

1R - 85

REPORTS

DATE:

8-24-11



1R-85

AMARILLO
921 North Bivins
Amarillo, Texas 79107
Phone 806.467.0607
Fax 806.467.0622

AUSTIN
3003 Tom Gary Cove
Building C-100
Round Rock, Texas 78664
Phone 512.989.3428
Fax 512.989.3487

MIDLAND
2901 State Highway 349
Midland, Texas 79706
Phone 432.522.2133
Fax 432.522.2180

SAN ANTONIO
17170 Jordan Road
Suite 102
Selma, Texas 78154
Phone 210.579.0235
Fax 210.568.2191

TULSA
9906 East 43rd Street
Suite G
Tulsa, Oklahoma 74146
Phone 918.742.0871
Fax 918.742.0876

HOBBS
318 East Taylor Street
Hobbs, New Mexico 88241
Phone 505.393.4261
Fax 505.393.4658

TYLER
719 West Front Street
Suite 255
Tyler, Texas 75702
Phone 903.531.9971
Fax 903.531.9979

HOUSTON
3233 West 11th Street
Suite 400
Houston, Texas 77008
Phone 713.861.0081
Fax 713.868.3208

ENVIRONMENTAL CONSULTING
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Toll Free: 866.742.0742
www.talonlpe.com

MOBILE DUAL PHASE EXTRACTION REPORT
TNM RED BYRD #1 PIPELINE RELEASE
LEA COUNTY, NEW MEXICO
SRS # TNM RED BYRD #1
TALON/LPE PROJECT # 700376.093.01

PREPARED FOR:

PLAINS MARKETING, L.P.
333 CLAY STREET
SUITE 1600
HOUSTON, TEXAS 77002

PREPARED BY:

TALON/LPE
921 N. BIVINS
AMARILLO, TEXAS 79107

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COPY 5 - TALON/LPE

August 24, 2011



PLAINS
PIPELINE, L.P.

RECEIVED OCD

September 8, 2011

2011 SEP 12 P 11: 48

Mr. Edward Hansen
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Plains Pipeline, L.P.
Reports for MDPE Events at Two (2) Remediation Sites in Lea County, NM

Dear Mr. Hansen:

Plains Pipeline, L.P. is pleased to submit the attached reports which provide details regarding the Mobile Dual Phase Extraction (MDPE) events that were conducted at the following sites during July 2011:

Red Byrd #1
Kimbrough Sweet 8-inch Sweet

NMOCD Reference #1R-0085
NMOCD Reference #AP-0029

Should you have any questions or comments, please contact me at (575) 441-1099.

Sincerely,

Jason Henry
Remediation Coordinator
Plains Pipeline, L.P.

Enclosure

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I. MDPE SUMMARY REPORT AND WASTE DISPOSITION

A. MDPE Results

The following report summarizes data collected during the 12-hour High Vacuum Multi-Phase Extraction (MDPE) event conducted from July 19, 2011 to July 20, 2011 at the TNM Red Byrd #1 Pipeline release site, located in Lea County, New Mexico. The objective of the MDPE treatment was to remove both vapor and liquid phase separated hydrocarbons (PSH) from onsite groundwater wells. Talon/LPE utilized an MDPE unit which consisted of an SVE extraction pump capable of generating vacuum up to 25" hg. Off gas vapors extracted from the extraction wells were destroyed using a propane-fired 1000-SCFM thermal oxidizer capable of processing 172.96 lbs/hr of gasoline.

A total of 12 hours (0.5 days) of PSH recovery was performed. MW-12 for 12 hours.

Prior to and immediately following the event, the groundwater wells were gauged for groundwater elevation and PSH. Depth to groundwater ranges were measured in feet below the top of casing. Refer to Attachment 1 for a summary of data collected during the MDPE event.

The volume of PSH removed during the MDPE event is shown to reflect the portions of PSH in the liquid phase and as off-gas vapor. Air removal rates were calculated from velocity measurements recorded at the influent manifold prior to entry into the MDPE unit. PSH recovery and air flow data has been detailed and is contained in Table 1. Three influent air samples were collected over the course of the event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. All three influent samples were tested for Total-Gas Analysis (Hydrocarbon Composition) by ASTM method D 1945. Laboratory analytical results can be found in Attachment 2.

