

1R - 299

REPORTS

DATE:

2001

February 19, 2001

Mr. Chris Williams
Oil Conservation Division
New Mexico Energy, Minerals & Natural Resources Department
1625 North French Drive
Hobbs, New Mexico 88240

RE: Cleanup Criteria/Additional Workplan
Equilon Pipeline Company
Penrose "A" Lease
Southeast Eunice, Lea County, New Mexico

Dear Mr. Williams:

On July 26, 2000, Equiva Services LLC submitted to your office a workplan detailing the cleanup goals at the above referenced site. The workplan detailed how closure values for the site were determined based upon the New Mexico Oil Conservation Division (NMOCD) ranking criteria. Closure values for the site were determined to be 1,000 milligrams per kilograms (mg/Kg) above background for total petroleum hydrocarbons (TPH), 50 mg/Kg for total benzene, toluene, ethylbenzene, and xylenes (BTEX), and 10 mg/Kg for benzene based upon the depth to groundwater at the site (approximately 70 feet below ground surface).

In order to meet the NMOCD criteria, extensive excavation has been performed at the site over the past month. At present, the site has been excavated to a depth of 40 feet below ground surface (bgs). Despite this intense remedial effort, hydrocarbon odors and staining are still evident at the bottom of the excavation with TPH concentrations of 5,480 mg/Kg (EPA Method 8015M). Maximum BTEX concentration is 24.60 mg/Kg, with no benzene detected, which is within closure criteria for benzene and total BTEX.

A Synthetic Precipitation Leaching Potential (SPLP) TPH, which measures the amount of TPH capable of being leached from the soil by precipitation and groundwater, was analyzed for soil samples at depths of 30 and 40 feet bgs. The results showed a marked decrease with depth (26.64 milligrams per Liter (mg/L) at 30 feet bgs to 9.01 mg/L at 40 feet bgs). See attached Table 1.

Since there are no toxicological values for TPH, *per se*, Equiva has requested that the soil samples from the base of the excavation also be analyzed for polycyclic aromatic hydrocarbons (PAHs) and SPLP volatile organic compounds (VOCs). This additional analysis was performed in an attempt to determine if individual TPH constituents were present in the remaining soil of the excavation in sufficient quantities to present a threat to human health or the environment. Laboratory analytical results are presented in Attachment A.

The attached Table 2 presents the results of additional laboratory analysis performed onsite for the sample at 40 feet bgs. Comparisons are presented between observed concentrations and USEPA Primary Drinking Water Standards, New Mexico WQCC Groundwater Standards, and Texas Natural Resource Conservation Commission (TNRCC) Permissible Contaminant Levels (PCLs) for Tier 1, Residential, Class 1 Groundwater.

As presented in Table 2, the **soil** concentrations of the contaminants of concern (COC) observed in the samples are all **below the MCLs or PCLs for Drinking Water**, where such MCLs or PCLs have been determined or are available. Notice that, in addition, SPLP TPH concentrations, which measure the mobile TPH fractions that are capable of being leached by precipitation and groundwater, have decreased with depth (26.64 mg/L at 30 feet bgs to 9.01 mg/L at 40 feet bgs). USEPA Primary Drinking Water Standards, New Mexico WQCC Ground Water Standards, and TNRCC PCLs for Tier 1, Class 1 Groundwater are presented in Attachment B.

The New Mexico Water Quality Control Commission has not established standards for soil concentrations determined to be protective of groundwater. However, the TNRCC, in their recently published Texas Risk Reduction Program (TRPP) has determined groundwater protective soil concentrations for the contaminants observed at this site. The attached Table 3 presents Tier 1, Class 1 Groundwater PCLs for Residential and Commercial/Industrial Facilities:

As presented in Table 3, TNRCC Tier 1, Class 1 groundwater protective soil concentrations for the COCs are a minimum of two orders of magnitude **greater** than the observed concentrations. TNRCC Tier 1 Soil PCLs are presented in Attachment B.

In light of the above information and depth of excavation, Equiva Services LLC respectfully requests that the New Mexico OCD concur with our assessment that the crude oil spill at the Penrose "A" Lease located in Lea County, New Mexico has been remediated to the point that the remaining contaminant levels do not present a threat to human health or the environment. In order to ensure that the remaining in place hydrocarbon impacted soil will not leach to the surrounding groundwater, Equiva proposes placing three feet of impervious clay at the bottom of the excavation. The remainder of the excavation will be backfilled with clean soils and brought up to grade. Upon completing the backfilling of the excavation, Equiva proposes installing a monitoring well through the center of the excavation to determine if the release has impacted groundwater. If groundwater has been impacted above regulatory limits, Equiva will work with your office and the landowner to reach a satisfactory remedy to the impact. Equiva Services appreciates any input the NMOCD has on this matter.

Thank you for your assistance and cooperation. If you have any questions or comments, please do not hesitate to call me at (281) 252-6917.

Sincerely
EQUIVA SERVICES LLC



Kyle Landreneau
Environmental Geologist
SHE/Science & Engineering

"Equiva Services LLC provides miscellaneous services, including environmental services, on behalf of its owners Motiva Enterprises LLC and Equilon Enterprises LLC, and on behalf of, Shell Oil Company, Star Enterprise and Texaco Inc."

Cc: Wayne Price-NMOCD Santa Fe
Roger Anderson-NMOCD Santa Fe
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Jeffrey Kindley – Enercon Services, Inc
306 West Wall
Suite 1312
Midland Texas 79701

Leo Sims S&D Ranch Environmental Representative
814 West Marland Blvd.
Hobbs New Mexico 88240

TABLE 1
SOIL ANALYTICAL RESULTS
EQUIVA PENROSE EXCAVATION SITE
LEA COUNTY, NEW MEXICO

Sample Location	Date	Benzene (in mg/kg)	Toluene (in mg/kg)	Ethylbenzene (in mg/kg)	Xylenes (in mg/kg)	Total BTEX (in mg/kg)	TPH-Dro (in mg/kg)	TPH-Gro (in mg/kg)	TPH-Total (in mg/kg)	SPLP-TPH (in mg/L)
Southwall 15'	11/09/00	<0.05	<0.05	<0.05	<0.05	<0.05	65	<5.0	65	NS
Westwall 15'	11/09/00	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<5.0	<50	NS
Eastwall 15'	11/09/00	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<5.0	<50	NS
Northwall 15'	11/09/00	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<5.0	<50	NS
Bottom 20'	11/09/00	<0.05	2.11	9.95	8.63	20.7	2,699	341	3,040*	NS
Bottom 30'	11/14/00	<0.005	<0.005	3.43	5.72	9.15	1,330	4,510	5,840*	26.64
Bottom 40'	11/17/00	<0.020	<0.020	8.50	16.10	24.60	1,580	3,900	5,480*	9.01
NMOCD Rankings		10	NA	NA	NA	50	NA	NA	1,000	NA

ND = Not detected

NS = Not sampled

NA = Not available

* Exceeds current NMOCD standards.

