

Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Protecting Texas by Reducing and Preventing Pollution

February 24, 2009

MR DOUG AGEE
ENVIRONMENTAL ENGINEER
BARNETT GATHERING LP
810 HOUSTON ST
FORT WORTH TX 76102-6203

Permit by Rule Registration Number: 72594
Location/City/County: Highway 81/287 go north 8.0 miles to Industrial Rd; go right (east) 0.4 mile; turn south into site, Saginaw, Tarrant County
Project Description/Unit: Railhead Compressor Station
Regulated Entity Number: RN104329248
Customer Reference Number: CN603072885
New or Existing Site: Existing
Affected Permit (if applicable): None
Renewal Date (if applicable): None

Barnett Gathering LP has certified the emissions associated with the Railhead Compressor Station under Title 30 Texas Administrative Code §§ 106.352 and 106.512.
For rule information see www.tceq.state.tx.us/permitting/air/nav/numerical_index.html.

No planned MSS emissions have been represented or reviewed for this registration. The company is also reminded that these facilities may be subject to and must comply with other state and federal air quality requirements.

All analytical data generated by a mobile or stationary laboratory to support the compliance with an air permit must be obtained from a NELAC (National Environmental Laboratory Accreditation Conference) accredited laboratory. For additional information regarding the laboratory accreditation program, please see the following website which includes the accreditation and exemption information:

http://www.tceq.state.tx.us/compliance/compliance_support/qa/env_lab_accreditation.html

This certification is taken under the authority delegated by the Executive Director of the TCEQ. If you have questions, please contact Ms. Brittany Bowman at (512) 239-3512.

Sincerely,

A handwritten signature in black ink, appearing to read "Anne M. Inman".

Anne M. Inman, P.E., Manager
Rule Registrations Section
Air Permits Division

Certified Site-Wide Emissions:

VOCs	19.94	tpy
Formaldehyde	1.91	tpy
SO ₂	0.07	tpy
CO	25.35	tpy
NO _x	17.24	tpy
PM ₁₀	1.07	tpy

cc: Air Section Manager, Region 4 - Fort Worth

Project Number: 143800

TCEQ Interoffice Memorandum

Barnett Sh- Railroad

To: File
Thru: Jaret Wessel, Barnett Shale Team Leader, DFW Region *JW*
From: Andi Anderson, Administrative Technician, DFW Region *A*
Date: November 7, 2011
Subject: Investigation No. 948870

The first page of the investigation report for Investigation No. 948870, previously filed, has been replaced with the attached to correct an error in the Activity Type of the approved report.

5

7

Bryan W. Shaw, Ph.D., *Chairman*
Buddy Garcia, *Commissioner*
Carlos Rubinstein, *Commissioner*
Mark R. Vickery, P.G., *Executive Director*



COPY

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 22, 2011

E-SIGNATURE CONFIRMATION

Signature Confirmation # 91 3408 2133 3932 0302 1944

Mr. Doug Agee, Senior Environmental Engineer
XTO Energy Inc
810 Houston St Ste 2000
Fort Worth TX 76102-6203

Re: Notice of Violation and Resolve for the Air Compliance Investigation at: Railhead
Compressor Station, 798 E Industrial Ave, Fort Worth, Tarrant County, Texas
TCEQ ID No.: RN104329248; CN603072885

Dear Mr. Agee:

On July 22, 2011, Mr. Daniel Atambo of the Texas Commission on Environmental Quality (TCEQ) DFW Region Office conducted an investigation of the above-referenced facility to evaluate compliance with applicable requirements for air quality. During the investigation, a certain alleged violation was identified for which compliance documentation was required. The TCEQ has received adequate documentation to resolve the alleged violation. Therefore, no further action is required.

In the listing of the alleged violations, we have cited applicable requirements, including TCEQ rules. Please note that both the rules themselves and the agency brochure entitled *Obtaining TCEQ Rules* (GI 032) are located on our agency website at <http://www.tceq.state.tx.us> for your reference. If you would like a hard copy of this brochure mailed to you, you may call and request one from either the DFW Region Office at 817-588-5800 or the Central Office Publications Ordering Team at 512-239-0028.

The TCEQ appreciates your assistance in this matter. Please note that the Legislature has granted TCEQ enforcement powers which we may exercise to ensure compliance with environmental regulatory requirements. We anticipate that you will resolve the alleged violations as required in order to protect the State's environment. If you have additional information that we are unaware of, you have the opportunity to contest the violation(s) documented in this notice. Should you choose to do so, you must notify DFW Region Office within 10 days from the date of this letter. At that time, Ms. Alyssa Taylor, R.E.M., will schedule a violation review meeting to be conducted within 21 days from the date of this letter.

Mr. Doug Agee, Senior Environmental Engineer
Page 2
September 22, 2011

However, please be advised that if you decide to participate in the violation review process, the TCEQ may still require you to adhere to the compliance schedule included in the attached Summary of Investigation Findings until an official decision is made regarding the status of any or all of the contested violations.

If you or members of your staff have any questions, please feel free to contact Mr. Atambo in the DFW Region Office at (817) 588-5803.

Sincerely,



Jaret A. Wessel
Barnett Shale Team Leader
DFW Region Office

JAW/axa

Enclosure: Summary of Investigation Findings

Summary of Investigation Findings

RAILHEAD COMPRESSOR STATION

Investigation # 948870

Investigation Date: 07/22/2011

, TARRANT COUNTY,

Additional ID(s): 72594
4843901719

ALLEGED VIOLATION(S) NOTED AND RESOLVED

Track No: 446982

30 TAC Chapter 117.2135(d)(9)
5C THSC Chapter 382.085(b)

Alleged Violation:

Investigation: 948870

Comment Date: 9/19/2011

On June 2009, Barnett Gathering, LP submitted a notice of Compliance Performance Testing for Caterpillar G3606 Engine. The Notice was received in DFW Region Office on June 8, 2009. However, there was no record in the Railhead Compressor Station's file at TCEQ DFW Region Office showing that a compliance test report for Caterpillar G3606 engine was submitted within 60 days after completion of the testing.

Recommended Corrective Action: While the investigator was conducting compliance investigation at the facility on May 19, 2011, Mr. Doug Agee, provided the Emission Compliance Test Report for the Caterpillar G3606.

Resolution: On May 19, 2011, Mr. Doug Agee, provided the Emission Compliance Test Report for the Caterpillar G3606. This appears to resolve the alleged violation.



Texas Commission on Environmental Quality
Investigation Report
 Barnett Gathering, L.P.
 CN603072885

COPY

RAILHEAD COMPRESSOR STATION

RN104329248

Investigation # 948870

Incident #

Investigator: DANIEL ATAMBO

Site Classification
 MINOR SOURCE

Conducted: 07/22/2011 -- 07/22/2011

No Industry Code Assigned

Program(s): AIR NEW SOURCE
 PERMITS

Investigation Type : Compliance Investigation

Location : HIGHWAY 81/287 GO NORTH
 8.0 MI TO INDUSTRIAL RD; TURN RIGHT
 (EAST) PROCEED 0.4 MI.; TURN S INTO
 SITE

Additional ID(s) : 72594
 4843901719

Address: ; ,

Activity Type : REGION 04 - DFW METROPLEX

~~FAIRMON - AIR FAIRMON - FOC INV GENERAL
 MONITORING~~
 FIAIRNGP - AIR FIAIRNGP - FOC INV FOR
 NATGASPETRO FACILITY

Principal(s) :

Role	Name
RESPONDENT	BARNETT GATHERING LP

Contact(s) :

Role	Title	Name	Phone
Regulated Entity Contact	SENIOR ENVIRONMENTAL ENGINEER	MR DOUG AGEE	Work (817) 885-2285

Other Staff Member(s) :

Role	Name
QA Reviewer	JARET WESSEL
Supervisor	JARET WESSEL
Investigator	BISMARCK OTORINO

Associated Check List

<u>Checklist Name</u>	<u>Unit Name</u>
AIR FOCUSED INVESTIGATION - GENERAL MONITORING	GEN MON
AIR GENERIC INVESTIGATION (10 ITEMS)	GEN
AIR INVESTIGATION - EQUIPMENT MONITORING AND SAMPLING	EUIP

Investigation Comments :



INTRODUCTION
A Air Focused Natural Gas Production (FIAIR NGP) Investigation / Air Focused - Monitoring (FI-MON) Investigation was conducted as part of a scheduled investigation at the XTO Energy, Inc., Railhead Compressor Station ('facility' or 'site') located at 798 E Industrial Avenue, Fort Worth, Tarrant County. The purpose of this investigation was to determine if the facility is in compliance with 30 Texas Administrative Code (TAC) § 117.8000, 106.352, 106.512 and §106.4. The specific objectives of the investigation were to identify emissions detectable by sight or with use of the GasFindIR (GFIR) camera, odor and Toxic Vapor Analyzer (TVA) Flame Ionization Detector (FID) and to check the site's Air Quality Authorization documentation records.