Based on a combination of field vapor screening and collected laboratory samples, a combined estimated total of **11.19 equivalent gallons of PSH (Total)** were removed during the event. The combined volume of PSH was comprised of approximately **11 gallons of PSH (liquid phase)** and approximately **0.19 gallons as off-gas vapor**.

The cumulative air flow measurements for the MDPE event were calculated using a combination of field data measurements and Preso® B+ manufacturer provided formulas. **Air flow rates extracted from the recovery well averaged 35.46 SCFM** during the event.

A portion of the extracted air flow rates measured is attributable to compressed air, which was "injected" into the extraction wells. This "injected" air is introduced into the extraction wells for the purpose of enhancing liquid recovery rates.

B. Air Quality

Three influent air samples were collected during the event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. The maximum concentration in air influent was recorded as 622.43 ppmv for Hydrocarbon Composition. Laboratory analytical results can be found in Attachment 2.

C. Waste Management and Disposition

A cumulative total of 1,975 gallons of fluid were generated during this event. The fluids were temporarily transferred to an on-site storage tank prior to being hauled to an offsite disposal facility. A copy of the waste ticket can be found in Attachment 4.

II. SYSTEM OPERATION DATA AND MASS RECOVERY CALCULATIONS

Formulae:

$$\text{Concentration (C_mg/l)} = \frac{\text{C_ppmv} \times \text{Mol. wt. in mg(estimated)} \times 1000 \times 0.000001}{0.0821 \times \text{Temp (K)}}$$

$$\text{Recovery Rate (lbs/hr)} = \frac{(\text{C_mg/l}) \times 2.2 \times (\text{Flowrate}) \times 60 \times 28.32}{1,000,000}$$

$$\text{Recovery (lbs)} = (\text{lbs/hr}) \times (\text{hrs})$$

$$\text{Correction Factor (CF)} = \frac{\text{FID Reading(ppmv)}}{\text{FID Reading at Time of Laboratory Analysis}}$$

$$\frac{8.34 \text{ lbs}}{\text{gallon water}} \times 0.66 \text{ average specific gravity of light crude (estimated)} = \frac{5.5 \text{ lbs light crude}}{\text{gallon}}$$

Table 1
System Operation Data and Mass Recovery Calculations

Time	Period (hours)	Influent Temp. (°f)	Vacuum (in. hg)	Vacuum (in. h2O)	Differential pressure (in. h2O)	Flow (SCFM)	FID Readings (ppmv)	Lab Result (ppmv)	Assigned Lab Result (ppmv)	Correction Factor (CF)	Adjusted Lab Result (ppmv)	Adjusted Lab Result (mg/L)	Recovery (lbs/hr)	Recovery in Period (lbs)	Total Recovery (lbs)
14:30	0	108	21	285.79	3.6	35.03	1701	-	622.43	1.01	631	2.19	0.29	0.00	0.00
15:00	1	110	21	285.79	2.9	31.39	1678	622.43	622.43	1.00	622	2.16	0.25	0.25	0.25
16:00	1	108	21	285.79	2.7	30.34	637	-	622.43	0.38	236	0.82	0.09	0.09	0.35
17:00	1	104	21	285.79	4.3	38.42	459	-	622.43	0.27	170	0.60	0.09	0.09	0.43
18:00	1	101	20	272.18	4.5	41.55	311	-	58.18	2.12	123	0.43	0.07	0.07	0.50
19:00	1	99	20	272.18	4.6	42.09	249	-	58.18	1.69	99	0.35	0.05	0.05	0.55
20:00	1	96	20	272.18	4.7	42.66	147	58.18	58.18	1.00	58	0.21	0.03	0.03	0.59
21:00	1	92	20	272.18	4.3	40.95	161	-	58.18	1.10	64	0.23	0.03	0.03	0.62
22:00	1	87	19.5	265.38	3	35.21	185	-	58.18	1.26	73	0.26	0.03	0.03	0.66
23:00	1	82	19	258.57	2.3	31.70	198	-	300.57	0.34	103	0.38	0.04	0.04	0.70
0:00	1	80	19	258.57	2	29.62	203	-	300.57	0.35	106	0.39	0.04	0.04	0.74
1:00	1	80	19	258.57	2.5	33.12	578	300.57	300.57	1.00	301	1.10	0.14	0.14	0.88
2:00	1	80	19	258.57	1.9	28.87	761	-	300.57	1.32	396	1.45	0.16	0.16	1.04
Averages:		94.38	19.96	271.66	3.33	35.46	559.08						Total	1.04	

