

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

September 11, 2008

MR SEAN M WILSON
ENVIRONMENTAL COMPLIANCE SPECIALIST
CROSSTEX NORTH TEXAS GATHERING LP
2501 CEDAR SPRINGS RD STE 100
DALLAS TX 75201-7684

Standard Permit Registration Number:	75004	Renewal Date:	March 21, 2015
Location:	10650 Hicks Field Road		
City/County:	Fort Worth, Tarrant County		
Project Description/Unit:	Jarvis Compressor Station		
Regulated Entity Number:	RN102939626		
Customer Reference Number:	CN603079856		
New or Existing Site:	Existing		
Affected Permit (if applicable):	None		
Standard Permit Type:	Oil and Gas Production Facilities		

CrossTex North Texas Gathering, LP has registered the emissions associated with the Jarvis Compressor Station (previously named Eagle Mountain Compressor Station) under the standard permit listed above as authorized by the Commissioners pursuant to Title 30 Texas Administrative Code ' 116.602 (30 TAC ' 116.602). Emissions are listed on the attached table. For rule information see www.tceq.state.tx.us/permitting/air/nav/standard.html.

Planned MSS for the sources identified on the maximum emissions rate table (MERT) were reviewed and authorized for this standard permit. Any other maintenance activities are not authorized by this standard permit and will need to obtain separate authorization.

As of July 1, 2008, all analytical data generated by a mobile or stationary laboratory in support of compliance with air permits must be obtained from a NELAC (National Environmental Laboratory Accreditation Conference) accredited laboratory under the Texas Laboratory Accreditation Program or meet one of several exemptions. Specific information concerning which laboratories must be accredited and which are exempt may be found in 30 TAC ' ' 25.4 and 25.6.

For additional information regarding the laboratory accreditation program and a list of accredited laboratories and their fields of accreditation, please see the following website:

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

For questions regarding the accreditation program, you may contact the Texas Laboratory Accreditation Program at (512) 239-3754 or by email at labprgms@tceq.state.tx.us.

Mr. Sean M. Wilson
Page 2
September 11, 2008

Re: Standard Permit Registration Number 75004

The company is also reminded that these facilities may be subject to and must comply with other state and federal air quality requirements. If you have questions, please contact Mr. Kevin Whitenight at (512) 239B4334. This action is taken under authority delegated by the Executive Director of the TCEQ.

Sincerely,

A handwritten signature in black ink, appearing to read "Anne M. Inman". The signature is fluid and cursive, with a large initial "A" and "I".

Anne M. Inman, P.E., Manager
Rule Registrations Section
Air Permits Division
Texas Commission on Environmental Quality

cc: Air Program Manager, Department of Environmental Management, City of Fort Worth, Fort Worth
Air Section Manager, Region 4 - Fort Worth

Project Number: 140086

Standard Permit Maximum Emission Rates Table
Permit Number 75004

The facilities and emissions included in this table have been represented and reviewed as the maximum emissions authorized by this standard permit registration.

MAXIMUM ALLOWABLE EMISSION RATES TABLE (MAERT)													
EPN / Emission Source	Specific VOC or Other Pollutants	VOC		NO _x		CO		PM ₁₀		SO ₂		Formaldehyde	
		lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
1 / Compressor engine 1		0.78	3.42	1.96	8.58	0.78	3.42	0.12	0.53	<0.01	<0.01	0.31	1.35
2 / Compressor engine 2		0.78	3.42	1.96	8.58	0.78	3.42	0.12	0.53	<0.01	<0.01	0.31	1.35
3 / Compressor engine 3		0.78	3.42	1.96	8.58	0.78	3.42	0.12	0.53	<0.01	<0.01	0.31	1.35
4 / Compressor engine 4		0.49	2.14	1.30	5.71	1.30	5.71	0.22	0.98	<0.01	<0.01	0.07	0.14
5 / Compressor engine 5		0.49	2.14	1.30	5.71	1.30	5.71	0.22	0.98	<0.01	<0.01	0.07	0.21
6 / Compressor engine 6		0.49	2.14	1.30	5.71	1.30	5.71	0.22	0.98	<0.01	<0.01	0.07	0.22
7 / Compressor engine 7		0.49	2.15	0.98	4.29	1.30	5.69	0.23	1.01	0.01	0.04	0.07	0.24
8 / Compressor Engine 8		0.56	2.43	1.48	6.49	1.85	8.11	0.26	1.12	<0.01	<0.01	0.19	0.56
20 / Compressor Engine 20		0.46	2.00	1.22	5.33	1.22	5.33	0.20	0.90	<0.01	<0.01	0.06	0.22
21 / Compressor Engine 10		0.35	1.52	0.97	4.26	0.46	2.03	0.16	0.69	<0.01	<0.01	0.06	0.22
22 / Compressor Engine 11		0.35	1.52	0.97	4.26	0.46	2.03	0.16	0.69	<0.01	<0.01	0.06	0.22
24 / Compressor Engine 12		0.78	3.42	1.96	8.58	0.78	3.42	0.12	0.53	0.01	0.04	0.31	1.36
25 / Compressor Engine 12 Blowdowns		1.24	0.10										
26 / Compressor Engine 12 Starter Vent		2.03	0.16										
27 / Compressor Engine 12 Fugitives		0.06	0.27										
9 and 10 / Amine Unit		0.08	0.33										
11 / Dehy Unit		0.03	0.13										
12 / Amine Reboilers		0.01	0.38	1.59	6.96	1.34	5.85	0.12	0.53				
13 / Glycol Reboilers		0.01	0.06	0.24	1.03	0.20	0.87	0.02	0.08				
14 / Flare		0.01	0.04	0.15	0.67	0.81	3.55	0.02	0.08				
15 / emergency generator		0.01	0.04	0.11	0.47	0.02	0.10	0.01	0.03				
16 / Slop Tank		0.42	1.84										
17 / Loading		0.23	1.00										
18 / Plant Fugitives		0.65	2.84										
TOTAL EMISSIONS (TPY):		11.58	34.41	16.67	69.87	12.72	50.63	2.31	8.76	<0.01	<0.01	1.89	7.44
MAXIMUM OPERATING SCHEDULE:		Hours/Day			Days/Week			Weeks/Year			Hours/Year		8760

- VOC - volatile organic compounds
- PM - total particulate matter
- PM₁₀ - particulate matter equal to or less than 10 microns in size
- NO_x - total oxides of nitrogen
- CO - carbon monoxide
- SO₂ - sulfur dioxide

**Fugitive emissions are an estimate only and should not be considered as a maximum allowable

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



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

January 23, 2012

MR MICHAEL LEBLANC
VICE PRESIDENT OF OPERATIONS
CROSSTEX NORTH TEXAS GATHERING LP
2501 CEDAR SPRINGS RD STE 100
DALLAS TX 75201-7684

Standard Permit Registration Number:	75004	Renewal Date:	March 21, 2015
Location:	10650 Hicks Field Rd., Fort Worth Tx 76179 from n of Ft. Worth off Highway 287 to right at Avondale-Hasler exit go about 4.7 mi to Hicks Field Rd turn left and cross 2 sets of RR tracks curve to the left 1 mi		
City/County:	Fort Worth, Tarrant County		
Project Description/Unit:	Jarvis Compressor Station		
Regulated Entity Number:	RN102939626		
Customer Reference Number:	CN603079856		
New or Existing Site:	Existing		
Affected Permit (if applicable):	None		
Standard Permit Type:	Oil and Gas Production Facilities		

Crosstex North Texas Gathering, L.P. has revised the emissions associated with the Jarvis Compressor Station under the standard permit listed above as authorized by the Commissioners pursuant to Title 30 Texas Administrative Code § 116.602 (30 TAC § 116.602). Emissions are listed on the attached table. For rule information see www.tceq.texas.gov/permitting/air/nav/standard.html.

Planned MSS emissions for 52 blowdowns/year per engine have been reviewed. These authorized MSS emissions are included on the emissions table. No other planned MSS emissions will be authorized under this registration.

As of July 1, 2008, all analytical data generated by a mobile or stationary laboratory in support of compliance with air permits must be obtained from a NELAC (National Environmental Laboratory Accreditation Conference) accredited laboratory under the Texas Laboratory Accreditation Program or meet one of several exemptions. Specific information concerning which laboratories must be accredited and which are exempt may be found in 30 TAC § 25.4 and § 25.6.

For additional information regarding the laboratory accreditation program and a list of accredited laboratories and their fields of accreditation, please see the following Web site:

www.tceq.texas.gov/compliance/compliance_support/qa/env_lab_accreditation.html

For questions regarding the accreditation program, you may contact the Texas Laboratory Accreditation Program at (512) 239-3754 or by email at labprgms@tceq.texas.gov.

Mr. Michael Leblanc

Page 2

January 23, 2012

Re: Standard Permit Registration Number 75004

The company is also reminded that these facilities may be subject to and must comply with other state and federal air quality requirements. In addition, under the applicability section for all Standard Permits, § 116.610(a)(2) states that "Construction or operation of the project must be commenced prior to the effective date of a revision to this subchapter."

If you have questions, please contact Mr. Kevin Whitenight at (512) 239-4334. This action is taken under authority delegated by the Executive Director of the TCEQ.

Sincerely,

A handwritten signature in black ink, appearing to read "Anne M. Inman". The signature is fluid and cursive, with a large initial "A" and a long horizontal stroke extending to the right.

Anne M. Inman, P.E., Manager
Rule Registrations Section
Air Permits Division
Texas Commission on Environmental Quality

cc: Environmental Program Manager, Transportation & Public Works/Environmental Services Air Pgm,
City of Fort Worth, Fort Worth
Air Section Manager, Region 4 - Fort Worth

Project Number: 172335

Standard Permit Maximum Emission Rates Table
Permit Number 75004

The facilities and emissions included in this table have been represented and reviewed as the maximum emissions authorized by this standard permit registration.

EPN / Emission Source	Specific VOC or Other Pollutants	VOC		NO _x		CO		PM ₁₀ /PM _{2.5}		SO ₂		Formaldehyde	
		lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
1 / Compressor Engine 1		1.25	5.48	1.96	8.58	0.74	3.24	0.12	0.53	0.01	0.04	0.23	1.01
7 / Compressor Engine 2		0.52	2.28	1.47	6.44	1.30	5.69	0.21	0.92	0.01	0.04	0.03	0.13
3 / Compressor Engine 3		1.25	5.48	1.96	8.58	0.74	3.24	0.12	0.53	0.01	0.04	0.23	1.01
2 / Compressor Engine 4		1.25	5.48	1.96	8.58	0.74	3.24	0.12	0.53	0.01	0.04	0.23	1.01
5 / Compressor Engine 5		0.52	2.28	1.30	5.69	1.30	5.69	0.21	0.92	0.01	0.04	0.03	0.13
6 / Compressor Engine 6		0.52	2.28	1.47	6.44	1.30	5.69	0.21	0.92	0.01	0.04	0.03	0.13
20 / Compressor Engine 7		0.73	3.20	1.22	5.34	1.22	5.34	0.20	0.88	0.01	0.04	0.03	0.13
4 / Compressor Engine 8		0.52	2.28	1.30	5.69	1.30	5.69	0.21	0.92	0.01	0.04	0.03	0.13
8 / Compressor Engine 9		0.67	2.93	1.48	6.48	1.85	8.10	0.25	1.10	0.01	0.04	0.04	0.18
24 / Compressor Engine 10		1.25	5.48	1.96	8.58	0.74	3.24	0.12	0.53	0.01	0.04	0.23	1.01
21 / Compressor Engine 11		0.38	1.66	1.48	6.48	0.38	1.66	0.10	0.44	0.01	0.04	0.06	0.26
22 / Compressor Engine 12		0.38	1.66	1.48	6.48	0.38	1.66	0.10	0.44	0.01	0.04	0.06	0.26
15 / Emergency Generator		0.33	0.02	4.15	0.21	0.90	0.05	0.29	0.01	0.27	0.01	0.01	0.01
AIRCOMP / Air Compressor		0.08	0.004	0.99	0.05	0.21	0.01	0.07	0.004	0.07	0.004	<0.01	<0.01
BDSV-GRP / Compressor Engine Blowdown		3.31	1.45										
17 / Loading area		0.60	0.05										
18 / Site Fugitives		1.07	4.63										
TK-1 / Slop tank		0.02	0.02										
TK-2 / Slop tank 2		0.02	0.01										
TK-3 / Salt Water Tank		0.02	0.02										
TK-4 / Salt Water Tank		0.02	0.02										
TK-5 / Salt Water Tank		0.02	0.02										
TK-6 / Salt Water Tank		0.02	0.02										
TK-7 / Glycol Tank		<0.01	<0.01										
TK-8 / Amine Tank		<0.01	<0.01										
TK-AF / Anti Freeze Tank		<0.01	<0.01										
TK-OL / Oil Tanks		<0.01	<0.01										
TK-WO / Waste Oil		<0.01	<0.01										
13A / Glycol Reboiler 1		0.01	0.04	0.15	0.66	0.12	0.53	0.01	0.04	<0.01	<0.01	<0.01	<0.01
13B / Glycol Reboiler 2		0.01	0.04	0.15	0.66	0.12	0.53	0.01	0.04	<0.01	<0.01	<0.01	<0.01
12A / Amine Reboiler 1		0.02	0.09	0.32	1.40	0.27	1.18	0.02	0.09	<0.01	<0.01	<0.01	<0.01
12B / Amine Reboiler 2		0.02	0.09	0.32	1.40	0.27	1.18	0.02	0.09	<0.01	<0.01	<0.01	<0.01
12C / Steam Reboiler		0.09	0.39	0.58	2.54	1.40	6.13	0.13	0.57	0.01	0.04	<0.01	<0.01
14, 11A, 11B / Flare		0.01	0.05	0.07	0.30	0.60	2.63	<0.01	<0.01	0.001	0.004		
AG-1 / Amine Unit Still Vent		0.01	0.04										
AG-2 / Amine Unit Still Vent		0.01	0.04										
FT-1 / Amine Unit Flash Tank		<0.01	<0.01										
FT-2 / Amine Unit Flash Tank		<0.01	<0.01										
TOTAL EMISSIONS (TPY):			47.58		90.58		64.72		9.50		0.57		5.40
MAXIMUM OPERATING SCHEDULE:		Hours/Day			Days/Week			Hours/Year		8760			

VOC - volatile organic compounds
NO_x - total oxides of nitrogen
CO - carbon monoxide
PM₁₀ - particulate matter equal to or less than 10 microns in size
PM_{2.5} - particulate matter equal to or less than 2.5 microns in size
SO₂ - sulfur dioxide

**Fugitive emissions are an estimate only and should not be considered as a maximum allowable

Effective Date: January 23, 2012

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

February 14, 2012

Ms. Oksana A. Howard, Manager of Environmental Compliance
Crosstex Energy Services LP
2501 Cedar Springs Rd Ste 100
Dallas TX 75201-7684

Re: Focused Investigation for Natural Gas Production Facility at: Jarvis Compressor
Station, Located 10650 Hicks Field Rd, Fort Worth, Tarrant County, Texas
TCEQ ID No.: RN102939626; CN603079856

Dear Ms. Howard:

On July 28, 2011, Mr. Brian Yerkes of the Texas Commission on Environmental Quality (TCEQ) DFW Region Office conducted a records review investigation of the above-referenced facility to evaluate compliance with applicable requirements for air quality. No violations were documented during the investigation.

The TCEQ appreciates your assistance in this matter and your compliance efforts to ensure protection of the State's environment. If you or members of your staff have any questions regarding these matters, please feel free to contact Mr. Yerkes in the DFW Region Office at 817/588-5869.

Sincerely,

A handwritten signature in cursive script that reads "Jaret Wessel".

Jaret A. Wessel
Barnett Shale Team Leader
DFW Region Office

JAW/axa

Texas Commission on Environmental Quality

Investigation Report

Crosstex North Texas Gathering, L.P.
CN603079856

COPY

JARVIS COMPRESSOR STATION

RN102939626

Investigation # 950611

Incident #

Investigator: BRIAN YERKES

Site Classification

MINOR SOURCE

Conducted: 07/28/2011 -- 07/28/2011

No Industry Code Assigned

Program(s): AIR NEW SOURCE
PERMITS

Investigation Type : Compliance Investigation

Location : 10650 HICKS FIELD RD
FORT WORTH TX 76179 FROM N OF
FT WORTH OFF HWY 287 TO RIGHT
AT AVONDALE-HASLER EXIT GO
ABOUT 4.7 MI TO HICKS FIELD RD
TURN LEFT AND CROSS 2 SETS OF
RR TRACKS CURVE TO THE LEFT 1 MI

Additional ID(s) : 75004

Address: ; ,

Activity Type : REGION 04 - DFW METROPLEX
FIARNGP - AIR FIARNGP - FOC INV FOR
NATGASPETRO FACILITYPrincipal(s) :

Role

Name

RESPONDENT

CROSSTEX NORTH TEXAS GATHERING LP

Contact(s) :

Role

Title

Name

Phone

Other Staff Member(s) :

Role

Name

QA Reviewer
Investigator
SupervisorJARET WESSEL
YVETTE VAUGHAN
JARET WESSEL

Associated Check List

Checklist NameUnit NameAIR FOCUSED INVESTIGATION - GENERAL
MONITORING

Jarvis Compressor Station

AIR FOCUSED INVESTIGATION - NGP FACILITY

Jarvis Compressor Station

AIR INVESTIGATION - EQUIPMENT MONITORING
AND SAMPLING

Jarvis Compressor Station

Investigation Comments :

INTRODUCTION

On July 28, 2011, Mr. Brian Yerkes, Environmental Investigator ('Investigator'), of the Texas

JARVIS COMPRESSOR STATION - FORT WORTH

7/28/2011 Inv. # - 950611

Page 2 of 5

Commission on Environmental Quality (TCEQ), Dallas/Fort Worth (DFW) Region office conducted a Air Focused Natural Gas and Petroleum (FAIRNGP) Investigation at the Crosstex Energy Services, L.P. (Crosstex Energy) Jarvis Compressor Station Facility ('regulated entity' or 'site'). The site is located at 10650 Hicks Field Rd. in Fort Worth, Tarrant County, Texas. The purpose of this investigation was to evaluate the compliance of the site while doing a follow-up investigation to the City of Fort Worth Natural Gas Air Quality Study conducted by Eastern Research Group Inc., (ERG). Ms. Yvette Vaughan, Investigator of the TCEQ, DFW Region office assisted in this investigation. Specifically, the 12 compressor engines and associated blowdown events, 2 amine units, 2 amine vents, 1 glycol dehydration vent, 1 glycol reboiler vent, 1 slop tank and fugitive emissions associated from the site. Equipment at the site is authorized under Standard Permit No. 75004.

This investigation was prompted by the results of the City of Fort Worth Natural gas Air Quality Study conducted by ERG. ERG was under contract with the city of Fort Worth. On July 13, 2011, ERG provided the City of Fort Worth with the final report. The final report can be found with the following link:

http://www.fortworthgov.org/uploadedFiles/Gas_Wells/AirQualityStudy_final.pdf.

The final report identified the site as possibly exceeding its permitted limit of emissions. ERG reported the site having total combined emissions of 79.93 tons/year (tpy) for Volatile Organic Compounds (VOC's), 0.34 tpy for SO₂, 1038.90 tpy for CO and 87.74 tpy for NO_x. The site is currently authorized under standard permit 75004 which was updated by a notice sent to the DFW Region office and permitting. The letter was originally sent to permitting on May 2, 2011 and permitting sent the updated copy to the TCEQ DFW Regional office on September 27, 2011. The allowable emissions are shown in the MAERT Table (Attachment 1) and also found in the permit file in the DFW Region. This shows that the facility is allowed to emit up to but no more than 36.91 tpy of VOC, 0.20 tpy of SO₂, 64.37 tpy of CO, 85.21 of NO_x, 10.19 tpy of PM₁₀ and 7.44 tpy of Formaldehyde. Due to these findings, the investigator contacted Ms. Oksana Howard (Manager of Environmental Compliance, Crosstex Energy) via phone on July 19, 2011 to set up the investigation at this site. It was agreed with Ms. Howard that the on-site portion of this investigation would be conducted on July 28, 2011 at 10:30 a.m.

Ms. Oksana Howard (Manager of Environmental Compliance, Crosstex Energy), Mr. Robert Ard (North Texas Area Supervisor, Crosstex Energy) and Ms. Michelle Mora-Gonzales (Lead Environmental Compliance specialist, Crosstex Energy) participated in the investigation.

The land use in areas surrounding the site is primarily industrial to the south. North, west and east sides of the plant are mainly agricultural land with scattered well-pad sites located on the land. Bond Ranch Road runs east and west along the north side of the facility and Business 287 runs north and south along the west side of the facility. The nearest receptor is located approximately 316 feet to the south of the fence line of the site. The terrain in the area is generally flat. Vegetation in the area includes native grasses surrounding the site. No water bodies were found surrounding the site. For more information concerning the site, please see the Survey Map found in Attachment 3.

Daily Narrative:

The investigators arrived at the site at approximately 10:00 a.m. on July 28, 2011, where they did a general survey around the site and found the site to be surrounded by scattered gas well sites. During the general survey the investigators did not notice any odors. The investigators then collected meteorological data where it was noted the sky to be clear with a temperature of 90 degrees Fahrenheit and a relative humidity of 48.5%. The wind was noted to be out of the south at an average speed of 1.7 miles per hour (mph) and a maximum speed of 3.4 mph. Meteorological conditions did not change during the investigation.

At 10:15 a.m., the investigators met with Ms. Howard, Mr. Ard, and Ms. Mora-Gonzales. At 10:17 a.m. the investigators began the walk-through of the site where it was noticed that site had 12 compressor engines, 2 amine unites, 1 amine reboiler, 1 glycol dehydration unit, 1 glycol reboiler and 1 flare. During the walk through of the facility it was noted that all pieces of equipment were running and no odors and no visible emissions were seen coming from the site. The GFIR

camera showed normal operational conditions at the site. The AreaRAE showed non-detectable limits of VOC, H₂S, CO and Lower Explosive Limit (LEL). The oxygen was recorded to be at 20.9%. The investigators completed the walk through of the site at 11:10 a.m. At this time Ms. Howard gave a process description of the site and mentioned that the amine units vent to the atmosphere and the emissions from the glycol unit are sent to the flare.

After conducting the on-site part of the investigation the investigator then went off-site to collect 2 summa canister samples (00228 and F2578). The investigators were also accompanied with Crosstex personnel for them to collect Summa samples in the same location as TCEQ Summa's. Summa canister 00228 was collected upwind of the site. Summa Canister F2578 was collected downwind of the site. The Summa's were started at 11:25 a.m. and finished at 11:45 a.m. using 30-minute orifice control devices. The laboratory analysis of 00228 can be found in Attachment 4 and F2578 can be found in Attachment 5. The results of the summa canister are discussed in further detail in the "Monitoring Results" section of this report.

The investigators left the site at 12:02 p.m. after talking with Ms. Howard about getting the information for the stack test conducted on the engines and the emission inventory for the fiscal year of 2010. It was agreed by Ms. Howard and the investigator that the information will be made available to the investigator for review by September 6, 2011.

The investigator received the calculations September 6, 2011 and had some questions concerning the emissions that Crosstex had. These numbers were shown to have exceeded the updated MAERT table dated September 16, 2011 for SO₂, VOC and Formaldehyde. Upon recognizing this information, the investigator got in contact with Ms. Howard and was informed by her via phone that the calculations were off by a decimal factor. Therefore the new updated emissions were received on October 4, 2011.

After a review of the emission calculations from both ERG and Crosstex, the investigator has determined that Crosstex estimates should be used to determine compliance with the standard permit 75004. Crosstex emission estimates were calculated using methods which would result in the most conservative, or maximum, emission quantities. Crosstex emission estimates were calculated based on liquid and gas analyses which speciate the samples and provide a concentration by weight for each speciated compound. In addition, Crosstex calculations were completed using EPA's AP-42 emission factors and formulas. These emission factors have been developed and compiled from source test data, material balance studies, and engineering estimates. Crosstex also calculated fugitive emissions from equipment such as flanges, valves, and seals.

