1R - 119

REPORTS

DATE:

1-17-13

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Amarillo, Texas 79107
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ENVIRONMENTAL CONSULTING
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Toll Free: 866.742.0742
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MOBILE DUAL PHASE EXTRACTION REPORT
TNM MONUMENT 10 PIPELINE RELEASE
MONUMENT, LEA COUNTY, NEW MEXICO
SRS # TNM MONUMENT 10
NMOCD# 1R-0119

PREPARED FOR:

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

RECEIVED OCD
2013 FEB 26 A 11:07

PREPARED BY:

TALON/LPE
921 N. BIVINS
AMARILLO, TEXAS 79107

STATE OF TEXAS
PAUL A. SANTOS
95526
LICENSED
PROFESSIONAL ENGINEER

2/7/13

TALON/LPE (F-6802)

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JANUARY 17, 2013

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Attachment 1 - MDPE field logs
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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 November 14, 2012, to November 15, 2012, at the TNM Monument 10 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. MW2 & MW3 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 **15.96 equivalent gallons of PSH (Total)** were removed during the event. The combined volume of PSH was comprised of approximately **6 gallons of PSH (liquid phase)** and approximately **9.96 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 254.40 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 10,244 ppmv for Hydrocarbon Composition. Laboratory analytical results can be found in Attachment 2.

C. Waste Management and Disposition

A cumulative total of 415 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:

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

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

Recovery (lbs) = (lbs/hr) x (hrs)

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

$$\frac{\text{8.34 lbs}}{\text{gallon water}} \times 0.845 \text{ measured specific gravity of light crude} = \frac{\text{7.047 lbs light crude}}{\text{gallon}}$$

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)
7:15	0.5	50	12.5	170.11	90.4	258.63	1873	-	5749.00	0.91	5230	6.53	6.31	3.16	3.16
7:45	0.5	58	12.5	170.11	92.9	260.15	2059	5749.00	5749.00	1.00	5749	7.06	6.87	3.43	6.59
8:45	1	62	12.5	170.11	93.1	259.43	2314	-	5749.00	1.12	6461	7.88	7.64	7.64	14.23
9:45	1	66	12.5	170.11	95.3	261.47	1999	-	5749.00	0.97	5581	6.75	6.60	6.60	20.83
10:45	1	70	12.5	170.11	96.4	261.98	2165	-	5749.00	1.05	6045	7.26	7.11	7.11	27.94
11:45	1	76	12.5	170.11	96.9	261.19	1935	-	5749.00	0.94	5403	6.42	6.26	6.26	34.21
12:45	1	76	12.5	170.11	97.8	262.40	1332	-	5749.00	0.65	3719	4.42	4.33	4.33	38.54
13:45	1	76	12.5	170.11	98.4	263.20	2869	-	5749.00	1.39	8011	9.51	9.36	9.36	47.90
8:30	1	52	15	204.14	89.1	237.20	794	-	10244.00	0.05	499	0.62	0.55	0.55	48.44
9:30	1	74	14.5	197.33	93.2	241.49	1237	-	10244.00	0.08	778	0.92	0.83	0.83	49.28
10:30	1	80	14	190.53	93.9	244.91	1876	-	10244.00	0.12	1180	1.38	1.27	1.27	50.55
11:30	1	84	13.5	183.72	94.4	248.46	16290	10244.00	10244.00	1.00	10244	11.93	11.08	11.08	61.63
12:30	1	84	13.5	183.72	93.1	246.74	12641	-	10244.00	0.78	7949	9.26	8.54	8.54	70.17
Averages:		69.85	13.12	178.49	94.22	254.40	3798.77						Total	70.17	

PSH Mass Recovered in Vapor Phase = 9.96 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)
5230	28.9976	1	0.0821	50	283	6.526891263

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 =	70.17	lbs
	9.96	gallons
PSH Mass Recovered in Liquid Phase =	42.28	lbs
	6.00	galons
TOTAL =	**112.45**	**lbs**
	15.96	**gallons**