PSH Mass Recovered in Vapor Phase = 0.19 gallons

FID maximum Concentration = 50,000 PPM

Ex: Conversion from ppmv to mg/L (light crude)

Measured Conc.	Molecular Wt.	Pressure	Gas Constant	Temp.	Temp.	Conc.
(C_ppmv)	(Grams)	(atm)	(atm.liter/K.mole)	(F)	(K)	(C_mg/l)
631	90	1	0.0821	108	315.2222222	2.194236716

Inputs are the green values.

Calculated values are yellow.

Constants are purple values.

Output are the blue values.

Total Hydrocarbon Recovery

PSH Mass Recovered in Vapor Phase =

PSH Mass Recovered in Liquid Phase =

1.04	lbs
0.19	gallons
60.50	lbs
11.00	gallons

Liquid-phase Hydrocarbon Recovery

(assumes gasoline product)

$[\pi \cdot r^2 \cdot h] = \text{volume}$

TOTAL = 61.54 lbs
11.19 gallons

Gallons removed determined at time of pick up	
PSH Volume in Gallons=	11
PSH Mass in Pounds=	60.5

% Total Hydrocarbon to mg/m³ to ppmv - Influent 1							
Compound	Molecular Weight (g/mol)	% total	% total (Decimal)	=	Mg/M³	=	ppmv
Methane (CH4)	16.04	0	0		0		0.00
Ethane (C2H6)	30.07	0	0		0		0.00
Propane (C3H8)	44.10	0	0		0		0.00
Iso-Butane (C4H10)	58.12	0	0		0		0.00
N-Butane (C4H10)	58.12	0	0		0		0.00
Iso-Pentane (C4H12)	72.15	0.0016	0.000016		16		4.54
N-Pentane (C5H12)	72.15	0.0016	0.000016		16		4.54
Hexane+ (C6H14)	86.18	0.2161	0.002161		2161		613.34
Total							622.43

% Total Hydrocarbon to mg/m³ to ppmv - Influent 2							
Compound	Molecular Weight (g/mol)	% total	% total (Decimal)	=	Mg/M³	=	ppmv
Methane (CH4)	16.04	0	0		0		0.00
Ethane (C2H6)	30.07	0	0		0		0.00
Propane (C3H8)	44.10	0	0		0		0.00
Iso-Butane (C4H10)	58.12	0	0		0		0.00
N-Butane (C4H10)	58.12	0	0		0		0.00
Iso-Pentane (C4H12)	72.15	0	0		0		0.00
N-Pentane (C5H12)	72.15	0	0		0		0.00
Hexane+ (C6H14)	86.18	0.0205	0.000205		205		58.18
Total							58.18

% Total Hydrocarbon to mg/m³ to ppmv - Influent 3							
Compound	Molecular Weight (g/mol)	% total	% total (Decimal)	=	Mg/M³	=	ppmv
Methane (CH4)	16.04	0	0		0		0.00
Ethane (C2H6)	30.07	0	0		0		0.00
Propane (C3H8)	44.10	0	0		0		0.00
Iso-Butane (C4H10)	58.12	0	0		0		0.00
N-Butane (C4H10)	58.12	0	0		0		0.00
Iso-Pentane (C4H12)	72.15	0	0		0		0.00
N-Pentane (C5H12)	72.15	0	0		0		0.00
Hexane+ (C6H14)	86.18	0.1059	0.001059		1059		300.57
Total							300.57

