1R - 464

REPORTS

DATE:

1-17-13

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921 North Bivins
Amarillo, Texas 79107
Phone 806.467.0607
Fax 806.467.0622

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MOBILE DUAL PHASE EXTRACTION REPORT
VACUUM TO JAL 14 INCH MAINLINE 5 PIPELINE RELEASE
LEA COUNTY, NEW MEXICO
SRS # 2003-00134
NMOCD# 1R-0464

PREPARED FOR:

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

PREPARED BY:

TALON/LPE
921 N. BIVINS
AMARILLO, TEXAS 79107

TALON/LPE (F-6802)
2/7/13

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JANUARY 17, 2013

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Section Page

Attachments:

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 November 15, 2012, to November 16, 2012, at the Vacuum to Jal 14 Inch Mainline 5 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. RW-1, RW-2, & RW-3 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. Two 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. Both 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 **20.93 equivalent gallons of PSH (Total)** were removed during the event. The combined volume of PSH was comprised of approximately **3 gallons of PSH (liquid phase)** and approximately **17.93 gallons as off-gas vapor**. The calculations used to estimate the off-gas vapor mass recovered reflect the mass of total hydrocarbons recovered and does not necessarily equate to an equal mass of the product released. The mass recovery calculations may be affected by variations in the specific gravity of hydrocarbon released, age of release, activity of aerobic and/or anaerobic processes, and site specific geochemical factors.

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 wells averaged 246.59 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

Two 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 influent concentration was recorded as 15,251 ppmv for Hydrocarbon Composition. Laboratory analytical results can be found in Attachment 2.

C. Waste Management and Disposition

A cumulative total of 1,199 gallons of fluid were generated during this event. The fluids were temporarily transferred to an on-site storage tank prior to being transferred to an authorized disposal facility. A copy of the waste ticket can be found in Attachment 4.

II. SYSTEM OPERATION DATA AND MASS RECOVERY CALCULATIONS

Formulae:

$$\text{Concentration (C\_mg/l)} = \frac{\text{C\_ppmv x Mol. wt. in mg(estimated) x 1000 x 0.000001}}{\text{0.0821 x Temp (K)}}$$

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

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

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

$$\frac{\text{8.34 lbs}}{\text{gallon water}} \times \text{0.82 average specific gravity of light crude (estimated)} = \frac{\text{6.84 lbs light crude}}{\text{gallon}}$$

Table 1
System Operation Data and Mass Recovery Calculations

Time	Period (hours)	Influent Temp. (°f)	Vacuum (In. hg)	Vacuum (In. h20)	Differential pressure (In. h20)	Flow (SCFM)	FID Readings (ppm)	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)
15:00	0.5	88	14	190.53	95.1	244.66	20068	-	15251.00	0.63	9602	11.34	10.37	5.18	5.18
15:30	0.5	88	14	190.53	94.5	243.89	31875	15251.00	15251.00	1.00	15251	18.01	16.42	8.21	13.39
16:30	1	82	14	190.53	93.6	244.07	29671	-	15251.00	0.93	14196	16.95	15.46	15.46	28.86
17:30	1	70	13.5	183.72	92.6	249.31	24880	-	15251.00	0.78	11904	14.53	13.54	13.54	42.40
18:30	1	64	13.5	183.72	92.9	251.14	19685	-	15251.00	0.62	9419	11.63	10.92	10.92	53.32
19:30	1	60	13.5	183.72	93.2	252.51	45765	-	15251.00	1.44	21897	27.25	25.72	25.72	79.04
20:30	1	58	13.5	183.72	91.6	250.81	17655	-	15251.00	0.55	8447	10.55	9.89	9.89	88.93
21:30	1	58	13.5	183.72	90.9	249.85	19137	-	4111.00	1.34	5499	6.80	6.35	6.35	95.28
22:30	1	56	13.5	183.72	87.6	245.75	17899	-	4111.00	1.25	5143	6.38	5.86	5.86	101.15
23:30	1	56	13.5	183.72	89.3	248.12	19311	-	4111.00	1.35	5549	6.89	6.39	6.39	107.53
0:30	1	56	13.5	183.72	85.2	242.36	16481	-	4111.00	1.15	4736	5.88	5.32	5.32	112.86
1:30	1	56	13.5	183.72	84	240.65	14307	4111.00	4111.00	1.00	4111	5.10	4.59	4.59	117.45
2:30	1	56	13.5	183.72	85.3	242.50	15973	-	4111.00	1.12	4590	5.70	5.16	5.16	122.61
Averages:		65.23	13.62	185.29	90.45	246.59	22515.92						Total	122.61	