DAILY NARRATIVE

On July 22, 2011, Mr. Daniel Atambo, Environmental Investigator ('Investigator'), of the Texas Commission on Environmental Quality (TCEQ), Dallas/Fort Worth (DFW) Region office, conducted a Compliance investigation at the facility. Mr. Bismark Otorino, Environmental Investigator of the TCEQ DFW Region office, participated in the investigation. The investigators arrived at this location at 10:00 CDT. The investigators met Mr. Doug Agee, Senior Environmental Engineer of XTO Energy, Inc. The investigator (Mr. Daniel Atambo) briefed Mr. Agee on the purpose of the investigation. Mr. Agee accompanied the investigator in walking through the facility identifying the equipment on the site. Mr. Agee provided documentation showing that Railhead Compressor Station was in compliance with TCEQ's 30 Texas Administrative Code (TAC) §106.352, 106.512, §106.4 and §117.8000. The documentation included the engine emissions report and emission calculations for all the equipment on the site.

When the investigator checked facility's file at the TCEQ DFW Region office, the records in the file indicated that Emission Compliance test report for the Waukesha, 7044 GSI engine, was submitted and received on January 4, 2011. The report was reviewed by Mr. Jeremy Baum, Emission Evaluator of the TCEQ DFW Region office. Mr. Baum concluded that the allowable emission rates were not exceeded (Refer Investigation Number 941151). However, there was no record showing that a compliance test report for Caterpillar G3606 Engine was submitted within 60 days after completion of the testing as provided in 30 TAC 117.2135 (d)(9). A Violation was alleged due to the emission compliance test report for Caterpillar G3606 Engine not being submitted within 60 days after completion of the testing. However, while the investigator was conducting compliance investigation at the facility on May 19, 2011, Mr. Doug Agee, provided the Emission Compliance Test Report for the Caterpillar G3606. This resolved the alleged violation.

The investigator and Mr. Agee discussed and compared the Fort Worth Natural Gas Air Quality Study Report (Attachment 1) with the Facility's Emissions Documentation (Attachment 2). The investigator noted that the study report indicated that VOCs emission rate (14.24 tpy) was lower than the permitted limit (19.94 tpy). The study report showed that Hazardous Air Pollutants (HAPs) exceeded the permitted limit. However, the emission calculations provided by the facility indicate emission rates for Formaldehyde and benzene were 1.906 tpy and 0.052 tpy, respectively. This is below the permitted limits. The Study also reported that CO emission rate (219 tpy) was above the permitted limit (25.35 tpy). Based on the emission calculations provided by the facility CO emission rate are 25.236 tpy, which is lower than the permitted limit. The Air Quality Study indicates that direct measurements were not taken to determine actual emission rates. The study did not consider the Nonselective Catalyst located between the engine Waukesha 7044 GSI Unit # 7044 GSI -1, Serial # C-15486/1 and the exhaust stack. This Catalyst controlled the CO emission rate to 8.111 tpy. The study also did not consider an Oxidation Catalyst bed at high temperature located between engine Caterpillar, Model G3606, Unit # 215568, Serial # 4ZS00730 and exhaust stack which controls the CO emission rate to 17.124 tpy. The Catalysts control the emission rates to below the permitted limits.

The investigators proceeded to monitor down wind and upwind of the site. This included use of the GFIR camera, Qrae Gas Monitor and TVA, as well as a survey of the area for odors and visible emissions. Upwind and downwind summa canister air quality samples ('Summa sample') were

taken during this investigation.

METEOROLOGICAL CONDITIONS

Skies: Clear

Temperature: 87.7°F

Relative Humidity: 61.3%

Wind Speed Ave: 11.0 mph

Wind Speed Max: 13.2 mph

Wind Direction: South

OBSERVATIONS

The equipment on the site included; Caterpillar Model G3606 Unit # 215568 Serial # 4ZS00730 and Waukesha 7044 GSI Unit # 7044GSI-1 Serial # C-15486/1 engines, Dehy 1.0 MMBtu/hr reboiler, Dehy still vet with condenser, 3-Tanks 400 bbl produced water, Truck loading produced water, 1000 gallon lube oil tank, 500 gallon methanol tank, 1000 gallon anti-freeze tank and Fugitives. The distance of the monitored area from the nearest receptor (Warehouse) was 600 feet.

The investigators left the vicinity of the site at 11:52 CDT.

EXIT INTERVIEW

The investigator briefed Mr. Agee of the preliminary findings of the investigation. On September 19, 2011, an exit interview form was sent to Mr. Agee (Attachment 3).

GENERAL FACILITY AND PROCESS INFORMATION

PROCESS DESCRIPTION

The XTO natural gas fired engine, Serial No. C-15486/1, Unit Number 7044GSI-1, located at Railhead is a Waukesha Model 7044 GSI 4 Stroke, rich burn engine rated at 1,680 bhp at 1,200 revolutions per minute (rpm). The engine drives a compressor, which is used to compress natural gas and move it through natural gas pipelines.

BACKGROUND

MONITORING RESULTS

During the investigation, no emissions were observed using the GasFindIR camera. No visible emissions were observed. The TVA detected a maximum reading of 1.17 ppm. No odors were noted. Upwind and downwind summa canister air quality samples were collected. The laboratory analysis Results reports of the summa canister samples reveal that none of the VOCs exceeds the air monitoring comparison values (AMCVs) with exception of 1,2 Dibromoethane found in the upwind sample (See ATTACHMENTS 4 and 5). 1, 2 Dibromoethane is a chemical detected across the state of Texas at very low levels. Monitored levels of 1, 2 Dibromoethane are typically reported at concentrations so low that they are below the method detection limit (MDL), meaning that they cannot be confidently or accurately measured by laboratory instruments. The 1, 2 Dibromoethane levels detected in the upwind sample does not pose a short-term or a long-term health concern.

CURRENT ENFORCEMENT ACTIONS

A Notice of Violation (Tracking No. 446982) was alleged due to failure to submit test report for review and approval within 60 days after completion of the testing of Caterpillar G3606 as provided in 30 TAC 117.2135 (d)(9) . However, on May 19, 2011, while the investigator was conducting compliance investigation at the facility, Mr. Doug Agee, provided the Emission Compliance Test Report for the Caterpillar G3606. This resolved the alleged violation.

AGREED ORDERS, COURT ORDERS AND OTHER COMPLIANCE AGREEMENTS

There are no current air quality related orders or compliance agreements associated with this

regulated entity.

ADDITIONAL INFORMATION/RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

The facility failed to submit test report for review and approval within 60 days after completion of the testing of Caterpillar G3606 as provided in 30 TAC 117.2135 (d) (9) . A Notice of Violation and resolve letter will be sent to XTO Energy, Inc.

ADDITIONAL ISSUES

No additional issues were noted as a result of this investigation.

ATTACHMENTS

- 1- Fort Worth Natural Gas Air Quality Study Report Tables
- 2- Emission calculations
- 3- Exit Interview Form
- 4- Summa Canister Results Report -Upwind
- 5- Summa Canister Results Report -Downwind

ALLEGED VIOLATION(S) NOTED AND RESOLVED

Track No: 446982

Resolution Status Date: 9/19/2011

Violation Start Date: 1/19/2011

Violation End Date:7/22/2011

30 TAC Chapter 117.2135(d)(9)

5C THSC Chapter 382.085(b)

Alleged Violation:

Investigation: 948870

Comment Date: 09/19/2011

On June 2009, Barnett Gathering, LP submitted a notice of Compliance Performance Testing for Caterpillar G3606 Engine. The Notice was received in DFW Region Office on June 8, 2009. However, there was no record in the Railhead Compressor Station's file at TCEQ DFW Region Office showing that a compliance test report for Caterpillar G3606 engine was submitted within 60 days after completion of the testing.

Recommended Corrective Action: While the investigator was conducting compliance investigation at the facility on May 19, 2011, Mr. Doug Agee, provided the Emission Compliance Test Report for the Caterpillar G3606.

Resolution: On May 19, 2011, Mr. Doug Agee, provided the Emission Compliance Test Report for the Caterpillar G3606. This appears to resolve the alleged violation.

Signed 
 Environmental Investigator

Date 9/20/11

Signed 
 Supervisor

Date 9/20/11

Attachments: (in order of final report submittal)

- | | |
|--|---|
| <input type="checkbox"/> Enforcement Action Request (EAR) | <input type="checkbox"/> Maps, Plans, Sketches |
| <input type="checkbox"/> Letter to Facility (specify type) : _____ | <input type="checkbox"/> Photographs |
| Investigation Report | <input type="checkbox"/> Correspondence from the facility |
| 4/5 Sample Analysis Results | 6/3 Other (specify) : |
| <input type="checkbox"/> Manifests | 1 - <u>Fort Worth Air Study Report Tables.</u> |
| <input type="checkbox"/> NOR | 2 - <u>Emission Calculations.</u> |
| | 3 - <u>Exit Interview form.</u> |



**TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY**



DFW REGIONAL OFFICE

**Attachment 1
Fort Worth Natural Gas Air Quality Study
Report Tables**

Regulated Entity: XTO ENERGY, INC –Railhead Compressor Station
RN104329248
CN600601348

Investigation Number: 948870

Investigation Date: July 22, 2011

Investigator: Daniel Atambo

Number of Attachment Page(s): 2



compliance with the rule. A full compliance evaluation for any individual site is an involved process that requires research into historical construction, operating, and production records and was beyond the scope of this study. However, based on the emission estimates developed under Task 3, the sources listed in Table 6.4-1 may exceed the regulatory thresholds discussed above.