ATTACHMENT 1
MDPE Field Logs

MDPE FIELD NOTES				
Site Name:	Red Byrd #1			Event #: 1
Location:	Lea County, NM			Arrive at site: 7/19/2011 13:30
Date:	7/19-20/2011			
Job#:	700376.093.01	SRS:	TNM Red Byrd #1	Start Vac: 7/19/2011 14:00
Phase:	MDPE	Unit:	1107	Stop Vac: 7/20/2011 2:00
Onsite Personnel:	L. Jaquez & M. Hernandez			Leave Site: 7/20/2011 3:00

Sample Name		Analysis	Date:	Time:	Comments:
INFLUENT	1	ASTM D 1945	7/19/2011	15:00	
INFLUENT	2	ASTM D 1945	7/19/2011	20:00	
INFLUENT	3	ASTM D 1945	7/20/2011	1:00	
EFFLUENT					

[illegible]

Start Date: 7/19/2011

MDPE FIELD DATA

Total Flow			Well Flow					Well Data													
TIME	SAMPLE TAKEN	Inflent temp. (°f)	Diff. Pressure (INH20) 6" Pitot	Pressure (In. h2O)	Inflent temp. (°f)	Diff. Pressure (INH20) 2" Preso	Vac (In.Hg)	FID Composite (PPM)	Propane Tank (%-size) 250 Gal.	EXHAUST TEMP F	COMMENTS:										
											MW12	PPM	In. HG	PPM	In. HG	PPM	In. HG	PPM	In. HG	PPM	In. HG
14:30	*	130	0.9	0.2	108	3.6	21	1701	90	1414		1701	21								
15:00	*	130	1	0.2	110	2.9	21	1678	88	1410		1678	21								
16:00		128	0.9	0.2	108	2.7	21	637	86	1408		637	21								
17:00		122	1	0.2	104	4.3	21	459	85	1412		459	21								
18:00		121	1	0.2	101	4.5	20	311	84	1408		311	20								
19:00		120	0.9	0.2	99	4.6	20	249	83	1410		249	20								
20:00	*	120	0.9	0.2	96	4.7	20	147	81	1409		149	20								
21:00		120	0.9	0.2	92	4.3	20	161	80	1413		161	20								
22:00		114	0.9	0.2	87	3	19.5	185	78	1415		185	19.5								
23:00		109	1	0.2	82	2.3	19	198	76	1411		198	19								
0:00		108	0.9	0.2	80	2	19	203	75	1416		203	19								
1:00	*	104	0.9	0.2	80	2.5	19	578	74	1407		578	19								
2:00		106	0.9	0.2	80	1.9	19	761	70	1409		761	19								

Soil Vacuum Influence

Observation Well	MW11
Extraction Well (EW)	MW12
Distance (ft) to EW	128
Time:	In.H2O
16:00	0
21:00	0.03
2:00	0.05

ATTACHMENT 2
Laboratory Analytical Results

TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
T (800) 378-1296

5002 Basin Street, Suite A1
Midland, Texas 79703
Tel (432) 689-6301
Fax (432) 689-6313

200 East Sunset Rd., Suite E
El Paso, Texas 79922
Tel (915) 585-3443
Fax (915) 585-4944
T (888) 586-3443

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (972) 242-7750

Company Name:

TALONUE

Phone #:

806-467-0607

Address:

(Street, City, Zip)

921 N. BYRNS AMARILLO TX 79107

Fax #:

806-467-0622

Contact Person:

SIMON WALSH

E-mail:

S.WALSH@TALONUE.COM

Invoice to:

(If different from above)

JASON HENRY

Project #:

700376.093.01

Project Name:

RED BIRD #1

Project Location (including state):

MONUMENT NEW MEXICO

Sampler Signature:

[Signature]

PRESERVATIVE

METHOD

MATRIX

SAMPLING

TIME

DATE

NONE

ICE

NaOH

H₂SO₄HNO₃

HCl

SLUDGE

AIR

SOIL

WATER

Volume / Amount

CONTAINERS

FIELD CODE

LAB

(LAB USE ONLY)

22536

INFLUENT #1

537

INFLUENT #2

538

INFLUENT #3

1 LIT

1 LIT

1 LIT

1 LIT

1 LIT

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ANALYSIS REQUEST

(Circle or Specify Method No.)