PSH Mass Recovered in Vapor Phase = 17.93 gallons

FID maximum Concentration = 50,000 PPM

Ex: Conversion from ppmv to mg/L (influent 1)

Measured Conc.	Molecular Wt.	Pressure	Gas Constant	Temp.	Temp.	Conc.
(ppmv)	(Grams)	(atm)	(atm.liter/K.mole)	(F)	(K)	(C_mg/l)
9602	29.4797	1	0.0821	88	304.1111111	11.3370402

Inputs are the green values.
Calculated values are yellow.
Constants are purple values.
Outpus are the blue values.

Liquid-phase Hydrocarbon Recovery

∏ * r2 * h = volume

Total Hydrocarbon Recovery

PSH Mass Recovered in Vapor Phase =	122.61	lbs
	17.93	gallons
PSH Mass Recovered in Liquid Phase =	20.52	lbs
	3.00	galons
TOTAL =	**143.13**	**lbs**
	20.93	**gallons**

Gallons removed determined at time of pick up

PSH Volume in Gallons=	3
PSH Mass in Pounds=	20.52

% Vol. Hydrocarbon to ppmv - Influent 1

Compound	Molecular Weight (g/mol)	% Vol	=	ppmv
Methane (CH4)	16.04	0.5531		5531.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0.0017		17.00
Iso-Butane (C4H10)	58.12	0.0645		645.00
N-Butane (C4H10)	58.12	0.0581		581.00
Iso-Pentane (C4H12)	72.15	0.0607		607.00
N-Pentane (C5H12)	72.15	0.074		740.00
Hexane+ (C6H14)	97.40	0.713		7130.00
			Total	**15251.00**

*Hexane+ is treated as 60% hexanes, 30 % heptanes, and 10 % octanes, as such its (0.6*93.1887)+(0.3*100.2019)+(0.1*114.2285) = 97.3966

Molecular Weight Calculations

component	Molecular Weight (g/mol)	mol%
Nitrogen (N2)	28.016	90.9879
Methane (CH4)	16.0425	0.3787
Carbon Dioxide (CO2)	44.011	8.3396
Ethane (C2H6)	30.069	0.0000
Propane (C3H8)	44.0956	0.0007
Iso-Butane (C4H10)	58.1222	0.0229
N-Butane (C4H10)	58.1222	0.0214
Iso-Pentane (C4H12)	72.1488	0.0193
N-Pentane (C5H12)	72.1488	0.0237
Hexane+	97.3966	0.2057
	Total	99.9999
	Calculated MW	**29.4797**

% Vol. Hydrocarbon to ppmv - Influent 2

Compound	Molecular Weight (g/mol)	% Vol	=	ppmv
Methane (CH4)	16.04	0.1904		1904.00
Ethane (C2H6)	30.07	0.0003		3.00
Propane (C3H8)	44.10	0.0003		3.00
Iso-Butane (C4H10)	58.12	0.0009		9.00
N-Butane (C4H10)	58.12	0.0067		67.00
Iso-Pentane (C4H12)	72.15	0.0182		182.00
N-Pentane (C5H12)	72.15	0.0198		198.00
Hexane+ (C6H14)	97.40	0.1745		1745.00
			Total	**4111.00**

*Hexane+ is treated as 60% hexanes, 30 % heptanes, and 10 % octanes, as such its (0.6*93.1887)+(0.3*100.2019)+(0.1*114.2285) = 97.3966

Molecular Weight Calculations

component	Molecular Weight (g/mol)	mol%
Nitrogen (N2)	28.016	92.7442
Methane (CH4)	16.0425	0.1286
Carbon Dioxide (CO2)	44.011	7.0626
Ethane (C2H6)	30.069	0.0001
Propane (C3H8)	44.0956	0.0001
Iso-Butane (C4H10)	58.1222	0.0003
N-Butane (C4H10)	58.1222	0.0024
Iso-Pentane (C4H12)	72.1488	0.0057
N-Pentane (C5H12)	72.1488	0.0063
Hexane+	97.3966	0.0497
	Total	100
	Calculated MW	**29.1709**

Calculated MW= $\frac{\text{sum (individual component MW x their reported mol\%)}}{100}$

ppmv= **% Vol x 10,000**

ATTACHMENT 1

MDPE Field Logs

MDPE FIELD NOTES					
Site Name:	Vac to Jal 14 Inch #5			Event #:	2
Location:	Eunice, NM			Arrive at site:	11/15/2012 13:30
Date:	11/15-16/2012				
Job#:	700376.130.02	SRS:	2003-00134	Start Vac:	11/15/2012 14:30
Phase:	MDPE2	Unit:	1107	Stop Vac:	11/16/2012 2:30
Onsite Personnel:	L. Bridges & B. Huntington			Leave Site:	11/15/2012 3:00

GAUGING DATA

WELL#	BEFORE			AFTER			COMMENTS
	PSH	GW	PSH-T	PSH	GW	PSH-T	
RW-1	50.72	50.76	0.04	-	50.66	-	Stinger set @ 50'
RW-2	49.70	49.78	0.08	-	50.61	-	Stinger set @ 50'
RW-3	50.21	50.26	0.05	-	50.09	-	Stinger set @ 50'
WASTE:	H2O:	1196		PSH:	3		TOTAL (GAL): 1199

Sample Name	Analysis	Date:	Time:	Comments:
INFLUENT	ASTM D1945	15-Nov-12	15:30	FID = 31875
INFLUENT	ASTM D1945	16-Nov-12	1:30	FID = 14307
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

Notes:
Tank #1 = 46.75" Total fluid with PSH @ 46.25' = 1199 total gallons with 3 gallons PSH

Start Date: 15-Nov-12

MDPE FIELD DATA

		Well Flow						Well Data				
TIME	SAMPLE TAKEN *	Inflent temp. (°f)	Diff. Pressure (INH20) 2" Preso	Vac (In.Hg)	FID Composite (PPM)	Propane Tank (%-size) 500 Gal.	EXHAUST TEMP F	COMMENTS: RW-1 VAC (INH2O)	RW-2 VAC (INH2O)	RW-3 VAC (INH2O)	VAC (INH2O)	VAC (INH2O)
15:00		88	95.1	14	20068	52	1412	28.1	14.1	30.6		
15:30	*	88	94.5	14	31875	52	1411	27.9	14.4	31.4		
16:30		82	93.6	14	29671	Tank gauge froze - No data	1410	27.4	13.9	32.8		
17:30		70	92.6	13.5	24880		1405	27.1	13.3	34.7		
18:30		64	92.9	13.5	19685		1410	26.3	13.4	26.1		
19:30		60	93.2	13.5	45765		1409	24.6	13.6	20.3		
20:30		58	91.6	13.5	17655		1410	27.3	13.3	25.6		
21:30		58	90.9	13.5	19137		1407	28.7	12.9	22.3		
22:30		56	87.6	13.5	17899		1409	26.4	13.5	27.1		
23:30		56	89.3	13.5	19311		1410	25.9	13.1	26.5		
0:30		56	85.2	13.5	16481		1409	26.8	12.4	25.8		
1:30	*	56	84	13.5	14307		1408	29.3	11.9	27.3		
2:30		56	85.3	13.5	15973		1407	27.8	12.1	26.8		

Soil Vacuum Influence

Observation Well	MW-2
Extraction Well (EW)	RW-2
Time:	In.H2O
15:30	0
20:30	0
1:30	0

ATTACHMENT 2

Laboratory Analytical Results

TRACEANALYSIS, INC.
6701 Aberdeen Avenue, Suite 9 | Lubbock, Texas 79424 | 800-378-1296 | 806-794-1296 | FAX 806-794-1298
200 East Sunset Road, Suite E | El Paso, Texas 79922 | 915-585-3443 | FAX 915-585-4944
5002 Basin Street, Suite A1 | Midland, Texas 79703 | 432-689-6301 | FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 | Carrollton, Texas 75006 | 972-242-7750
E-Mail: lab@traceanalysis.com | WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Simon Walshe
Talon LPE-Amarillo
921 North Bivins
Amarillo, TX, 79107

Report Date: December 3, 2012

Work Order: 12111623

Project Location: Eunice, NM
Project Name: Vac. to Jal 14" #5
Project Number: 700376.130.02
SRS #: 2003-00134

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
314434	Influent #1	air	2012-11-15	15:30	2012-11-16

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 5 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Report Contents

Case Narrative

Samples for project Vac. to Jal 14" #5 were received by TraceAnalysis, Inc. on 2012-11-16 and assigned to work order 12111623. Samples for work order 12111623 were received intact at a temperature of 23.0 C.

Samples were analyzed for the following tests using their respective methods.

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 12111623 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

LAB Order ID # 12111623

Page 1 of 1

TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (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
1 (888) 588-3443

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

Company Name: Taylor LPE

Phone #: 8004676607

Address: (Street, City, Zip) 921 N Bivins Amarillo Tx 79107

Fax #:

Contact Person: Simone Walsh

E-mail:

Invoice to: (If different from above) Plains (Jessica Henry) SRS# ~~3003~~-00134

Project #: 70376.130.02

Project Name: Vac to Jal 14" #5

Project Location (including state): Eunice, NM

Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
314434	Inplant #1	1	1			✓							✓	11-15	1530
435	" #2	1	1			✓							✓	11-16	0130

ANALYSIS REQUEST (Circle or Specify Method No.)

MTBE 8021 / 602 / 8260 / 624	
BTEX 8021 / 602 / 8260 / 624	
TPH 418.1 / TX1005 / TX1005 Ext(C35)	
TPH 8015 GRO / DRO / TVHC	
PAH 8270 / 625	
Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7	
TCLP Metals Ag As Ba Cd Cr Pb Se Hg	
TCLP Volatiles	
TCLP Semi Volatiles	
TCLP Pesticides	
RCI	
GC/MS Vol. 8260 / 624	
GC/MS Semi. Vol. 8270 / 625	
PCB's 8082 / 608	
Pesticides 8081 / 608	
BOD, TSS, pH	
Moisture Content	
Cl, F, SO_4, NO_3-N, NO_2-N, PO_4-P, Alkalinity	
Na, Ca, Mg, K, TDS, EC	
ASTM D 1945	↓
Turn Around Time if different from standard	
Hold	

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
	Taylor	11-16-12	1245	JTaylor	TA	11/16/12	1245

INST 1.3 °C
OBS 2.3.4 °C
COR 2.3.0 °C

LAB USE ONLY

Intact Y N

Headspace Y / N / NA

Log-in-Review RF

REMARKS:

- ☐ Dry Weight Basis Required
- ☐ TRRP Report Required
- ☐ Check If Special Reporting Limits Are Needed

Carrier # Carry in

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

ORIGINAL COPY

Office: 806-665-0750
Fax: 806-665-0745

MIDWEST PRECISION TESTING, LLC.

615 N. Price Rd.
Pampa, TX 79065

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

COC #: N/A

Lab #: 16669-16670

Quality Control #: 2335

Approved by:

Neil Ray

Neil Ray

Date: 11/29/12

Office: 806-665-0790
Fax: 806-665-0745

MIDWEST PRECISION TESTING, LLC.

615 N. Price Rd.
Pampa, TX 79065

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

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

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

Sample Id.: Influent Air #1
Trace: 314434-1
Sample Temp.: N/A
Atmospheric Temp.: N/A
Pressure: N/A
Field Data: N/A
Sample Date: 11/15/12 Time: N/A
Sampled By: N/A
Analysis Date: 11/26/12
Analysis By: Jessica Cabezudo

Lab #: 16669
Quality Control Report: 2335

Analytical Results

Gas Composition					
	Mol %	GPM	Vol %	ppm vol.	Wt. %
Nitrogen (N2):	90.9879	9.9585	86.2170	862170	86.5650
Carbon Dioxide (CO2):	8.3396	1.4065	12.2577	122577	12.4379
Hydrocarbon Composition	**Mol %**	**GPM**	**Vol. %**		**Wt. %**
Methane (CH4):	0.3787	0.0643	0.5531	5531	0.2058
Ethane (C2H6):	0.0000	0.0000	0.0000	0	0.0000
Propane (C3H8):	0.0007	0.0002	0.0017	17	0.0011
Iso-Butane (C4H10):	0.0229	0.0074	0.0645	645	0.0450
N-Butane (C4H10):	0.0214	0.0067	0.0581	581	0.0421
Iso-Pentane (C5H12):	0.0193	0.0070	0.0607	607	0.0471
N-Pentane (C5H12):	0.0237	0.0085	0.0740	740	0.0580
Hexanes+ (C6H14):	0.2057	0.0888	0.7130	7130	0.5979
Totals	100.000	11.5480	100.000		100.000

Comments - Additional Data

BTU -dry (BTU/ft^3):	17.5	Z-Comp. Factor-dry:	0.99949
BTU -water vapor sat.(BTU/ft^3):	18.2	Z-Comp. Factor-water vapor sat.:	0.99421
Specific Gravity -dry:	1.0176	14.65 psi Pressure Base	
Specific Gravity-water vapor sat.:	1.0161	Molecular Weight	29.4797

Office: 806-665-0790
Fax: 806-665-0745

MIDWEST PRECISION TESTING, LLC.

615 N. Price Rd.
Pampa, TX 79065

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

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

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

Sample Id.: Influent Air #2
Trace: 314435-1
Sample Temp.: N/A
Atmospheric Temp.: N/A
Pressure: N/A
Field Data: N/A
Sample Date: 11/16/12 Time: N/A
Sampled By: N/A
Analysis Date: 11/26/12
Analysis By: Jessica Cabezudo

Lab #: 16670
Quality Control Report: 2335

Analytical Results

Gas Composition					
	Mol %	GPM	Vol %	ppm vol.	Wt. %
Nitrogen (N2):	92.7442	10.1501	89.0681	890681	89.1106
Carbon Dioxide (CO2):	7.0626	1.1911	10.5209	105209	10.6377
Hydrocarbon Composition	**Mol %**	**GPM**	**Vol. %**		**Wt. %**
Methane (CH4):	0.1286	0.0218	0.1904	1904	0.0706
Ethane (C2H6):	0.0001	0.0000	0.0003	3	0.0001
Propane (C3H8):	0.0001	0.0000	0.0003	3	0.0002
Iso-Butane (C4H10):	0.0003	0.0001	0.0009	9	0.0007
N-Butane (C4H10):	0.0024	0.0008	0.0067	67	0.0048
Iso-Pentane (C5H12):	0.0057	0.0021	0.0182	182	0.0141
N-Pentane (C5H12):	0.0063	0.0023	0.0198	198	0.0155
Hexanes+ (C6H14):	0.0497	0.0214	0.1745	1745	0.1458
Totals	100.000	11.3897	100.000		100.000

Comments - Additional Data

BTU -dry (BTU/ft^3):	4.4	Z-Comp. Factor-dry:	0.99955
BTU -water vapor sat.(BTU/ft^3):	5.2	Z-Comp. Factor-water vapor sat.:	0.99457
Specific Gravity -dry:	1.0071	14.65 psi Pressure Base	
Specific Gravity-water vapor sat.:	1.0054	Molecular Weight	29.1709

Office: 806-665-0790
Fax: 806-665-0745

MIDWEST PRECISION TESTING, LLC.

615 N. Price Rd.
Pampa, TX 79065

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

Sample Id.: DCG
Reference Std. 53619AW
Sample Temp.: 120° F
Analysis Date: 11/26/12
Analysis By: Jessica Cabezudo

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

Quality Control Report#: 2335

Analytical Results

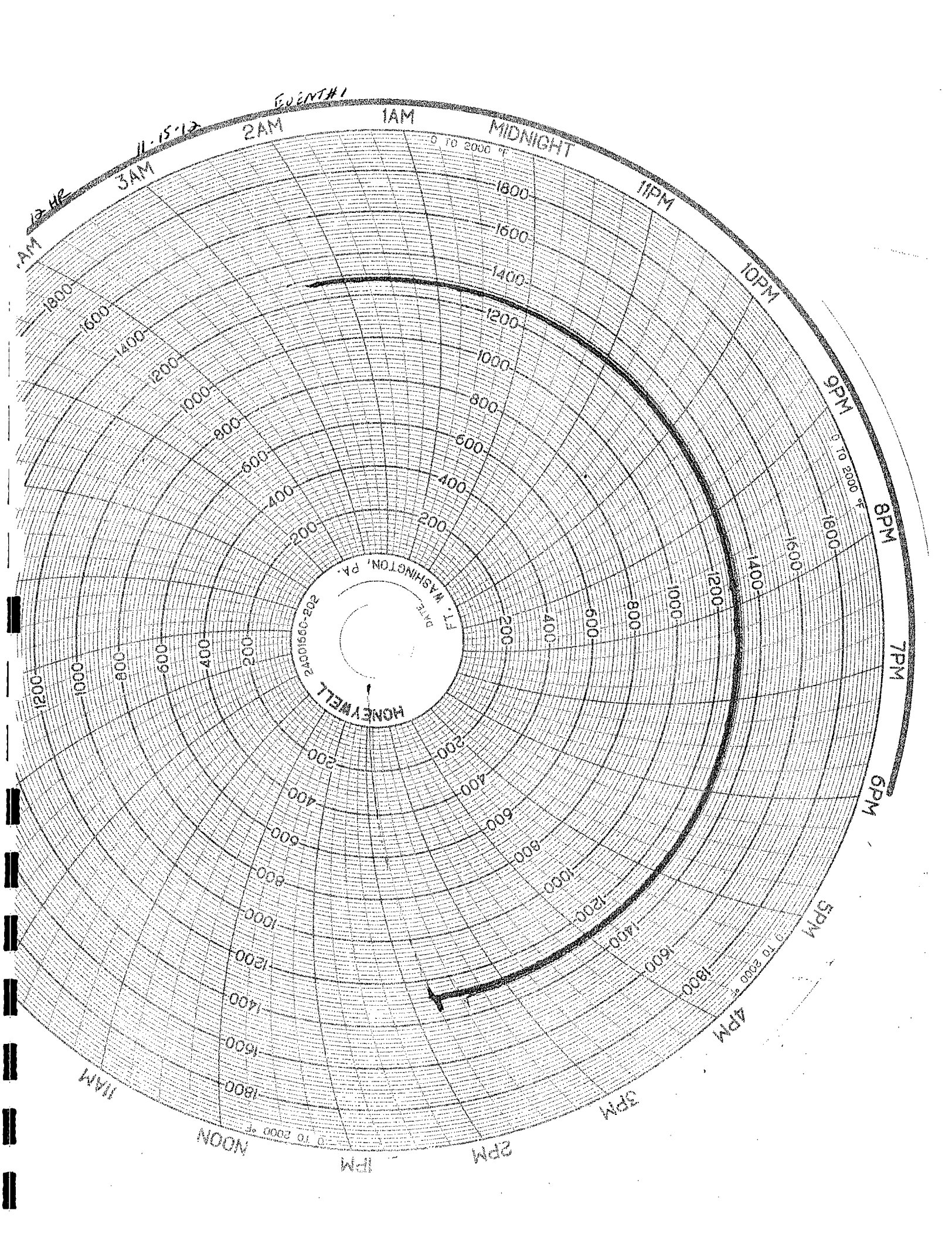
RESULTS	ACTUAL	ANALYSIS			
Gas Composition			**MDL**	**RL**	**% Deviation**
	Mol %	**Mol %**	**Mol %**	**ppm mol**	**(90-100%)**
Nitrogen (N2):	4.918	4.7667	0.0010	10	96.9
Carbon Dioxide (CO2):	1.499	1.4981	0.0010	10	99.9
			MDL	**RL**	**% Deviation**
Hydrocarbon Composition	**Mol %**	**Mol %**	**Mol %**	**ppm mol**	**(90-100%)**
Methane (CH4):	69.891	70.1327	0.0001	1	99.7
Ethane (C2H6):	9.111	9.1284	0.0001	1	99.8
Propane (C3H8):	5.984	5.8562	0.0001	1	97.9
Iso-Butane (C4H10):	3.024	2.9837	0.0001	1	98.7
N-Butane (C4H10):	3.040	3.0366	0.0001	1	99.9
Iso-Pentane (C5H12):	1.012	1.0151	0.0001	1	99.7
N-Pentane (C5H12):	1.018	1.0613	0.0001	1	95.7
Hexane+ (C6H14):	0.503	0.5211	0.0001	1	96.4
Totals	100.000	100.000			

Comments - Additional Data

ACTUAL		ANALYSIS	
BTU -dry (BTU/ft3):	1324.0	BTU -dry (BTU/ft^3):	1324.9
BTU -water vapor sat. (BTU/ft3):	1318.4	BTU -water vapor sat. (BTU/ft^3):	1319.3
Specific Gravity -dry:	0.8349	Specific Gravity -dry:	0.8339
Specific Gravity -water vapor sat.:	0.8419	Specific Gravity -water vapor sat.:	0.8408
Z-Comp. Factor -dry:	0.99564	Z-Comp. Factor -dry:	0.99563
Z-Comp. Factor -water vapor sat.:	0.98306	Z-Comp. Factor -water vapor sat.:	0.98306

ATTACHMENT 3

Oxidizer Charts


FOURTH 1
12 HR
11-15-12
12AM
1AM
2AM
3AM
MIDNIGHT
11PM
10PM
9PM
8PM
7PM
6PM
5PM
4PM
3PM
2PM
1PM
NOON
11AM
0 TO 2000 °F
200
400
600
800
1000
1200
1400
1600
1800
HONEYWELL
2400150C-202
WASHINGTON, PA.
DATE
FT.

ATTACHMENT 4

Waste Ticket

207943

24-HOUR SERVICE, CALL
LOVINGTON 396-4948
TATUM 398-4960

GANDY CORPORATION

KILL TRUCKS – VACUUM TRUCKS – WINCH TRUCKS
TANK CLEANING – ROUSTABOUTING
PRC #14225

P.O. BOX 2140
LOVINGTON, NEW MEXICO 88260

481313

Date 11-16-12 Truck No. 352

Company [illegible] PLANT Purchase Order No. Invoice Number

From VAC TO DAL TA #5 Rig No. Location

To Lease SPRINKLE Well No. Location

			TIME	RATE	AMOUNT
Time Out A.M. P.M.	Time In A.M. P.M.				
Diesel / Crude Oil	Brine Water / Salt Water	Fresh Water / Acid	Bbls. Hauled 30	1.10	33.00
Driver, Operator or Pusher DENNIS HARROUN			4.5	95.00	427.50
Helper					
Helper					
Helper					
Other Charges					
Description of Work: PUMPED FLUID FROM PIT TANK TO DAL					
				Sub Total	460.50
Sprinkle SWD Ticket # 65692				Sales Tax	25.33
Authorized by:				TOTAL	485.83

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