Gallons removed determined at time of pick up

PSH Volume in Gallons=	6
PSH Mass in Pounds=	42.282

% Vol. Hydrocarbon to ppmv - Influent 1

Compound	Molecular Weight (g/mol)	% Vol	=	ppmv
Methane (CH4)	16.04	0.0869		869.00
Ethane (C2H6)	30.07	0.0029		29.00
Propane (C3H8)	44.10	0.0087		87.00
Iso-Butane (C4H10)	58.12	0.0301		301.00
N-Butane (C4H10)	58.12	0.0333		333.00
Iso-Pentane (C4H12)	72.15	0.0442		442.00
N-Pentane (C5H12)	72.15	0.0358		358.00
Hexane+ (C6H14)	97.40	0.333		3330.00
			Total	**5749.00**

*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	94.1381
Methane (CH4)	16.0425	0.0584
Carbon Dioxide (CO2)	44.011	5.6570
Ethane (C2H6)	30.069	0.0012
Propane (C3H8)	44.0956	0.0036
Iso-Butane (C4H10)	58.1222	0.0105
N-Butane (C4H10)	58.1222	0.0120
Iso-Pentane (C4H12)	72.1488	0.0138
N-Pentane (C5H12)	72.1488	0.0112
Hexane+	97.3966	0.0942
	Total	100
	Calculated MW	**28.9976**

% Vol. Hydrocarbon to ppmv - Influent 2

Compound	Molecular Weight (g/mol)	% Vol	=	ppmv
Methane (CH4)	16.04	0.6738		6738.00
Ethane (C2H6)	30.07	0.0202		202.00
Propane (C3H8)	44.10	0.0266		266.00
Iso-Butane (C4H10)	58.12	0.0495		495.00
N-Butane (C4H10)	58.12	0.0568		568.00
Iso-Pentane (C4H12)	72.15	0.0552		552.00
N-Pentane (C5H12)	72.15	0.0379		379.00
Hexane+ (C6H14)	97.40	0.1044		1044.00
			Total	**10244.00**

*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	94.0154
Methane (CH4)	16.0425	0.4523
Carbon Dioxide (CO2)	44.011	5.4164
Ethane (C2H6)	30.069	0.0086
Propane (C3H8)	44.0956	0.0110
Iso-Butane (C4H10)	58.1222	0.0172
N-Butane (C4H10)	58.1222	0.0205
Iso-Pentane (C4H12)	72.1488	0.0172
N-Pentane (C5H12)	72.1488	0.0119
Hexane+	97.3966	0.0295
	Total	100
	Calculated MW	**28.8748**

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:	Monument 10			Event #:	4
Location:	S. of Monument, NM			Arrive at site:	11/14/2012 6:15
Date:	11/14-15/2012				
Job#:	700376.082.04	SRS:	TNM Monument 10	Start Vac:	11/14/2012 6:45
Phase:	MDPE4	Unit:	1107	Stop Vac:	11/15/2012 12:30
Onsite Personnel:	L. Bridges & B. Huntington			Leave Site:	11/15/2012 13:00

GAUGING DATA

WELL#	BEFORE			AFTER			COMMENTS
	PSH	GW	PSH-T	PSH	GW	PSH-T	
MW-1	-	21.84	-	Not gauged			
MW-2	22.64	23.07	0.43	-	22.91	-	Stinger set @ 23'
MW-3	22.55	24.15	1.60	-	23.42	-	Stinger set @ 24'
MW-7	-	22.86	-	Not Gauged			
MW-6	-	24.21	-	Not Gauged			
MW-4	-	20.46	-	Not Gauged			
MW-5	-	21.38	-	Not Gauged			
WASTE:	H2O:	409		PSH:	6		TOTAL (GAL): 415

Sample Name	Analysis	Date:	Time:	Comments:
INFLUENT	ASTM D1945	14-Nov-12	7:45	FID = 2059
INFLUENT	ASTM D1945	15-Nov-12	11:30	FID = 16290
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

Notes:
Transfer pump failed @ 13:45 on 11/14/12. Event resumed on 11/15/12 @07:30

Start Date: 14-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: MW-2 VAC (INH2O)	MW-3 VAC (INH2O)	VAC (INH2O)	VAC (INH2O)	VAC (INH2O)
7:15		50	90.4	12.5	1873	68	1413	50.3	60			
7:45	*	58	92.9	12.5	2059	66	1411	51.7	60.5			
8:45		62	93.1	12.5	2314	64	1412	51.6	60.8			
9:45		66	95.3	12.5	1999	62	1410	51.1	61.1			
10:45		70	96.4	12.5	2165	60	1408	52.3	60.3			
11:45		76	96.9	12.5	1935	60	1409	52.2	60.1			
12:45		76	97.8	12.5	1332	58	1411	51.1	58.4			
13:45		76	98.4	12.5	2869	56	1406	51.3	57.8			
Event stopped at 13:45 due to transfer pump failure. Resumed at 07:30 on 11/15/12												
8:30		52	89.1	15	794	56	1411	38.2	64.3			
9:30		74	93.2	14.5	1237	55	1412	47.3	60.1			
10:30		80	93.9	14	1876	53	1409	45.6	59.4			
11:30	*	84	94.4	13.5	16290	52	1410	49.4	56.5			
12:30		84	93.1	13.5	12641	51	1409	43.7	54.4			

Soil Vacuum Influence

Observation Well	MW-1
Extraction Well (EW)	MW-2
Time:	In.H2O
11/14/2012 7:45	0
11/14/2012 12:45	0.09
11/15/2012 11:30	0.07

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: 12111621

Project Location: Monument, NM
Project Name: TNM Monument #10
Project Number: 700376.082.04
SRS #: TNM Monument #10

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
314422	Influent #1	air	2012-11-14	07:45	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.

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

Report Contents

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Analytical Report 4
Sample 314422 (Influent #1) 4

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Laboratory Certifications 5
Standard Flags 5
Attachments 5

Case Narrative

Samples for project TNM Monument #10 were received by TraceAnalysis, Inc. on 2012-11-16 and assigned to work order 12111621. Samples for work order 12111621 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 12111621 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 # 12111621

Page 1 of 1

TraceAnalysis, Inc.

email: lab@traceanalysis.com

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Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

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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: Talon LPE
Phone #: 8064627607
Address: (Street, City, Zip) 921 N Rivers Amarillo, Tx
Fax #:
Contact Person: Simon Walthe
E-mail:
Invoice to: (If different from above) Plains (Jason Henry) SR5# TNM Monument #10
Project #: 20976.052.04
Project Name: TNM Monument #10
Project Location (including state): Monument, NM
Sampler Signature:

ANALYSIS REQUEST (Circle or Specify Method No.)

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
314422	Event #1	1	1			✓							✓	11-14	0745
423	" #2	1	1			✓							✓	11-15	1130

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:	
	Talon LPE	11-16-12	1245		TA	11/16/12	1245	INST 113 OBS 23.4 °C COR 23.0 °C
								INST ____ OBS ____ °C COR ____ °C
								INST ____ OBS ____ °C COR ____ °C

LAB USE ONLY
Intact Y / N
Headspace Y / N / NA
Log-in-Review

REMARKS:

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

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

Carrier # Courier

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 #: 16665-16666

Quality Control #: 2335

Approved by:

Neil Ray

Neil Ray

Date: 11/29/17

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: 314422-1
Sample Temp.: N/A
Atmospheric Temp.: N/A
Pressure: N/A
Field Data: N/A
Sample Date: 11/14/12 Time: N/A
Sampled By: N/A
Analysis Date: 11/26/12
Analysis By: Jessica Cabezudo

Lab #: 16665
Quality Control Report: 2335

Analytical Results

Gas Composition					
	Mol %	GPM	Vol %	ppm vol.	Wt. %
Nitrogen (N2):	94.1381	10.3023	90.9477	909477	91.0030
Carbon Dioxide (CO2):	5.6570	0.9540	8.4774	84774	8.5727
Hydrocarbon Composition	**Mol %**	**GPM**	**Vol. %**		**Wt. %**
Methane (CH4):	0.0584	0.0099	0.0869	869	0.0322
Ethane (C2H6):	0.0012	0.0003	0.0029	29	0.0013
Propane (C3H8):	0.0036	0.0010	0.0087	87	0.0055
Iso-Butane (C4H10):	0.0105	0.0034	0.0301	301	0.0210
N-Butane (C4H10):	0.0120	0.0038	0.0333	333	0.0240
Iso-Pentane (C5H12):	0.0138	0.0050	0.0442	442	0.0341
N-Pentane (C5H12):	0.0112	0.0041	0.0358	358	0.0280
Hexanes+ (C6H14):	0.0942	0.0407	0.3330	3330	0.2783
Totals	100.000	11.3245	100.000		100.000

Comments - Additional Data

BTU -dry (BTU/ft^3):	7.2	Z-Comp. Factor-dry:	0.99958
BTU -water vapor sat.(BTU/ft^3):	8.0	Z-Comp. Factor-water vapor sat.:	0.99473
Specific Gravity -dry:	1.0011	14.65 psi Pressure Base	
Specific Gravity-water vapor sat.:	0.9993	Molecular Weight	28.9976

Office: 806-665-0750
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: 314423-1
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 #: 16666
Quality Control Report: 2335

Analytical Results

Gas Composition					
	Mol %	GPM	Vol %	ppm vol.	Wt. %
Nitrogen (N2):	94.0154	10.2888	90.8564	908564	91.2470
Carbon Dioxide (CO2):	5.4164	0.9134	8.1193	81193	8.2408
Hydrocarbon Composition	**Mol %**	**GPM**	**Vol. %**		**Wt. %**
Methane (CH4):	0.4523	0.0768	0.6738	6738	0.2508
Ethane (C2H6):	0.0086	0.0023	0.0202	202	0.0089
Propane (C3H8):	0.0110	0.0030	0.0266	266	0.0167
Iso-Butane (C4H10):	0.0172	0.0056	0.0495	495	0.0346
N-Butane (C4H10):	0.0205	0.0064	0.0568	568	0.0411
Iso-Pentane (C5H12):	0.0172	0.0063	0.0552	552	0.0428
N-Pentane (C5H12):	0.0119	0.0043	0.0379	379	0.0297
Hexanes+ (C6H14):	0.0295	0.0128	0.1044	1044	0.0876
Totals	100.000	11.3196	100.000		100.000

Comments - Additional Data

BTU -dry (BTU/ft^3):	8.9	Z-Comp. Factor-dry:	0.99958
BTU -water vapor sat.(BTU/ft^3):	9.7	Z-Comp. Factor-water vapor sat.:	0.99478
Specific Gravity -dry:	0.9969	14.65 psi Pressure Base	
Specific Gravity-water vapor sat.:	0.9951	Molecular Weight	28.8748

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

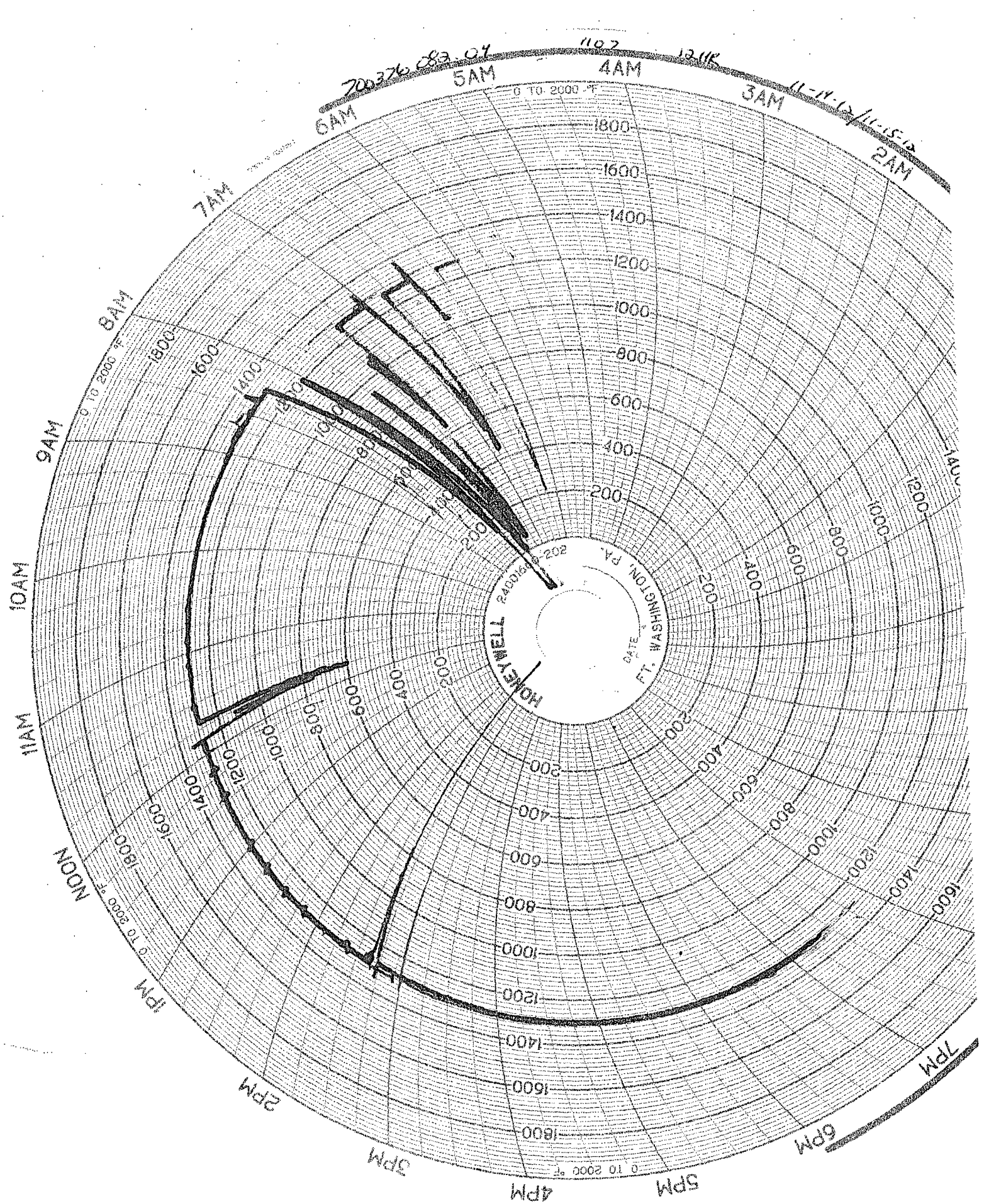
RESULTS	ACTUAL	ANALYSIS			
Gas Composition			MDL	RL	% Deviation
	Mol %	Mol %	Mol %	ppm mol	(90-100%)
Nitrogen (N2):	4.918	4.7667	0.0010	10	96.9
Carbon Dioxide (CO2):	1.499	1.4981	0.0010	10	99.9
			MDL	RL	% Deviation
Hydrocarbon Composition	Mol %	Mol %	Mol %	ppm mol	(90-100%)
Methane (CH4):	69.891	70.1327	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


HONEYWELL
RADIATION
FT. WASHINGTON, PA.
DATE
0 TO 2000 °F
12AM
1AM
2AM
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4AM
5AM
6AM
7AM
8AM
9AM
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11AM
NOON
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7PM

ATTACHMENT 4

Waste Ticket

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

GANDY CORPORATION

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

P.O. BOX 2140
LOVINGTON, NEW MEXICO 88260

485905

Date 11-20-12 Truck No. 361

Company PLAINS PIPELINE Purchase Order No. Invoice Number

From TNM MONUMENT # 16 Rig No. Location

To Lease SPRINKLE Well No. Location

Time Out A.M. P.M. Time In A.M. P.M.

Diesel Brine Water Fresh Water
Crude Oil Salt Water Acid Bbls. Hauled 10

	TIME	RATE	AMOUNT
		1.10	11.00
Driver, Operator or Pusher DAVID HARPOLE	3	102.00	306.00
Helper			
Helper			
Helper			
Other Charges			

Description of Work: EMPTIED OUT PORTABLE TOX TO DISPOSAL

	Sub Total	317.00
Sprinkle SWD ticket #C5617	Sales Tax	17.44
Authorized by:	TOTAL	~~334.44~~

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334.44