GC/MS Vol. 8260 / 624

GC/MS Semi. Vol. 8270 / 625

PCBs 8082 / 608

Pesticides 8081 / 608

BOD, TSS, pH

Moisture Content

Cl, F, SO₄, NO₃, NO₂, Alkalinity

Na, Ca, Mg, K, TDS, EC

ASTMD 1945

X X X

X X X

X X X

X X X

X X X

X X X

X X X

X X X

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X X X

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REMARKS:

LAB USE ONLY

ONLY

ONLY

ONLY

ONLY

ONLY

ONLY

ONLY

ONLY

ONLY

ONLY

ONLY

ONLY

ONLY

Dry Weight Basis Required
TRRP Report Required
Check if Special Reporting
Limits Are Needed

AUG - 2 2011

Carrier #

C. Campbell

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

806-665-0750
806-665-0753
877-788-0750

Midwest Precision Testing LLC
135 N Price Rd
Pampa, TX 79065

www.mwptlab.com

The following analytical results were produced using the strictest quality control and most current methods:

COC #: N/A

Lab #: 6012-6014

Quality Control #: 1580

Approved by:

Neil Ray

Neil Ray

Date: 8/01/11

806-665-0750
806-665-0753
877-788-0750

Midwest Precision Testing LLC
135 N Price Rd
Pampa, TX 79065

www.mwptlab.com

Sample Matrix: Gas
Sample Type: Spot
Preservative: N/A
Sample Container: Tedlar Bag

Client: Trace Analysis, Inc.
Project Location: N/A

Sample Id.: Influent #1
Trace: 272536

Method(s): ASTM D 1945
Gas Analysis by Gas
Chromatography

Sample Temp.: N/A
Atmospheric Temp.: N/A
Pressure: N/A
Field Data: N/A
Sample Date: 7/19/11 Time: 3:00 pm
Sampled By: N/A
Analysis Date: 7/29/11
Analysis By: Neil Ray

Lab #: 6012
Quality Control Report: 1580

Analytical Results

<u>Gas Composition</u>	<u>Mol %</u>	<u>GPM</u>	<u>Vol %</u>	<u>Wt. %</u>
Nitrogen (N2):	99.6129	10.9001	99.2754	99.3062
Carbon Dioxide (CO2):	0.3269	0.0551	0.5053	0.5108
<u>Hydrocarbon Composition</u>	<u>Mol %</u>	<u>GPM</u>	<u>Vol. %</u>	<u>Wt. %</u>
Methane (CH4):	0.0000	0.0000	0.0000	0.0000
Ethane (C2H6):	0.0000	0.0000	0.0000	0.0000
Propane (C3H8):	0.0000	0.0000	0.0000	0.0000
Iso-Butane (C4H10):	0.0000	0.0000	0.0000	0.0000
N-Butane (C4H10):	0.0000	0.0000	0.0000	0.0000
Iso-Pentane (C5H12):	0.0005	0.0002	0.0016	0.0012
N-Pentane (C5H12):	0.0005	0.0002	0.0016	0.0012
Hexane+ (C6H14):	0.0593	0.0256	0.2161	0.1806
Totals	100.0000	10.9812	100.0000	100.0000

Comments - Additional Data

BTU -dry (BTU/ft ³):	3.1	Z-Comp. Factor-dry:	0.99970
BTU -water vapor sat.(BTU/ft ³):	3.9	Z-Comp. Factor-water vapor sat.:	0.99558
Specific Gravity -dry:	0.9703	14.65 psi Pressure Base	
Specific Gravity-water vapor sat.:	0.9682		

806-665-0750
806-665-0753
877-788-0750

Midwest Precision Testing LLC
135 N Price Rd
Pampa, TX 79065

www.mwptlab.com

Sample Matrix: Gas
Sample Type: Spot
Preservative: N/A
Sample Container: Tedlar Bag