TABLE 2
OBSERVED SOIL CONCENTRATIONS vs. GROUNDWATER STANDARDS
EQUIVA PENROSE EXCAVATION SITE
LEA COUNTY, NEW MEXICO

Bottom Sample 40 foot depth	Observed Concentration (in mg/Kg)	USEPA Primary Drinking Water Standards (in mg/L)	New Mexico WQCC Groundwater Standards (in mg/L)	TNRCC Permissible Contaminant Levels (in mg/Kg)
TPH				
DRO	1,580	NA	NA	NA
GRO	3,900	NA	NA	NA
SPLP TPH	9.01	NA	NA	NA
VOLATILES (VOCs)				
Naphtthalene	0.1260	NA	NA	0.490
Isopropylbenzene	0.0593	NA	NA	NA
n-Propylbenzene	0.0926	NA	NA	NA
1,3,5-Trimethylbenzene*	0.5420	NA	NA	NA*
1,2,4-Trimethylbenzene*	0.4250	NA	NA	NA*
sec-Butylbenzene	0.3510	NA	NA	NA
p-Isopropyltoluene	0.3590	NA	NA	NA
n-Butylbenzene	0.4440	NA	NA	NA
Total Xylenes	0.0853	10.0	NA	10.0
Polycyclic Aromatic Hydrocarbons (PAHs)				
NA-Not available	ND	NA	NA	NA
ND-Not detected				

* PCLs for 1,2,4- and 1,3, 5 Trimethylbenzene are undetermined; however a PCL of 1,000 mg/Kg has been determined for 1,2, 3 Trimethylbenzene

TABLE 3
OBSERVED SOIL CONCENTRATIONS vs. TNRCC GROUNDWATER PROTECTIVE SOIL CONCENTRATIONS
(RESIDENTIAL AND COMMERCIAL/INDUSTRIAL)
EQUIVA PENROSE EXCAVATION SITE
LEA COUNTY, NEW MEXICO

Contaminant	Observed Concentration (in mg/Kg)	Groundwater Protective PCL Residential (in mg/Kg)	Groundwater Protective PCL Commercial/Industrial (in mg/Kg)
Naphthalene	0.1260	31.00	93.00
Isopropylbenzene	0.0593	NA	NA
n-Propylbenzene	0.0926	NA	NA
1,3,5-Trimethylbenzene	0.5420	NA	NA
1,2,4-Trimethylbenzene	0.4250	NA	NA
sec-Butylbenzene	0.3510	NA	NA
p-Isopropyltoluene	0.3590	NA	NA
n-Butylbenzene	0.4440	NA	NA
Total Xylenes	0.0853	120.00	120.00

NA-Not available

* PCLs for 1,2,4- and 1,3, 5 Trimethylbenzene are undetermined; however a PCL of 26,000 mg/Kg has been determined for 1,2, 3 Trimethylbenzene



2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

Page ____ of ____

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]

+ Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.



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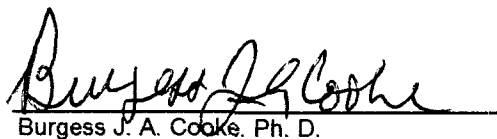
ANALYTICAL RESULTS FOR
ENERCON SERVICES
ATTN: JEFF KINDLEY
306 W. WALL, SUITE 1312
MIDLAND, TX 79701
FAX TO: (915) 631-6591

Receiving Date: 11/14/00
Reporting Date: 11/16/00
Project Number: ES-533 (EQUIVON SERVICES)
Project Name: PENROSE
Project Location: EUNICE, NM

Sampling Date: 11/14/00
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

LAB NUMBER	SAMPLE ID	GRO (C ₆ -C ₁₀) (mg/Kg)	DRO (>C ₁₀ -C ₂₈) (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE:		11/14/00	11/14/00	11/15/00	11/15/00	11/15/00	11/15/00
H5344-1	BOTTOM 30'	1330	4510	<0.005	<0.005	3.43	5.72
Quality Control		787	804	0.094	0.095	0.087	0.266
True Value QC		800	800	0.100	0.100	0.100	0.300
% Recovery		98.3	100	93.8	94.7	87.2	88.6
Relative Percent Difference		7.7	0.9	1.4	3.8	0.5	2.8

METHODS: TPH GRO & DRO - EPASW-846 8015 M; BTEX - SW-846 8260.


Burgess J. A. Cooke, Ph. D.

11/16/00
Date

H5344.XLS

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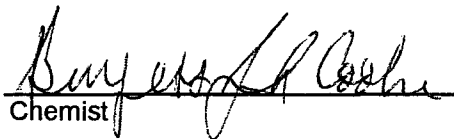
ANALYTICAL RESULTS FOR
ENERCON SERVICES
ATTN: JEFF KINDLEY
306 W. WALL, SUITE 1312
MIDLAND, TX 79701
FAX TO: (915) 684-7587

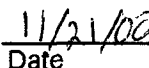
Receiving Date: 11/14/00
Reporting Date: 11/21/00
Project Number: ES-533 (EQUIVON SERVICES)
Project Name: PENROSE
Project Location: EUNICE, NM

Sampling Date: 11/14/00
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

LAB NUMBER	SAMPLE ID	GRO (C ₆ -C ₁₀) (mg/L)	DRO (>C ₁₀ -C ₂₈) (mg/L)
ANALYSIS DATE:		11/18/00	11/18/00
H5344-1	BOTTOM 30'	5.24	21.4
Quality Control		9.32	10.8
True Value QC		10.0	10.0
% Recovery		93.2	108
Relative Percent Difference		11.3	2.3

METHOD: SW-846 1312, 8015 M


Chemist


Date

H5344T.XLS

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ANALYTICAL RESULTS FOR
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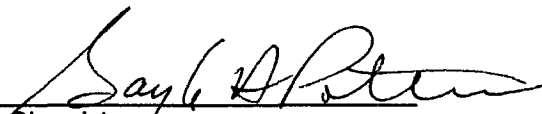
Receiving Date: 11/17/00
Reporting Date: 12/04/00
Project Number: ES-533
Project Name: PENROSE
Project Location: EUNICE, LEA COUNTY, NM

Analysis Date: 12/01/00
Sampling Date: 11/17/00
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Cl ⁻ (mg/Kg)
H5359-1	BOTTOM 40'	66
Quality Control		1025
True Value QC		1000
% Recovery		103
Relative Percent Difference		4.1

METHOD: Standard Methods	4500-Cl ⁻ B
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NOTE: Analysis performed on a 1:4 w:v aqueous extract.