Based on the investigator's review of the provided emission calculations, the site has emissions of 31.22 tpy of VOC's, 49.37 tpy of NO_x, 29.31 tpy of CO, 8.49 tpy of PM, 0.00 of SO₂ and 7.30 tpy of Formaldehyde (based on Crosstex's calculations) as opposed to ERG's estimates of 79.93 tpy of VOC's, 87.74 tpy of NO_x, 1038.90 tpy of CO, 1.00 tpy of PM, 0.34 of SO₂ and 31.93 tpy of Formaldehyde.

Exit Interview:

An exit interview was conducted verbally explaining the findings of the investigation to Crosstex. No customer survey was given to Crosstex.

GENERAL FACILITY AND PROCESS INFORMATION

Process Description:

The gas enters the site from various gas pad sites and gets compressed with the 12 compressor engines on site. The gas then enters the amine units where it Hydrogen DiSulfide (H₂S) and CO get removed from the gas. The emissions from the amine units get vented into the atmosphere. The gas enters the glycol dehydration unit where the gas is then further dried. The gas stream then leaves the site for other consumers.

BACKGROUND

The regulated entity has a compliance history rating of 0 and a performance classification of high. The customer has a compliance history rating of 1.2 and a performance classification of average.

Monitoring Results:

On August 15, 2011, both the upwind and downwind sampling results were reviewed by the investigator. The results for both of the upwind and downwind summa samples showed no exceedances of any of the applicable short-term or long-term AMCV's. For more information concerning the laboratory report please see Attachments 4 and 5. No visible emissions were seen coming from the site. No odors were present coming from the site. The AreaRAE had non detectable readings of Lower Explosive Limit (LEL), H2S, CO and VOC. Oxygen was at 20.9%. The GFIR camera showed normal operating conditions coming from the site.

Current Enforcement Actions:

No violations are alleged at this time.

Agreed Orders, Court Orders and Other Compliance Agreements:

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

Prior Enforcement Issues:

There have been no air quality related prior enforcement issues associated with this regulated entity in the five years prior to this investigation.

Complaints:

A review of the region files indicates there have been no air quality related complaints filed against this entity in the five years prior to this investigation.

ADDITIONAL INFORMATION/RECOMMENDATIONS

Conclusions and Recommendations:

No violations are alleged as a result of this investigation. A General Compliance letter will be sent to Crosstex.

Additional Issues:

No additional issues are associated with this investigation.

No Violations Associated to this Investigation

Signed


Environmental Investigator

Date

02/08/2012

Signed


Supervisor

Date

2/8/12

Attachments: (in order of final report submittal)

Enforcement Action Request (EAR)

Letter to Facility (specify type) : _____

Investigation Report

45 Sample Analysis Results

Manifests

NOR

3 Maps, Plans, Sketches

Photographs

Correspondence from the facility

1, 20 Other (specify) :

MAERT TABLE, summary of

Emissions



TCEQ
DFW Region

Attachment 1

MAERT Table

Customers: CROSSTEX ENERGY SERVICES, L.P.
CN603079856

Regulated Entity: Jarvis Compressor Station
RN102939626

Investigation Number: 950611
Investigation Date: July 28, 2011
Investigator: Brian Yerkes
Number of Pages: 1



Standard Permit Maximum Emission Rates Table
Permit Number 75004

The facilities and emissions included in this table have been represented and reviewed as the maximum emissions authorized by this standard permit registration.

MAXIMUM ALLOWABLE EMISSION RATES TABLE (MAERT)													
EPN / Emission Source	Specific VOC or Other Pollutants	VOC		NO _x		CO		PM ₁₀		SO ₂		Formaldehyde	
		lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
1 / Compressor engine 1		0.78	3.42	1.96	8.58	0.78	3.42	0.12	0.53	0.01	0.04	0.31	1.35
2 / Compressor engine 2		0.78	3.42	1.96	8.58	0.78	3.42	0.12	0.53	0.01	0.04	0.31	1.35
3 / Compressor engine 3		0.78	3.42	1.96	8.58	0.78	3.42	0.12	0.53	0.01	0.04	0.31	1.35
4 / Compressor engine 4		0.49	2.14	1.30	5.71	1.30	5.71	0.22	0.98	<0.01	<0.01	0.07	0.14
5 / Compressor engine 5		0.49	2.14	1.30	5.71	1.30	5.71	0.22	0.98	<0.01	<0.01	0.07	0.21
6 / Compressor engine 6		0.49	2.14	1.30	5.71	1.30	5.71	0.22	0.98	<0.01	<0.01	0.07	0.22
7 / Compressor engine 7		0.49	2.15	0.98	4.29	1.30	5.69	0.23	1.01	0.01	0.04	0.07	0.24
8 / Compressor Engine 8		0.56	2.43	1.48	6.49	1.85	8.11	0.26	1.12	<0.01	<0.01	0.19	0.56
20 / Compressor Engine 20		0.46	2.00	1.22	5.33	1.22	5.33	0.20	0.90	<0.01	<0.01	0.06	0.22
21 / Compressor Engine 10		0.35	1.52	0.97	4.26	0.46	2.03	0.16	0.69	<0.01	<0.01	0.06	0.22
22 / Compressor Engine 11		0.35	1.52	0.97	4.26	0.46	2.03	0.16	0.69	<0.01	<0.01	0.06	0.22
24 / Compressor Engine 12		0.78	3.42	1.96	8.58	0.78	3.42	0.12	0.53	0.01	0.04	0.31	1.36
25 / Compressor Engine 12 Blowdowns		1.24	0.10										
26 / Compressor Engine 12 Starter Vent		2.03	0.16										
27 / Compressor Engine 12 Fugitives		0.06	0.27										
9 and 10 / Amine Unit		0.08	0.33										
11 / Dehy Unit		0.03	0.13										
12 / Amine Reboilers		0.01	0.38	1.59	6.96	1.34	5.85	0.12	0.53				
13 / Glycol Reboilers		0.01	0.06	0.24	1.03	0.20	0.87	0.02	0.08				
14 / Flare		0.01	0.04	0.15	0.67	0.81	3.55	0.02	0.08				
15 / emergency generator		0.01	0.04	0.11	0.47	0.02	0.10	0.01	0.03				
16 / Slop Tank		0.42	1.84										
17 / Loading		0.23	1.00										
18 / Plant Fugitives		0.65	2.84										
TOTAL EMISSIONS (TPY):		11.58	36.91	19.45	85.21	14.68	64.37	2.31	10.19	0.05	0.20	1.89	7.44
MAXIMUM OPERATING SCHEDULE:		Hours/Day		Days/Week		Weeks/Year		Hours/Year		8760			

- VOC - volatile organic compounds
- PM - total particulate matter
- PM₁₀ - particulate matter equal to or less than 10 microns in size
- NO_x - total oxides of nitrogen
- CO - carbon monoxide
- SO₂ - sulfur dioxide

**Fugitive emissions are an estimate only and should not be considered as a maximum allowable

Effective Date: 09/16/2011

TCEQ
DFW Region

Attachment 2

Summary of Emission Calculations

Customers: CROSSTEX ENERGY SERVICES, L.P.
CN603079856

Regulated Entity: Jarvis Compressor Station
RN102939626

Investigation Number: 950611
Investigation Date: July 28, 2011
Investigator: Brian Yerkes
Number of Pages: 1



COMPARISON OF 2010 REPORTED EMISSIONS AND STANDARD PERMIT ALLOWABLES
 Crossstex North Texas Gathering
 Jarvis Compressor Station
 RN102939626

Annual Emissions Summary Table													
Emission Unit (EPN)	Description	CO		NO _x		PM/PM ₁₀ /PM _{2.5}		SO ₂		VOC		HCHO	
		2010 EI Report (T/yr)	2010 Revised EI Report (T/yr)	2010 EI Report (T/yr)	2010 Revised EI Report (T/yr)	2010 EI Report (T/yr)	2010 Revised EI Report (T/yr)	2010 EI Report (T/yr)	2010 Revised EI Report (T/yr)	2010 EI Report (T/yr)	2010 Revised EI Report (T/yr)	2010 EI Report (T/yr)	2010 Revised EI Report (T/yr)
Compressor Engine 1 (1)	Cat 3606 Lean Burn 4-Stroke Engine	3.3264	0.68	7.6508	6.33	0.4989	0.51	0.0294	0.00	3.3264	3.32	1.3306	1.32
Compressor Engine 4 (2)	Cat 3606 Lean Burn 4-Stroke Engine	3.3599	1.82	8.3998	7.29	0.5040	0.52	0.0297	0.00	3.3599	3.34	1.3440	1.34
Compressor Engine 3 (3)	Cat 3606 Lean Burn 4-Stroke Engine	3.3943	0.99	8.4858	5.88	0.5091	0.52	0.0300	0.00	3.3943	3.35	1.3577	1.33
Compressor Engine 8 (4)	Waikesha L7042GSI Rich-Burn 4-Stroke w/Catalyst	5.6288	0.73	5.6288	1.07	0.9694	0.81	0.0294	0.00	2.8144	1.93	1.9490	0.13
Compressor Engine 5 (5)	Waikesha L7042GSI Rich-Burn 4-Stroke w/Catalyst	2.8252	2.99	1.4126	1.99	0.9731	0.82	0.0295	0.00	2.8252	1.99	1.9565	0.13
Compressor Engine 6 (6)	Waikesha L7042GSI Rich-Burn 4-Stroke w/Catalyst	2.8236	1.91	3.3883	2.04	0.9725	0.78	0.0295	0.00	2.8236	1.82	1.9554	0.13
Compressor Engine 2 (7)	Waikesha L7042GSI Rich-Burn 4-Stroke w/Catalyst	2.7921	2.50	2.6525	1.81	0.9617	0.86	0.0291	0.00	2.7921	2.12	1.9335	0.13
Compressor Engine 9 (8)	Waikesha L7044GSI Rich-Burn 4-Stroke w/Catalyst	3.1873	3.66	2.7092	1.68	1.1010	0.95	0.0334	0.00	2.3905	1.12	0.7968	0.13
Compressor Engine 7 (20)	Waikesha L5794GSI Rich-Burn 4-Stroke w/Catalyst	2.5868	1.23	2.7161	0.13	0.8541	0.81	0.0259	0.00	2.5868	1.87	1.7913	0.13
Compressor Engine 11 (21)	Cat 3516 Lean Burn 4-Stroke Engine	2.0061	0.60	4.2128	2.89	0.3500	0.39	0.0206	0.00	1.5046	1.81	0.5617	0.60
Compressor Engine 12 (22)	Cat 3516 Lean Burn 4-Stroke Engine	1.9829	0.59	4.1642	2.48	0.3459	0.38	0.0204	0.00	1.4872	1.73	0.5552	0.59
Compressor Engine 10 (24)	Cat 3606 Lean Burn 4-Stroke Engine	3.3737	2.03	8.4343	6.90	0.5191	0.52	0.0306	0.00	3.3737	3.36	1.3495	1.34
COMP-SV (26)	Compressor Engine 10 Startups	--	--	--	--	--	--	--	--	0.0632	0.00	--	--
COMP-BD (25)	Compressor Engine 10 Blowdowns	--	--	--	--	--	--	--	--	0.1014	0.01	--	--
Amine Units Combined (9 & 10)	Amine Units Combined	--	--	--	--	--	--	--	--	0.3504	0.09	--	--
RELRAMINE (12)	Amine Reboiler Heater	5.9603	5.85	7.0956	6.96	0.5393	0.53	0.0426	0.00	0.3903	0.38	--	--
RELRDEHY (13)	Glycol Unit Reboiler Heater	0.8830	1.10	1.0512	1.27	0.0799	0.09	0.0063	0.00	0.0578	0.09	--	--
DEHY1 (11)	Glycol Dehy Unit Vent	--	--	--	--	--	--	--	--	5.2998	0.02	--	--
TANK (16)	Slop Tank	--	--	--	--	--	--	--	--	1.8440	0.12	--	--
RACK (17)	Vapors displaced during liquid loading	--	--	--	--	--	--	--	--	0.0003	0.05	--	--
FLARE (14)	Flare - pilot plus flared waste gas	4.6989	2.63	2.3337	0.65	0.1296	--	0.0102	0.00	0.5128	0.04	--	--
FUG (18)	Site-Wide Fugitive Emissions (Unmonitored)	--	--	--	--	--	--	--	--	0.6557	2.66	--	--
COMP-FUG (27)	Compressor Engine 10 Fugitives	--	--	--	--	--	--	--	--	--	--	--	--
GEN (15)	Emergency Generator	--	--	--	--	--	--	--	--	--	--	--	--
Total:		48.8293	29.31	70.5557	49.37	9.3076	8.49	0.3966	0.00	42.3048	31.22	16.8812	7.30

TCEQ
DFW Region

Attachment 3

Survey Map

Customers: CROSSTEX ENERGY SERVICES, L.P.
CN603079856

Regulated Entity: Jarvis Compressor Station
RN102939626

Investigation Number: 950611
Investigation Date: July 28, 2011
Investigator: Brian Yerkes
Number of Pages: 1

Crosstex Energy Services, L.P. – Jarvis Compressor Station
Survey Map

July 28, 2011



— Monitoring Route



North



Regulated Facility



Wind Direction



Monitoring Location

Wind Speed Ave: 1.7 mph
Wind Speed Max: 3.4 mph
Wind Direction: South

Temperature: 90.0°F
Relative Humidity: 48.5%
Skies: Clear Skies

TCEQ
DFW Region

Attachment 4

Laboratory Analysis - Upwind

Customers: CROSSTEX ENERGY SERVICES, L.P.
CN603079856

Regulated Entity: Jarvis Compressor Station
RN102939626

Investigation Number: 950611
Investigation Date: July 28, 2011
Investigator: Brian Yerkes
Number of Pages: 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: 1108011

ACL Lead: David Manis

Region: T04

Date Received: 8/1/2011

Project(s): Barnett Shale

Facility(ies) Sampled	City	County	Facility Type
Crosstex Energy Services	Fort Worth	Tarrant	Natural Gas

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: 00228-072811

Laboratory Sample Number: 1108011-001

Sampled by: Yvette Vaughan

Sampling Site: Jarvis Compressor Station

Date & Time Sampled: 07/28/11 11:25:00 Valid Sample: Yes

Comments:

Canister 00228 was used to collect a 30-minute sample using OFC-097.

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: 08/12/11

Reviewed By: David Manis

David Manis (Acting)

Date: 8/15/11

Technical Specialist: David Manis

David Manis

Date: 8/15/11

Laboratory Analysis Results

ACL Number: 1108011

Analysis Code: AMOR006

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

Lab ID		1108011-001					
Field ID		00228-072811					
Canister ID		00228					
Analysis Date		08/06/11					
Compound	LOD	Concentration	SDL	Flags**	Concentration	SDL	Flags**
ethane	0.50	4.8	1.0	T,D1			
ethylene	0.50	0.67	1.0	J,T,D1			
acetylene	0.50	ND	1.0	T,D1			
propane	0.50	2.3	1.0	L,T,D1			
propylene	0.50	ND	1.0	T,D1			
dichlorodifluoromethane	0.20	0.56	0.40	L,D1			
methyl chloride	0.20	0.76	0.40	L,D1			
isobutane	0.23	0.24	0.46	J,D1			
vinyl chloride	0.17	ND	0.34	D1			
1-butene	0.20	0.15	0.40	J,D1			
1,3-butadiene	0.27	ND	0.54	D1			
n-butane	0.20	0.38	0.40	J,D1			
t-2-butene	0.18	ND	0.36	D1			
bromomethane	0.27	ND	0.54	D1			
c-2-butene	0.27	ND	0.54	D1			
3-methyl-1-butene	0.23	ND	0.46	D1			
isopentane	0.27	0.21	0.54	J,D1			
trichlorofluoromethane	0.29	0.25	0.58	J,D1			
1-pentene	0.27	ND	0.54	D1			
n-pentane	0.27	ND	0.54	D1			
isoprene	0.27	0.25	0.54	J,D1			
t-2-pentene	0.27	ND	0.54	D1			
1,1-dichloroethylene	0.18	ND	0.36	D1			
c-2-pentene	0.25	ND	0.50	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	0.54	D1			
2,3-dimethylbutane	0.28	ND	0.56	D1			
2-methylpentane	0.27	ND	0.54	D1			
3-methylpentane	0.23	ND	0.46	D1			
2-methyl-1-pentene + 1-hexene	0.20	0.01	0.40	J,D1			
n-hexane	0.20	ND	0.40	D1			
chloroform	0.21	ND	0.42	D1			
t-2-hexene	0.27	ND	0.54	D1			
c-2-hexene	0.27	ND	0.54	D1			
1,2-dichloroethane	0.27	ND	0.54	D1			
methylcyclopentane	0.27	ND	0.54	D1			
2,4-dimethylpentane	0.27	ND	0.54	D1			
1,1,1-trichloroethane	0.26	ND	0.52	D1			
benzene	0.27	0.08	0.54	J,D1			
carbon tetrachloride	0.27	ND	0.54	D1			
cyclohexane	0.24	ND	0.48	D1			
2-methylhexane	0.27	0.02	0.54	J,D1			
2,3-dimethylpentane	0.26	ND	0.52	D1			

Laboratory Analysis Results

ACL Number: 1108011

Analysis Code: AMOR006

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

Lab ID		1108011-001					
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	0.58	D1			
2,2,4-trimethylpentane	0.24	0.03	0.48	J,D1			
2-chloropentane	0.27	ND	0.54	D1			
n-heptane	0.25	ND	0.50	D1			
o-1,3-dichloropropylene	0.20	ND	0.40	D1			
methylcyclohexane	0.26	ND	0.52	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	0.11	0.54	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	0.54	D1			
ethylbenzene	0.27	0.03	0.54	J,D1			
m & p-xylene	0.27	0.01	0.54	J,D1			
styrene	0.27	ND	0.54	D1			
1,1,2,2-tetrachloroethane	0.20	ND	0.40	D1			
o-xylene	0.27	ND	0.54	D1			
n-nonane	0.22	ND	0.44	D1			
isopropylbenzene	0.24	ND	0.48	D1			
n-propylbenzene	0.27	ND	0.54	D1			
m-ethyltoluene	0.11	ND	0.22	D1			
p-ethyltoluene	0.16	ND	0.32	D1			
1,3,5-trimethylbenzene	0.25	ND	0.50	D1			
o-ethyltoluene	0.13	ND	0.26	D1			
1,2,4-trimethylbenzene	0.27	ND	0.54	D1			
n-decane	0.27	ND	0.54	D1			
1,2,3-trimethylbenzene	0.27	ND	0.54	D1			
m-diethylbenzene	0.27	ND	0.54	D1			
p-diethylbenzene	0.27	ND	0.54	D1			
n-undecane	0.27	ND	0.54	D1			

Laboratory Analysis Results

ACL Number: 1108011

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: 1108011

Analysis Code: AMOR006

Quality Control Notes:

D1-sample concentration was calculated using a dilution factor of 4.02

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

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TCEQ
DFW Region

Attachment 5

Laboratory Analysis - Downwind

Customers: CROSSTEX ENERGY SERVICES, L.P.
CN603079856

Regulated Entity: Jarvis Compressor Station
RN102939626

Investigation Number: 950611
Investigation Date: July 28, 2011
Investigator: Brian Yerkes
Number of Pages: 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: 1108017

ACL Lead: David Manis

Region: T04

Date Received: 8/3/2011

Project(s): Barnett Shale

Facility(ies) Sampled	City	County	Facility Type
Crosstex Energy Services	Fort Worth	Tarrant	Natural Gas

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 multitrap 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: F2578-071811

Laboratory Sample Number: 1108017-001

Sampled by: Brian Yerkes

Sampling Site: Jarvis Compressor Station

Date & Time Sampled: 07/28/11 11:25:00 Valid Sample: Yes

Comments:

Canister F2578 was used to collect a 30-minute sample using OFC-027.

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: 1108017

Analysis Code: AMOR006

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

Lab ID		1108017-001					
Field ID		F2578-071811					
Canister ID		F2578					
Analysis Date		08/06/11					
Compound	LOD	Concentration	SDL	Flags**	Concentration	SDL	Flags**
ethane	0.50	34	1.0	T,D1			
ethylene	0.50	0.43	1.0	J,T,D1			
acetylene	0.50	1.3	1.0	L,T,D1			
propane	0.50	2.3	1.0	L,T,D1			
propylene	0.50	ND	1.0	T,D1			
dichlorodifluoromethane	0.20	0.56	0.40	L,D1			
methyl chloride	0.20	0.74	0.40	L,D1			
isobutane	0.23	0.30	0.46	J,D1			
vinyl chloride	0.17	ND	0.34	D1			
1-butene	0.20	0.10	0.40	J,D1			
1,3-butadiene	0.27	ND	0.54	D1			
n-butane	0.20	0.43	0.40	L,D1			
t-2-butene	0.18	ND	0.36	D1			
bromomethane	0.27	ND	0.54	D1			
c-2-butene	0.27	ND	0.54	D1			
3-methyl-1-butene	0.23	ND	0.46	D1			
isopentane	0.27	ND	0.54	D1			
trichlorofluoromethane	0.29	0.25	0.58	J,D1			
1-pentene	0.27	ND	0.54	D1			
n-pentane	0.27	ND	0.54	D1			
isoprene	0.27	ND	0.54	D1			
t-2-pentene	0.27	ND	0.54	D1			
1,1-dichloroethylene	0.18	ND	0.36	D1			
c-2-pentene	0.25	ND	0.50	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	0.54	D1			
2,3-dimethylbutane	0.28	ND	0.56	D1			
2-methylpentane	0.27	ND	0.54	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	0.54	D1			
c-2-hexene	0.27	ND	0.54	D1			
1,2-dichloroethane	0.27	ND	0.54	D1			
methylcyclopentane	0.27	ND	0.54	D1			
2,4-dimethylpentane	0.27	ND	0.54	D1			
1,1,1-trichloroethane	0.26	ND	0.52	D1			
benzene	0.27	0.50	0.54	J,D1			
carbon tetrachloride	0.27	0.11	0.54	J,D1			
cyclohexane	0.24	ND	0.48	D1			
2-methylhexane	0.27	0.02	0.54	J,D1			
2,3-dimethylpentane	0.26	ND	0.52	D1			

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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	0.58	D1			
2,2,4-trimethylpentane	0.24	ND	0.48	D1			
2-chloropentane	0.27	ND	0.54	D1			
n-heptane	0.25	ND	0.50	D1			
o-1,3-dichloropropylene	0.20	ND	0.40	D1			
methylcyclohexane	0.26	ND	0.52	D1			
1-1,3-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	0.17	0.54	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	0.54	D1			
ethylbenzene	0.27	0.03	0.54	J,D1			
m & p-xylene	0.27	0.02	0.54	J,D1			
styrene	0.27	ND	0.54	D1			
1,1,2,2-tetrachloroethane	0.20	ND	0.40	D1			
o-xylene	0.27	ND	0.54	D1			
n-nonane	0.22	ND	0.44	D1			
isopropylbenzene	0.24	ND	0.48	D1			
n-propylbenzene	0.27	ND	0.54	D1			
m-ethyltoluene	0.11	ND	0.22	D1			
p-ethyltoluene	0.16	ND	0.32	D1			
1,3,5-trimethylbenzene	0.25	ND	0.50	D1			
o-ethyltoluene	0.13	ND	0.26	D1			
1,2,4-trimethylbenzene	0.27	ND	0.54	D1			
n-decane	0.27	ND	0.54	D1			
1,2,3-trimethylbenzene	0.27	ND	0.54	D1			
m-diethylbenzene	0.27	ND	0.54	D1			
p-diethylbenzene	0.27	ND	0.54	D1			
n-undecane	0.27	ND	0.54	D1			

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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

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Quality Control Notes:

D1-sample concentration was calculated using a dilution factor of 4.02

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