Client: Trace Analysis, Inc.
Project Location: N/A

Sample Id.: Influent #2
Trace: 272537

Method(s): ASTM D 1945
Gas Analysis by Gas
Chromatography

Sample Temp.: N/A
Atmospheric Temp.: N/A
Pressure: N/A
Field Data: N/A
Sample Date: 7/19/11 Time: 8:00 pm
Sampled By: N/A
Analysis Date: 7/29/11
Analysis By: Neil Ray

Lab #: 6013
Quality Control Report: 1580

Analytical Results

<u>Gas Composition</u>	<u>Mol %</u>	<u>GPM</u>	<u>Vol %</u>	<u>Wt. %</u>
Nitrogen (N2):	99.7501	10.9151	99.6011	99.6005
Carbon Dioxide (CO2):	0.2443	0.0412	0.3784	0.3824
<u>Hydrocarbon Composition</u>	<u>Mol %</u>	<u>GPM</u>	<u>Vol. %</u>	<u>Wt. %</u>
Methane (CH4):	0.0000	0.0000	0.0000	0.0000
Ethane (C2H6):	0.0000	0.0000	0.0000	0.0000
Propane (C3H8):	0.0000	0.0000	0.0000	0.0000
Iso-Butane (C4H10):	0.0000	0.0000	0.0000	0.0000
N-Butane (C4H10):	0.0000	0.0000	0.0000	0.0000
Iso-Pentane (C5H12):	0.0000	0.0000	0.0000	0.0000
N-Pentane (C5H12):	0.0000	0.0000	0.0000	0.0000
Hexane+ (C6H14):	0.0056	0.0024	0.0205	0.0171
Totals	100.0000	10.9587	100.0000	100.0000

Comments - Additional Data

BTU -dry (BTU/ft ³):	0.3	Z-Comp. Factor-dry:	0.99971
BTU -water vapor sat.(BTU/ft ³):	1.2	Z-Comp. Factor-water vapor sat.:	0.99564
Specific Gravity -dry:	0.9686	14.65 psi Pressure Base	
Specific Gravity-water vapor sat.:	0.9665		

806-665-0750
806-665-0753
877-788-0750

Midwest Precision Testing LLC
135 N Price Rd
Pampa, TX 79065

www.mwptlab.com

Sample Matrix: Gas
Sample Type: Spot
Preservative: N/A
Sample Container: Tedlar Bag

Client: Trace Analysis, Inc.
Project Location: N/A

Sample Id.: Influent #3
Trace: 272538

Method(s): ASTM D 1945
Gas Analysis by Gas
Chromatography

Sample Temp.: N/A
Atmospheric Temp.: N/A
Pressure: N/A
Field Data: N/A
Sample Date: 7/20/11 Time: 1:00 am
Sampled By: N/A
Analysis Date: 7/29/11
Analysis By: Neil Ray

Lab #: 6014
Quality Control Report: 1580

Analytical Results

Gas Composition				
	Mol %	GPM	Vol %	Wt. %
Nitrogen (N2):	99.2182	10.8570	98.7322	98.7373
Carbon Dioxide (CO2):	0.7527	0.1269	1.1619	1.1743
Hydrocarbon Composition				
	Mol %	GPM	Vol. %	Wt. %
Methane (CH4):	0.0000	0.0000	0.0000	0.0000
Ethane (C2H6):	0.0000	0.0000	0.0000	0.0000
Propane (C3H8):	0.0000	0.0000	0.0000	0.0000
Iso-Butane (C4H10):	0.0000	0.0000	0.0000	0.0000
N-Butane (C4H10):	0.0000	0.0000	0.0000	0.0000
Iso-Pentane (C5H12):	0.0000	0.0000	0.0000	0.0000
N-Pentane (C5H12):	0.0000	0.0000	0.0000	0.0000
Hexane+ (C6H14):	0.0291	0.0126	0.1059	0.0885
Totals	100.0000	10.9965	100.0000	100.0000

