount Spiked	Amount Recovered	Percent Recovered
LEAD	20.0	22.4	112.00

Program Manager: D. L. Amburgey
Date Approved: 7-FEB-1991

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1

AnaLIS ID: 901226-052
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >10930
Instrument ID: 5970-3
Authorized By: D. C. Canada

Customer Sample ID: 27-102
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

BNA - Base/Neutral/Acid Compounds (TCL)

Date Extracted/Prepared: 3-JAN-1991
Preparation Procedure Number: EPA-3550
Percent Moisture: 7.5
Percent Moisture (decanted):
Associated Blank: 910103-263
[] : Result has been Corrected for Spike

Date Analyzed: 14-JAN-1991
Analysis Procedure Number: BNA (CLP) NDP
Dilution Factor: 1.0
Analyst: C MEEHAN
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
108-95-2	Phenol	1000U	106-47-8	4-Chloroaniline	1000U
111-44-4	bis(2-Chloroethyl)ether	1000U	87-68-3	Hexachlorobutadiene	1000U
95-57-8	2-Chlorophenol	1000U	59-50-7	4-Chloro-3-methylphenol	1000U
541-73-1	1,3-Dichlorobenzene	1000U	91-57-6	2-Methylnaphthalene	1000U
106-46-7	1,4-Dichlorobenzene	1000U	77-47-4	Hexachlorocyclopentadiene	1000U
100-51-6	Benzyl Alcohol	1000U	88-06-2	2,4,6-Trichlorophenol	1000U
95-50-1	1,2-Dichlorobenzene	1000U	95-95-4	2,4,5-Trichlorophenol	5200U
95-48-7	2-Methylphenol	1000U	91-58-7	2-Chloronaphthalene	1000U
108-60-1	bis(2-Chloroisopropyl)ether	1000U	88-74-4	2-Nitroaniline	5200U
106-44-5	4-Methylphenol	1000U	131-11-3	Dimethylphthalate	1000U
621-64-7	N-Nitroso-di-n-propylamine	1000U	208-96-8	Acenaphthylene	1000U
67-72-1	Hexachloroethane	1000U	99-09-2	3-Nitroaniline	5200U
98-95-3	Nitrobenzene	1000U	83-32-9	Acenaphthene	1000U
78-59-1	Isophorone	1000U	51-28-5	2,4-Dinitrophenol	5200U
88-75-5	2-Nitrophenol	1000U	100-02-7	4-Nitrophenol	5200U
105-67-9	2,4-Dimethylphenol	1000U	132-64-9	Dibenzofuran	1000U
65-85-0	Benzoic Acid	5200U	121-14-2	2,4-Dinitrotoluene	1000U
111-91-1	bis(2-Chloroethoxy)methane	1000U	606-20-2	2,6-Dinitrotoluene	1000U
120-83-2	2,4-Dichlorophenol	1000U	84-66-2	Diethylphthalate	220 JB
120-82-1	1,2,4-Trichlorobenzene	1000U	7005-72-3	4-Chlorophenyl-phenylether	1000U
91-20-3	Naphthalene	1000U	86-73-7	Fluorene	1000U

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9613474.0198

AnaLIS ID: 901226-052
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >10930
Instrument ID: 5970-3
Authorized By: D. C. Canada

Customer Sample ID: 27-102
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

BNA - Base/Neutral/Acid Compounds (TCL)

Date Extracted/Prepared: 3-JAN-1991
Preparation Procedure Number: EPA-3550
Percent Moisture: 7.5
Percent Moisture (decanted):
Associated Blank: 910103-263
[] : Result has been Corrected for Spike

Date Analyzed: 14-JAN-1991
Analysis Procedure Number: BNA (CLP) NDP
Dilution Factor: 1.0
Analyst: C MEEHAN
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
100-01-6	4-Nitroaniline	5200U	53-70-3	Dibenz(a,h)anthracene	1000U
534-52-1	4,6-Dinitro-2-methylphenol	5200U	191-24-2	Benzo(g,h,i)perylene	1000U
86-30-6	N-Nitrosodiphenylamine	1000U			
101-55-3	4-Bromophenyl-phenylether	1000U			
118-74-1	Hexachlorobenzene	1000U			
87-86-5	Pentachlorophenol	5200U			
85-01-8	Phenanthrene	1000U			
120-12-7	Anthracene	1000U			
84-74-2	Di-n-butylphthalate	4600 B			
206-44-0	Fluoranthene	1000U			
129-00-0	Pyrene	1000U			
85-68-7	Butylbenzylphthalate	1000U			
91-94-1	3,3'-Dichlorobenzidine	2100U			
56-55-3	Benzo(a)anthracene	1000U			
117-81-7	bis(2-Ethylhexyl)phthalate	440 JB			
218-01-9	Chrysene	1000U			
117-84-0	Di-n-octylphthalate	1000U			
205-99-2	Benzo(b)fluoranthene	1000U			
207-08-9	Benzo(k)fluoranthene	1000U			
50-32-8	Benzo(a)pyrene	1000U			
193-39-5	Indeno(1,2,3-cd)pyrene	1000U			

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9613474.0199

ANALYSIS DATA REPORT

AnaLIS ID:	901226-052	Customer Sample ID:	27-102
Laboratory:	Organic Mass Spectroscopy Laboratory	Customer:	KESSNER/ROOS
File ID:	>07745	Sample Matrix:	SOIL
Instrument ID:	70-2	Requisition Number:	
Authorized By:	D. C. Canada	Date Sample Received:	20-DEC-1990

VOA - Volatile Organic Compounds (TCL)

Date Extracted/Prepared:		Date Analyzed:	27-DEC-1990
Preparation Procedure Number:		Analysis Procedure Number:	VOA (CLP) NDP
Percent Moisture:		Dilution Factor:	1.0
Percent Moisture (decanted):		Analyst:	LM POTTER
Associated Blank:	901227-032	QA File Number:	NA

[] : Result has been Corrected for Spike

CAS		ug/Kg	CAS		ug/Kg
74-87-3	Chloromethane	10U	79-00-5	1,1,2-Trichloroethane	5U
74-83-9	Bromomethane	10U	71-43-2	Benzene	5U
75-01-4	Vinyl Chloride	10U	10061-02-6	trans-1,3-Dichloropropene	5U
75-00-3	Chloroethane	10U	75-25-2	Bromoform	5U
75-09-2	Methylene Chloride	5U	108-10-1	4-Methyl-2-pentanone	10U
67-64-1	Acetone	10U	591-78-6	2-Hexanone	10U
75-15-0	Carbon Disulfide	5U	127-18-4	Tetrachloroethene	5U
75-35-4	1,1-Dichloroethene	5U	79-34-5	1,1,2,2-Tetrachloroethane	5U
75-34-3	1,1-Dichloroethane	5U	108-88-3	Toluene	5U
540-59-0	1,2-Dichloroethene (total)	5U	108-90-7	Chlorobenzene	5U
67-66-3	Chloroform	5U	100-41-4	Ethylbenzene	5U
107-06-2	1,2-Dichloroethane	5U	100-42-5	Styrene	5U
78-93-3	2-Butanone	17 B	1330-20-7	Xylene (total)	5U
71-55-6	1,1,1-Trichloroethane	5U			
56-23-5	Carbon Tetrachloride	5U			
108-05-4	Vinyl Acetate	10U			
75-27-4	Bromodichloromethane	5U			
78-87-5	1,2-Dichloropropane	5U			
10061-01-5	cis-1,3-Dichloropropene	5U			
79-01-6	Trichloroethene	5U			
124-48-1	Dibromochloromethane	5U			

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9613474.0200

Oak Ridge K-25 Site
Analytical Chemistry Department
Results of Analyses

AnaLIS ID: 901226-055 Project: G132 027S Customer Sample ID: 27-103
Customer: KESSNER/ROOS Requisition Number:
Date Sampled: 18-DEC-1990 Date Sample Received: 20-DEC-1990
Sampled By: Date Sample Completed: 27-JAN-1991
Material Description: SOIL [] : Result has been Corrected for Spike

Activ. Number	Procedure No.	Analysis	Result	Units	Analyst	QA File Number	Date Completed
102003	EPA-3050 EPA-7421	Lead	8.8	ug/g	P BUCKLEY	10123H	27-JAN-1991
132803	EPA-3550	Prep (BNA- SW-846-Sox)	C		JH KREIS	1993	4-JAN-1991

Prep (BNA- SW-846-Sox)

Analyst = JH KREIS
Date Extracted = 3-JAN-1991
Sample Weight Extracted (g) = 10.15
Percent Solids = 93.3
Calculated Dried Weight (g) = 9.47
Extraction Method = Soxhlet
Extraction Solvent = Methlylene Chloride/Acetone
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 1
Associated Blank = 910103-263

Program Manager: D. L. Ambrgey
Date Approved: 7-FEB-1991

9613474.0201

AnaLIS ID: 901226-055
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >10933
Instrument ID: 5970-3
Authorized By: D. C. Canada

Customer Sample ID: 27-103
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

BNA - Base/Neutral/Acid Compounds (TCL)

Date Extracted/Prepared: 3-JAN-1991
Preparation Procedure Number: EPA-3550
Percent Moisture: 6.7
Percent Moisture (decanted):
Associated Blank: 910103-263
[] : Result has been Corrected for Spike

Date Analyzed: 14-JAN-1991
Analysis Procedure Number: BNA (CLP) NDP
Dilution Factor: 2.0
Analyst: C MEEHAN
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
108-95-2	Phenol	2100U	106-47-8	4-Chloroaniline	2100U
111-44-4	bis(2-Chloroethyl)ether	2100U	87-68-3	Hexachlorobutadiene	2100U
95-57-8	2-Chlorophenol	2100U	59-50-7	4-Chloro-3-methylphenol	2100U
541-73-1	1,3-Dichlorobenzene	2100U	91-57-6	2-Methylnaphthalene	2100U
106-46-7	1,4-Dichlorobenzene	2100U	77-47-4	Hexachlorocyclopentadiene	2100U
100-51-6	Benzyl Alcohol	2100U	88-06-2	2,4,6-Trichlorophenol	2100U
95-50-1	1,2-Dichlorobenzene	2100U	95-95-4	2,4,5-Trichlorophenol	10000U
95-48-7	2-Methylphenol	2100U	91-58-7	2-Chloronaphthalene	2100U
108-60-1	bis(2-Chloroisopropyl)ether	2100U	88-74-4	2-Nitroaniline	10000U
106-44-5	4-Methylphenol	2100U	131-11-3	Dimethylphthalate	2100U
621-64-7	N-Nitroso-di-n-propylamine	2100U	208-96-8	Acenaphthylene	2100U
67-72-1	Hexachloroethane	2100U	99-09-2	3-Nitroaniline	10000U
98-95-3	Nitrobenzene	2100U	83-32-9	Acenaphthene	2100U
78-59-1	Isophorone	2100U	51-28-5	2,4-Dinitrophenol	10000U
88-75-5	2-Nitrophenol	2100U	100-02-7	4-Nitrophenol	10000U
105-67-9	2,4-Dimethylphenol	2100U	132-64-9	Dibenzofuran	2100U
65-85-0	Benzoic Acid	10000U	121-14-2	2,4-Dinitrotoluene	2100U
111-91-1	bis(2-Chloroethoxy)methane	2100U	606-20-2	2,6-Dinitrotoluene	2100U
120-83-2	2,4-Dichlorophenol	2100U	84-66-2	Diethylphthalate	200 B
120-82-1	1,2,4-Trichlorobenzene	2100U	7005-72-3	4-Chlorophenyl-phenylether	2100U
91-20-3	Naphthalene	2100U	86-73-7	Fluorene	2100U

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

AnaLIS ID: 901226-055
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >10933
Instrument ID: 5970-3
Authorized By: D. C. Canada

Customer Sample ID: 27-103
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

BNA - Base/Neutral/Acid Compounds (TCL)

Date Extracted/Prepared: 3-JAN-1991
Preparation Procedure Number: EPA-3550
Percent Moisture: 6.7
Percent Moisture (decanted):
Associated Blank: 910103-263
[] : Result has been Corrected for Spike

Date Analyzed: 14-JAN-1991
Analysis Procedure Number: BNA (CLP) NDP
Dilution Factor: 2.0
Analyst: C MEEHAN
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
100-01-6	4-Nitroaniline	10000U	53-70-3	Dibenz(a,h)anthracene	380 J
534-52-1	4,6-Dinitro-2-methylphenol	10000U	191-24-2	Benzo(g,h,i)perylene	2100U
86-30-6	N-Nitrosodiphenylamine	2100U			
101-55-3	4-Bromophenyl-phenylether	2100U			
118-74-1	Hexachlorobenzene	2100U			
87-86-5	Pentachlorophenol	10000U			
85-01-8	Phenanthrene	2100U			
120-12-7	Anthracene	2100U			
84-74-2	Di-n-butylphthalate	3800 B			
206-44-0	Fluoranthene	2100U			
129-00-0	Pyrene	2100U			
85-68-7	Butylbenzylphthalate	2100U			
91-94-1	3,3'-Dichlorobenzidine	4200U			
56-55-3	Benzo(a)anthracene	2100U			
117-81-7	bis(2-Ethylhexyl)phthalate	490 JB			
218-01-9	Chrysene	220 J			
117-84-0	Di-n-octylphthalate	2100U			
205-99-2	Benzo(b)fluoranthene	2100U			
207-08-9	Benzo(k)fluoranthene	210 J			
50-32-8	Benzo(a)pyrene	270 J			
193-39-5	Indeno(1,2,3-cd)pyrene	200 J			

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9613474.0203

AnaLIS ID: 901226-055
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >07748
Instrument ID: 70-2
Authorized By: D. C. Canada

Customer Sample ID: 27-103
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

VOA - Volatile Organic Compounds (TCL)

Date Extracted/Prepared:
Preparation Procedure Number:
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 901227-032

Date Analyzed: 27-DEC-1990
Analysis Procedure Number: VOA (CLP) NDP
Dilution Factor: 1.0
Analyst: LM POTTER
QA File Number: NA

[] : Result has been Corrected for Spike

CAS		ug/Kg	CAS		ug/Kg
74-87-3	Chloromethane	10U	79-00-5	1,1,2-Trichloroethane	5U
74-83-9	Bromomethane	10U	71-43-2	Benzene	5U
75-01-4	Vinyl Chloride	10U	10061-02-6	trans-1,3-Dichloropropene	5U
75-00-3	Chloroethane	10U	75-25-2	Bromoform	5U
75-09-2	Methylene Chloride	2 J	108-10-1	4-Methyl-2-pentanone	2 J
67-64-1	Acetone	48 B	591-78-6	2-Hexanone	10U
75-15-0	Carbon Disulfide	5U	127-18-4	Tetrachloroethene	5U
75-35-4	1,1-Dichloroethene	5U	79-34-5	1,1,2,2-Tetrachloroethane	5U
75-34-3	1,1-Dichloroethane	5U	108-88-3	Toluene	5U
540-59-0	1,2-Dichloroethene (total)	5U	108-90-7	Chlorobenzene	5U
67-66-3	Chloroform	5U	100-41-4	Ethylbenzene	5U
107-06-2	1,2-Dichloroethane	5U	100-42-5	Styrene	5U
78-93-3	2-Butanone	14 B	1330-20-7	Xylene (total)	5U
71-55-6	1,1,1-Trichloroethane	5U			
56-23-5	Carbon Tetrachloride	5U			
108-05-4	Vinyl Acetate	10U			
75-27-4	Bromodichloromethane	5U			
78-87-5	1,2-Dichloropropane	5U			
10061-01-5	cis-1,3-Dichloropropene	5U			
79-01-6	Trichloroethene	5U			
124-48-1	Dibromochloromethane	5U			

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9613474.0204

Oak Ridge K-25 Site
Analytical Chemistry Department
Results of Analyses

AnaLIS ID: 901226-056 Project: G132 027S Customer Sample ID: 27-104
Customer: KESSNER/ROOS Requisition Number:
Date Sampled: 18-DEC-1990 Date Sample Received: 20-DEC-1990
Sampled By: Date Sample Completed: 27-JAN-1991
Material Description: SOIL [] : Result has been Corrected for Spike

Activ. Number	Procedure No.	Analysis	Result	Units	Analyst	QA File Number	Date Completed
102003	EPA-3050 EPA-7421	Lead	4.8	ug/g	P BUCKLEY	10123H	27-JAN-1991
132803	EPA-3550	Prep (BNA- SW-846-Sox)	C		JH KREIS	1993	4-JAN-1991

Prep (BNA- SW-846-Sox)

Analyst = JH KREIS
Date Extracted = 3-JAN-1991
Sample Weight Extracted (g) = 10.32
Percent Solids = 92.7
Calculated Dried Weight (g) = 9.57
Extraction Method = Soxhlet
Extraction Solvent = Methlylene Chloride/Acetone
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 1
Associated Blank = 910103-263

Program Manager: D. L. Amburgey
Date Approved: 7-FEB-1991

9613474.0205

42

AnaLIS ID: 901226-056
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >10934
Instrument ID: 5970-3
Authorized By: D. C. Canada

Customer Sample ID: 27-104
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

BNA - Base/Neutral/Acid Compounds (TCL)

Date Extracted/Prepared: 3-JAN-1991
Preparation Procedure Number: EPA-3550
Percent Moisture: 7.3
Percent Moisture (decanted):
Associated Blank: 910103-263
[] : Result has been Corrected for Spike

Date Analyzed: 14-JAN-1991
Analysis Procedure Number: BNA (CLP) NDP
Dilution Factor: 5.0
Analyst: C MEEHAN
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
108-95-2	Phenol	5200U	106-47-8	4-Chloroaniline	5200U
111-44-4	bis(2-Chloroethyl)ether	5200U	87-68-3	Hexachlorobutadiene	5200U
95-57-8	2-Chlorophenol	5200U	59-50-7	4-Chloro-3-methylphenol	5200U
541-73-1	1,3-Dichlorobenzene	5200U	91-57-6	2-Methylnaphthalene	24000
106-46-7	1,4-Dichlorobenzene	5200U	77-47-4	Hexachlorocyclopentadiene	5200U
100-51-6	Benzyl Alcohol	5200U	88-06-2	2,4,6-Trichlorophenol	5200U
95-50-1	1,2-Dichlorobenzene	5200U	95-95-4	2,4,5-Trichlorophenol	26000U
95-48-7	2-Methylphenol	5200U	91-58-7	2-Chloronaphthalene	5200U
108-60-1	bis(2-Chloroisopropyl)ether	5200U	88-74-4	2-Nitroaniline	26000U
106-44-5	4-Methylphenol	5200U	131-11-3	Dimethylphthalate	5200U
621-64-7	N-Nitroso-di-n-propylamine	5200U	208-96-8	Acenaphthylene	5200U
67-72-1	Hexachloroethane	5200U	99-09-2	3-Nitroaniline	26000U
98-95-3	Nitrobenzene	5200U	83-32-9	Acenaphthene	760 J
78-59-1	Isophorone	5200U	51-28-5	2,4-Dinitrophenol	26000U
88-75-5	2-Nitrophenol	5200U	100-02-7	4-Nitrophenol	26000U
105-67-9	2,4-Dimethylphenol	5200U	132-64-9	Dibenzofuran	5200U
65-85-0	Benzoic Acid	26000U	121-14-2	2,4-Dinitrotoluene	5200U
111-91-1	bis(2-Chloroethoxy)methane	5200U	606-20-2	2,6-Dinitrotoluene	5200U
120-83-2	2,4-Dichlorophenol	5200U	84-66-2	Diethylphthalate	5200U
120-82-1	1,2,4-Trichlorobenzene	5200U	7005-72-3	4-Chlorophenyl-phenylether	5200U
91-20-3	Naphthalene	5200U	86-73-7	Fluorene	5200U

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9613474.0206

AnaLIS ID: 901226-056
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >10934
Instrument ID: 5970-3
Authorized By: D. C. Canada

Customer Sample ID: 27-104
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

BNA - Base/Neutral/Acid Compounds (TCL)

Date Extracted/Prepared: 3-JAN-1991
Preparation Procedure Number: EPA-3550
Percent Moisture: 7.3
Percent Moisture (decanted):
Associated Blank: 910103-263
[] : Result has been Corrected for Spike

Date Analyzed: 14-JAN-1991
Analysis Procedure Number: BNA (CLP) NDP
Dilution Factor: 5.0
Analyst: C MEEHAN
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
100-01-6	4-Nitroaniline	26000U	53-70-3	Dibenz(a,h)anthracene	560 J
534-52-1	4,6-Dinitro-2-methylphenol	26000U	191-24-2	Benzo(g,h,i)perylene	5200U
86-30-6	N-Nitrosodiphenylamine	5200U			
101-55-3	4-Bromophenyl-phenylether	5200U			
118-74-1	Hexachlorobenzene	5200U			
87-86-5	Pentachlorophenol	26000U			
85-01-8	Phenanthrene	3600 J			
120-12-7	Anthracene	5200U			
84-74-2	Di-n-butylphthalate	3400 J			
206-44-0	Fluoranthene	7200			
129-00-0	Pyrene	7200			
85-68-7	Butylbenzylphthalate	5200U			
91-94-1	3,3'-Dichlorobenzidine	10000U			
56-55-3	Benzo(a)anthracene	4100 J			
117-81-7	bis(2-Ethylhexyl)phthalate	1600 J			
218-01-9	Chrysene	6100			
117-84-0	Di-n-octylphthalate	5200U			
205-99-2	Benzo(b)fluoranthene	6000			
207-08-9	Benzo(k)fluoranthene	5200U			
50-32-8	Benzo(a)pyrene	4000 J			
193-39-5	Indeno(1,2,3-cd)pyrene	5200U			

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9613474.0207

4

AnaLIS ID: 901226-056
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >07775
Instrument ID: 70-2
Authorized By: D. C. Canada

Customer Sample ID: 27-104
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

VOA - Volatile Organic Compounds (TCL)

Date Extracted/Prepared:
Preparation Procedure Number:
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 901231-001

Date Analyzed: 31-DEC-1990
Analysis Procedure Number: VOA (CLP) NDP
Dilution Factor: 100.0
Analyst: LM POTTER
QA File Number: NA

[] : Result has been Corrected for Spike

CAS		ug/Kg	CAS		ug/Kg
74-87-3	Chloromethane	1300U	79-00-5	1,1,2-Trichloroethane	630U
74-83-9	Bromomethane	1300U	71-43-2	Benzene	630U
75-01-4	Vinyl Chloride	1300U	10061-02-6	trans-1,3-Dichloropropene	630U
75-00-3	Chloroethane	1300U	75-25-2	Bromoform	630U
75-09-2	Methylene Chloride	260 JB	108-10-1	4-Methyl-2-pentanone	1300U
67-64-1	Acetone	1300U	591-78-6	2-Hexanone	5400
75-15-0	Carbon Disulfide	630U	127-18-4	Tetrachloroethene	630U
75-35-4	1,1-Dichloroethene	630U	79-34-5	1,1,2,2-Tetrachloroethane	630U
75-34-3	1,1-Dichloroethane	630U	108-88-3	Toluene	630U
540-59-0	1,2-Dichloroethene (total)	630U	108-90-7	Chlorobenzene	160 J
67-66-3	Chloroform	630U	100-41-4	Ethylbenzene	630U
107-06-2	1,2-Dichloroethane	630U	100-42-5	Styrene	630U
78-93-3	2-Butanone	1300U	1330-20-7	Xylene (total)	13000
71-55-6	1,1,1-Trichloroethane	630U			
56-23-5	Carbon Tetrachloride	630U			
108-05-4	Vinyl Acetate	1300U			
75-27-4	Bromodichloromethane	630U			
78-87-5	1,2-Dichloropropane	630U			
10061-01-5	cis-1,3-Dichloropropene	630U			
79-01-6	Trichloroethene	630U			
124-48-1	Dibromochloromethane	630U			

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9613474.0208

Oak Ridge K-25 Site
Analytical Chemistry Department
Results of Analyses

AnaLIS ID: 901226-057 Project: G132 027S Customer Sample ID: 27-105
Customer: KESSNER/ROOS Requisition Number:
Date Sampled: 18-DEC-1990 Date Sample Received: 20-DEC-1990
Sampled By: Date Sample Completed: 27-JAN-1991
Material Description: SOIL [] : Result has been Corrected for Spike

Activ. Number	Procedure No.	Analysis	Result	Units	Analyst	QA File Number	Date Completed
102003	EPA-3050 EPA-7421	Lead	4.3	ug/g	P BUCKLEY	10123H	27-JAN-1991
132803	EPA-3550	Prep (BNA- SW-846-Sox)	C		JH KREIS	1993	4-JAN-1991

Prep (BNA- SW-846-Sox)

Analyst	= JH KREIS
Date Extracted	= 3-JAN-1991
Sample Weight Extracted (g)	= 10.60
Percent Solids	= 92.5
Calculated Dried Weight (g)	= 9.81
Extraction Method	= Soxhlet
Extraction Solvent	= Methlylene Chloride/Acetone
Extraction Cleanup	= Sodium Sulfate
Final Volume of Extract (mL)	= 1
Associated Blank	= 910103-263

***** Comments from the Organic Mass Spectroscopy Laboratory *****

THIS SAMPLE DOES NOT MEET CLP SOW OR LABORATORY QAP CRITERIA FOR SURROGATE STANDARD % RECOVERY FOR EXTRACTABLE ORGANICS. TWO OR MORE SURROGATE STANDARDS WERE OUTSIDE ACCEPTANCE CRITERIA LIMITS DUE TO MATRIX EFFECT AND DILUTION. INTERNAL STANDARD AREAS WERE WITHIN CLP SOW AND LABORATORY QAP ACCEPTANCE CRITERIA.

Program Manager: D. L. Amburgey
Date Approved: 7-FEB-1991

AnaLIS ID: 901226-057
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: 10935
Instrument ID: 5970-3
Authorized By: D. C. Canada

Customer Sample ID: 27-105
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

BNA - Base/Neutral/Acid Compounds (TCL)

Date Extracted/Prepared: 3-JAN-1991
Preparation Procedure Number: EPA-3550
Percent Moisture: 7.5
Percent Moisture (decanted):
Associated Blank: 910103-263
[] : Result has been Corrected for Spike

Date Analyzed: 14-JAN-1991
Analysis Procedure Number: BNA (CLP) NDP
Dilution Factor: 5.0
Analyst: C MEEHAN
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
108-95-2	Phenol	5000U	106-47-8	4-Chloroaniline	5000U
111-44-4	bis(2-Chloroethyl)ether	5000U	87-68-3	Hexachlorobutadiene	5000U
95-57-8	2-Chlorophenol	5000U	59-50-7	4-Chloro-3-methylphenol	5000U
541-73-1	1,3-Dichlorobenzene	5000U	91-57-6	2-Methylnaphthalene	35000
106-46-7	1,4-Dichlorobenzene	5000U	77-47-4	Hexachlorocyclopentadiene	5000U
100-51-6	Benzyl Alcohol	5000U	88-06-2	2,4,6-Trichlorophenol	5000U
95-50-1	1,2-Dichlorobenzene	5000U	95-95-4	2,4,5-Trichlorophenol	24000U
95-48-7	2-Methylphenol	5000U	91-58-7	2-Chloronaphthalene	5000U
108-60-1	bis(2-Chloroisopropyl)ether	5000U	88-74-4	2-Nitroaniline	24000U
106-44-5	4-Methylphenol	5000U	131-11-3	Dimethylphthalate	5000U
621-64-7	N-Nitroso-di-n-propylamine	5000U	208-96-8	Acenaphthylene	5000U
67-72-1	Hexachloroethane	5000U	99-09-2	3-Nitroaniline	24000U
98-95-3	Nitrobenzene	5000U	83-32-9	Acenaphthene	2000 J
78-59-1	Isophorone	5000U	51-28-5	2,4-Dinitrophenol	24000U
88-75-5	2-Nitrophenol	5000U	100-02-7	4-Nitrophenol	24000U
105-67-9	2,4-Dimethylphenol	5000U	132-64-9	Dibenzofuran	5000U
65-85-0	Benzoic Acid	24000U	121-14-2	2,4-Dinitrotoluene	5000U
111-91-1	bis(2-Chloroethoxy)methane	5000U	606-20-2	2,6-Dinitrotoluene	5000U
120-83-2	2,4-Dichlorophenol	5000U	84-66-2	Diethylphthalate	5000U
120-82-1	1,2,4-Trichlorobenzene	5000U	7005-72-3	4-Chlorophenyl-phenylether	5000U
91-20-3	Naphthalene	5000U	86-73-7	Fluorene	940 J

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9613474.0210

5

AnaLIS ID: 901226-057
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: 10935
Instrument ID: 5970-3
Authorized By: D. C. Canada

Customer Sample ID: 27-105
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

BNA - Base/Neutral/Acid Compounds (TCL)

Date Extracted/Prepared: 3-JAN-1991
Preparation Procedure Number: EPA-3550
Percent Moisture: 7.5
Percent Moisture (decanted):
Associated Blank: 910103-263
[] : Result has been Corrected for Spike

Date Analyzed: 14-JAN-1991
Analysis Procedure Number: BNA (CLP) NDP
Dilution Factor: 5.0
Analyst: C MEEHAN
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
100-01-6	4-Nitroaniline	24000U	53-70-3	Dibenz(a,h)anthracene	1900 J
534-52-1	4,6-Dinitro-2-methylphenol	24000U	191-24-2	Benzo(g,h,i)perylene	5000U
86-30-6	N-Nitrosodiphenylamine	5000U			
101-55-3	4-Bromophenyl-phenylether	5000U			
118-74-1	Hexachlorobenzene	5000U			
87-86-5	Pentachlorophenol	24000U			
85-01-8	Phenanthrene	9600			
120-12-7	Anthracene	2300 J			
84-74-2	Di-n-butylphthalate	3000 JB			
206-44-0	Fluoranthene	18000			
129-00-0	Pyrene	18000			
85-68-7	Butylbenzylphthalate	5000U			
91-94-1	3,3'-Dichlorobenzidine	10000U			
56-55-3	Benzo(a)anthracene	12000			
117-81-7	bis(2-Ethylhexyl)phthalate	5000U			
218-01-9	Chrysene	15000			
117-84-0	Di-n-octylphthalate	5000U			
205-99-2	Benzo(b)fluoranthene	12000			
207-08-9	Benzo(k)fluoranthene	4400 J			
50-32-8	Benzo(a)pyrene	10000			
193-39-5	Indeno(1,2,3-cd)pyrene	1200 J			

Data Reporting Qualifiers:

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ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9013974.0211

5

AnaLIS ID: 901226-057
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >07778
Instrument ID: 70-2
Authorized By: D. C. Canada

Customer Sample ID: 27-105
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

VOA - Volatile Organic Compounds (TCL)

Date Extracted/Prepared:
Preparation Procedure Number:
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 901231-001
[] : Result has been Corrected for Spike

Date Analyzed: 31-DEC-1990
Analysis Procedure Number: VOA (CLP) NDP
Dilution Factor: 100.0
Analyst: LM POTTER
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
74-87-3	Chloromethane	1300U	79-00-5	1,1,2-Trichloroethane	630U
74-83-9	Bromomethane	1300U	71-43-2	Benzene	630U
75-01-4	Vinyl Chloride	1300U	10061-02-6	trans-1,3-Dichloropropene	630U
75-00-3	Chloroethane	1300U	75-25-2	Bromoform	630U
75-09-2	Methylene Chloride	260 JB	108-10-1	4-Methyl-2-pentanone	1300U
67-64-1	Acetone	1300U	591-78-6	2-Hexanone	10000
75-15-0	Carbon Disulfide	630U	127-18-4	Tetrachloroethene	630U
75-35-4	1,1-Dichloroethene	630U	79-34-5	1,1,2,2-Tetrachloroethane	630U
75-34-3	1,1-Dichloroethane	630U	108-88-3	Toluene	630U
540-59-0	1,2-Dichloroethene (total)	630U	108-90-7	Chlorobenzene	630U
67-66-3	Chloroform	630U	100-41-4	Ethylbenzene	630U
107-06-2	1,2-Dichloroethane	630U	100-42-5	Styrene	630U
78-93-3	2-Butanone	1300U	1330-20-7	Xylene (total)	17000
71-55-6	1,1,1-Trichloroethane	630U			
56-23-5	Carbon Tetrachloride	630U			
108-05-4	Vinyl Acetate	1300U			
75-27-4	Bromodichloromethane	630U			
78-87-5	1,2-Dichloropropane	630U			
10061-01-5	cis-1,3-Dichloropropene	630U			
79-01-6	Trichloroethene	630U			
124-48-1	Dibromochloromethane	630U			

Data Reporting Qualifiers:

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J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9613474.0212

Oak Ridge K-25 Site
Analytical Chemistry Department
Results of Analyses

AnaLIS ID: 901226-058 Project: G132 027S Customer Sample ID: 27-106
Customer: KESSNER/ROOS Requisition Number:
Date Sampled: 18-DEC-1990 Date Sample Received: 20-DEC-1990
Sampled By: Date Sample Completed: 27-JAN-1991
Material Description: SOIL [] : Result has been Corrected for Spike

Activ. Number	Procedure No.	Analysis	Result	Units	Analyst	QA File Number	Date Completed
102003	EPA-3050 EPA-7421	Lead	4.2	ug/g	P BUCKLEY	10123H	27-JAN-1991
132803	EPA-3550	Prep (BNA- SW-846-Sox)	C		JH KREIS	1993	4-JAN-1991

Prep (BNA- SW-846-Sox)

Analyst = JH KREIS
Date Extracted = 3-JAN-1991
Sample Weight Extracted (g) = 10.90
Percent Solids = 91.5
Calculated Dried Weight (g) = 9.97
Extraction Method = Soxhlet
Extraction Solvent = Methlylene Chloride/Acetone
Extraction Cleanup = Sodium Sulfate
Final Volume of Extract (mL) = 1
Associated Blank = 910103-263

Program Manager: D. L. Amburgey
Date Approved: 7-FEB-1991

9101274.0213

5

AnaLIS ID: 901226-058
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >10936
Instrument ID: 5970-3
Authorized By: D. C. Canada

Customer Sample ID: 27-106
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

BNA - Base/Neutral/Acid Compounds (TCL)

Date Extracted/Prepared: 3-JAN-1991
Preparation Procedure Number: EPA-3550
Percent Moisture: 8.5
Percent Moisture (decanted):
Associated Blank: 910103-263
[] : Result has been Corrected for Spike

Date Analyzed: 14-JAN-1991
Analysis Procedure Number: BNA (CLP) NDP
Dilution Factor: 1.0
Analyst: C MEEHAN
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
108-95-2	Phenol	980U	106-47-8	4-Chloroaniline	980U
111-44-4	bis(2-Chloroethyl)ether	980U	87-68-3	Hexachlorobutadiene	980U
95-57-8	2-Chlorophenol	980U	59-50-7	4-Chloro-3-methylphenol	980U
541-73-1	1,3-Dichlorobenzene	980U	91-57-6	2-Methylnaphthalene	980U
106-46-7	1,4-Dichlorobenzene	980U	77-47-4	Hexachlorocyclopentadiene	980U
100-51-6	Benzyl Alcohol	980U	88-06-2	2,4,6-Trichlorophenol	980U
95-50-1	1,2-Dichlorobenzene	980U	95-95-4	2,4,5-Trichlorophenol	4900U
95-48-7	2-Methylphenol	980U	91-58-7	2-Chloronaphthalene	980U
108-60-1	bis(2-Chloroisopropyl)ether	980U	88-74-4	2-Nitroaniline	4900U
106-44-5	4-Methylphenol	980U	131-11-3	Dimethylphthalate	980U
621-64-7	N-Nitroso-di-n-propylamine	980U	208-96-8	Acenaphthylene	980U
67-72-1	Hexachloroethane	980U	99-09-2	3-Nitroaniline	4900U
98-95-3	Nitrobenzene	980U	83-32-9	Acenaphthene	980U
78-59-1	Isophorone	980U	51-28-5	2,4-Dinitrophenol	4900U
88-75-5	2-Nitrophenol	980U	100-02-7	4-Nitrophenol	4900U
105-67-9	2,4-Dimethylphenol	980U	132-64-9	Dibenzofuran	980U
65-85-0	Benzoic Acid	140 J	121-14-2	2,4-Dinitrotoluene	980U
111-91-1	bis(2-Chloroethoxy)methane	980U	606-20-2	2,6-Dinitrotoluene	980U
120-83-2	2,4-Dichlorophenol	980U	84-66-2	Diethylphthalate	170 JB
120-82-1	1,2,4-Trichlorobenzene	980U	7005-72-3	4-Chlorophenyl-phenylether	980U
91-20-3	Naphthalene	980U	86-73-7	Fluorene	980U

Data Reporting Qualifiers:

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B - Analyte was found in the reagent blank as well as the sample.
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ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9619479L0214

AnaLIS ID: 901226-058
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >10936
Instrument ID: 5970-3
Authorized By: D. C. Canada

Customer Sample ID: 27-106
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

BNA - Base/Neutral/Acid Compounds (TCL)

Date Extracted/Prepared: 3-JAN-1991
Preparation Procedure Number: EPA-3550
Percent Moisture: 8.5
Percent Moisture (decanted):
Associated Blank: 910103-263
[] : Result has been Corrected for Spike

Date Analysed: 14-JAN-1991
Analysis Procedure Number: BNA (CLP) NDP
Dilution Factor: 1.0
Analyst: C MEEHAN
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
100-01-6	4-Nitroaniline	4900U	53-70-3	Dibenz(a,h)anthracene	980U
534-52-1	4,6-Dinitro-2-methylphenol	4900U	191-24-2	Benzo(g,h,i)perylene	980U
86-30-6	N-Nitrosodiphenylamine	980U			
101-55-3	4-Bromophenyl-phenylether	980U			
118-74-1	Hexachlorobenzene	980U			
87-86-5	Pentachlorophenol	4900U			
85-01-8	Phenanthrene	980U			
120-12-7	Anthracene	980U			
84-74-2	Di-n-butylphthalate	3700 B			
206-44-0	Fluoranthene	980U			
129-00-0	Pyrene	980U			
85-68-7	Butylbenzylphthalate	980U			
91-94-1	3,3'-Dichlorobenzidine	2000U			
56-55-3	Benzo(a)anthracene	980U			
117-81-7	bis(2-Ethylhexyl)phthalate	410 JB			
218-01-9	Chrysene	980U			
117-84-0	Di-n-octylphthalate	980U			
205-99-2	Benzo(b)fluoranthene	980U			
207-08-9	Benzo(k)fluoranthene	980U			
50-32-8	Benzo(a)pyrene	980U			
193-39-5	Indeno(1,2,3-cd)pyrene	980U			

Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.
B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

9613474.0215

ANALYSIS DATA REPORT

AnaLIS ID: 901226-058
Laboratory: Organic Mass Spectroscopy Laboratory
File ID: >07779
Instrument ID: 70-2
Authorized By: D. C. Canada

Customer Sample ID: 27-106
Customer: KESSNER/ROOS
Sample Matrix: SOIL
Requisition Number:
Date Sample Received: 20-DEC-1990

VOA - Volatile Organic Compounds (TCL)

Date Extracted/Prepared:
Preparation Procedure Number:
Percent Moisture:
Percent Moisture (decanted):
Associated Blank: 901231-001
[] : Result has been Corrected for Spike

Date Analyzed: 31-DEC-1990
Analysis Procedure Number: VOA (CLP) NDP
Dilution Factor: 1.0
Analyst: LM POTTER
QA File Number: NA

CAS		ug/Kg	CAS		ug/Kg
74-87-3	Chloromethane	13U	79-00-5	1,1,2-Trichloroethane	6U
74-83-9	Bromomethane	13U	71-43-2	Benzene	6U
75-01-4	Vinyl Chloride	13U	10061-02-6	trans-1,3-Dichloropropene	6U
75-00-3	Chloroethane	13U	75-25-2	Bromoform	6U
75-09-2	Methylene Chloride	260 JB	108-10-1	4-Methyl-2-pentanone	13U
67-64-1	Acetone	13U	591-78-6	2-Hexanone	13U
75-15-0	Carbon Disulfide	6U	127-18-4	Tetrachloroethene	6U
75-35-4	1,1-Dichloroethene	6U	79-34-5	1,1,2,2-Tetrachloroethane	6U
75-34-3	1,1-Dichloroethane	6U	108-88-3	Toluene	6U
540-59-0	1,2-Dichloroethene (total)	6U	108-90-7	Chlorobenzene	6U
67-66-3	Chloroform	6U	100-41-4	Ethylbenzene	6U
107-06-2	1,2-Dichloroethane	6U	100-42-5	Styrene	6U
78-93-3	2-Butanone	13U	1330-20-7	Xylene (total)	6U
71-55-6	1,1,1-Trichloroethane	6U			
56-23-5	Carbon Tetrachloride	6U			
108-05-4	Vinyl Acetate	13U			
75-27-4	Bromodichloromethane	6U			
78-87-5	1,2-Dichloropropane	6U			
10061-01-5	cis-1,3-Dichloropropene	6U			
79-01-6	Trichloroethene	6U			
124-48-1	Dibromochloromethane	6U			

Data Reporting Qualifiers:

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B - Analyte was found in the reagent blank as well as the sample.
J - Indicates an estimated value.
ND - Not detected.
A - Aldol condensation product.
D - Secondary dilution.
E - Exceeds initial calibration range.

MARTIN MARIETTA

MARTIN MARIETTA ENERGY SYSTEMS, INC.

CHAIN OF CUSTODY RECORD

STA # 0006-90

SES/COC NO. 000259

SAMPLING AND ENVIRONMENTAL SUPPORT DEPARTMENT

PROJECT NUMBER	PROJECT NAME
90-027	Tank 100-N-55-27

SAMPLERS (SIGNATURE) R. J. Stoll / T. Richard Roos

CUSTOMER NUMBER	LAB NUMBER	SAMPLING DATE	SAMPLING TIME	SAMPLE TYPE	NO. OF CONTAINERS	Semi VOA	VOA					REMARKS
27-101	K-25	12-18-90	0630	Soil	4	X	X					901226-051
27-102	↓	↓	1037	↓	↓	X	X					-052, 053, 054
27-103			1047			X	X					-055
27-104			1058			X	X					-056
27-105			1105			X	X					-057,
27-106	↓	↓	1115	↓	↓	X	X					-058

Charge Code NG2J7

RELINQUISHED BY (Signature)	Date	Time	RECEIVED BY (Signature)	Date	Time	RELINQUISHED BY (Signature)	Date	Time	RECEIVED BY (Signature)
T. Richard Roos	12/18/90	1203	R. J. Stoll	12-18-90	1203	R. J. Stoll	12-18-90	1436	[illegible]
R. J. Stoll			M. J. McAdoo	12/21/90	1055				

UCN 16691A (1 6 90)

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