Chemist

12/04/2000
Date

H5359C.XLS

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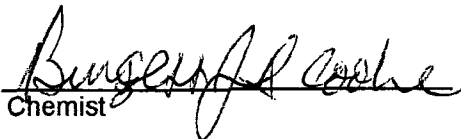
ANALYTICAL RESULTS FOR
ENERCON SERVICES
ATTN: JEFF KINDLEY
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MIDLAND, TX 79701
FAX TO: (915) 684-7587

Receiving Date: 11/17/00
Reporting Date: 11/21/00
Project Number: ES-533 (EQUIVON SERVICES)
Project Name: PENROSE
Project Location: EUNICE, LEA COUNTY, NM

Sampling Date: 11/17/00
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

LAB NUMBER	SAMPLE ID	GRO	DRO
		(C ₆ -C ₁₀) (mg/L)	(>C ₁₀ -C ₂₈) (mg/L)
ANALYSIS DATE:		11/18/00	11/18/00
H5359-1	BOTTOM 40'	<5.0	9.01
Quality Control		9.32	10.8
True Value QC		10.0	10.0
% Recovery		93.2	108
Relative Percent Difference		11.3	2.3

METHOD: SW-846 1312, 8015 M


Chemist

11/21/00
Date

H5359.XLS

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Analytical and Quality Control Report

Equilon Pipeline Co.
Kyle Landreneau
PMB 174 269 CypressWood
Spring, Tx. 77388

Report Date: November 20, 2000

Order ID Number: A00111008

Project: ES-533
TA Job Code: Equiva Penrose
Casualty Code: Eunice ,Lea County New Mexico
Project Location: ES-533
Project Address:
Enercon Services Inc. / Midland / Jeff Kindley

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to Trace-Analysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
158545	Southwall 15'	Soil	11/9/00	11:00	11/10/00
158546	Westwall 15'	Soil	11/9/00	11:10	11/10/00
158547	Eastwall 15'	Soil	11/9/00	11:20	11/10/00
158548	Northwall 15'	Soil	11/9/00	11:30	11/10/00
158549	Bottom 20'	Soil	11/9/00	11:40	11/10/00

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 9 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



Dr. Blair Leftwich, Director

Analytical and Quality Control Report

Sample: 158545 - Southwall 15'

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC06653 Date Analyzed: 11/17/00
Analyst: RC Preparation Method: 5035 Prep Batch: PB05840 Date Prepared: 11/17/00

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.49	mg/Kg	50	0.10	89	72 - 128
4-BFB		4.7	mg/Kg	50	0.10	94	72 - 128

Sample: 158545 - Southwall 15'

Analysis: TPH DRO Analytical Method: Mod. 8015B QC Batch: QC06646 Date Analyzed: 11/14/00
Analyst: BP Preparation Method: 3550 B Prep Batch: PB05835 Date Prepared: 11/14/00

Param	Flag	Result	Units	Dilution	RDL
DRO		65	mg/Kg	1	50

Sample: 158545 - Southwall 15'

Analysis: TPH GRO Analytical Method: 8015B QC Batch: QC06654 Date Analyzed: 11/17/00
Analyst: RC Preparation Method: N/A Prep Batch: PB05841 Date Prepared: 11/17/00

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 158546 - Westwall 15'

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC06653 Date Analyzed: 11/17/00
Analyst: RC Preparation Method: 5035 Prep Batch: PB05840 Date Prepared: 11/17/00

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.64	mg/Kg	50	0.10	92	72 - 128
4-BFB		4.74	mg/Kg	50	0.10	94	72 - 128

Sample: 158546 - Westwall 15'

Analysis: TPH DRO Analytical Method: Mod. 8015B QC Batch: QC06646 Date Analyzed: 11/14/00
Analyst: BP Preparation Method: 3550 B Prep Batch: PB05835 Date Prepared: 11/14/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 158546 - Westwall 15'

Analysis: TPH GRO Analytical Method: 8015B QC Batch: QC06654 Date Analyzed: 11/17/00
Analyst: RC Preparation Method: N/A Prep Batch: PB05841 Date Prepared: 11/17/00

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 158547 - Eastwall 15'

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC06653 Date Analyzed: 11/17/00
Analyst: RC Preparation Method: 5035 Prep Batch: PB05840 Date Prepared: 11/17/00

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.41	mg/Kg	50	0.10	88	72 - 128
4-BFB		4.83	mg/Kg	50	0.10	96	72 - 128

Sample: 158547 - Eastwall 15'

Analysis: TPH DRO Analytical Method: Mod. 8015B QC Batch: QC06646 Date Analyzed: 11/14/00
Analyst: BP Preparation Method: 3550 B Prep Batch: PB05835 Date Prepared: 11/14/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 158547 - Eastwall 15'

Analysis: TPH GRO Analytical Method: 8015B QC Batch: QC06654 Date Analyzed: 11/17/00
Analyst: RC Preparation Method: N/A Prep Batch: PB05841 Date Prepared: 11/17/00

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 158548 - Northwall 15'

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC06653 Date Analyzed: 11/17/00
Analyst: RC Preparation Method: 5035 Prep Batch: PB05840 Date Prepared: 11/17/00

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.42	mg/Kg	50	0.10	88	72 - 128
4-BFB		4.47	mg/Kg	50	0.10	89	72 - 128

Sample: 158548 - Northwall 15'

Analysis: TPH DRO Analytical Method: Mod. 8015B QC Batch: QC06646 Date Analyzed: 11/14/00
Analyst: BP Preparation Method: 3550 B Prep Batch: PB05835 Date Prepared: 11/14/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 158548 - Northwall 15'

Analysis: TPH GRO Analytical Method: 8015B QC Batch: QC06654 Date Analyzed: 11/17/00
Analyst: RC Preparation Method: N/A Prep Batch: PB05841 Date Prepared: 11/17/00

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 158549 - Bottom 20'

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC06653 Date Analyzed: 11/17/00
Analyst: RC Preparation Method: 5035 Prep Batch: PB05840 Date Prepared: 11/17/00

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		2.11	mg/Kg	50	0.001
Ethylbenzene		9.95	mg/Kg	50	0.001

Continued ...

Report Date: November 20, 2000
ES-533

Order Number: A00111008
Equiva Penrose

Page Number: 5 of 9
Eunice ,Lea County New Mexico

... Continued Sample: 158549 Analysis: BTEX

Param	Flag	Result	Units	Dilution	RDL
M,P,O-Xylene		8.63	mg/Kg	50	0.001
Total BTEX		20.7	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		3.84	mg/Kg	50	0.10	76	72 - 128
4-BFB		6.02	mg/Kg	50	0.10	120	72 - 128

Sample: 158549 - Bottom 20'

Analysis: TPH DRO Analytical Method: Mod. 8015B QC Batch: QC06646 Date Analyzed: 11/14/00
Analyst: BP Preparation Method: 3550 B Prep Batch: PB05835 Date Prepared: 11/14/00

Param	Flag	Result	Units	Dilution	RDL
DRO		2699	mg/Kg	1	50

Sample: 158549 - Bottom 20'

Analysis: TPH GRO Analytical Method: 8015B QC Batch: QC06654 Date Analyzed: 11/17/00
Analyst: RC Preparation Method: N/A Prep Batch: PB05841 Date Prepared: 11/17/00

Param	Flag	Result	Units	Dilution	RDL
GRO		341	mg/Kg	1	0.10

Quality Control Report Method Blank

Sample: Method Blank QCBatch: QC06653

Param	Flag	Results	Units	Reporting Limit
Benzene		<0.05	mg/Kg	0.001
Toluene		<0.05	mg/Kg	0.001
Ethylbenzene		<0.05	mg/Kg	0.001
M,P,O-Xylene		<0.05	mg/Kg	0.001
Total BTEX		<0.05	mg/Kg	0.001

Surrogate	Flag	Result	Units	Spike Amount	Percent Recovery	Recovery Limit
TFT		4.78	mg/Kg	0.10	95	72 - 128
4-BFB		4.79	mg/Kg	0.10	95	72 - 128