Comments - Additional Data

BTU -dry (BTU/ft ³):	1.5	Z-Comp. Factor-dry:	0.99970
BTU -water vapor sat.(BTU/ft ³):	2.4	Z-Comp. Factor-water vapor sat.:	0.99554
Specific Gravity -dry:	0.9720	14.65 psi Pressure Base	
Specific Gravity-water vapor sat.:	0.9699		

806-665-0750
806-665-0753
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Pampa, TX 79065

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Sample Type: Standard
Preservative: N/A
Sample Container: Industrial
Cylinder

Sample Id.: DCG
Reference Std. 47366AW
Sample Temp.: 120° F
Analysis Date: 7/29/11
Analysis By: Neil Ray

Method(s): ASTM D 1945
Gas Analysis by Gas
Chromatography

Quality Control Report#: 1580

Analytical Results

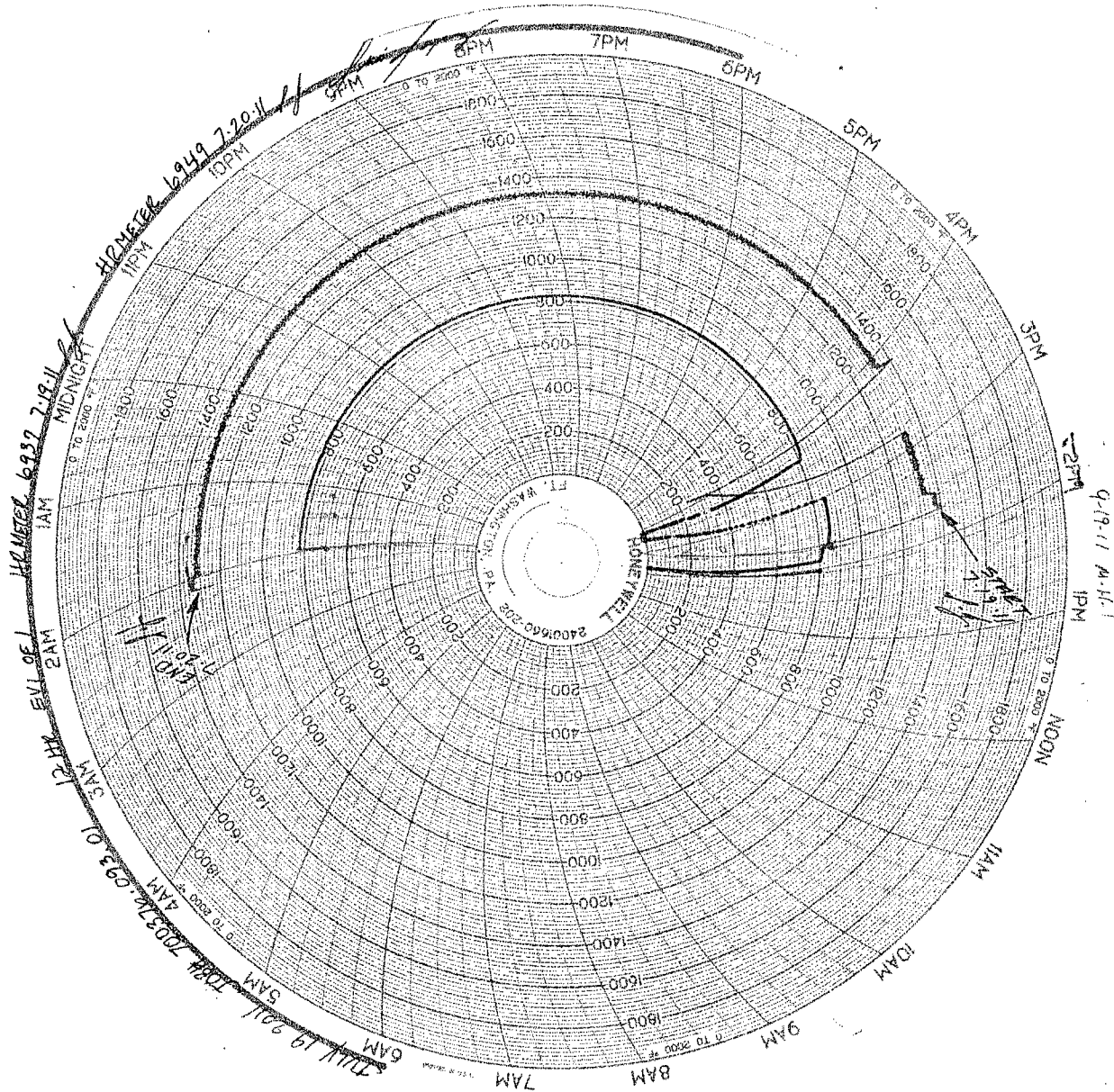
RESULTS	ACTUAL	ANALYSIS			
<u>Gas Composition</u>			MDL	RL	% Deviation
	Mol %	Mol %	Mol %	ppm mol	(90-100%)
Nitrogen (N2):	4.926	4.7451	0.0010	10	96.3
Carbon Dioxide (CO2):	1.489	1.4885	0.0010	10	100.0
			MDL	RL	% Deviation
<u>Hydrocarbon Composition</u>	Mol %	Mol %	Mol %	ppm mol	(90-100%)
Methane (CH4):	69.955	70.5102	0.0001	1	99.2
Ethane (C2H6):	9.138	9.0967	0.0001	1	99.5
Propane (C3H8):	5.947	5.8182	0.0001	1	97.8
Iso-Butane (C4H10):	3.018	2.9541	0.0001	1	97.9
N-Butane (C4H10):	3.021	2.9588	0.0001	1	97.9
Iso-Pentane (C5H12):	1.001	0.9971	0.0001	1	99.6
N-Pentane (C5H12):	1.007	0.9773	0.0001	1	97.0
Hexane+ (C6H14):	0.498	0.4541	0.0001	1	91.2
Totals	100.000	100.000			