Table 6.4-1. Sources Above Regulatory Thresholds

Site ID	Site Type	VOC (tons/yr)	CO (tons/yr)	Total HAP (tons/yr)	Formaldehyde (tons/yr)
PS-159	Processing Facility	80 ^a	1,039 ^{b, c}	47 ^d	32 ^e
PS-118	Compressor Station	43 ^a	270 ^{b, c}	25 ^d	17 ^e
PS-119	Compressor Station	38 ^a	240 ^c	22	15 ^e
PS-127	Compressor Station	24	545 ^{b, c}	14	9
238	Well Pad	14	219 ^c	8	6

^a This site potentially exceeds the 25 tpy VOC threshold under 30 TAC 106, Subchapter O, Section 106.352.

^b This site potentially exceeds the 250 tpy CO threshold under 30 TAC 106, Subchapter O, Section 106.352.

^c This site potentially exceeds the 100 tpy CO threshold under the federal Title V Operating Permit Program.

^d This site potentially exceeds the 25 tpy total HAP threshold under the federal Title V Operating Permit Program.

^e This site potentially exceeds the 10 tpy single HAP threshold under the federal Title V Operating Permit Program.

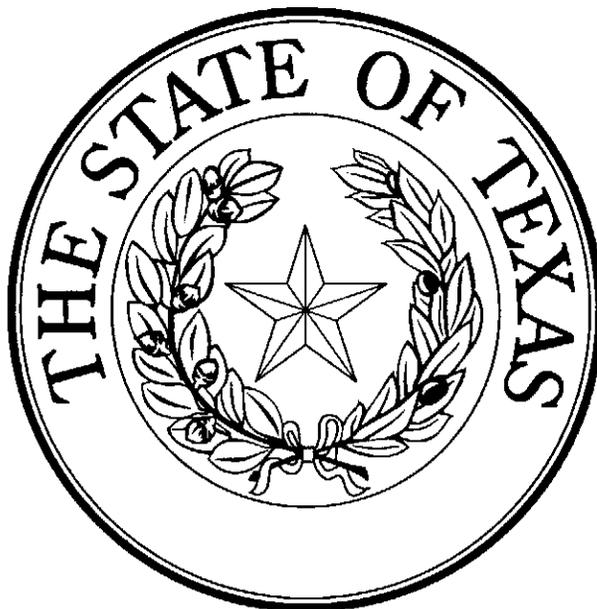


Table 3.5-3. Point Source Emissions Summary by Site (Continued)

Site ID	Address	Site Type	No. Wells	No. Value	No. Comp. errors	No. Tanks	No. Comp. reservoirs	No. M21 >500 ppm	No. IRs	PM (lbm/yr)	NOx (tonn/yr)	CO (tonn/yr)	SO2 (tonn/yr)	VOCs (tonn/yr)				HAPs ^a (tonn/yr)			
														VOC Total	Engine VOC	Tank VOC	Fugitive VOC	HAP Total	Formaldehyde	Benzene	
230	5996 BOWMAN ROBERTS RD	WELL PAD	2	163	1615	2	1	3	4	0.07	0.98	2.74	<0.01	1.01	0.99	<0.01	0.02	<0.01	0.59	0.40	0.01
234	5492 TEN MILE BRIDGE RD	WELL PAD	1	48	320	1	0	0	1	-0-	-0-	-0-	-0-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-0-	<0.01
235	6493 TEN MILE BRIDGE RD	WELL PAD	1	71	491	1	0	0	1	-0-	-0-	-0-	-0-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-0-	<0.01
238	798 INDUSTRIAL ROAD	WELL PAD	2	691	5185	4	2	4	10	0.53	15.71	219.33	0.06	14.24	14.12	0.11	<0.01	8.42	5.67	0.21	<0.01
240	1392 CANELL SANDERSON RD	WELL PAD	2	298	2586	2	1	0	5	0.05	0.70	1.96	<0.01	0.67	0.65	0.02	<0.01	0.39	0.26	0.01	<0.01
241	1895 NORTHEAST LOOP 820	WELL PAD	2	218	1676	2	1	2	1	0.07	0.99	2.77	<0.01	1.00	1.00	<0.01	<0.01	0.59	0.40	0.01	<0.01
247	1290 SILVER CREEK RD	WELL PAD	4	478	4646	4	0	2	4	-0-	-0-	-0-	-0-	0.97	<0.01	0.97	<0.01	0.11	-0-	0.02	<0.01
257	10999 OLD WEATHERFORD RD	WELL PAD	3	253	2863	4	2	5	16	0.07	1.06	11.58	<0.01	20.93	1.01	19.91	<0.01	4.93	0.41	0.11	<0.01
258	9595 OLD WEATHERFORD RD	WELL PAD	3	145	1015	2	0	0	5	-0-	-0-	-0-	-0-	<0.01	<0.01	<0.01	<0.01	<0.01	-0-	<0.01	<0.01
260	11398 WEST FWY	WELL PAD	3	217	1519	6	0	4	8	-0-	-0-	-0-	-0-	0.02	<0.01	0.01	<0.01	<0.01	-0-	<0.01	<0.01
261	10499 CHAPIN RD	WELL PAD	2	147	1029	4	0	1	6	-0-	-0-	-0-	-0-	<0.01	<0.01	<0.01	<0.01	<0.01	-0-	<0.01	<0.01
266	11392 TIGER TRL	WELL PAD	5	310	1740	10	1	7	6	0.05	0.70	1.96	<0.01	1.43	0.65	0.01	0.77	0.46	0.26	0.01	<0.01
267	11392 TIGER TRL	WELL PAD	5	445	3115	20	1	6	26	0.14	1.98	24.21	<0.01	19.87	2.00	17.85	0.02	3.02	0.80	0.16	<0.01
268	11395 TIGER TRL	WELL PAD	5	311	3732	0	1	1	7	0.14	1.98	24.21	<0.01	4.30	2.00	<0.01	2.30	1.34	0.80	0.04	<0.01
269	11392 TIGER TRL	WELL PAD	8	657	4599	0	0	1	3	-0-	-0-	-0-	-0-	<0.01	<0.01	<0.01	<0.01	<0.01	-0-	<0.01	<0.01
282	4490 OLD DECATUR RD	WELL PAD	6	378	2485	6	1	3	13	0.05	0.70	1.96	<0.01	0.70	0.65	0.03	0.02	0.40	0.26	0.01	<0.01
284	998 RAILHEAD RD	WELL PAD	2	138	966	2	0	2	1	-0-	-0-	-0-	-0-	<0.01	<0.01	<0.01	<0.01	<0.01	-0-	<0.01	<0.01
285	4890 BLUE MOUND RD	WELL PAD	1	84	588	1	0	1	1	-0-	-0-	-0-	-0-	<0.01	<0.01	<0.01	<0.01	<0.01	-0-	<0.01	<0.01
287	4201 BLUE MOUND RD	WELL PAD	1	151	357	1	0	0	1	-0-	-0-	-0-	-0-	<0.01	<0.01	<0.01	<0.01	<0.01	-0-	<0.01	<0.01
288	291 NE 38TH ST	WELL PAD	4	175	1225	5	0	2	1	-0-	-0-	-0-	-0-	<0.01	<0.01	<0.01	<0.01	<0.01	-0-	<0.01	<0.01
289	4999 MARK IV PKWY	WELL PAD	2	233	1781	2	1	3	3	0.05	0.70	1.96	<0.01	0.66	0.65	<0.01	<0.01	0.39	0.26	<0.01	<0.01



**TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY**



DFW REGIONAL OFFICE

Attachment 2

Emission Calculations

Regulated Entity: XTO ENERGY, INC –Railhead Compressor Station
RN104329248
CN600601348

Investigation Number: 948870

Investigation Date: July 22, 2011

Investigator: Daniel Atambo

Number of Attachment Page(s): 12



**TABLE 2.1: ENGINE EMISSIONS REPORT
XTO ENERGY, INC.
CATERPILLAR, 3606, UNIT #215568, SERIAL #4ZS00730**

Test Period:	Qtr 4 - 2009	Air Permit Number:	PBR
Location:	Railhead Compressor Station	Unit Number:	215568
Date:	November 20, 2009	Suction Pressure (psi):	119
Project Number:	xto-09-dfw-tx-comp#7	Discharge Pressure (psi):	860
Engine Manufacturer:	Caterpillar	Stack Exhaust Temperature (°F):	--
Engine Model:	3606	Rated Horsepower (bhp):	1,775
Engine Serial Number:	4ZS00730	Brake Horsepower (bhp):	1,775
Analyzer Manufacturers:	TECO(NOx), TECO(CO), SERV(O2)	Engine Fuel Flow (Fuel Consump.) (Btu/hp*hr):	6,760
Analyzer Model Numbers:	42I-HL, 48I, 1440	Specific Gravity:	0.5845
Date Analyzers Calibrated:	November 20, 2009	Fuel Heating Value [HHV] (Btu/SCF):	988
Emission Test Results:	Appendix A	BSFC (Btu/hp*hr):	7,503
Analyzer Data Plots:	Appendix B	Annual Hours Allowed to Operate:	8,760
Cal Gas Spec. Sheets:	Appendix C	Engine Speed (rpm):	1,002
Quality Control Data Sheets:	Appendix D	Air Manifold Temp (°F):	136
Chromatograph Report:	Appendix E	Air Manifold Pressure (psi):	36
Ambient Temperature (°F):	57.0	Turbo Speed (rpm):	--
Barometric Pressure (in. Hg):	29.19	Engine Ignition Timing (°BTDC):	--
Relative Humidity (%):	86	Load Step:	--
Emission Test Results			
Pollutant (units)	Stack Test Results	Permit Limits	Passing
O ₂ (%)	12.15	--	--
NOx (ppmvd)	52.39	--	--
CO (ppmvd)	9.42	--	--
NOx (g/hp*hr)	0.40	0.45	YES
CO (g/hp*hr)	0.04	0.25	YES
All testing conducted according to United States Environmental Protection Agency (EPA), Methods: 3a, 7e and 10.			
Torque (%):		Tested By: Air Hygiene International, Inc.	
Tested By: JMP		Testers: JMP	



TABLE 2.1: ENGINE EMISSIONS REPORT
XTO ENERGY, INC.
WAUKESHA, 7044 GSI, UNIT #7044GSI-1, SERIAL #C-15486/1

Test Period:	Qtr 4 - 2010	Air Permit Number:	PBR
Location:	Railhead Compressor Station	Unit Number:	7044GSI-1
Date:	November 18, 2010	Suction Pressure (psi):	101
Project Number:	xto-10-dfw-tx-comp#5	Discharge Pressure (psi):	717
Engine Manufacturer:	Waukesha	Stack Exhaust Temperature (°F):	--
Engine Model:	7044 GSI	Rated Horsepower (bhp):	1,680
Engine Serial Number:	C-15486/1	Brake Horsepower (bhp):	1,663
Analyzer Manufacturer:	TECO(NOx) TECO(CO) SERV(O2)	Engine Fuel Flow (Fuel Consump.) (Btu/hp*hr):	7,780
Analyzer Model Numbers:	42-HL, 48i, 1440	Specific Gravity:	0.5872
Date Analyzers Calibrated:	November 18, 2010	Fuel Heating Value [HHV] (Btu/SCF):	994
Emission Test Results:	Appendix A	BSFC (Btu/hp*hr):	8,633
Analyzer Data Plots:	Appendix B	Annual Hours Allowed to Operate:	8,760
Cal Gas Spec. Sheets:	Appendix C	Engine Speed (rpm):	1,216
Quality Control Data Sheets:	Appendix D	Air Manifold Temp (°F):	117
Chromatograph Report:	Appendix E	Air Manifold Pressure (psi):	15.67
Ambient Temperature (°F):	53.3	Rated Engine Speed (rpm):	1,200
Barometric Pressure (in. Hg):	29.52	Engine Ignition Timing (°BTDC):	--
Relative Humidity (%):	49	Load Step:	--
		Load (%):	99
Emission Test Results			
Pollutant (units)	Stack Test Results	Permit Limits	Passing
O ₂ (%)	0.00	--	--
NOx (ppmvd)	122.99	--	--
CO (ppmvd)	167.14	--	--
NOx (g/hp*hr)	0.45	0.50	YES
CO (g/hp*hr)	0.37	0.50	YES

All testing conducted according to United States Environmental Protection Agency (EPA), Methods: 3a, 7e and 10.

Tested By:	Air Hygiene International, Inc.
Testers:	JMP

**RAILHEAD COMPRESSOR STATION
REVISED
EMISSION CALCULATIONS**

Railhead

EPN	Name	Nox (#/hr)	CO (#/hr)	VOC (#/hr)	Bezene	Formaldehyde (#/hr)	PM (#/hr)
WAUK1	Waukesha 7044 GSI	1.852	1.852	0.652	0.006	0.185	0.119
CAT	Caterpillar G 3606	1.955	3.910	2.346	0.006	0.250	0.126

EPN	Name	Nox (tpy)	CO (tpy)	VOC (tpy)	Benzene (tpy)	Formaldehyde (tpy)	PM (TPY)
WAUK1	Waukesha 7044 GSI	8.111	8.111	2.856	0.025	0.811	0.521
CAT	Caterpillar G 3606	8.562	17.124	10.275	0.027	1.095	0.550
TOTAL		16.674	25.236	13.130	0.052	1.906	1.071

WAUKESHA

Nox & CO each =	0.5	gm/hp-hr per mfg specs.
VOC	0.2	gm/hp-hr per mfg specs.
Formaldehyde =	0.05	gm/hp-hr per mfg specs.
Benzene	0.00044	lb/mmbtu per AP42 3.2-3
PM	0.0091	lb/mmbtu per AP42 3.2-2
Btu/hp-hr	7780	
HP each =	1680	
grams per lb =	453.59	

CATERPILAR

Nox =	0.5 mfg specs
CO =	1 mfg specs
VOC =	0.6 mfg specs
Formaldehyde =	.27 g/hp-hr mfg specs
grams per lb =	453.59





Bighorn Environmental
DEHYDRATOR EMISSIONS

Antero Resources
 Railhead Station
 Tarrant County, Texas

Burner/Flare Emission:

Heater/Flare Burner

Burner Duty Rating 1250.0 Mbtu/hr
 Burner Efficiency 98.0 %
 Gas Heat Content (LHV) 995.8 Btu/scf
 Total Gas Consumption 30742.9 scfd
 H2S Concentration 0.000 Mole %

NOx	0.1281	lbs/hr	0.561	TPY
CO	0.0269	lbs/hr	0.118	TPY
VOC	0.0001	lbs/hr	0.000	TPY
SO2	0.0000	lbs/hr	0.000	TPY
H2S	0.0000	lbs/hr	0.000	TPY

Reboiler Emissions From Gri GlyCalc 4.0

Dry Gas Rate 84,000 MCFD
 Glycol Circulation Rate 10 Gal/min
 Treating Temperature 125 Deg F
 Treating Pressure 700 psi

Total HC	13.3743	lbs/hr	58.579	TPY
Total VOC	0.7030	lbs/hr	3.079	TPY
Total HAP	0.2711	lbs/hr	1.187	TPY

Total Dry Emission

NOx	0.1281	lbs/hr	0.561	TPY
CO	0.0269	lbs/hr	0.118	TPY
VOC	0.7031	lbs/hr	3.079	TPY
SO2	0.0000	lbs/hr	0.000	TPY
H2S	0.0000	lbs/hr	0.000	TPY

AP-42 Factors Used

NOx 100 Lbs/MMCFD
 CO 84 Lbs/MMCFD
 TOC 5.8 Lbs/MMCFD

Sulfur Emission Equations

SO2 = ((Gas Consumed * H2S Fraction) / 379.5 scf/lbmole) * 64 lb/lbmole * Efficiency
 H2S = ((Gas Consumed * H2S Fraction) / 379.5 scf/lbmole) * 32 lb/lbmole * (1 - Efficiency)



Case Name: Railhead Station
 File Name: C:\Documents and Settings\Lee Hinman\My Documents\Bighorn\Kahuna\Antero
 Projects\FT Worth Applications\Railhead\45 MMCFD Dehy Run.ddf
 Date: June 17, 2004

DESCRIPTION:

Description: Railhead Compressor Station
 Antero Resources LP
 45 MMCFD, Elec Glycol Pumps
 10 gpm Circ Rate

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	11.9916	287.797	52.5230
Ethane	1.5944	38.266	6.9835
Propane	0.4081	9.793	1.7873
Isobutane	0.0788	1.891	0.3451
n-Butane	0.1499	3.596	0.6563
n-Hexane	0.0663	1.591	0.2903
Total Emissions	14.2889	342.934	62.5855
Total Hydrocarbon Emissions	14.2889	342.934	62.5855
Total VOC Emissions	0.7030	16.871	3.0790
Total HAP Emissions	0.0663	1.591	0.2903

EQUIPMENT REPORTS:

ABSORBER

Calculated Absorber Stages: 2.02
 Specified Dry Gas Dew Point: 7.00 lbs. H2O/MMSCF
 Temperature: 125.0 deg. F
 Pressure: 700.0 psig
 Dry Gas Flow Rate: 45.0000 MMSCF/day
 Glycol Losses with Dry Gas: 1.0439 lb/hr
 Wet Gas Water Content: Saturated
 Calculated Wet Gas Water Content: 152.59 lbs. H2O/MMSCF
 Calculated Lean Glycol Recirc. Ratio: 2.20 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	4.57%	95.43%
Carbon Dioxide	99.81%	0.19%
Nitrogen	99.98%	0.02%
Methane	99.98%	0.02%

—

,

,

—

		Pa	2
Hexane	99.95%	0.05%	
Propane	99.91%	0.09%	
Isobutane	99.88%	0.12%	
n-Butane	99.85%	0.15%	
n-Hexane	99.69%	0.31%	

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	23.56%	76.44%
Carbon Dioxide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
n-Hexane	0.50%	99.50%

STREAM REPORTS:

WET GAS STREAM

Temperature: 125.00 deg. F
 Pressure: 714.70 psia
 Flow Rate: 1.88e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	3.21e-001	2.87e+002
Carbon Dioxide	2.93e+000	6.40e+003
Nitrogen	5.38e-001	7.48e+002
Methane	9.38e+001	7.46e+004
Ethane	2.13e+000	3.18e+003
Propane	2.12e-001	4.64e+002
Isobutane	2.29e-002	6.61e+001
n-Butane	3.39e-002	9.77e+001
n-Hexane	4.98e-003	2.13e+001
Total Components	100.00	8.59e+004

DRY GAS STREAM

Temperature: 125.00 deg. F
 Pressure: 714.70 psia
 Flow Rate: 1.88e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.47e-002	1.31e+001



Carbon Dioxide	2.94e+000	6.39e+003
Nitrogen	5.40e-001	7.47e+002
Methane	9.41e+001	7.46e+004
Ethane	2.14e+000	3.17e+003
Propane	2.13e-001	4.64e+002
Isobutane	2.30e-002	6.60e+001
n-Butane	3.40e-002	9.75e+001
n-Hexane	4.98e-003	2.12e+001

Total Components	100.00	8.56e+004
------------------	--------	-----------

LEAN GLYCOL STREAM

Temperature: 125.00 deg. F
 Flow Rate: 1.00e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.85e+001	5.55e+003
Water	1.50e+000	8.45e+001
Carbon Dioxide	2.18e-011	1.23e-009
Nitrogen	2.23e-013	1.26e-011
Methane	7.16e-018	4.03e-016
Ethane	1.34e-008	7.53e-007
Propane	2.95e-010	1.66e-008
Isobutane	4.20e-011	2.36e-009
n-Butane	6.60e-011	3.72e-009
n-Hexane	5.92e-006	3.33e-004
Total Components	100.00	5.63e+003

RICH GLYCOL STREAM

Temperature: 125.00 deg. F
 Pressure: 714.70 psia
 Flow Rate: 1.06e+001 gpm
 NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.35e+001	5.54e+003
Water	6.05e+000	3.58e+002
Carbon Dioxide	2.08e-001	1.23e+001
Nitrogen	2.13e-003	1.26e-001
Methane	2.02e-001	1.20e+001
Ethane	2.69e-002	1.59e+000
Propane	6.89e-003	4.08e-001
Isobutane	1.33e-003	7.88e-002
n-Butane	2.53e-003	1.50e-001
n-Hexane	1.12e-003	6.66e-002
Total Components	100.00	5.92e+003

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
 Pressure: 14.70 psia
 Flow Rate: 6.19e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.33e+001	2.74e+002
Carbon Dioxide	1.71e+000	1.23e+001
Nitrogen	2.76e-002	1.26e-001
Methane	4.58e+000	1.20e+001
Ethane	3.25e-001	1.59e+000
Propane	5.67e-002	4.08e-001
Isobutane	8.31e-003	7.88e-002
n-Butane	1.58e-002	1.50e-001
n-Hexane	4.72e-003	6.63e-002
Total Components	100.00	3.01e+002



GAS ANALYSIS

Bighorn Environmental
GAS ANALYSIS INFORMATION

Antero Resources
 Railhead Station
 Tarrant County, Texas

Fuel Gas Composition Information:

	Fuel Gas mole %	Fuel M.W. lb/lb-mole	Fuel S.G.	Fuel Wt. %	LHV, dry Btu/scf	HHV, dry Btu/scf	AFR vol/vol	VOC NM / NE	Z Factor	GPM
Nitrogen, N2	0.540	0.151	0.005	0.874			-		0.0054	
Carbon Dioxide, CO2	2.941	1.294	0.045	7.474			-		0.0293	
Hydrogen Sulfide, H2S	-	-	-	-			-		-	
Helium, He	-	-	-	-			-		-	
Oxygen, O2	-	-	-	-			-		-	
Methane, CH4	94.107	15.098	0.521	87.183	855.8	950.5	8.968		0.9392	
Ethane, C2H6	2.137	0.643	0.022	3.711	34.6	37.8	0.356		0.0212	0.568
Propane	0.213	0.094	0.003	0.542	4.9	5.4	0.051	0.542	0.0021	0.058
Iso-Butane	0.023	0.013	0.000	0.077	0.7	0.7	0.007	0.077	0.0002	0.007
Normal Butane	0.034	0.020	0.001	0.114	1.0	1.1	0.011	0.114	0.0003	0.011
Iso Pentane	-	-	-	-			-	-	-	-
Normal Pentane	-	-	-	-			-	-	-	-
Hexane	0.005	0.004	0.000	0.025	0.2	0.2	0.002	0.025	0.0000	0.002
Heptane	-	-	-	-			-	-	-	-
	100.000	17.317	0.598		897.3	995.8	9.396	0.759	0.9978	0.647

Ideal Gross (HHV) 995.8
 Ideal Gross (sal'd) 979.2
 GPM 0.647
 Real Gross (HHV) 998.0
 Real Net (LHV) 899.3

Gasoline Content (GPM)	
Ethane & Heavier	0.647
Propane & Heavier	0.079
Butane & Heavier	0.020
Pentane & Heavier	0.002

—

,

,

—

Bighorn Environmental
GAS DATA INFORMATION

Specific Gravity of Air, @ 29.92 in. Hg and 60 -F 28.9625
 One mole of gas occupies, @ 14.696 psia & 32 -F 359.2 cu ft. per lb-mole
 One mole of gas occupies, @ 14.696 psia & 60 -F 379.64 cu ft. per lb-mole

Hydrogen Sulfide (H2S) conversion chart:

0 grains H2S/100 scf	=	0.00000 mole % H2S
		0.0 ppmv H2S
0 mole % H2S	=	0 grains H2S/100 scf
		0.0 ppmv H2S
0 ppmv H2S	=	0.000 grains H2S/100 scf
		0.00000 mole % H2S

Ideal Gas at 14.696 psia and 60°F

		MW lb/mol	Specific Gravity	Lb per Cu Ft	Cu Ft per Lb	LHV, dry Btu/scf	HHV, dry Btu/scf	LHV Btu/lb	HHV Btu/lb	cu ft of air / 1 cu ft of gas	Z factor
Nitrogen	N2	28.013	0.9672	0.0738	13.552	0	0	0	0	0	0.9997
Carbon Dioxide	CO2	44.010	1.5196	0.1159	8.626	0	0	0	0	0	0.9964
Hydrogen Sulfide	H2S	34.076	1.1766	0.0898	11.141	587	637	6,545	7,100	7.15	0.9846
Helium	He	4.003	0.1382	0.0105	94.848						1.0006
Oxygen	O2	31.999	1.1048	0.0843	11.864	0	0	0	0	0	0.9992
Methane	CH4	16.043	0.5539	0.0423	23.664	909.4	1,010.0	21,520	23,879	9.53	0.9980
Ethane	C2H6	30.070	1.0382	0.0792	12.625	1,618.7	1,769.6	20,432	22,320	16.68	0.9919
Propane	C3H8	44.097	1.5226	0.1162	8.609	2,314.9	2,516.1	19,944	21,661	23.82	0.9825
Iso-Butane	C4H10	58.124	2.0069	0.1531	6.532	3,000.4	3,251.9	19,629	21,257	30.97	0.9711
Normal Butane	C4H10	58.124	2.0069	0.1531	6.532	3,010.8	3,262.3	19,680	21,308	30.97	0.9667
Iso Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,699.0	4,000.9	19,478	21,052	38.11	1.0000
Normal Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,706.9	4,008.9	19,517	21,091	38.11	1.0000
Hexane	C6H14	86.178	2.9755	0.2270	4.405	4,403.8	4,755.9	19,403	20,940	45.26	0.9879
Heptane	C7H16	100.205	3.4598	0.2639	3.789	5,100.0	5,502.5	22,000	23,000	52.41	0.9947

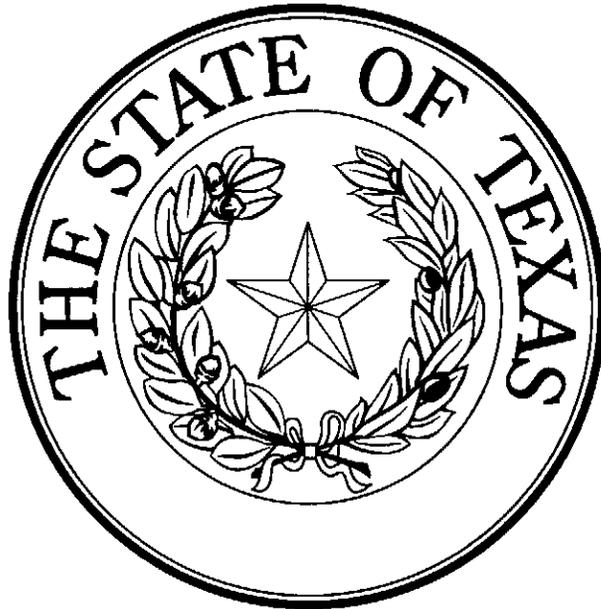
Real Gas at 14.696 psia and 60°F

		MW lb/mol	Specific Gravity	Lb per Cu Ft	Cu Ft per Lb	LHV, dry Btu/scf	HHV, dry Btu/scf	LHV Btu/lb	HHV Btu/lb	cu ft of air / 1 cu ft of gas	Gal/Mole
Nitrogen	N2	28.013	0.9672	0.0738	13.552	0	0	0	0	0	4.1513
Carbon Dioxide	CO2	44.010	1.5196	0.1159	8.626	0	0	0	0	0	6.4532
Hydrogen Sulfide	H2S	34.076	1.1766	0.0898	11.141	621	672	6,545	7,100	7.15	5.1005
Helium	He	4.003	0.1382	0.0105	94.848						3.8376
Oxygen	O2	31.999	1.1048	0.0843	11.864	0	0	0	0	0	3.3605
Methane	CH4	16.043	0.5539	0.0423	23.664	911	1,012	21,520	23,879	9.53	6.4172
Ethane	C2H6	30.070	1.0382	0.0792	12.625	1,631	1,783	20,432	22,320	16.68	10.126
Propane	C3H8	44.097	1.5226	0.1162	8.609	2,353	3,354	19,944	21,661	23.82	10.433
Iso-Butane	C4H10	58.124	2.0069	0.1531	6.532	3,101	3,369	19,629	21,257	30.97	12.386
Normal Butane	C4H10	58.124	2.0069	0.1531	6.532	3,094	3,370	19,680	21,308	30.97	11.937
Iso Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,709	4,001	19,478	21,052	38.11	13.86
Normal Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,698	4,009	19,517	21,091	38.11	13.713
Hexane	C6H14	86.178	2.9755	0.2270	4.405	4,404	4,756	19,403	20,940	45.26	15.566
Heptane	C7H16	100.205	3.4598	0.2639	3.789	5,101	5,503	22,000	23,000	52.41	17.468

16.3227
17.468



**TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY**



DFW REGIONAL OFFICE

Attachment 3

Exit Interview Form

Regulated Entity: XTO ENERGY, INC –Railhead Compressor Station
RN104329248
CN600601348

Investigation Number: 948870

Investigation Date: July 22, 2011

Investigator: Daniel Atambo

Number of Attachment Page(s): 1



TCEQ EXIT INTERVIEW FORM: Potential Violations and/or Records Request					
Regulated Entity/Site Name	BARNETT GATHERING LP - RAILHEAD COMPRESSOR STATION			TCEQ Add. ID No. RN No. (optional)	RN104329248
Investigation Type	FIAIR NGP	Contact Made In-House (Y/N)	N	Purpose of Investigation	Compliance Investigation
Regulated Entity Contact	MR. DOUG AGEE, Environmental Engineer.		Telephone No.	817-885-2285	Date Contacted
			FAX #/Email address	Doug_Agee@xtenergy.com	PAX/Email date
					09/19/2011
					09/19/2011

NOTICE: The information provided in this form is intended to provide clarity to issues that have arisen during the investigation process between the TCEQ and the regulated entity named above and *does not represent final TCEQ findings related to violations*. Any potential or alleged violations discovered after the date on this form will be communicated to the regulated entity representative prior to the issuance of a notice of violation or enforcement. Conclusions drawn from this investigation, including additional violations or potential violations discovered (if any) during the course of this investigation, will be documented in a final investigation-report.

Issue No.	Type	Rule Citation (if known)	Description of Issue
1	AV	30 TAC 117.2135(d) (9)	Failure to submit test report for review and approval within 60 days after completion of the testing of Caterpillar G3606. On May 19, 2011, while the investigator was conducting compliance investigation at the facility, Mr. Doug Agee, provided the Emission Compliance Test Report for the Caterpillar G3606. This appears to resolve the alleged violation.

Note 1: Issue Type Can Be One or More of: AV (Alleged Violation), PV (Potential Violation), O (Other), or RR (Records Request)

Did the TCEQ document the regulated entity named above operating without proper authorization?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Did the investigator advise the regulated entity representative that continued operation is not authorized?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Document Acknowledgment. Signature on this document establishes only that the regulated entity (RE) representative received a copy of this document and associated continuation pages on the date noted. If contact was made by telephone, the document will be sent via FAX or Email to RE; therefore, the RE signature is not required.

Daniel Atambo	9/19/11	
Investigator Name (Signed & Printed)	Date	Regulated Entity Representative Name (Signed & Printed)
		Date

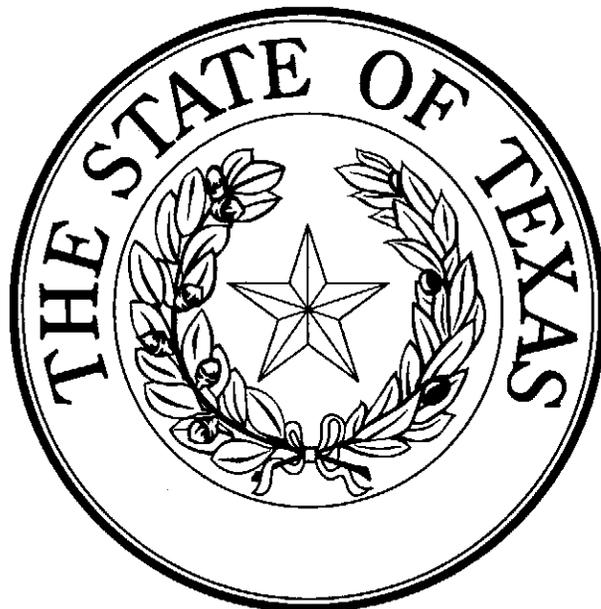
If you have questions about any information on this form, please contact your local TCEQ Regional Office. Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, call 512/239-3282.

White Copy: Regulated Entity Representative

Yellow Copy: TCEQ



**TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY**



DFW REGIONAL OFFICE

Attachment 4

Summa Canister Results Report –Upwind

Regulated Entity: XTO ENERGY, INC –Railhead Compressor Station
RN104329248
CN600601348

Investigation Number: 948870

Investigation Date: July 22, 2011

Investigator: Daniel Atambo

Number of Attachment Page(s): 5



Texas Commission on Environmental Quality

Laboratory and Quality Assurance Section
P.O. Box 13087, MC-165
Austin, Texas 78711-3087
(512) 239-1716

Laboratory Analysis Results

ACL Number: 1107054

ACL Lead: David Manis

Region: T04

Date Received: 7/26/2011

Project(s): Barnett Shale

Facility(ies) Sampled	City	County	Facility Type
XTO Energy Inc	Saginaw	Tarrant	

Laboratory Procedure(s) Performed:

Analysis: AMOR006

Determination of VOC Canisters by GC/MS Using Modified Method TO-15

Procedure:

Prior to analysis, subatmospheric samples are pressurized to twice the collected volume using a sample dilution system. For analysis, a known volume of a sample is directed from the canister into a multitrapp cryogenic concentrator. Internal standards are added to the sample stream prior to the trap. The concentrated sample is thermally desorbed and carried onto a GC column for separation. The analytical strategy involves using a GC with dual columns that are coupled to a mass selective detector (MSD) and a flame ionization detector (FID). Mass spectra for individual peaks in the total ion chromatogram are then used for target compound identification and quantitation. The fragmentation pattern is compared with stored spectra taken under similar conditions in order to identify the compound. For any given compound, the intensity of the quantitation fragment is compared with the system response to the fragment for known amounts of the compound. This establishes the compound concentration in the sample. For non-target compound peaks which are at least one-half the height of the internal standard, a library search is performed in an attempt to identify the compound solely upon fracture patterns. These tentatively identified compounds (TIC's) are reported as a sample specific footnote. Accurate quantitation of TICs is not possible. The FID is used for the quantitation of ethane, ethylene, acetylene, propylene and propane and identification is based on matching retention times of standards containing known analytes.

Sample(s) Received

Field ID Number: M0112-072211

Laboratory Sample Number: 1107054-001

Sampled by: Daniel Atambo

Sampling Site: Railhead Compressor Station

Date & Time Sampled: 07/22/11 10:44:00 Valid Sample: Yes

Comments:

Canister M0112 was used to collect a 30-minute upwind sample using OFC-031.

Please note that this analytical technique is not capable of measuring all compounds which might have adverse health effects. For questions on the analytical procedures please contact the laboratory manager at (512) 239-4894. For an update on the health effects evaluation of these data, please contact the Toxicology Division at (512) 239-1795.

Analyst: _____

J.P. Loh

Date: _____

8/3/11

Reviewed By: _____

David Manis (Acting)

Date: _____

8/8/11

Technical Specialist: _____

David Manis

Date: _____

8/8/11

Laboratory Analysis Results

ACL Number: 1107054

Analysis Code: AMOR006

Note: Results are reported in units of parts per billion by volume (ppbv)

Lab ID		1107054-001					
Field ID		M0112-072211					
Canister ID		M0112					
Analysis Date		08/02/11					
Compound	LOD	Concentration	SDL	Flags**	Concentration	SDL	Flags**
ethane	0.50	2.9	1.0	T,DI			
ethylene	0.50	0.47	1.0	J,T,DI			
acetylene	0.50	ND	1.0	T,DI			
propane	0.50	1.1	1.0	L,T,DI			
propylene	0.50	ND	1.0	T,DI			
dichlorodifluoromethane	0.20	0.45	0.40	L,DI			
methyl chloride	0.20	0.82	0.40	L,DI			
isobutane	0.23	0.26	0.46	J,DI			
vinyl chloride	0.17	ND	0.34	DI			
1-butene	0.20	0.17	0.40	J,DI			
1,3-butadiene	0.27	ND	0.55	DI			
n-butane	0.20	0.43	0.40	L,DI			
t-2-butene	0.18	ND	0.36	DI			
bromomethane	0.27	0.01	0.55	J,DI			
c-2-butene	0.27	ND	0.55	DI			
3-methyl-1-butene	0.23	ND	0.46	DI			
isopentane	0.27	0.21	0.55	J,DI			
trichlorofluoromethane	0.29	0.24	0.59	J,DI			
1-pentene	0.27	ND	0.55	DI			
n-pentane	0.27	0.13	0.55	J,DI			
isoprene	0.27	0.03	0.55	J,DI			
t-2-pentene	0.27	ND	0.55	DI			
1,1-dichloroethylene	0.18	0.02	0.36	J,DI			
c-2-pentene	0.25	ND	0.51	DI			
methylene chloride	0.14	0.04	0.28	J,DI			
2-methyl-2-butene	0.23	0.01	0.46	J,DI			
2,2-dimethylbutane	0.21	0.01	0.42	J,DI			
cyclopentene	0.20	ND	0.40	DI			
4-methyl-1-pentene	0.22	ND	0.44	DI			
1,1-dichloroethane	0.19	ND	0.38	DI			
cyclopentane	0.27	ND	0.55	DI			
2,3-dimethylbutane	0.28	ND	0.57	DI			
2-methylpentane	0.27	0.05	0.55	J,DI			
3-methylpentane	0.23	0.03	0.46	J,DI			
2-methyl-1-pentene + 1-hexene	0.20	ND	0.40	DI			
n-hexane	0.20	0.07	0.40	J,DI			
chloroform	0.21	0.01	0.42	J,DI			
t-2-hexene	0.27	ND	0.55	DI			
c-2-hexene	0.27	ND	0.55	DI			
1,2-dichloroethane	0.27	ND	0.55	DI			
methylcyclopentane	0.27	0.02	0.55	J,DI			
2,4-dimethylpentane	0.27	ND	0.55	DI			
1,1,1-trichloroethane	0.26	ND	0.53	DI			
benzene	0.27	0.10	0.55	J,DI			
carbon tetrachloride	0.27	0.09	0.55	J,DI			
cyclohexane	0.24	ND	0.48	DI			
2-methylhexane	0.27	ND	0.55	DI			
2,3-dimethylpentane	0.26	ND	0.53	DI			

Laboratory Analysis Results

ACL Number: 1107054

Analysis Code: AMOR006

Note: Results are reported in units of parts per billion by volume (ppbv)							
Lab ID	1107054-001						
Compound	LOD	Concentration	SDL	Flags**	Concentration	SDL	Flags**
3-methylhexane	0.20	0.03	0.40	J,D1			
1,2-dichloropropane	0.17	ND	0.34	D1			
trichloroethylene	0.29	ND	0.59	D1			
2,2,4-trimethylpentane	0.24	0.03	0.48	J,D1			
2-chloropentane	0.27	ND	0.55	D1			
n-heptane	0.25	0.04	0.51	J,D1			
c-1,3-dichloropropylene	0.20	ND	0.40	D1			
methylcyclohexane	0.26	0.02	0.53	J,D1			
t-1,3-dichloropropylene	0.20	ND	0.40	D1			
1,1,2-trichloroethane	0.21	ND	0.42	D1			
2,3,4-trimethylpentane	0.24	0.02	0.48	J,D1			
toluene	0.27	0.13	0.55	J,D1			
2-methylheptane	0.20	ND	0.40	D1			
3-methylheptane	0.23	ND	0.46	D1			
1,2-dibromoethane	0.20	0.06	0.40	J,D1			
n-octane	0.19	0.05	0.38	J,D1			
tetrachloroethylene	0.24	ND	0.48	D1			
chlorobenzene	0.27	ND	0.55	D1			
ethylbenzene	0.27	0.03	0.55	J,D1			
m & p-xylene	0.27	0.08	0.55	J,D1			
styrene	0.27	ND	0.55	D1			
1,1,2,2-tetrachloroethane	0.20	ND	0.40	D1			
o-xylene	0.27	0.03	0.55	J,D1			
n-nonane	0.22	0.04	0.44	J,D1			
isopropylbenzene	0.24	ND	0.48	D1			
n-propylbenzene	0.27	ND	0.55	D1			
m-ethyltoluene	0.11	ND	0.22	D1			
p-ethyltoluene	0.16	ND	0.32	D1			
1,3,5-trimethylbenzene	0.25	ND	0.51	D1			
o-ethyltoluene	0.13	ND	0.26	D1			
1,2,4-trimethylbenzene	0.27	ND	0.55	D1			
n-decane	0.27	ND	0.55	D1			
1,2,3-trimethylbenzene	0.27	ND	0.55	D1			
m-diethylbenzene	0.27	ND	0.55	D1			
p-diethylbenzene	0.27	ND	0.55	D1			
n-undecane	0.27	0.04	0.55	J,D1			

Laboratory Analysis Results

ACL Number: 1107054

Analysis Code: AMOR006

Note: Results are reported in units of parts per billion by volume (ppbv)

LOD - Limit of Detection.

ND - not detected

NQ - concentration can not be quantified.

SDL - Sample Detection Limit (LOD adjusted for dilutions).

INV - Invalid.

J - Reported concentration is below SDL.

L - Reported concentration is at or above the SDL and is below the lower limit of quantitation.

E - Reported concentration exceeds the upper limit of instrument calibration.

M - Result modified from previous result.

T - Data was not confirmed by a confirmational analysis. Data is tentatively identified.

* SDL is equal to LOD

** Quality control flags explanations are listed on the last page of this report.

TCEQ laboratory customer support may be reached at kbachtel@tceq.state.tx.us

The TCEQ is an equal opportunity/affirmative action employer. The agency does not allow discrimination on the basis of race, color, religion, national origin, sex, disability, age, sexual orientation or veteran status. In compliance with the Americans With Disabilities Act, this document may be requested in alternate formats by contacting the TCEQ at (512) 239-0010, (Fax 512-239-0055), or 1-800-RELAY-TX (TDD), or by writing P.O. Box 13087, Austin, Texas 78711-3087.

Laboratory Analysis Results

ACL Number: 1107054

Analysis Code: AMOR006

Quality Control Notes:

quality control notes for sample 1107054-001.

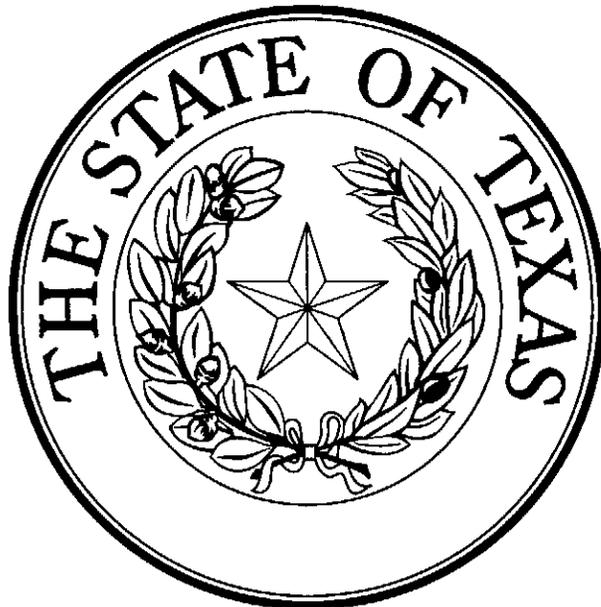
D1-sample concentration was calculated using a dilution factor of 4.04

TCEQ laboratory customer support may be reached at kbachtel@tceq.state.tx.us

The TCEQ is an equal opportunity/affirmative action employer. The agency does not allow discrimination on the basis of race, color, religion, national origin, sex, disability, age, sexual orientation or veteran status. In compliance with the Americans With Disabilities Act, this document may be requested in alternate formats by contacting the TCEQ at (512) 239-0010, (Fax 512-239-0055), or 1-800-RELAY-TX (TDD), or by writing P.O. Box 13087, Austin, Texas 78711-3087.



**TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY**



DFW REGIONAL OFFICE

**Attachment 5
Summa Canister Results Report –Downwind**

Regulated Entity: XTO ENERGY, INC –Railhead Compressor Station
RN104329248
CN600601348

Investigation Number: 948870

Investigation Date: July 22, 2011

Investigator: Daniel Atambo

Number of Attachment Page(s): 5



Texas Commission on Environmental Quality

Laboratory and Quality Assurance Section

P.O. Box 13087, MC-165

Austin, Texas 78711-3087

(512) 239-1716

Laboratory Analysis Results

ACL Number: 1107053

ACL Lead: David Manis

Region: T04

Date Received: 7/26/2011

Project(s): Barnett Shale

Facility(ies) Sampled	City	County	Facility Type
XTO Energy Inc	Saginaw	Tarrant	

Laboratory Procedure(s) Performed:

Analysis: AMOR006

Determination of VOC Canisters by GC/MS Using Modified Method TO-15

Procedure:

Prior to analysis, subatmospheric samples are pressurized to twice the collected volume using a sample dilution system. For analysis, a known volume of a sample is directed from the canister into a multitrapp cryogenic concentrator. Internal standards are added to the sample stream prior to the trap. The concentrated sample is thermally desorbed and carried onto a GC column for separation. The analytical strategy involves using a GC with dual columns that are coupled to a mass selective detector (MSD) and a flame ionization detector (FID). Mass spectra for individual peaks in the total ion chromatogram are then used for target compound identification and quantitation. The fragmentation pattern is compared with stored spectra taken under similar conditions in order to identify the compound. For any given compound, the intensity of the quantitation fragment is compared with the system response to the fragment for known amounts of the compound. This establishes the compound concentration in the sample. For non-target compound peaks which are at least one-half the height of the internal standard, a library search is performed in an attempt to identify the compound solely upon fracture patterns. These tentatively identified compounds (TIC's) are reported as a sample specific footnote. Accurate quantitation of TICs is not possible. The FID is used for the quantitation of ethane, ethylene, acetylene, propylene and propane and identification is based on matching retention times of standards containing known analytes.

Sample(s) Received

Field ID Number: F2567-072211

Laboratory Sample Number: 1107053-001

Sampled by: Daniel Atambo

Sampling Site: Railhead Compressor Station

Date & Time Sampled: 07/22/11 10:45:00 Valid Sample: Yes

Comments:

Canister F2567 was used to collect a 30-minute downwind sample using OFC-094.

Please note that this analytical technique is not capable of measuring all compounds which might have adverse health effects. For questions on the analytical procedures please contact the laboratory manager at (512) 239-4894. For an update on the health effects evaluation of these data, please contact the Toxicology Division at (512) 239-1795.

Analyst: Jaydeep Patel
Jaydeep Patel

Date: 08/11/11

Reviewed By: David Manis
David Manis (Acting)

Date: 8/11/11

Technical Specialist: David Manis
David Manis

Date: 8/11/11

Laboratory Analysis Results

ACL Number: 1107053

Analysis Code: AMOR006

Note: Results are reported in units of parts per billion by volume (ppbv)

Lab ID		1107053-001					
Field ID		F2567-072211					
Canister ID		F2567					
Analysis Date		08/01/11					
Compound	LOD	Concentration	SDL	Flags**	Concentration	SDL	Flags**
ethane	0.50	53	1.0	T,D1			
ethylene	0.50	0.84	1.0	J,T,D1			
acetylene	0.50	ND	1.0	T,D1			
propane	0.50	4.2	1.0	T,D1			
propylene	0.50	ND	1.0	T,D1			
dichlorodifluoromethane	0.20	0.56	0.40	L,D1			
methyl chloride	0.20	0.91	0.40	L,D1			
isobutane	0.23	0.59	0.46	L,D1			
vinyl chloride	0.17	ND	0.34	D1			
1-butene	0.20	ND	0.40	D1			
1,3-butadiene	0.27	ND	0.55	D1			
n-butane	0.20	0.62	0.40	L,D1			
t-2-butene	0.18	ND	0.36	D1			
bromomethane	0.27	ND	0.55	D1			
c-2-butene	0.27	ND	0.55	D1			
3-methyl-1-butene	0.23	ND	0.46	D1			
isopentane	0.27	ND	0.55	D1			
trichlorofluoromethane	0.29	0.24	0.59	J,D1			
1-pentene	0.27	ND	0.55	D1			
n-pentane	0.27	ND	0.55	D1			
isoprene	0.27	ND	0.55	D1			
t-2-pentene	0.27	ND	0.55	D1			
1,1-dichloroethylene	0.18	ND	0.36	D1			
c-2-pentene	0.25	ND	0.51	D1			
methylene chloride	0.14	ND	0.28	D1			
2-methyl-2-butene	0.23	ND	0.46	D1			
2,2-dimethylbutane	0.21	ND	0.42	D1			
cyclopentene	0.20	ND	0.40	D1			
4-methyl-1-pentene	0.22	ND	0.44	D1			
1,1-dichloroethane	0.19	ND	0.38	D1			
cyclopentane	0.27	ND	0.55	D1			
2,3-dimethylbutane	0.28	ND	0.57	D1			
2-methylpentane	0.27	ND	0.55	D1			
3-methylpentane	0.23	ND	0.46	D1			
2-methyl-1-pentene + 1-hexene	0.20	ND	0.40	D1			
n-hexane	0.20	ND	0.40	D1			
chloroform	0.21	ND	0.42	D1			
t-2-hexene	0.27	ND	0.55	D1			
c-2-hexene	0.27	ND	0.55	D1			
1,2-dichloroethane	0.27	ND	0.55	D1			
methylcyclopentane	0.27	ND	0.55	D1			
2,4-dimethylpentane	0.27	ND	0.55	D1			
1,1,1-trichloroethane	0.26	ND	0.53	D1			
benzene	0.27	0.20	0.55	J,D1			
carbon tetrachloride	0.27	0.09	0.55	J,D1			
cyclohexane	0.24	ND	0.48	D1			
2-methylhexane	0.27	0.01	0.55	J,D1			
2,3-dimethylpentane	0.26	ND	0.53	D1			

Laboratory Analysis Results

ACL Number: 1107053

Analysis Code: AMOR006

Note: Results are reported in units of parts per billion by volume (ppbv)							
Lab ID	1107053-001						
Compound	LOD	Concentration	SDL	Flags**	Concentration	SDL	Flags**
3-methylhexane	0.20	ND	0.40	D1			
1,2-dichloropropane	0.17	ND	0.34	D1			
trichloroethylene	0.29	ND	0.59	D1			
2,2,4-trimethylpentane	0.24	ND	0.48	D1			
2-chloropentane	0.27	ND	0.55	D1			
n-heptane	0.25	ND	0.51	D1			
c-1,3-dichloropropylene	0.20	ND	0.40	D1			
methylcyclohexane	0.26	ND	0.53	D1			
t-1,3-dichloropropylene	0.20	ND	0.40	D1			
1,1,2-trichloroethane	0.21	ND	0.42	D1			
2,3,4-trimethylpentane	0.24	ND	0.48	D1			
toluene	0.27	0.14	0.55	J,D1			
2-methylheptane	0.20	0.01	0.40	J,D1			
3-methylheptane	0.23	ND	0.46	D1			
1,2-dibromoethane	0.20	ND	0.40	D1			
n-octane	0.19	ND	0.38	D1			
tetrachloroethylene	0.24	ND	0.48	D1			
chlorobenzene	0.27	ND	0.55	D1			
ethylbenzene	0.27	0.04	0.55	J,D1			
m & p-xylene	0.27	0.03	0.55	J,D1			
styrene	0.27	ND	0.55	D1			
1,1,2,2-tetrachloroethane	0.20	ND	0.40	D1			
o-xylene	0.27	ND	0.55	D1			
n-nonane	0.22	ND	0.44	D1			
isopropylbenzene	0.24	ND	0.48	D1			
n-propylbenzene	0.27	ND	0.55	D1			
m-ethyltoluene	0.11	ND	0.22	D1			
p-ethyltoluene	0.16	ND	0.32	D1			
1,3,5-trimethylbenzene	0.25	ND	0.51	D1			
o-ethyltoluene	0.13	ND	0.26	D1			
1,2,4-trimethylbenzene	0.27	ND	0.55	D1			
n-decane	0.27	ND	0.55	D1			
1,2,3-trimethylbenzene	0.27	ND	0.55	D1			
m-diethylbenzene	0.27	ND	0.55	D1			
p-diethylbenzene	0.27	ND	0.55	D1			
n-undecane	0.27	ND	0.55	D1			

Laboratory Analysis Results

ACL Number: 1107053

Analysis Code: AMOR006

Note: Results are reported in units of parts per billion by volume (ppbv)

LOD - Limit of Detection.

ND - not detected

NQ - concentration can not be quantified.

SDL - Sample Detection Limit (LOD adjusted for dilutions).

INV - Invalid.

J - Reported concentration is below SDL.

L - Reported concentration is at or above the SDL and is below the lower limit of quantitation.

E - Reported concentration exceeds the upper limit of instrument calibration.

M - Result modified from previous result.

T- Data was not confirmed by a confirmational analysis. Data is tentatively identified.

* SDL is equal to LOD

** Quality control flags explanations are listed on the last page of this report.

TCEQ laboratory customer support may be reached at kbachtel@tceq.state.tx.us

The TCEQ is an equal opportunity/affirmative action employer. The agency does not allow discrimination on the basis of race, color, religion, national origin, sex, disability, age, sexual orientation or veteran status. In compliance with the Americans With Disabilities Act, this document may be requested in alternate formats by contacting the TCEQ at (512) 239-0010, (Fax 512-239-0055), or 1-800-RELAY-TX (TDD), or by writing P.O. Box 13087, Austin, Texas 78711-3087.

Laboratory Analysis Results

ACL Number: 1107053

Analysis Code: AMOR006

Quality Control Notes:

D1-sample concentration was calculated using a dilution factor of 4.04

TCEQ laboratory customer support may be reached at kbachtel@tceq.state.tx.us

The TCEQ is an equal opportunity/affirmative action employer. The agency does not allow discrimination on the basis of race, color, religion, national origin, sex, disability, age, sexual orientation or veteran status. In compliance with the Americans With Disabilities Act, this document may be requested in alternate formats by contacting the TCEQ at (512) 239-0010, (Fax 512-239-0055), or 1-800-RELAY-TX (TDD), or by writing P.O. Box 13087, Austin, Texas 78711-3087.