Sample: Method Blank QCBatch: QC06654

Param	Flag	Results	Units	Reporting Limit
GRO		<5	mg/Kg	0.10

Quality Control Report Lab Control Spikes and Duplicate Spikes

Sample: LCS QC Batch: QC06653

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
MTBE		4.95	mg/Kg	50	0.10	<0.05	99	0	80 - 120	20
Benzene		4.84	mg/Kg	50	0.10	<0.05	96	2	80 - 120	20
Toluene		4.79	mg/Kg	50	0.10	<0.05	95	2	80 - 120	20
Ethylbenzene		4.75	mg/Kg	50	0.10	<0.05	95	1	80 - 120	20
M,P,O-Xylene		13.5	mg/Kg	50	0.30	<0.05	90	2	80 - 120	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
TFT		4.83	mg/Kg	50	0.10	96	72 - 128
4-BFB		4.78	mg/Kg	50	0.10	95	72 - 128

Sample: LCSD QC Batch: QC06653

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
MTBE		5.1	mg/Kg	50	0.10	<0.05	102	3	80 - 120	20
Benzene		5.06	mg/Kg	50	0.10	<0.05	101	4	80 - 120	20
Toluene		5	mg/Kg	50	0.10	<0.05	100	4	80 - 120	20
Ethylbenzene		4.96	mg/Kg	50	0.10	<0.05	99	4	80 - 120	20
M,P,O-Xylene		14.1	mg/Kg	50	0.30	<0.05	94	4	80 - 120	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
TFT		4.91	mg/Kg	50	0.10	98	72 - 128
4-BFB		4.81	mg/Kg	50	0.10	96	72 - 128

Sample: LCS QC Batch: QC06654

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
GRO		0.94	mg/Kg	1	1	<5	94		70 - 130	20

Sample: LCSD

QC Batch: QC06654

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
GRO		0.934	mg/Kg	1	1	<5	93	1	70 - 130	20

Quality Control Report Matrix Spikes and Duplicate Spikes

Sample: MS

QC Batch: QC06653

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
Benzene		5.17	mg/Kg	50	0.10	<0.05	103	4	80 - 120	20
Toluene		5.27	mg/Kg	50	0.10	0.299	99	4	80 - 120	20
Ethylbenzene		5.14	mg/Kg	50	0.10	0.36	95	4	80 - 120	20
M,P,O-Xylene		13.8	mg/Kg	50	0.30	0.762	86	4	80 - 120	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
TFT		4.32	mg/Kg	50	0.10	86	72 - 128
4-BFB		4.11	mg/Kg	50	0.10	82	72 - 128

Sample: MSD

QC Batch: QC06653

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
Benzene		4.88	mg/Kg	50	0.10	<0.05	97	6	80 - 120	20
Toluene		4.95	mg/Kg	50	0.10	0.299	93	7	80 - 120	20
Ethylbenzene		4.68	mg/Kg	50	0.10	0.36	86	10	80 - 120	20
M,P,O-Xylene		12.5	mg/Kg	50	0.30	0.762	78	10	80 - 120	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
TFT		4.45	mg/Kg	50	0.10	89	72 - 128

Continued ...

... Continued

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
4-BFB		4.17	mg/Kg	50	0.10	83	72 - 128

Quality Control Report Continuing Calibration Verification Standards

Sample: CCV (1)

QC Batch: QC06646

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	271	108	75 - 125	11/14/00

Sample: ICV (1)

QC Batch: QC06646

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	284	113	75 - 125	11/14/00

Sample: CCV (1)

QC Batch: QC06653

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.10	0.099	99	80 - 120	11/17/00
Toluene		mg/Kg	0.10	0.099	99	80 - 120	11/17/00
Ethylbenzene		mg/Kg	0.10	0.097	97	80 - 120	11/17/00
M,P,O-Xylene		mg/Kg	0.30	0.276	92	80 - 120	11/17/00

Sample: CCV (2)

QC Batch: QC06653

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.10	0.092	92	80 - 120	11/17/00
Toluene		mg/Kg	0.10	0.092	92	80 - 120	11/17/00
Ethylbenzene		mg/Kg	0.10	0.09	90	80 - 120	11/17/00
M,P,O-Xylene		mg/Kg	0.30	0.254	84	80 - 120	11/17/00

Sample: ICV (1) QC Batch: QC06653

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.10	0.099	99	80 - 120	11/17/00
Toluene		mg/Kg	0.10	0.098	98	80 - 120	11/17/00
Ethylbenzene		mg/Kg	0.10	0.097	97	80 - 120	11/17/00
M,P,O-Xylene		mg/Kg	0.30	0.275	91	80 - 120	11/17/00

Sample: CCV (1) QC Batch: QC06654

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1	0.922	92	75 - 125	11/17/00

Sample: ICV (1) QC Batch: QC06654

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1	0.968	96	75 - 125	11/17/00

TRACE ANALYSIS, INC.

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806•794•1296 FAX 806•794•1298
915•585•3443 FAX 915•585•4944

December 18, 2000

Receiving Date: 12/08/2000

Sample Type: Soil

Project Loc.: ES-533

TA Job Code: Equiva Penrose

Casualty Code: Eunice,
Lea County, NM

Sampling Date: 12/06/2000

Sample Condition: I & C

Sample Received by: VH

Extraction Date: 12/13/00

Analysis Date: 12/14/2000

ANALYTICAL RESULTS FOR
EQUILON PIPELINE CO.
Attention: Kyle Landreneau
PMB 174 269 Cypresswood
Spring, TX 77388

Project: ES-533

SPLP PAH Reporting T160335

8270 Compounds (mg/L)	Limit	Bottom 40'	QC	RPD	%EA	%IA
Naphthalene	0.005	ND	59.31	2	102	99
Acenaphthylene	0.005	ND	59.09	2	102	98
Acenaphthene	0.005	ND	59.37	0	102	99
Fluorene	0.005	ND	55.45	1	101	92
Phenanthrene	0.005	ND	58.77	0	100	98
Anthracene	0.005	ND	59.87	1	101	100
Fluoranthene	0.005	ND	55.60	5	105	93
Pyrene	0.005	ND	66.40	5	105	111
Benzo[a]anthracene	0.005	ND	59.80	11	111	100
Chrysene	0.005	ND	55.03	6	107	92
Benzo[b]fluoranthene	0.005	ND	59.32	1	101	99
Benzo[k]fluoranthene	0.005	ND	62.25	6	106	104
Benzo[a]pyrene	0.005	ND	60.12	1	101	100
Indeno[1,2,3-cd]pyrene	0.005	ND	61.88	1	101	103
Dibenz[a,h]anthracene	0.005	ND	61.59	0	100	103
Benzo[g,h,i]perylene	0.005	ND	63.61	1	101	106

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR

69

2-Fluorobiphenyl SURR

62

Terphenyl-d14 SURR

71

METHODS: EPA SW 846-1312, 8270C.

CHEMIST: MA



12-18-00

Director, Dr. Blair Leftwich

DATE

TRACE ANALYSIS, INC.

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Analytical and Quality Control Report

Equilon Pipeline Co.
Kyle Landreneau
PMB 174 269 CypressWood
Spring, Tx. 77388

Report Date: December 18, 2000

Order ID Number: A00120819

Project: ES-533
TA Job Code: Equiva Penrose
Casualty Code: Eunice, Lea County New Mexico
Project Location: ES-533
Project Address:
Enercon Services Inc. / Midland / Jeff Kindley

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to Trace Analysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
160335	Bottom 40'	Soil	12/6/00	13:00	12/8/00

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 6 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.


Dr. Blair Leftwich, Director

Analytical and Quality Control Report

Sample: 160335 - Bottom 40'

Analysis: PAH Analytical Method: S 8270C QC Batch: QC07357 Date Analyzed: 12/13/00
Analyst: MA Preparation Method: E 3510C Prep Batch: PB06413 Date Prepared: 12/11/00

Param	Flag	Result	Units	Dilution	RDL
Naphthalene		<0.25	mg/Kg	1	0.25
Acenaphthylene		<0.25	mg/Kg	1	0.25
Acenaphthene		<0.25	mg/Kg	1	0.25
Fluorene		<0.25	mg/Kg	1	0.25
Phenanthrene		<0.25	mg/Kg	1	0.25
Anthracene		<0.25	mg/Kg	1	0.25
Fluoranthene		<0.25	mg/Kg	1	0.25
Pyrene		<0.25	mg/Kg	1	0.25
Benzo(a)anthracene		<0.25	mg/Kg	1	0.25
Chrysene		<0.25	mg/Kg	1	0.25
Benzo(b)fluoranthene		<0.25	mg/Kg	1	0.25
Benzo(k)fluoranthene		<0.25	mg/Kg	1	0.25
Benzo(a)pyrene		<0.25	mg/Kg	1	0.25
Indeno(1,2,3-cd)pyrene		<0.25	mg/Kg	1	0.25
Dibenzo(a,h)anthracene		<0.25	mg/Kg	1	0.25
Benzo(g,h,i)perylene		<0.25	mg/Kg	1	0.25

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		61.90	mg/Kg	1	80	77	27 - 115
2-Fluorobiphenyl		52.63	mg/Kg	1	80	65	31 - 132
Terphenyl-d14		55.35	mg/Kg	1	80	69	12 - 167

Quality Control Report Method Blank

Sample: Method Blank

QCBatch: QC07357

Param	Flag	Results	Units	Reporting Limit
Naphthalene		<0.25	mg/Kg	0.25
Acenaphthylene		<0.25	mg/Kg	0.25
Acenaphthene		<0.25	mg/Kg	0.25
Fluorene		<0.25	mg/Kg	0.25
Phenanthrene		<0.25	mg/Kg	0.25
Anthracene		<0.25	mg/Kg	0.25
Fluoranthene		<0.25	mg/Kg	0.25
Pyrene		<0.25	mg/Kg	0.25
Benzo(a)anthracene		<0.25	mg/Kg	0.25
Chrysene		<0.25	mg/Kg	0.25
Benzo(b)fluoranthene		<0.25	mg/Kg	0.25
Benzo(k)fluoranthene		<0.25	mg/Kg	0.25
Benzo(a)pyrene		<0.25	mg/Kg	0.25

Continued ...

... Continued

Param	Flag	Results	Units	Reporting Limit
Indeno(1,2,3-cd)pyrene		<0.25	mg/Kg	0.25
Dibenzo(a,h)anthracene		<0.25	mg/Kg	0.25
Benzo(g,h,i)perylene		<0.25	mg/Kg	0.25

Surrogate	Flag	Result	Units	Spike Amount	Percent Recovery	Recovery Limit
Nitrobenzene-d5		66.32	mg/Kg	80	82	27 - 115
2-Fluorobiphenyl		64.00	mg/Kg	80	80	31 - 132
Terphenyl-d14		77.05	mg/Kg	80	96	12 - 167

Quality Control Report Lab Control Spikes and Duplicate Spikes

Sample: LCS

QC Batch: QC07357

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
Naphthalene		49.35	mg/Kg	1	80	<0.25	61		23 - 124	20
Acenaphthylene		54.16	mg/Kg	1	80	<0.25	67		34 - 135	20
Acenaphthene		55.69	mg/Kg	1	80	<0.25	69		31 - 131	20
Fluorene		62.47	mg/Kg	1	80	<0.25	78		36 - 132	20
Phenanthrene		63.76	mg/Kg	1	80	<0.25	79		31 - 138	20
Anthracene		61.23	mg/Kg	1	80	<0.25	76		24 - 141	20
Fluoranthene		69.32	mg/Kg	1	80	<0.25	86		22 - 153	20
Pyrene		61.09	mg/Kg	1	80	<0.25	76		22 - 147	20
Benzo(a)anthracene		63.61	mg/Kg	1	80	<0.25	79		41 - 127	20
Chrysene		94.59	mg/Kg	1	80	<0.25	118		0 - 182	20
Benzo(b)fluoranthene		73.36	mg/Kg	1	80	<0.25	91		40 - 131	20
Benzo(k)fluoranthene		70.19	mg/Kg	1	80	<0.25	87		35 - 133	20
Benzo(a)pyrene		73.36	mg/Kg	1	80	<0.25	91		53 - 117	20
Indeno(1,2,3-cd)pyrene		73.40	mg/Kg	1	80	<0.25	91		30 - 130	20
Dibenzo(a,h)anthracene		74.98	mg/Kg	1	80	<0.25	93		0 - 184	20
Benzo(g,h,i)perylene		74.20	mg/Kg	1	80	<0.25	92		41 - 123	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
Nitrobenzene-d5		46.87	mg/Kg	1	80	58	27 - 115
2-Fluorobiphenyl		48.06	mg/Kg	1	80	60	31 - 132
Terphenyl-d14		58.71	mg/Kg	1	80	73	12 - 167

Sample: LCSD

QC Batch: QC07357

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
Naphthalene		48.42	mg/Kg	1	80	<0.25	60	2	23 - 124	20
Acenaphthylene		54.01	mg/Kg	1	80	<0.25	67	0	34 - 135	20
Acenaphthene		55.37	mg/Kg	1	80	<0.25	69	0	31 - 131	20
Fluorene		62.41	mg/Kg	1	80	<0.25	78	0	36 - 132	20
Phenanthrene		63.26	mg/Kg	1	80	<0.25	79	1	31 - 138	20
Anthracene		61.02	mg/Kg	1	80	<0.25	76	0	24 - 141	20
Fluoranthene		65.01	mg/Kg	1	80	<0.25	81	6	22 - 153	20
Pyrene		65.56	mg/Kg	1	80	<0.25	81	7	22 - 147	20
Benzo(a)anthracene		63.97	mg/Kg	1	80	<0.25	79	0	41 - 127	20
Chrysene		93.44	mg/Kg	1	80	<0.25	116	1	0 - 182	20
Benzo(b)fluoranthene		73.90	mg/Kg	1	80	<0.25	92	1	40 - 131	20
Benzo(k)fluoranthene		74.58	mg/Kg	1	80	<0.25	93	6	35 - 133	20
Benzo(a)pyrene		74.97	mg/Kg	1	80	<0.25	93	2	53 - 117	20
Indeno(1,2,3-cd)pyrene		70.17	mg/Kg	1	80	<0.25	87	4	30 - 130	20
Dibenzo(a,h)anthracene		66.91	mg/Kg	1	80	<0.25	83	11	0 - 184	20
Benzo(g,h,i)perylene		69.14	mg/Kg	1	80	<0.25	86	7	41 - 123	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
Nitrobenzene-d5		46.01	mg/Kg	1	80	57	27 - 115
2-Fluorobiphenyl		48.17	mg/Kg	1	80	60	31 - 132
Terphenyl-d14		62.29	mg/Kg	1	80	77	12 - 167

Quality Control Report Matrix Spikes and Duplicate Spikes

Sample: MS

QC Batch: QC07357

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
Naphthalene		47.24	mg/Kg	1	80	<0.25	59		23 - 124	20
Acenaphthylene		52.12	mg/Kg	1	80	<0.25	65		34 - 135	20
Acenaphthene		51.63	mg/Kg	1	80	<0.25	64		31 - 131	20
Fluorene		57.90	mg/Kg	1	80	<0.25	72		36 - 132	20
Phenanthrene		55.90	mg/Kg	1	80	<0.25	69		31 - 138	20
Anthracene		53.58	mg/Kg	1	80	<0.25	66		24 - 141	20
Fluoranthene		71.30	mg/Kg	1	80	<0.25	89		22 - 153	20
Pyrene		50.46	mg/Kg	1	80	<0.25	63		22 - 147	20
Benzo(a)anthracene		55.68	mg/Kg	1	80	<0.25	69		41 - 127	20
Chrysene		72.83	mg/Kg	1	80	<0.25	91		0 - 182	20
Benzo(b)fluoranthene		67.07	mg/Kg	1	80	<0.25	83		40 - 131	20
Benzo(k)fluoranthene		55.53	mg/Kg	1	80	<0.25	69		35 - 133	20
Benzo(a)pyrene		65.81	mg/Kg	1	80	<0.25	82		53 - 117	20
Indeno(1,2,3-cd)pyrene		68.42	mg/Kg	1	80	<0.25	85		30 - 130	20
Dibenzo(a,h)anthracene		61.52	mg/Kg	1	80	<0.25	76		0 - 184	20
Benzo(g,h,i)perylene		68.41	mg/Kg	1	80	<0.25	85		41 - 123	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
Nitrobenzene-d5		45.79	mg/Kg	1	80	57	27 - 115
2-Fluorobiphenyl		45.95	mg/Kg	1	80	57	31 - 132
Terphenyl-d14		50.62	mg/Kg	1	80	63	12 - 167

Sample: MSD

QC Batch: QC07357

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
Naphthalene		47.74	mg/Kg	1	80	<0.25	59	1	23 - 124	20
Acenaphthylene		52.57	mg/Kg	1	80	<0.25	65	1	34 - 135	20
Acenaphthene		52.03	mg/Kg	1	80	<0.25	65	1	31 - 131	20
Fluorene		57.78	mg/Kg	1	80	<0.25	72	0	36 - 132	20
Phenanthrene		55.98	mg/Kg	1	80	<0.25	69	0	31 - 138	20
Anthracene		54.08	mg/Kg	1	80	<0.25	67	1	24 - 141	20
Fluoranthene		69.45	mg/Kg	1	80	<0.25	86	3	22 - 153	20
Pyrene		53.42	mg/Kg	1	80	<0.25	66	6	22 - 147	20
Benzo(a)anthracene		56.11	mg/Kg	1	80	<0.25	70	1	41 - 127	20
Chrysene		72.48	mg/Kg	1	80	<0.25	90	0	0 - 182	20
Benzo(b)fluoranthene		63.89	mg/Kg	1	80	<0.25	79	5	40 - 131	20
Benzo(k)fluoranthene		57.37	mg/Kg	1	80	<0.25	71	3	35 - 133	20
Benzo(a)pyrene		64.80	mg/Kg	1	80	<0.25	81	2	53 - 117	20
Indeno(1,2,3-cd)pyrene		70.38	mg/Kg	1	80	<0.25	87	3	30 - 130	20
Dibenzo(a,h)anthracene		63.07	mg/Kg	1	80	<0.25	78	2	0 - 184	20
Benzo(g,h,i)perylene		67.33	mg/Kg	1	80	<0.25	84	2	41 - 123	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
Nitrobenzene-d5		46.68	mg/Kg	1	80	58	27 - 115
2-Fluorobiphenyl		47.56	mg/Kg	1	80	59	31 - 132
Terphenyl-d14		53.03	mg/Kg	1	80	66	12 - 167

Quality Control Report Continuing Calibration Verification Standards

Sample: CCV (1)

QC Batch: QC07357

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Naphthalene		mg/L	60	59.31	98	23 - 124	12/13/00
Acenaphthylene		mg/L	60	59.09	98	34 - 135	12/13/00
Acenaphthene		mg/L	60	59.37	98	31 - 131	12/13/00
Fluorene		mg/L	60	55.45	92	36 - 132	12/13/00
Phenanthrene		mg/L	60	58.77	97	31 - 138	12/13/00
Anthracene		mg/L	60	59.87	99	24 - 141	12/13/00
Fluoranthene		mg/L	60	55.60	92	22 - 153	12/13/00

Continued ...

... Continued

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Pyrene		mg/L	60	66.40	110	22 - 147	12/13/00
Benzo(a)anthracene		mg/L	60	59.80	99	41 - 127	12/13/00
Chrysene		mg/L	60	55.03	91	0 - 182	12/13/00
Benzo(b)fluoranthene		mg/L	60	59.32	98	40 - 131	12/13/00
Benzo(k)fluoranthene		mg/L	60	62.25	103	35 - 133	12/13/00
Benzo(a)pyrene		mg/L	60	60.12	100	53 - 117	12/13/00
Indeno(1,2,3-cd)pyrene		mg/L	60	61.88	103	30 - 130	12/13/00
Dibenzo(a,h)anthracene		mg/L	60	61.59	102	0 - 184	12/13/00
Benzo(g,h,i)perylene		mg/L	60	63.61	106	41 - 123	12/13/00
Nitrobenzene-d5		mg/L	60	60.83	101	27 - 115	12/13/00
2-Fluorobiphenyl		mg/L	60	61.55	102	31 - 132	12/13/00
Terphenyl-d14		mg/L	60	64.17	106	12 - 167	12/13/00

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Analytical and Quality Control Report

Equilon Pipeline Co.
Kyle Landreneau
PMB 174 269 CypressWood
Spring, Tx. 77388

Report Date: December 18, 2000

Order ID Number: A00120819

Project: ES-533
TA Job Code: Equiva Penrose
Casualty Code: Eunice, Lea County New Mexico
Project Location: ES-533
Project Address:
Enercon Services Inc. / Midland / Jeff Kindley

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to Trace-Analysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
160335	Bottom 40'	Soil	12/6/00	13:00	12/8/00

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 7 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.


Dr. Blair Leftwich, Director

Analytical and Quality Control Report

Sample: 160335 - Bottom 40'

Analysis: 8260 Analytical Method: S 8260B QC Batch: QC07349 Date Analyzed: 12/12/00
Analyst: JG Preparation Method: E 5030B Prep Batch: PB06404 Date Prepared: 12/12/00

Param	Flag	Result	Units	Dilution	RDL
Bromochloromethane		<25.0	µg/Kg	25	1
Dichlorodifluoromethane		<25.0	µg/Kg	25	1
Chloromethane (methyl chloride)		<25.0	µg/Kg	25	1
Vinyl Chloride		<25.0	µg/Kg	25	1
Bromomethane (methyl bromide)		<25.0	µg/Kg	25	1
Chloroethane		<25.0	µg/Kg	25	1
Trichlorofluoromethane		<25.0	µg/Kg	25	1
Acetone		<250	µg/Kg	25	10
Iodomethane (methyl iodide)		<25.0	µg/Kg	25	1
Carbon Disulfide		<25.0	µg/Kg	25	1
Acrylonitrile		<25.0	µg/Kg	25	1
2-Butanone (MEK)		<125	µg/Kg	25	5
4-methyl-2-pentanone (MIBK)		<125	µg/Kg	25	5
2-hexanone		<125	µg/Kg	25	5
trans 1,4-Dichloro-2-butene		<250	µg/Kg	25	10
1,1-Dichloroethene		<25.0	µg/Kg	25	1
Methylene chloride		<125	µg/Kg	25	5
MTBE		<25.0	µg/Kg	25	1
trans-1,2-Dichloroethene		<25.0	µg/Kg	25	1
1,1-Dichloroethane		<25.0	µg/Kg	25	1
cis-1,2-dichloroethene		<25.0	µg/Kg	25	1
2,2-Dichloropropane		<25.0	µg/Kg	25	1
1,2-Dichloroethane (EDC)		<25.0	µg/Kg	25	1
Chloroform		<25.0	µg/Kg	25	1
1,1,1-Trichloroethane		<25.0	µg/Kg	25	1
1,1-Dichloropropene		<25.0	µg/Kg	25	1
Benzene		<25.0	µg/Kg	25	1
Carbon Tetrachloride		<25.0	µg/Kg	25	1
1,2-Dichloropropane		<25.0	µg/Kg	25	1
Trichloroethene (TCE)		<25.0	µg/Kg	25	1
Dibromomethane (methylene bromide)		<25.0	µg/Kg	25	1
Bromodichloromethane		<25.0	µg/Kg	25	1
2-Chloroethyl vinyl ether		<125	µg/Kg	25	5
cis-1,3-Dichloropropene		<25.0	µg/Kg	25	1
trans-1,3-Dichloropropene		<25.0	µg/Kg	25	1
Toluene		<25.0	µg/Kg	25	1
1,1,2-Trichloroethane		<25.0	µg/Kg	25	1
1,3-Dichloropropane		<25.0	µg/Kg	25	1
Dibromochloromethane		<25.0	µg/Kg	25	1
1,2-Dibromoethane (EDB)		<25.0	µg/Kg	25	1
Tetrachloroethene (PCE)		<25.0	µg/Kg	25	1
Chlorobenzene		<25.0	µg/Kg	25	1
1,1,1,2-Tetrachloroethane		<25.0	µg/Kg	25	1
Ethylbenzene		<25.0	µg/Kg	25	1
m,p-Xylene		35.4	µg/Kg	25	1
Bromoform		<25.0	µg/Kg	25	1
Styrene		<25.0	µg/Kg	25	1
o-Xylene		49.9	µg/Kg	25	1

Continued ...

... Continued Sample: 160335 Analysis: 8260

Param	Flag	Result	Units	Dilution	RDL
1,1,2,2-Tetrachloroethane		<25.0	µg/Kg	25	1
2-Chlorotoluene		<25.0	µg/Kg	25	1
1,2,3-Trichloropropane		<25.0	µg/Kg	25	1
Isopropylbenzene		59.3	µg/Kg	25	1
Bromobenzene		<25.0	µg/Kg	25	1
n-Propylbenzene		92.6	µg/Kg	25	1
1,3,5-Trimethylbenzene		542	µg/Kg	25	1
tert-Butylbenzene		<25.0	µg/Kg	25	1
1,2,4-Trimethylbenzene		425	µg/Kg	25	1
1,4-Dichlorobenzene (para)		<25.0	µg/Kg	25	1
sec-Butylbenzene		351	µg/Kg	25	1
1,3-Dichlorobenzene		<25.0	µg/Kg	25	1
p-Isopropyltoluene		359	µg/Kg	25	1
4-Chlorotoluene		<25.0	µg/Kg	25	1
1,2-Dichlorobenzene (ortho)		<25.0	µg/Kg	25	1
n-Butylbenzene		444	µg/Kg	25	1
1,2-Dibromo-3-chloropropane		<125	µg/Kg	25	5
1,2,3-Trichlorobenzene		<125	µg/Kg	25	5
1,2,4-Trichlorobenzene		<125	µg/Kg	25	5
Naphthalene		126	µg/Kg	25	1
Hexachlorobutadiene		<125	µg/Kg	25	5

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		52.99	µg/Kg	1	50	105	69 - 116
Toluene-d8		48.14	µg/Kg	1	50	96	88 - 114
4-Bromofluorobenzene	1	58.55	µg/Kg	1	50	117	74 - 110

Quality Control Report Method Blank

Sample: Method Blank

QCBatch: QC07349

Param	Flag	Results	Units	Reporting Limit
Bromochloromethane		<25.0	µg/Kg	1
Dichlorodifluoromethane		<25.0	µg/Kg	1
Chloromethane (methyl chloride)		<25.0	µg/Kg	1
Vinyl Chloride		<25.0	µg/Kg	1
Bromomethane (methyl bromide)		<25.0	µg/Kg	1
Chloroethane		<25.0	µg/Kg	1
Trichlorofluoromethane		<25.0	µg/Kg	1
Acetone		<250	µg/Kg	10
Iodomethane (methyl iodide)		<25.0	µg/Kg	1
Carbon Disulfide		<25.0	µg/Kg	1
Acrylonitrile		<25.0	µg/Kg	1
2-Butanone (MEK)		<125	µg/Kg	5

Continued ...

¹surrogate out of control limits due to coelution with unknown hydrocarbons

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Param	Flag	Results	Units	Reporting Limit
4-methyl-2-pentanone (MIBK)		<125	µg/Kg	5
2-hexanone		<125	µg/Kg	5
trans 1,4-Dichloro-2-butene		<250	µg/Kg	10
1,1-Dichloroethene		<25.0	µg/Kg	1
Methylene chloride		<125	µg/Kg	5
MTBE		<25.0	µg/Kg	1
trans-1,2-Dichloroethene		<25.0	µg/Kg	1
1,1-Dichloroethane		<25.0	µg/Kg	1
cis-1,2-dichloroethene		<25.0	µg/Kg	1
2,2-Dichloropropane		<25.0	µg/Kg	1
1,2-Dichloroethane (EDC)		<25.0	µg/Kg	1
Chloroform		<25.0	µg/Kg	1
1,1,1-Trichloroethane		<25.0	µg/Kg	1
1,1-Dichloropropene		<25.0	µg/Kg	1
Benzene		<25.0	µg/Kg	1
Carbon Tetrachloride		<25.0	µg/Kg	1
1,2-Dichloropropane		<25.0	µg/Kg	1
Trichloroethene (TCE)		<25.0	µg/Kg	1
Dibromomethane (methylene bromide)		<25.0	µg/Kg	1
Bromodichloromethane		<25.0	µg/Kg	1
2-Chloroethyl vinyl ether		<125	µg/Kg	5
cis-1,3-Dichloropropene		<25.0	µg/Kg	1
trans-1,3-Dichloropropene		<25.0	µg/Kg	1
Toluene		<25.0	µg/Kg	1
1,1,2-Trichloroethane		<25.0	µg/Kg	1
1,3-Dichloropropane		<25.0	µg/Kg	1
Dibromochloromethane		<25.0	µg/Kg	1
1,2-Dibromoethane (EDB)		<25.0	µg/Kg	1
Tetrachloroethene (PCE)		<25.0	µg/Kg	1
Chlorobenzene		<25.0	µg/Kg	1
1,1,1,2-Tetrachloroethane		<25.0	µg/Kg	1
Ethylbenzene		<25.0	µg/Kg	1
m,p-Xylene		<25.0	µg/Kg	1
Bromoform		<25.0	µg/Kg	1
Styrene		<25.0	µg/Kg	1
o-Xylene		<25.0	µg/Kg	1
1,1,2,2-Tetrachloroethane		<25.0	µg/Kg	1
2-Chlorotoluene		<25.0	µg/Kg	1
1,2,3-Trichloropropane		<25.0	µg/Kg	1
Isopropylbenzene		<25.0	µg/Kg	1
Bromobenzene		<25.0	µg/Kg	1
n-Propylbenzene		<25.0	µg/Kg	1
1,3,5-Trimethylbenzene		<25.0	µg/Kg	1
tert-Butylbenzene		<25.0	µg/Kg	1
1,2,4-Trimethylbenzene		<25.0	µg/Kg	1
1,4-Dichlorobenzene (para)		<25.0	µg/Kg	1
sec-Butylbenzene		<25.0	µg/Kg	1
1,3-Dichlorobenzene		<25.0	µg/Kg	1
p-Isopropyltoluene		<25.0	µg/Kg	1
4-Chlorotoluene		<25.0	µg/Kg	1
1,2-Dichlorobenzene (ortho)		<25.0	µg/Kg	1
n-Butylbenzene		<25.0	µg/Kg	1
1,2-Dibromo-3-chloropropane		<125	µg/Kg	5

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Param	Flag	Results	Units	Reporting Limit
1,2,3-Trichlorobenzene		<125	µg/Kg	5
1,2,4-Trichlorobenzene		<125	µg/Kg	5
Naphthalene		<25.0	µg/Kg	1
Hexachlorobutadiene		<125	µg/Kg	5

Surrogate	Flag	Result	Units	Spike Amount	Percent Recovery	Recovery Limit
Dibromofluoromethane		54.07	µg/Kg	50	108	69 - 116
Toluene-d8		50.01	µg/Kg	50	100	88 - 114
4-Bromofluorobenzene		47.52	µg/Kg	50	95	74 - 110

Quality Control Report Lab Control Spikes and Duplicate Spikes

Sample: LCS

QC Batch: QC07349

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
1,1-Dichloroethene		98	µg/Kg	1	100	<25.0	98		80 - 120	20
Benzene		90	µg/Kg	1	100	<25.0	90		80 - 120	20
Trichloroethene (TCE)		88	µg/Kg	1	100	<25.0	88		80 - 120	20
Toluene		91	µg/Kg	1	100	<25.0	91		80 - 120	20
Chlorobenzene		95	µg/Kg	1	100	<25.0	95		80 - 120	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
Dibromofluoromethane		53.96	µg/Kg	1	50	107	69 - 116
Toluene-d8		49.10	µg/Kg	1	50	98	88 - 114
4-Bromofluorobenzene		50.55	µg/Kg	1	50	101	74 - 110

Sample: LCSD

QC Batch: QC07349

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
1,1-Dichloroethene		99	µg/Kg	1	100	<25.0	99	1	80 - 120	20
Benzene		91	µg/Kg	1	100	<25.0	91	1	80 - 120	20
Trichloroethene (TCE)		89	µg/Kg	1	100	<25.0	89	1	80 - 120	20
Toluene		93	µg/Kg	1	100	<25.0	93	2	80 - 120	20
Chlorobenzene		96	µg/Kg	1	100	<25.0	96	1	80 - 120	20

Continued ...

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Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
Dibromofluoromethane		53.21	µg/Kg	1	50	106	69 - 116
Toluene-d8		48.84	µg/Kg	1	50	97	88 - 114
4-Bromofluorobenzene		49.33	µg/Kg	1	50	98	74 - 110

Quality Control Report Matrix Spikes and Duplicate Spikes

Sample: MS

QC Batch: QC07349

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
1,1-Dichloroethene		100	µg/Kg	1	100	<25.0	100		80 - 120	20
Benzene		98	µg/Kg	1	100	<25.0	98		74 - 121	20
Trichloroethene (TCE)		90	µg/Kg	1	100	<25.0	90		72 - 121	20
Toluene		95	µg/Kg	1	100	<25.0	95		75 - 134	20
Chlorobenzene		99	µg/Kg	1	100	<25.0	99		83 - 120	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
Dibromofluoromethane		48.10	µg/Kg	1	50	96	69 - 116
Toluene-d8		49.24	µg/Kg	1	50	98	88 - 114
4-Bromofluorobenzene		53.55	µg/Kg	1	50	107	74 - 110

Sample: MSD

QC Batch: QC07349

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
1,1-Dichloroethene		102	µg/Kg	1	100	<25.0	102	2	80 - 120	20
Benzene		99	µg/Kg	1	100	<25.0	99	1	74 - 121	20
Trichloroethene (TCE)		90	µg/Kg	1	100	<25.0	90	0	72 - 121	20
Toluene		96	µg/Kg	1	100	<25.0	96	1	75 - 134	20
Chlorobenzene		99	µg/Kg	1	100	<25.0	99	0	83 - 120	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
Dibromofluoromethane		48.12	µg/Kg	1	50	96	69 - 116
Toluene-d8		48.37	µg/Kg	1	50	96	88 - 114
4-Bromofluorobenzene		54.41	µg/Kg	1	50	108	74 - 110

Quality Control Report Continuing Calibration Verification Standards

Sample: CCV (1)

QC Batch: QC07349

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Vinyl Chloride		µg/Kg	100	99	99	80 - 120	12/12/00
1,1-Dichloroethene		µg/Kg	100	93	93	64 - 149	12/12/00
Chloroform		µg/Kg	100	112	112	80 - 120	12/12/00
1,2-Dichloropropane		µg/Kg	100	100	100	80 - 120	12/12/00
Toluene		µg/Kg	100	102	102	70 - 127	12/12/00
Chlorobenzene		µg/Kg	100	102	102	76 - 122	12/12/00
Ethylbenzene		µg/Kg	100	104	104	80 - 120	12/12/00
Dibromofluoromethane		µg/Kg	50	53.15	106	73 - 129	12/12/00
Toluene-d8		µg/Kg	50	48.02	96	87 - 114	12/12/00
4-Bromofluorobenzene		µg/Kg	50	54.92	109	65 - 112	12/12/00