Comments - Additional Data

ACTUAL		ANALYSIS	
BTU -dry (BTU/ft ³):	1322.3	BTU -dry (BTU/ft ³):	1316.1
BTU -water vapor sat. (BTU/ft ³):	1316.6	BTU -water vapor sat. (BTU/ft ³):	1310.4
Specific Gravity -dry:	0.8337	Specific Gravity -dry:	0.8278
Specific Gravity -water vapor sat.:	0.8406	Specific Gravity -water vapor sat.:	0.8347
Z-Comp. Factor -dry:	0.99565	Z-Comp. Factor -dry:	0.99571
Z-Comp. Factor -water vapor sat.:	0.98309	Z-Comp. Factor -water vapor sat.:	0.98320

ATTACHMENT 3

Oxidizer Charts



ATTACHMENT 4
Waste Ticket

S. C. C. 35434
ICC MC #259649

TRANSPORTS
FRAC TANKS
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B
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O

Plains

CONTRACT
NUMBER

FIELD
ORDER
NUMBER

165185

A. F. E.
NUMBER

DATE

7-20-11

REQ. OR
PURCHASE ORDER
NUMBER

ORDERED BY

LUIS

DELIVERED
FROM

Location

TO

D. Spaul.

LOCATION

Red Blvd #1

WELL OR
RIG NO.

TRUCK OR
UNIT NO.

62

CAPACITY

120

AMOUNT
HAULED

40

START
TIME

AMEND
TIME

AM HOURS
CHGD.

4

DESCRIPTION

○HR.

○BBL

RATE

AMOUNT

Provide TL 15 Empty Plastic
Tank.

4

Hrs.

82 00

328 00

Bbls

Bbls

KCL

Disp

40

1 10

44 00

Disp

Helper

Tank Min

Day Rental

Chart Recorder

1775 013

1120 2511

1120 1564

372 00

TOP GAUGE

BOTTOM GAUGE

SET DATE

RELEASE DATE

FOR OFFICE USE ONLY

TAX

25.00

NET TOTAL

397.00

Thank You

Shelly D.

OPERATOR OR DRIVER

SRS # TNM-Red Blvd #1

Jason Cherry 07/22/11

AUTHORIZED BY: